



# CONTRACT DOCUMENTS

FOR

## CALIFORNIA NURSERY HISTORICAL PARK ENTRY PLAZA

CITY PROJECT NO. PWC 8837C

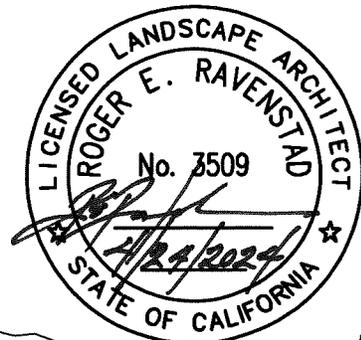
CITY BID NO. 24-024

**PROJECT MANAGER**

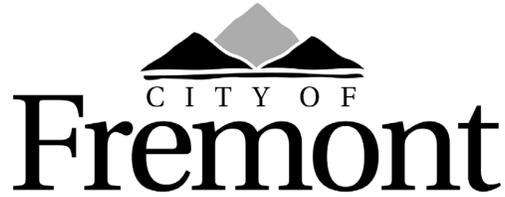
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COMMUNITY SERVICES DEPARTMENT • LANDSCAPE ARCHITECTURE DIVISION  
CITY OF FREMONT • ALAMEDA COUNTY, CALIFORNIA



LANDSCAPE ARCHITECTURE DIVISION  
SPECIAL PROVISIONS

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FOR  
**CALIFORNIA NURSERY HISTORICAL PARK**  
**ENTRY PLAZA**

CITY PROJECT NO. PWC 8837C  
IN THE  
CITY OF FREMONT, ALAMEDA COUNTY, CALIFORNIA

CITY COUNCIL  
REFERENCE ONLY



PROJECT LOCATION MAP

City of Fremont

CITY COUNCIL  
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CITY COUNCIL ONLY

REFERENCE ONLY

## Notice Inviting Bids

### 1. Bid Submission.

The City of Fremont ("City") will accept sealed bids for its **California Nursery Historical Park Entry Plaza (PWC 8837C)** ("Project"), on or before **Tuesday, May 21, 2024**, at 2:00p.m. ("Bid Deadline"), at its Purchasing Division, located at 3300 Capitol Avenue, Building B, Fremont, California 94538, at which date, time and place the bids will be opened publicly and the dollar amounts of each bid will be read aloud.

Bids shall be placed in a sealed envelope and must be received by the City of Fremont prior to the Date and Time indicated. The bids will be opened by Purchasing and the initiating department. A Preliminary bid result will be posted on the City's website the same day by 4:00pm. Please visit [www.fremont.gov/532/Bid-Results](http://www.fremont.gov/532/Bid-Results) to obtain Preliminary Bid Results.

We recommend that if bidders are responding via a delivery service such as US Mail, UPS, FedEx or any way other than personally delivering the bid response that it is done as soon as possible to allow for any delays in the delivery process.

**PLEASE NOTE THE DELIVERY LOCATION ON THE MAP BELOW. DELIVERY TO ANY OTHER AREA OTHER THAN NOTED BELOW WILL NOT GUARANTEE DELIVERY.**

For vendors that wish to deliver in person, someone will be in the Purchasing Department on the day of the bid opening to accept bids from the hours of 8:00am to 2:00pm (**please note we are closed for lunch from 12-1pm**). Delivery prior to bid opening date is recommended. City staff will be in the Purchasing Office Tuesdays, Wednesday's and Friday's to accept bids. **To deliver your bid, please come to the Liberty Street entrance ONLY, where it says BID DELIVERIES**, as shown in the sign posted at the Liberty Street entrance.



## 2. Project Information.

**2.1 Location and Description.** The Project is located at California Nursery Historical Park, 36550 Niles Blvd., Fremont CA 94536 and is described as follows: The project includes the construction of an entry plaza and rose garden. Scope of work consists of clearing and grubbing, rough grading and installation of storm drainage system, sanitary sewer and potable water line. Site work includes modification of the existing driveway, installation of curbs and gutters, concrete paving, asphalt concrete, decomposed granite, pavers and other amenities, including seat wall, arbor, site furnishings, landscape lighting, planting and irrigation.

**2.2 Time for Completion.** The planned timeframe for commencement and completion of construction of the Project is: **Ninety (90)** working days.

**2.3 Estimated Project Cost.** The estimated construction cost, or construction cost range, for the Project is **\$1,530,000**. This estimate serves only as a guideline to bidders of the scope of the Work and the Project. No bidder, including the successful bidder, is entitled to make any claim against City based on inaccuracy of the estimated cost or range of cost of the Work or the Project.

## 3. License and Registration Requirements.

**3.1 License.** This Project requires a valid California contractor's license for the following classification(s): **Class A**. Contractors bidding as a joint venture must secure a joint venture license prior to award of the Contract for the Project.

**3.2 DIR Registration.** City may not accept a Bid Proposal from, or enter into the Contract with, a bidder without proof that the bidder is registered with the California Department of Industrial Relations ("DIR") to perform public work under Labor Code Section 1725.5, subject to limited legal exceptions.

**4. Obtaining Contract Documents.** The plans, specifications, plan-holder's list, bid, and contract documents for the Project, and any addenda thereto ("Contract Documents") may be purchased from ARC Document Solutions Santa Clara ("ARC"), located at 821 Martin Avenue, Santa Clara, CA 95050; telephone: (408) 295-5770; email: [santaclara@e-arc.com](mailto:santaclara@e-arc.com); or via Planwell at: [www.e-arc.com/ca/santaclara](http://www.e-arc.com/ca/santaclara). No partial sets will be issued and the cost of purchase is non-refundable. Call in advance to confirm availability. Reference City of Fremont **Bid No. 24-024**.

Bidders are encouraged to recycle unused Contract Documents.

## 5. Bid Proposal and Security.

**5.1 Bid Proposal Form.** Each bid must be submitted using the Bid Proposal form provided with the Contract Documents.

**5.2 Bid Security.** The Bid Proposal must be accompanied by bid security of ten percent of the maximum bid amount, in the form of a cashier's or certified check made payable to City, or a bid bond executed by a surety licensed to do business in the State of California on the Bid Bond form included with the Contract Documents. The bid security must guarantee that, upon award of the bid, the successful bidder will execute the Contract and submit the payment and performance bonds, the insurance certificates, and the other documentation required by the Contract Documents, within ten days after City's issuance of the Notice of Award.

**6. Prevailing Wage Requirements.**

**6.1 General.** This Project is subject to the prevailing wage requirements applicable to the locality in which the Work is to be performed for each craft, classification or type of worker needed to perform the Work, including employer payments for health and welfare, pension, vacation, apprenticeship and similar purposes.

**6.2 Rates.** The prevailing rates are on file with the City Engineer and available online at <http://www.dir.ca.gov/DLSR>. Each Contractor and Subcontractor must pay no less than the specified rates to all workers employed to work on the Project. The schedule of per diem wages is based upon a working day of eight hours. The rate for holiday and overtime work must be at least time and one-half.

**6.3 Compliance.** The Contract will be subject to compliance monitoring and enforcement by the DIR, under Labor Code Section 1771.4.

**6.4 Minimum Wage.** This Contract may be subject to the City Minimum Wage Ordinance, codified in Fremont Municipal Code Chapter 5.30. Contractor represents it has read and understands the City's minimum wage requirements and agrees to fully comply with the ordinance. Contractor shall promptly provide any documents and information required by City to verify compliance.

Contractor shall include all applicable minimum wage requirements in all subcontractor contracts and require subcontractors to comply with the requirements.

If federal, state, and local minimum wage laws apply to this Contract, Contractor shall comply with the highest rate of pay applicable.

Contractor's violation of the City's Minimum Wage Ordinance constitutes a material breach of Contract for which the City may pursue all available legal and equitable remedies, including termination.

For more information on the City's minimum wage requirements, please refer to the City of Fremont Minimum Wage Flyer published in the City's website and updated annually.

**7. Performance and Payment Bonds.**

The successful bidder will be required to provide performance and payment bonds, each for 100% of the Contract Price.

**8. Substitution of Securities.**

Substitution of appropriate securities in lieu of retention amounts from progress payments is permitted under Public Contract Code Section 22300.

**9. Subcontractor List.**

Each Subcontractor must be registered with the DIR to perform work on public projects. Each bidder must submit a completed Subcontractor List form with its Bid Proposal, including the name, location of the place of business, California contractor license number, DIR registration number, and portion of the Work (based on the Base Bid) for each Subcontractor that will perform work or service, or fabricate or install work, for the prime contractor in excess of one-half of 1% of the bid price, using the Subcontractor List form included with the Contract Documents.

**10. Instructions to Bidders.**

Additional and more detailed information about the Project and City's bidding requirements is provided in the Instructions to Bidders. All bidders should carefully review the Instructions to Bidder before submitting a Bid Proposal for the Project.

**11. Bidders' Conference**

A conference will be held on **Wednesday, May 8, 2024 at 10am**, at the following location: the parking lot at California Nursery Historical Park (Niles Blvd and Nursery Ave), to acquaint all prospective bidders with the Contract Documents and the Worksite. The bidders' conference **is not** mandatory.

**12. Retention.**

**Percentage.** The percentage of retention that will be withheld from progress payments is 5%.

\_\_\_\_\_  
Janice Becerra-Scola, Purchasing Agent  
Purchasing Division

Date: \_\_\_\_\_

Publication Dates: 1) **Tuesday, April 30, 2024**  
2) **Tuesday, May 7, 2024**

END OF NOTICE INVITING BIDS

## Instructions to Bidders

Each bid ("Bid Proposal") submitted to the City of Fremont ("City") for its **California Nursery Historical Park Entry Plaza Project** ("Project") must be submitted in accordance with the following instructions and requirements:

### 1. Bid Submission.

**1.1 General.** Each Bid Proposal must be signed, sealed and submitted to City, using the form provided in the Contract Documents, by or before the Bid Deadline set forth in the Notice Inviting Bids. City reserves the right to amend or postpone the Bid Deadline by subsequent addendum. Faxed or emailed Bid Proposals will not be accepted, unless otherwise specified. Late submissions will be returned unopened. Each bidder is solely responsible for all of its costs to prepare and submit its bid and by submitting a bid waives any right to recover those costs from City. The bid price(s) must include all costs to perform the Work as specified, including all indirect costs such as applicable taxes, insurance and field offices.

**1.2 Bid Envelope.** The envelope containing the sealed Bid Proposal and all required forms and attachments must be clearly labeled and addressed as follows:

**SEALED BID ENCLOSED, CITY OF FREMONT**

**BID PROPOSAL**

**California Nursery Historical Park Entry Plaza Project**

Project No. **PWC8837C**

Bid No. **24-024**

City of Fremont, Office of Purchasing (Finance Department)  
3300 Capitol Avenue, Building B  
Fremont, CA 94538

Attn: Janice Becerra-Scola

The envelope must also be clearly labeled, as follows, with the bidder's name, address, contractor license number(s), and registration number with the California Department of Industrial Relations ("DIR") for bidding on public works contracts (Labor Code Sections 1725.5 and 1771.1):

*[Contractor company name]*  
*[street address]*  
*[city, state, zip code]*  
*[California contractor license number(s)]*  
*[DIR Registration No: \_\_\_\_\_]*

**1.3 DIR Registration.** City will not accept a Bid Proposal from or enter into the Contract with a bidder without proof that the bidder is registered with the DIR to perform public work under Labor Code Section 1725.5, subject to limited legal exceptions. If City is unable to confirm that the bidder is currently registered with the DIR, City may disqualify the bidder and return its bid unopened. (Labor Code Section 1725.5.) If the bid is sent by mail, the sealed envelope must be enclosed in a separate envelope.

**1.4 Bid Submittals.** Each bidder must use the forms provided by City in these Contract Documents for the bid submittal. All bid forms must be fully completed and signed as directed, along with the required attachments, and the sealed bid submittal must include the following:

- (A) Bid Proposal
- (B) Bid Schedule
- (C) Subcontractor List
- (D) Noncollusion Declaration
- (E) Bid Security (Cashier's or Certified Check or Bid Bond)
- (F) Bidder's Statement of Responsibility

**2. Pre-Bid Investigation.**

**2.1 Contract Documents.** Each bidder is solely responsible for diligent and thorough review of the Contract Documents (as defined in the General Conditions), examination of the Project site, and reasonable and prudent inquiry concerning known and potential site conditions prior to submitting a Bid Proposal. However, except for any areas that are open to the general public, bidders may not enter City's property or the Project site without prior coordination with and written authorization from City. Bidders are responsible for reporting any errors or omissions in the Contract Documents to City prior to submitting a Bid Proposal, subject to the limitations of Public Contract Code Section 1104. City expressly disclaims responsibility for assumptions a bidder might draw from the presence or absence of information provided by City.

**2.2 Project Site.** Soil and soil test data, water table elevations, and soil analyses for test holes may be available for inspection in the Landscape Architecture Division within the Community Services Department or as otherwise specified in the General Conditions. Any additional subsurface exploration at the Project site must be done at the bidder's expense, but only with prior written authorization from City. All soil data and analyses available for inspection or provided in the Contract Documents apply only to the test hole locations. The water table elevation indicated by a soil test report existed on the date the test hole was drilled. The bidder is responsible for determining and allowing for any differing soil or water table conditions during construction. Because groundwater levels may fluctuate, difference(s) in elevation between ground water shown in soil boring logs and ground water actually encountered during Project construction will not be considered changed Project site conditions.

**2.3 Utility Company Standards.** The Project must be completed in a manner that satisfies the standards and requirements of the affected utility companies or agencies (collectively, "utility owners"). The successful bidder may be required by the utility owners to provide detailed plans prepared by a California registered civil engineer showing the necessary temporary support of the utilities during coordinated construction work. Bidders are directed to contact the utility owners about their requirements before submitting a Bid Proposal.

**3. Questions and Requests for Information or Clarification.** Questions, requests for information, and requests for clarification regarding the Project, the bid procedures, or any of the Contract Documents must be submitted to City in writing, addressed to the Project Manager for the Project, as follows:

Eva Lee, Landscape Designer  
39550 Liberty Street, Fremont, CA 94537  
elee@fremont.gov

If a bidder finds any error, omission, inconsistency, or ambiguity in the Contract Documents, the bidder must make a written request for clarification before submitting the bid. Bidders must submit any inquiry under this Section by **5:00 p.m. on Tuesday, May 14, 2024**, at least (5) Working Days before the Bid Deadline. Questions received any later will not be addressed before the Bid Deadline.

4. **Addenda.** Any addenda issued prior to the bid opening are part of the Contract Documents. Subject to the limitations of Public Contract Code Section 4104.5, City reserves the right to issue addenda prior to bid time. City will make reasonable efforts to deliver addenda to known plan holders who have provided a delivery address for receipt of addenda. However, City makes no guarantee that all bidders will receive all addenda. Each bidder is responsible for ascertaining and ensuring it has received and reviewed all addenda prior to submitting its bid and must acknowledge receipt of all addenda in the Bid Proposal. Bidders should check with ARC (see Section 4 of Notice Inviting Bids) for any addenda or updates on the Project, at: <http://www.e-arc.com/ca/santaclara>.
5. **Brand Designations and “Or Equal” Substitutions.** Any specification designating a material, product, thing, or service by specific brand or trade name, and followed by the words “or equal,” is intended only to indicate quality and type of item desired, and bidders may request use of any equal material, product, thing, or service. All data substantiating the proposed substitute as an equal item must be submitted with the written request for substitution. Pre-bid requests for substitution must be submitted to the Engineer at least seven Working Days before the Bid Deadline, so that all interested bidders may be notified of any approved alternative. Any other requests for substitution must comply with the General Conditions. If the Engineer denies the request for substitution, the material, product, thing or service specified in the Contract Documents must be furnished and installed. This provision does not apply to materials, products, things, or services that may lawfully be designated by a specific brand or trade name under Public Contract Code Section 3400(c) and Fremont Municipal Code Section 3.20.167(b).
6. **Bid Schedule.** Bidders are required to fully complete the Bid Schedule form accompanying the Bid Proposal form with unit prices as indicated, and to submit the completed Bid Schedule with their Bid Proposal.

**6.1 Incorrect Totals.** This provision is intended to resolve computational errors on the Bid Schedule form.

**(A) Unit Price Subtotals.** In the event a computational error for any bid item (base bid or alternate) results in an incorrect extended total for that item, the submitted base bid or bid alternate total will be adjusted to reflect the corrected amount (estimated quantity X unit cost).

**(B) Unit Price Total.** In the event of a discrepancy between the actual total of the itemized or unit prices shown on the Bid Schedule for the base bid, and the amount entered as the base bid on the Bid Proposal form, the actual total of the itemized or unit prices shown on the Bid Schedule for the base bid will be deemed the base bid price.

**(C) Alternates.** In the event of a discrepancy between the actual total of the itemized or unit prices shown on the Bid Schedule for any bid alternate, and the amount entered for the alternate on the Bid Proposal form, the actual total of the itemized prices shown on the Bid Schedule for that alternate will be deemed the alternate price.

**(D) Withdrawal for Material Error.** Nothing in this provision is intended to prevent a bidder from requesting to withdraw its bid for material error under Public Contract Code Section 5100 *et seq.*

**6.2 Estimated Quantities.** The quantities shown on the Bid Schedule are estimated and the actual quantities required to perform the Work may be greater or less than the estimated amount. The Contract Price will be adjusted to reflect the actual quantities required for the Work based on the itemized or unit prices provided in the Bid Schedule, with no allowance for anticipated profit for quantities that are deleted or decreased, and no increase in the unit price. However, items marked as "Final Pay" items will be compensated based solely on City's estimated quantities, and payment will not be adjusted based on actual quantities, even if the actual quantities differ from City's estimate on the Bid Schedule. Only changes in quantities of "Final Pay" items due to design changes will be measured and paid separately pursuant to a Change Order.

- 7. Bidders Interested in More Than One Bid.** No person, firm, or corporation may submit or be a party to more than one Bid Proposal unless alternate bids are specifically called for. However, a person, firm, or corporation that has submitted a subcontract proposal or quote to a bidder may submit subcontract proposals or quotes to other bidders, and may also submit a Bid Proposal as a prime contractor.
- 8. Bid Proposal Form and Enclosures.** Each Bid Proposal must be completed in ink using the Bid Proposal form included in the Contract Documents. The Bid Proposal form must be fully completed without interlineations, alterations, or erasures. Any necessary corrections must be clear and legible, and must be initialed by the bidder's authorized representative. A Bid Proposal submitted with exceptions or terms such as "negotiable," "will negotiate," or similar, will be considered non-responsive.
- 9. Authorization and Execution.** Each Bid Proposal must be signed by the bidder's authorized representative. A Bid Proposal submitted by a partnership must be signed in the partnership name by a general partner with authority to bind the partnership. A Bid Proposal submitted by a corporation must be signed with the legal name of the corporation, followed by the signature and title of two officers of the corporation with full authority to bind the corporation to the terms of the Bid Proposal, under California Corporation Code Section 313.
- 10. Bid Security.** Each Bid Proposal must be accompanied by bid security of ten percent of the maximum bid amount (meaning the base bid plus all additive alternate prices, if any), in the form of a cashier's check or certified check made payable to City, or a bid bond using the form included in the Contract Documents and executed by a surety licensed to do business in the State of California. The bid security must guarantee that, if City issues the Notice of Award of the Contract to the bidder, then the bidder will provide to City all of the documents required under Section 14 below within ten calendar days thereof.
- 11. Withdrawal of Bid Proposals.** A Bid Proposal for the Project will be considered a firm offer and may not be withdrawn for a period of 90 days after the bid opening without forfeiture of the bid security, except as authorized for material error under Public Contract Code Section 5100 *et seq.* or Fremont Municipal Code Section 3.20.200.
- 12. Bid Protest.** Any bid protest must comply with City's protest procedures for public construction project contracts, set forth in Fremont Municipal Code Section 3.20.330. City will issue the Notice of Intent to Award the Contract by posting the notice on designated public bulletin boards and on its bid results webpage at: <http://fremont.gov/index.aspx?NID=532>. A bid protest must be submitted in writing to, and

received by, City's Office of Purchasing, located at 3300 Capitol Avenue, Building B, Fremont, California 94538, before 5:00 p.m. on the fifth Working Day after the date of City's posting of the Notice of Intent to Award ("Bid Protest Deadline"). The protesting bidder will bear the risk of any nondelivery of its bid protest before the Bid Protest Deadline, regardless of the method of delivery used. The bid protest must comply with the following requirements:

**12.1 General.** Only a bidder that has actually submitted a Bid Proposal is eligible to submit a bid protest against another bidder. Subcontractors are not eligible to submit bid protests. A bidder may not rely on the bid protest submitted by another bidder, but must timely pursue its own protest. For purposes of this Section 12, a "Working Day" means a day that City is open for normal business, and excludes weekends and holidays observed by City. Pursuant to Public Contract Code Section 4104, inadvertent omission of a Subcontractor's DIR registration number on the Subcontractor List form is not grounds for a bid protest, provided it is corrected within 24 hours.

**12.2 Protest Contents.** The bid protest must contain a complete statement of the legal grounds for the protest, all the facts relevant to the protest, the form of relief requested, and the legal basis for such relief, as well as all supporting documentation. Material submitted after the Bid Protest Deadline will not be considered. The protest must refer to the specific portion(s) of the Contract Documents upon which the protest is based. The protest must include the name, address, email address, and telephone number of the protesting bidder and any person representing the protesting bidder. If City requests additional information, it must be provided to City within the time period City specifies.

**12.3 Copy to Protested Bidder.** Upon submission of its bid protest to City, the protesting bidder must also concurrently transmit the protest and all supporting documents to the protested bidder, and to any other bidder who has a reasonable prospect of receiving an award depending upon the outcome of the protest, by email or hand delivery to ensure delivery before the Bid Protest Deadline.

**12.4 Response to Protest.** The protested bidder may submit a written response to the protest, provided the response is received by City before 5:00 p.m. within two Working Days after the Bid Protest Deadline or after actual receipt of the bid protest, whichever is sooner (the "Response Deadline"). The response must include all supporting documentation. Material submitted after the Response Deadline will not be considered. The response must include the name, address, email address, and telephone number of the person representing the protested bidder if different from the protested bidder.

**12.5 Copy to Protesting Bidder.** Upon submission of its response to the bid protest to the City, the protested bidder must also concurrently transmit by email or hand delivery, by or before the Response Deadline, a copy of its response and all supporting documents to the protesting bidder and to any other bidder who has a reasonable prospect of receiving an award depending upon the outcome of the protest.

**12.6 Exclusive Remedy.** The procedure and time limits set forth in this Section are mandatory and are the bidder's sole and exclusive remedy in the event of bid protest. A bidder's failure to comply with these procedures will constitute a waiver of any right to further pursue a bid protest, including filing a Government Code Claim or initiation of legal proceedings.

**12.7 Right to Award.** City reserves the right to award the Contract to the bidder it has determined to be the responsible bidder submitting the lowest responsive bid, and to issue

a Notice to Proceed with the Work notwithstanding any pending or continuing challenge to its determination.

13. **Reservation of Rights.** City reserves the right, acting in its sole discretion, to waive nonmaterial and inconsequential bid irregularities, to accept or reject any and all bids, to issue a new Notice Inviting Bids for the Project, or to abandon the Project entirely.
14. **Award of Contract.** City will award the Contract, if at all, by issuing a written Notice of Award within 90 days after the opening of bids, or as otherwise specified in the Special Conditions, to the responsible bidder that submitted the lowest responsive bid. The successful bidder must submit to City all of the following documents, within ten calendar days after City's issuance of the Notice of Award:
  - 14.1 Two duly signed counterpart originals of the Contract provided by City with the Notice of Award, using the form included in the Contract Documents;
  - 14.2 Documentation evidencing the authority of the individual(s) signing the Contract on behalf of the successful bidder;
  - 14.3 Payment and performance bonds for the Project as specified in the Contract Documents and using the bond forms included in the Contract Documents, each for 100% of the Contract Price as awarded;
  - 14.4 If required for this Project, a warranty bond as specified in the Contract Documents, using the warranty bond form provided for 20% of the Contract Price as awarded;
  - 14.5 Insurance certificates and endorsements evidencing the successful bidder's insurance coverage, as required by the Contract Documents;
  - 14.6 Documentation evidencing the successful bidder's payment of City business tax and registration tax for a business license, as required by the Contract Documents;
  - 14.7 A copy of the successful bidder's California contractor's license(s), showing the classification(s) required by the Contract Documents; and
  - 14.8 Identification of the successful bidder's on-site superintendent for the Project, as required by the Contract Documents.
15. **Statement of Responsibility.** Each sealed Bid Proposal must include the bidder's Statement of Responsibility using the form provided with the Contract Documents. The Statement of Responsibility must be completed and signed, including all required attachments, providing satisfactory evidence that shows the bidder's financial resources, the bidder's experience in the type of work being required by City, the bidder's organization available for the performance of the Contract, and any other required evidence of the bidder's qualifications to perform the Contract. City may consider such evidence before making its decision to award the proposed Contract. A bid that does not fully comply with this requirement may be rejected as nonresponsive. A bidder that submits a Statement of Responsibility which is subsequently determined to contain false or misleading information, or material omissions, may be disqualified as non-responsible.
16. **License(s).** The successful bidder and its Subcontractor(s) must possess the California contractor's license(s) in the classification(s) required by law to perform the Work. The successful bidder must also obtain a City business license within ten days following City's issuance of the Notice of Award. Each Subcontractor must also obtain a City business license before performing any Work.
17. **Ineligible Subcontractor.** Any Subcontractor who is ineligible to perform work on a public works project under Labor Code Sections 1777.1 or 1777.7 is prohibited from performing work on the Project.
18. **Pre-Construction Conference.** City will schedule a mandatory pre-construction conference for the Project following City's issuance of the Notice of Award and Contract

execution by the successful bidder. The successful bidder must attend and participate in the pre-construction conference, and provide all of the required information and documents for the conference as set forth in Section 2.2(E) of the General Conditions. City will issue a Notice to Proceed following the conference, identifying the commencement date for the Work and the Contract Time.

19. **Safety Orders.** Each bid must include a bid item for adequate sheeting, shoring, and bracing, or equivalent method, for the protection of life or limb, which comply with safety orders as required by Labor Code Section 6707.
20. **SubContractor Work Limit.** The prime Contractor must perform at least 15% of the Work on the Project, calculated as a percentage of the base bid price on the Bid Proposal form, using Contractor's own forces. The remaining Work may be performed by qualified SubContractors.

END OF INSTRUCTIONS TO BIDDERS

CITY COUNCIL ONLY  
REFERENCE ONLY

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**Bid Proposal**

**California Nursery Historical Park Entry Plaza Project**

\_\_\_\_\_ (“Bidder”) hereby submits this Bid Proposal to the City of Fremont (“City”) for the above-referenced project (“Project”), in response to the Notice Inviting Bids and in accordance with the Contract Documents referenced therein.

1. **Base Bid.** Bidder proposes to perform and fully complete the Work for the Project as specified in the Contract Documents, within the time required for full completion of the Work, for the following price (“Base Bid”): \$ \_\_\_\_\_. Bidder will furnish all labor (including supervision), materials and equipment (whether or not permanent or actually incorporated into the Work), utilities for the Work (including water, sanitary facilities, electricity, fuel, light, heat, and telephone), tools, transportation, and services necessary to complete the Work for the amounts quoted in this Bid Proposal (including the costs of all applicable taxes, patent rights, royalties, licenses, and permits). **Any Work shown on the Plans or described in the Specifications without a specific bid item(s) in this Bid Proposal is hereby included within or made part of this Bid Proposal.**

2. **Addenda.** Bidder agrees that it has confirmed receipt of or access to, and reviewed, all addenda issued for this Bid. Bidder specifically acknowledges receipt of the following addenda:

Addendum:	Date Received:	Addendum:	Date Received:
#01	_____	#05	_____
#02	_____	#06	_____
#03	_____	#07	_____
#04	_____	#08	_____

3. **Bidder’s Warranties.** By signing and submitting this Bid Proposal, Bidder warrants the following:

3.1 **Examination of Contract Documents.** Bidder has thoroughly examined the Contract Documents and represents that, to the best of Bidder’s knowledge, there are no errors, omissions, or discrepancies in the Contract Documents, subject to the limitations of Public Contract Code Section 1104.

3.2 **Examination of Worksite and Local Conditions.** Bidder has visited and examined the Worksite and is familiar with the local conditions at the Project location, including the weather, road access, vehicle routes, and surface and subsurface conditions. Bidder is also familiar with the availability of labor, materials, equipment, and utilities for the Project and has attended any mandatory bidders’ conference and any mandatory pre-bid Project site visit.

3.3 **Bidder is Qualified.** Bidder is fully qualified to perform the Work. Bidder has the expertise and financial capacity to perform all obligations required by the Contract Documents.

3.4 **Contract Time.** The time for completion of the Work for the Project as specified in the Notice Inviting Bids is reasonable and Bidder is ready and able to perform the Work within that timeframe.

**3.5 Legal Compliance.** Bidder is aware of and will comply with all applicable legal requirements for the Project, including all federal, California, local and City laws and regulations.

**(A) Trenching of Five Feet or More.** For the excavation of any trench of a depth of five feet or more, this Bid Proposal includes as a bid item the cost of adequate sheeting, shoring, bracing, sloping or other equivalent provisions to be made, including the costs of design for a detailed plan, for protection of life and limb from the hazard of caving ground during the excavation. Any such provisions will conform to applicable safety orders in accordance with California Labor Code Sections 6705 and 6707.

**3.6 Responsibility for Bid.** Bidder has carefully reviewed this Bid Proposal and is solely responsible for any errors or omissions contained in the completed bid.

**3.7 Iran Contracting Act.** If the Contract Price exceeds \$1,000,000, Bidder is not identified on a list created under the Iran Contracting Act, Public Contract Code § 2200 *et seq.* (the "Act"), as a person engaging in investment activities in Iran, as defined in the Act, or is otherwise expressly exempt under the Act.

**4. Award of Contract.** By signing and submitting this Bid Proposal, Bidder agrees that if Bidder is awarded the Contract for the Project, Bidder will provide all of the following to City within ten calendar days following City's issuance of the Notice of Award:

**4.1 Signed Contract.** Two duly signed counterpart originals of the Contract provided by City with the Notice of Award, using the form included in the Project contract documents ("Contract Documents");

**4.2 Signing Authority.** Documentation evidencing the authority of the individual(s) signing the Contract on behalf of Bidder;

**4.3 Payment, Performance and Warranty Bonds.** A payment bond and a performance bond for the Project, each for 100% of the maximum Contract Price as awarded, and a warranty bond, if required, for 20% of the maximum Contract Price as awarded, each executed by sureties licensed to do business in the State of California and using the applicable bond form included with the Contract Documents;

**4.4 Insurance.** The insurance certificates and endorsements evidencing Bidder's insurance coverage as required by the Contract Documents;

**4.5 Business Tax and Registration Tax.** Documentation evidencing Bidder's and all listed Subcontractors' payment of City business tax and registration tax for a business license, as required by the Contract Documents;

**4.6 Contractor's License.** A copy of Bidder's California contractor's license, showing the classification(s) required by the Contract Documents; and

**4.7 On-Site Superintendent.** Identification of Bidder's on-site superintendent for the Project, as required by the Contract Documents.

**5. Bid Security.** As a guarantee that, if awarded the Contract, Bidder will perform its obligations under Section 4 above, Bidder is enclosing bid security in the amount of ten percent of its maximum bid amount (meaning the base bid plus all additive alternate prices, if any) in one of the following forms (check one):

\_\_\_\_\_ A cashier's check or certified check payable to City and issued by \_\_\_\_\_ in the amount of \$ \_\_\_\_\_.

\_\_\_\_\_ A bid bond, using the Bid Bond form included with the Contract Documents, payable to City and executed by a surety licensed to do business in the State of California.

This Bid Proposal is hereby submitted on \_\_\_\_\_, 20\_\_.

\_\_\_\_\_

\_\_\_\_\_  
Name and Title

\_\_\_\_\_  
*[See Section 9 of Instructions to Bidders]*

\_\_\_\_\_  
Name and Title

\_\_\_\_\_  
Company Name

\_\_\_\_\_  
License #, Expiration Date, and Classification

\_\_\_\_\_  
Address

\_\_\_\_\_  
DIR Registration #

\_\_\_\_\_  
City, State, Zip

\_\_\_\_\_  
Phone

\_\_\_\_\_  
Contact Name

\_\_\_\_\_  
Contact Email

END OF BID PROPOSAL

CITY COUNCIL  
REFERENCE ONLY

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### Bid Schedule

This Bid Schedule must be completed in ink and included with the sealed Bid Proposal. Pricing must be provided for each Bid Item as indicated. The lump sum or unit cost for each item must be inclusive of all costs, whether direct or indirect, including profit and overhead. The sum of all amounts entered in the "Extended Total Amount" column must be identical to the Base Bid price entered in Section 1 of the Bid Proposal form. In case of a math error or ambiguity, the unit cost listed for any bid item will prevail over the extended total amount listed for that bid item. The grand total of all of the extended total amounts listed will also prevail over the Total Base Bid listed below.

LS = Lump Sum      EA = Each      LF = Linear Foot      CY = Cubic Yard      F = Final Pay  
 SF = Square Feet      LB = Pounds      TON = Ton (2000 lbs)      AL = Allowance      S = Specialty Item

BID ITEM NO.	SPEC. SECT.	ITEM DESCRIPTION	EST. QTY.	UNIT	UNIT COST	EXTENDED TOTAL AMOUNT
<b><u>SITE MOBILIZATION, DEMOLITION AND EARTHWORK</u></b>						
1	01 51 00	Mobilization	1	LS	\$	\$
2	01 56 20	Temporary Construction Fencing	1,000	LF	\$	\$
3	01 56 39	Tree Protection Fencing	200	LF	\$	\$
4	02 41 00	General Demolition	1	LS	\$	\$
5	31 00 00	Rough Grading (F)	1,200	CY	\$	\$
6	31 00 00	On-Site Import Borrow Topsoil (F)	1,000	CY	\$	\$
7	31 22 19	Fine Grading (F)	14,000	SF	\$	\$
<b><u>DRAINAGE AND UTILITIES</u></b>						
8	22 14 00	Raise (E) Manhole	1	EA	\$	\$
9	22 14 00	Raise (E) Area Drain	1	EA	\$	\$
10	22 14 00	8" Storm Drain Line	303	LF	\$	\$
11	22 14 00	Curb Inlet	1	EA	\$	\$
12	22 14 00	24" Area Drain	1	EA	\$	\$
13	22 14 00	Trench Drain at Walkway	1	LS	\$	\$
14	22 14 00	Cobbles	1	TON	\$	\$
15	33 00 00	1" Potable Water Line for Drinking Fountain	170	LF	\$	\$
16	33 00 00	Potable Water Gate Valve	2	EA	\$	\$
17	33 31 00	4" Sanitary Sewer Line for Drinking Fountain	170	LF	\$	\$
18	33 31 00	Sanitary Sewer Cleanout	2	EA	\$	\$
<b><u>CONCRETE, PAVERS AND SURFACING</u></b>						
19	03 30 00	Concrete Paving	11,040	SF	\$	\$
20	03 30 00	6" Concrete Band	38	LF	\$	\$

BID ITEM NO.	SPEC. SECT.	ITEM DESCRIPTION	EST. QTY.	UNIT	UNIT COST	EXTENDED TOTAL AMOUNT
21	03 30 00	12" Concrete Band	590	LF	\$	\$
22	03 30 00	6" Concrete Curb	130	LF	\$	\$
23	03 30 00	12" Concrete Curb	40	LF	\$	\$
24	03 30 00	Type A Curb and Gutter	355	LF	\$	\$
25	03 30 00	Type B Curb and Gutter	138	LF	\$	\$
26	03 30 00	Pilaster	4	EA	\$	\$
27	03 30 00	Concrete Seatwall	1	LS	\$	\$
28	03 30 00	Bricks on Concrete Base	322	SF	\$	\$
29	32 12 16	Asphalt Paving	2,500	SF	\$	\$
30	32 14 43	Permeable Pavers – Type A	2,900	SF	\$	\$
31	32 14 43	Permeable Pavers – Type B	480	SF	\$	\$
32	32 14 43	Truncated Domes	30	SF	\$	\$
33	32 14 43	Repair at Planter Area	1	LS	\$	\$
34	32 15 40	Decomposed Granite w/ Permeable Base	3,260	SF	\$	\$
		<u>METAL</u>				
35	05 50 00	Steel Arbor	2	EA	\$	\$
		<u>SITE FURNISHING</u>				
36	32 33 00	6 Ft Bench	10	EA	\$	\$
37	32 33 00	Trash Receptacle	5	EA	\$	\$
38	32 33 00	Recycle Receptacle	5	EA	\$	\$
39	32 33 00	Drinking Fountain	1	EA	\$	\$
40	32 33 00	Removable Bollards	2	EA	\$	\$
		<u>PARK SIGNS</u>				
41	10 14 00	Installation of City-Furnished Upright Exhibit Base for Double-Sided Interpretive Panels and Laser Cut Panels	1	EA	\$	\$
42	10 14 00	Installation of City-Furnished Cantilevered Exhibit Base for Interpretive Panel	4	EA	\$	\$
		<u>IRRIGATION</u>				
43	32 84 00	1-1/2" Mainline	15	LF	\$	\$
44	32 84 00	2" Mainline	500	LF	\$	\$
45	32 84 00	Lateral Lines (F)	4,200	LF	\$	\$
46	32 84 00	Sleeves	270	LF	\$	\$
47	32 84 00	Pop-up Sprinklers	3	EA	\$	\$

BID ITEM NO.	SPEC. SECT.	ITEM DESCRIPTION	EST. QTY.	UNIT	UNIT COST	EXTENDED TOTAL AMOUNT
48	32 84 00	Pop-up Rotors	18	EA	\$	\$
49	32 84 00	Tree Bubblers	26	EA	\$	\$
50	32 84 00	Shrub Bubblers	1,137	EA	\$	\$
51	32 84 00	Remote Control Valves	20	EA	\$	\$
52	32 84 00	Gate Valves	1	EA	\$	\$
53	32 84 00	Quick Coupling Valves	9	EA	\$	\$
54	32 84 00	Decoders	13	EA	\$	\$
55	32 84 00	#14-2 Wire Cable in 1-1/4" Conduit with Pull Box	450	LF	\$	\$
<b>PLANTING</b>						
56	32 91 13	Soil Preparation and Amendment	14,000	SF	\$	\$
57	32 90 19	Canary Island Palm	1	EA	\$	\$
58	32 90 00	24" Box Tree	15	EA	\$	\$
59	32 90 00	1 Gallon Shrub	699	EA	\$	\$
60	32 90 00	5 Gallon Shrub	34	EA	\$	\$
61	32 90 00	5 Gallon Roses	404	EA	\$	\$
62	32 92 23	Sod	4,600	SF	\$	\$
63	32 90 00	Boulders	20	TON	\$	\$
64	32 90 00	Steel Header	1,345	LF	\$	\$
65	32 90 00	Bark Mulch (F)	120	CY	\$	\$
66	32 90 00	90 Day Plant Establishment Period	1	LS	\$	\$
<b>ELECTRICAL</b>						
67	26 28 16	20A Breaker	3	EA	\$	\$
68	26 05 34	Pull Box	4	EA	\$	\$
69	26 05 33	Conduit (F)	1,800	LF	\$	\$
70	26 05 19	Electrical Cable and Connection (F)	10,500	LF	\$	\$
71	26 50 00	Bollard Light	14	EA	\$	\$
72	26 50 00	In-Grade Fixture (Walkway)	48	EA	\$	\$
73	26 50 00	In-Grade Fixture (Seatwall)	4	EA	\$	\$
74	26 27 26	Receptacle Pedestal	4	EA	\$	\$

**TOTAL BASE BID:** Items 1 through 74 inclusive: \$ \_\_\_\_\_

[Note: The amount entered as the "Total Base Bid" should be identical to the Base Bid amount entered in Section 1 of the Bid Proposal form.]

BIDDER NAME: \_\_\_\_\_

END OF BID SCHEDULE

CITY COUNCIL  
REFERENCE ONLY



**Noncollusion Declaration**

TO BE EXECUTED BY BIDDER AND SUBMITTED WITH BID

The undersigned declares:

I am the \_\_\_\_\_ [title] of \_\_\_\_\_  
[business name], the party making the foregoing bid.

The bid is not made in the interest of, or on behalf of, any undisclosed person, partnership, company, association, organization, or corporation. The bid is genuine and not collusive or sham. The bidder has not directly or indirectly induced or solicited any other bidder to put in a false or sham bid. The bidder has not directly or indirectly colluded, conspired, connived, or agreed with any bidder or anyone else to put in a sham bid, or to refrain from bidding. The bidder has not in any manner, directly or indirectly, sought by agreement, communication, or conference with anyone to fix the bid price of the bidder or any other bidder, or to fix any overhead, profit, or cost element of the bid price, or of that of any other bidder. All statements contained in the bid are true. The bidder has not, directly or indirectly, submitted his or her bid price or any breakdown thereof, or the contents thereof, or divulged information or data relative thereto, to any corporation, partnership, company, association, organization, bid depository, or to any member or agent thereof, to effectuate a collusive or sham bid, and has not paid and will not pay, any person or entity for such purpose.

This declaration is intended to comply with California Public Contract Code Section 7106 and Title 23 U.S.C Section 112.

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

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Name

END OF NONCOLLUSION DECLARATION

## Bid Bond

\_\_\_\_\_ (“Bidder”) has submitted a bid, dated \_\_\_\_\_, 20\_\_\_\_ (“Bid”), to the City of Fremont (“City”) for work on the < \_\_\_\_\_ > Project (“Project”). Under this duly executed bid bond (“Bid Bond”), Bidder as Principal and \_\_\_\_\_, its surety (“Surety”), are bound to City as 23remon in the penal sum of ten percent of the maximum amount of the Bid (the “Bond Sum”). Bidder and Surety bind themselves and their respective heirs, executors, administrators, successors and assigns, jointly and severally, as follows:

1. **General.** If Bidder is awarded the Contract for the Project, Bidder will enter into the Contract with City in accordance with the terms of the Bid.
2. **Submittals.** Within ten calendar days following issuance of the Notice of Award to Bidder, Bidder must submit the following to City:
  - 2.1 **Signed Contract.** Two duly signed counterpart originals of the Contract provided by City with the Notice of Award, using the form included in the Project contract documents (“Contract Documents”);
  - 2.2 **Evidence of Signing Authority.** Documentation evidencing the authority of the individual(s) signing the Contract on behalf of Bidder.
  - 2.3 **Payment, Performance and Warranty Bonds.** A payment bond and a performance bond for the Project, each for 100% of the maximum Contract Price as awarded, and a warranty bond, if required for 20% of the maximum Contract Price as awarded, each executed by a surety licensed to do business in the State of California and using the applicable bond forms included with the Contract Documents;
  - 2.4 **Insurance.** The insurance certificates and endorsements evidencing Bidder’s insurance coverage as required by the Contract Documents.
  - 2.5 **Business Tax and Registration Tax.** Documentation evidencing Bidder’s and all listed Subcontractors’ payment of City business tax and registration tax for a business license, as required by the Contract Documents.
  - 2.6 **Contractor’s License.** A copy of Bidder’s California contractor’s license, showing the classification(s) required by the Contract Documents.
  - 2.7 **On-Site Superintendent.** Identification of Bidder’s on-site superintendent for the Project, as required by the Contract Documents.
3. **Enforcement.** If Bidder fails to execute the Contract and submit to City all of the required documentation as required under Section 2 above, Surety guarantees that Bidder forfeits the Bond Sum to City. Any notice to Surety may be given in the manner specified in the Contract and delivered or transmitted to Surety as follows:

Attn: \_\_\_\_\_  
Address: \_\_\_\_\_  
City/State/Zip: \_\_\_\_\_  
Phone : \_\_\_\_\_  
Fax : \_\_\_\_\_  
Email : \_\_\_\_\_

4. **Duration ; Waiver.** If Bidder fulfills its obligations under Section 2 above, then this obligation will be null and void; otherwise it will remain in full force and effect for 90 days following award of the Contract or until this Bid Bond is returned to Bidder, whichever occurs first. Surety waives the provisions of Civil Code Sections 2819 and 2845.

This Bid Bond is entered into and effective on \_\_\_\_\_, 20\_\_\_\_\_.

SURETY: \_\_\_\_\_  
Business name

\_\_\_\_\_

\_\_\_\_\_

Name/Title

(Notary Acknowledgment with Notary Seal for Surety and Surety's Power of Attorney Must be Attached)

BIDDER: \_\_\_\_\_  
Business name

\_\_\_\_\_

Signature

\_\_\_\_\_

Name/Title

END OF BID BOND

**Bidder's Statement of Responsibility**

**California Nursery Historical Park Entry Plaza Project**

The bidder must submit to City, with the Bid Proposal, a completed and signed Bidder's Statement of Responsibility. The bidder must use this form and include all required attachments and attaching clearly labeled additional sheets if needed. City may use the completed Statement of Responsibility to evaluate a bidder's qualifications for this Project. The Statement of Responsibility must be filled out completely, accurately, and legibly. Any errors, omissions, or misrepresentations in completion of the Statement of Responsibility may be grounds for rejection of the bid or termination of a Contract awarded pursuant to the bid.

**Part 1: General Information**

Bidder Business Name: \_\_\_\_\_ ("Bidder")

Check One:     Corporation  
                   Partnership  
                   Sole Proprietorship  
                   Joint Venture of: \_\_\_\_\_  
                   Other: \_\_\_\_\_

Address: \_\_\_\_\_  
\_\_\_\_\_

Phone: \_\_\_\_\_

Owner of Company: \_\_\_\_\_

Contact Person: \_\_\_\_\_

Email: \_\_\_\_\_

Bidder's California Contractor's License Number(s): \_\_\_\_\_

**Part 2: Bidder Experience**

1. How many years has Bidder been performing work as a contractor under its present business name? \_\_\_\_\_ years

1.1. If any of Bidder's experience listed in this Statement of Responsibility refers to work performed under a different business name(s), list on a separate sheet of paper the other name(s) and describe the relationship to Bidder's current business.

2. Has Bidder completed projects similar in type and size to this Project as a general contractor?  
 Yes     No

3. Has Bidder ever been disqualified on grounds that it is not responsible?  
 Yes     No

If yes, provide additional information on a separate sheet of paper regarding the disqualification, including the name and address of the agency or owner of the subject project, the type and size

of the project, the reasons that Bidder was disqualified as not responsible, and the month and year in which the disqualification occurred.

4. Has Bidder ever been terminated from a construction project, either as a general contractor or as a subcontractor?

\_\_\_\_\_ Yes      \_\_\_\_\_ No

If yes, provide additional information on a separate sheet of paper regarding the termination, including the name and address of the agency or owner of the subject project, the type and size of the project, whether Bidder was under contract as a general contractor or a subcontractor, the reasons that Bidder was terminated, and the month and year in which the termination occurred.

5. Provide information about Bidder's current projects performed as general contractor as follows:

5.1 How many construction projects is Bidder currently under contract to perform that are still in progress? \_\_\_\_\_

5.2 What is the total dollar amount of the current construction contracts listed in Subsection 5.1? \$ \_\_\_\_\_

5.3 What is Bidder's total bonding capacity? \$ \_\_\_\_\_

5.4 How many construction contracts listed in Subsection 5.1 are:

(A) In an amount of 50% or less of Bidder's total bid amount for the Project?  
\_\_\_\_\_

(B) In an amount between 50% and 100% of Bidder's total bid amount for the Project? \_\_\_\_\_

(C) In an amount between 100% and 150% of Bidder's total bid amount for the Project? \_\_\_\_\_

(D) In an amount over 150% of Bidder's total bid amount for the Project?  
\_\_\_\_\_

6. Provide information about Bidder's past projects performed as general contractor as follows:

6.1 <Insert Number> most recently completed public works projects within the last <Insert Number> years;

6.2 Three largest completed projects within the last three years; and

6.3 Any project which is similar to this Project.

7. Use separate sheets of paper to provide all of the following information for each project identified in response to Sections 5 and 6:

7.1 Project name

7.2 Location

7.3 Owner

7.4 Owner contact (name and current phone number)

7.5 Architect or engineer name

7.6 Architect or engineer contact (name and current phone number)

7.7 Project manager (name and current phone number)

7.8 Description of project and scope of work performed

7.9 Initial contract value (at time of bid award)

7.10 Final cost of construction (including change orders) (provide estimated cost if project is still in progress)

- 7.11 Original scheduled completion date
- 7.12 Time extensions granted (number of days)
- 7.13 Actual date of completion (provide estimated date if project is still in progress)
- 7.14 Number and amount of stop notices or mechanic's liens filed
- 7.15 Amount of liquidated damages assessed against Bidder
- 7.16 Nature and resolution of any claim, lawsuit, and/or arbitration between Bidder and the owner.

**Part 3: Claim History**

1. Provide information about Bidder's claims history as follows:

- 1.1 Has any claim been made against Bidder in the past five years which has resulted in arbitration or litigation? \_\_\_\_\_
- 1.2 Has Bidder made a claim(s) against any city or other client in the past five years which has resulted in arbitration or litigation? \_\_\_\_\_
- 1.3 If the answer was yes to Subsections 1.1 or 1.2, describe each claim(s) using the format below:

Project name \_\_\_\_\_  
 Claim amount \_\_\_\_\_  
 Other party entity name \_\_\_\_\_  
 Other party contact (name and current phone number) \_\_\_\_\_  
 Description of the claim(s), using separate sheets of paper

**2. Part 4: Surety History**

1. Provide information about Bidder's surety history as follows:

- 1.1 Has Bidder ever failed to satisfactorily complete a construction contract? \_\_\_\_\_
- 1.2 Has a surety completed any portion of a Bidder construction contract within the last five years? \_\_\_\_\_
- 1.3 If the answer was yes to Subsections 1.1 or 1.2, provide explanation(s) using the format below:

Project name \_\_\_\_\_  
 Surety name \_\_\_\_\_  
 Surety contact (name and current phone number) \_\_\_\_\_  
 Date surety took over the project \_\_\_\_\_  
 Explanation(s), using separate sheets of paper

**Part 5: Verification**

In signing this document, I, the undersigned, declare that I am duly authorized to sign and submit this Bidder's Statement of Responsibility on behalf of the named Bidder, and that all responses and information set forth in this Bidder's Statement of Responsibility and the accompanying pages and attachments are, to the best of my knowledge, true, accurate and complete as of the date of submission. **I declare under penalty of perjury under the laws of the State of California that the foregoing is true and correct.**

Signature: \_\_\_\_\_ Date: \_\_\_\_\_

By: \_\_\_\_\_  
Name and Title

On Behalf of (Legal Name of Bidder): \_\_\_\_\_

END OF BIDDER'S STATEMENT OF RESPONSIBILITY

CITY COUNCIL ONLY  
REFERENCE ONLY

## Contract

This public works contract ("Contract") is entered into by and between the City of Fremont ("City") and \_\_\_\_\_ ("Contractor"), for work ("Work") on the **California Nursery Historical Park Entry Plaza** ("Project").

The parties agree as follows:

1. **Award of Contract.** In response to the Notice Inviting Bids, Contractor has submitted a Bid Proposal to perform Work on the Project. On \_\_\_\_\_, 20\_\_\_\_, City authorized award of this Contract to Contractor for the amount set forth in Section 4, below.
2. **Contract Documents.** The Contract Documents incorporated into this Contract include and are comprised of all of the following:
  - 2.1 Notice Inviting Bids;
  - 2.2 Instructions to Bidders;
  - 2.3 Addenda, if any;
  - 2.4 Bid Proposal and attachments thereto;
  - 2.5 Contract and Change Orders;
  - 2.6 Payment and Performance Bonds, and (if required) Warranty Bond;
  - 2.7 General Conditions;
  - 2.8 Special Conditions;
  - 2.9 Project Drawings and Specifications;
  - 2.10 Notice of Award;
  - 2.11 Notice to Proceed; and
  - 2.12 The following: No other documents
3. **Contractor's Obligations.** Contractor will perform all of the Work required for the Project, as specified in the Contract Documents. Contractor must provide, furnish, and supply all things necessary and incidental for the timely performance and completion of the Work, including all necessary labor, materials, equipment, transportation, and utilities, unless otherwise specified in the Contract Documents. Contractor must use its best efforts to complete the Work in a professional and expeditious manner and to meet or exceed the performance standards required by the Contract Documents.
4. **Payment.** As full and complete compensation for Contractor's timely performance and completion of the Work in strict accordance with the terms and conditions of the Contract Documents, City will pay Contractor \$\_\_\_\_\_ ("Contract Price"), in accordance with the payment provisions in the General Conditions. The Contract Price is fully inclusive of all direct and indirect costs for performing the Work in full compliance with the Contract Documents, including, but not limited to, the items specified in Section 1 of the Bid Proposal, compliance with all General Conditions and Special Conditions requirements, all Work encompassed by the Plans and Specifications, and all taxes, overhead, and profit.
5. **Time for Completion.** Contractor will fully complete the Work for the Project within **Ninety (90) Working Days** from the commencement date given in the Notice to Proceed ("Contract Time"). Contractor must commence the Work no later than ten calendar days after the commencement date stated in the Notice to Proceed. By signing below, Contractor expressly waives any claim for delayed early completion.
6. **Liquidated Damages.** If Contractor fails to complete the Work within the Contract Time, City will assess liquidated damages in the amount of **\$1,000** for each day of unexcused delay in completion, and the Contract Price will be reduced accordingly.

**7. Labor Code Compliance.**

**7.1 General.** This Contract is subject to all applicable requirements of Chapter 1 of Part 7 of Division 2 of the Labor Code, including requirements pertaining to wages, working hours and workers' compensation insurance.

**7.2 Prevailing Wages.** This Project is subject to the prevailing wage requirements applicable to the locality in which the Work is to be performed for each craft, classification or type of worker needed to perform the Work, including employer payments for health and welfare, pension, vacation, apprenticeship and similar purposes. Copies of these prevailing rates are available online at <http://www.dir.ca.gov/DLSR>.

**7.3 DIR Registration.** City may not enter into the Contract with a bidder without proof that the bidder and its Subcontractors are registered with the California Department of Industrial Relations to perform public work under Labor Code Section 1725.5, subject to limited legal exceptions.

**7.4 Minimum Wage.** This Contract may be subject to the City Minimum Wage Ordinance, codified in Fremont Municipal Code Chapter 5.30. Contractor represents it has read and understands the City's minimum wage requirements and agrees to fully comply with the requirements. Contractor shall promptly provide any documents and information required by City to verify compliance.

Contractor shall include all applicable minimum wage requirements in all subcontractor contracts and require subcontractors to comply with the requirements.

If federal, state, and local minimum and prevailing wage laws apply to this Contract, Contractor shall comply with the highest rate of pay applicable.

Contractor's violation of the City's Minimum Wage Ordinance constitutes a material breach of Contract for which the City may pursue all available legal and equitable remedies, including termination.

**8. Workers' Compensation Certification.** Under Labor Code Section 1861, by signing this Contract, Contractor certifies as follows: "I am aware of the provisions of Labor Code Section 3700 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 on this Contract."

**9. Conflicts of Interest.** Contractor, its employees, Subcontractors and agents, may not have, maintain or acquire a direct or indirect conflict of interest in relation to this Contract, or in the performance of this Contract, that violates any City ordinance or policy or violates any California law, including under Government Code Section 1090 *et seq.* and under the Political Reform Act as set forth in Government Code Section 81000 *et seq.* and its accompanying regulations. Any violation of this Section constitutes a material breach of the Contract.

**10. Independent Contractor.** Contractor is an independent contractor under this Contract and will have control of the Work and the manner in which it is performed. Contractor and its Subcontractors are not employees of City and are not entitled to participate in any health, retirement, or any other employee benefits from City.

11. **Notice.** Any notice, billing, or payment required by the Contract Documents must be made in writing, and sent to the other party by personal delivery, U.S. Mail, a reliable overnight delivery service, facsimile, or by email. Notice is deemed effective upon delivery unless otherwise specified. Notice for each party must be given as follows:

**City:**

Name: City of Fremont  
Address: 3300 Capitol Avenue  
City/State/Zip: Fremont, California 94538  
Phone: 510-494-4768  
Attn: Khandan Bahmani, City Engineer  
Email: Kbahmani@fremont.gov  
Copy to: Eva Lee, Landscape Designer  
elee@fremont.gov

**Contractor:**

Name: \_\_\_\_\_  
Address: \_\_\_\_\_  
City/State/Zip: \_\_\_\_\_  
Phone: \_\_\_\_\_  
Attn: \_\_\_\_\_  
Email: \_\_\_\_\_  
Copy to: \_\_\_\_\_

12. **General Provisions.**

- 12.1 **Assignment and Successors.** Contractor may not assign its rights or obligations under this Contract, in part or in whole, without City's written consent. This Contract is binding on Contractor's successors and permitted assigns.
- 12.2 **Third Party Beneficiaries.** There are no intended third party beneficiaries to this Contract except as expressly provided in the General Conditions or Special Conditions.
- 12.3 **Governing Law and Venue.** This Contract will be governed by California law and venue will be in the Superior Court of Alameda County, and no other place.
- 12.4 **Amendment.** No amendment or modification of this Contract will be binding unless it is in a writing duly authorized and signed by the parties to this Contract.
- 12.5 **Integration.** This Contract and the Contract Documents incorporated herein, including authorized amendments or Change Orders thereto, constitute the final, complete, and exclusive terms of the agreement between City and Contractor.
- 12.6 **Severability.** If any provision of the Contract Documents, or portion of a provision, is determined to be illegal, invalid, or unenforceable, the remaining provisions of the Contract Documents will remain in full force and effect.
- 12.7 **Authorization.** Each individual signing below warrants that he or she is authorized to do so by the party that he or she represents, and that this Contract is legally

binding on that party. If Contractor is a corporation, signatures from two officers of the corporation are required pursuant to California Corporation Code Section 313.

**12.8 COUNTERPARTS.** This Agreement may be signed in counterparts, each of which shall be deemed to be an original. The Parties agree that the digital signatures of the parties included in this Agreement are intended to authenticate this writing and to have the same force and effect as manual signatures. Any digital signature shall have the same legal validity and enforceability as a manually executed signature or use of a paper-based record keeping system to the fullest extent permitted by applicable law.

*[Signatures are on the following page.]*

CITY COUNCIL  
REFERENCE ONLY

The parties agree to this Contract as witnessed by the signatures below:

CITY OF FREMONT:

APPROVED AS TO FORM:

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Name/Title

\_\_\_\_\_  
Name/Title

Date: \_\_\_\_\_

CONTRACTOR: \_\_\_\_\_  
Business Name

\_\_\_\_\_  
Signature

Seal: \_\_\_\_\_

\_\_\_\_\_  
Name/Title

Date: \_\_\_\_\_

\_\_\_\_\_  
Second Signature (See Section 12.7)

\_\_\_\_\_  
Name/Title

Date: \_\_\_\_\_

\_\_\_\_\_  
Contractor's California License Number(s) and Expiration Date(s)

END OF CONTRACT

CITY COUNCIL  
REFERENCE ONLY

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## Payment Bond

The City of Fremont ("City") and \_\_\_\_\_ ("Contractor") have entered into a contract, dated \_\_\_\_\_, 20\_\_ ("Contract") for work on the **California Nursery Historical Park Entry Plaza** ("Project"). The Contract is incorporated by reference into this Payment Bond ("Bond").

- 1. General.** Under this Bond, Contractor as principal and \_\_\_\_\_, its surety ("Surety"), are bound to City as 35remon in an amount not less than \$ \_\_\_\_\_, under California Civil Code Sections 9550, *et seq.*
- 2. Surety's Obligation.** If Contractor or any of its Subcontractors fails to pay a person authorized in California Civil Code Section 9100 to assert a claim against a payment bond, any amounts due under the Unemployment Insurance Code with respect to work or labor performed under the Contract, or for any amounts required to be deducted, withheld, and paid over to the Employment Development Department from the wages of employees of Contractor and its Subcontractors, under California Unemployment Insurance Code Section 13020, with respect to the work and labor, then Surety will pay for the obligation.
- 3. Beneficiaries.** This Bond inures to the benefit of any of the persons named in California Civil Code Section 9100, so as to give a right of action to those persons or their assigns in any suit brought upon this Bond. Contractor must promptly provide a copy of this Bond upon request by any person with legal rights under this Bond.
- 4. Duration.** If Contractor promptly makes payment of all sums for all labor, materials, and equipment furnished for use in the performance of the Work required by the Contract, in conformance with the time requirements set forth in the Contract and as required by California law, Surety's obligations under this Bond will be null and void. Otherwise, Surety's obligations will remain in full force and effect.
- 5. Waivers.** Surety waives any requirement to be notified of alterations to the Contract or extensions of time for performance of the Work under the Contract. Surety waives the provisions of Civil Code Sections 2819 and 2845. City waives the requirement of a new bond for any supplemental contract under Civil Code Section 9550. Any notice to Surety may be given in the manner specified in the Contract and delivered or transmitted to Surety as follows:  
  
Attn: \_\_\_\_\_  
Address: \_\_\_\_\_  
City/State/Zip: \_\_\_\_\_  
Phone: \_\_\_\_\_  
Fax: \_\_\_\_\_  
Email: \_\_\_\_\_
- 6. Law and Venue.** This Bond will be governed by California law, and any dispute pursuant to this Bond will be venued in the Superior Court of Alameda County, and no other place. Surety will be responsible for City's attorneys' fees and costs in any action to enforce the provisions of this Bond.

7. **Effective Date; Execution.** This Bond is entered into and is effective on \_\_\_\_\_, 20\_\_.

SURETY: \_\_\_\_\_  
Business Name

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Name/Title

(Notary Acknowledgment with Notary Seal for Surety and Surety's Power of Attorney Must be Attached)

CONTRACTOR: \_\_\_\_\_  
Business Name

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Name/Title

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Name/Title

END OF PAYMENT BOND

## Performance Bond

The City of Fremont ("City") and \_\_\_\_\_ ("Contractor") have entered into a contract, dated \_\_\_\_\_, 20\_\_\_\_ ("Contract") for work on the **California Nursery Historical Park Entry Plaza** ("Project"). The Contract is incorporated by reference into this Performance Bond ("Bond").

1. **General.** Under this Bond, Contractor as Principal and \_\_\_\_\_, its surety ("Surety"), are bound to City as 37remon for an amount not less than \$\_\_\_\_\_. By executing this Bond, Contractor and Surety bind themselves and their respective heirs, executors, administrators, successors and assigns, jointly and severally, to the provisions of this Bond.
2. **Surety's Obligations.** If Contractor fully performs its obligations under the Contract, including its warranty obligations under the Contract, and Contractor has timely provided a warranty bond as required under the Contract, Surety's obligation under this Bond will become null and void upon the City's acceptance of the Project, excluding any exceptions to acceptance, if any. Otherwise Surety's obligations will remain in full force and effect until expiration of the one year warranty period under the Contract.
3. **Surety's Waiver.** Surety waives any requirement to be notified of and further consents to any alterations to the Contract made under the applicable provisions of the Contract Documents, including changes to the scope of Work or extensions of time for performance of Work under the Contract. Surety waives the provisions of Civil Code Sections 2819 and 2845.
4. **Application of Contract Balance.** Upon making a demand on this Bond, City will make the Contract Balance available to Surety for completion of the Work under the Contract. For purposes of this provision, the Contract Balance is defined as the total amount payable by City to Contractor as the Contract Price minus amounts already paid to Contractor, and minus any liquidated damages, credits, or backcharges to which City is entitled under the terms of the Contract.
5. **Contractor Default.** Upon written notification from City that Contractor is in default under Section 13.3 of the Contract General Conditions, time being of the essence, Surety must act within the time specified in that Section 13.3 to remedy the default through one of the following courses of action:
  - 5.1 Arrange for completion of the Work under the Contract by Contractor, with City's consent, but only if Contractor is in default solely due to its financial inability to complete the Work;
  - 5.2 Arrange for completion of the Work under the Contract by a qualified contractor acceptable to City, and secured by performance and payment bonds issued by an admitted surety as required by the Contract Documents, at Surety's expense; or
  - 5.3 Waive its right to complete the Work under the Contract and reimburse City the amount of City's costs to have the remaining Work completed.
6. **Surety Default.** If Surety defaults on its obligations under the Bond, City will be entitled to recover all costs it incurs due to Surety's default, including legal, design professional, or delay costs.
7. **Notice.** Any notice to Surety may be given in the manner specified in the Contract and sent to Surety as follows:

Attn: \_\_\_\_\_  
Address: \_\_\_\_\_  
City/State/Zip: \_\_\_\_\_  
Phone: \_\_\_\_\_  
Fax: \_\_\_\_\_  
Email: \_\_\_\_\_

8. **Law and Venue.** This Bond will be governed by California law, and any dispute pursuant to this Bond will be venued in the Superior Court of Alameda County, and no other place. Surety will be responsible for City's attorneys' fees and costs in any action to enforce the provisions of this Bond.
9. **Effective Date; Execution.** This Bond is entered into and effective on \_\_\_\_\_, 20\_\_\_\_.

SURETY: \_\_\_\_\_  
Business Name

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Name/Title

(Notary Acknowledgment with Notary Seal for Surety and Surety's Power of Attorney Must be Attached)

CONTRACTOR: \_\_\_\_\_  
Business Name

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Name/Title

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Name/Title

END OF PERFORMANCE BOND

## Warranty Bond

The City of Fremont ("City") and \_\_\_\_\_ ("Contractor") have entered into a contract, dated \_\_\_\_\_, 20\_\_\_\_ ("Contract") for work on the **California Nursery Historical Park Entry Plaza** ("Project"). The Contract is incorporated by reference into this Warranty Bond ("Bond").

- 1. General.** Under this Bond, Contractor as principal and \_\_\_\_\_, its surety ("Surety"), are bound to City as 39remon in the maximum amount of 20% of the final Contract Price or as otherwise specified in the Contract Documents.
- 2. Warranty Period.** The Contract requires Contractor to guarantee its work and that of its Subcontractors on the Project, against defects in materials or workmanship which are discovered during the one year period commencing with City's acceptance of the Project ("Warranty Period"), and to promptly make repairs or reimburse the City for repairs as further specified in Article 11 of the Contract General Conditions.
- 3. Surety's Obligations.** If Contractor faithfully carries out and performs its guarantee under the Contract, and, on due notice from City, repairs and remedies at its sole expense any and all defects in materials and workmanship in the Project which are discovered during the Warranty Period, or if Contractor promptly reimburses City for all loss and damage that City sustains because of Contractor's failure to makes such repairs in accordance with the Contract requirements, then Surety's obligations under this Bond will be null and void. Otherwise, Surety's obligations will remain in full force and effect.
- 4. Waiver.** Surety waives the provisions of Civil Code Sections 2819 and 2845.
- 5. Notice.** Any notice to Surety may be given in the manner specified in the Contract and delivered or transmitted to Surety as follows:

Attn: \_\_\_\_\_  
Address: \_\_\_\_\_  
City/State/Zip: \_\_\_\_\_  
Phone: \_\_\_\_\_  
Fax: \_\_\_\_\_  
Email: \_\_\_\_\_

- 6. Law and Venue.** This Bond will be governed by California law, and any dispute pursuant to this Bond will be venued in the Superior Court of Alameda County, and no other place. Surety will be responsible for City's attorneys' fees and costs in any action to enforce the provisions of this Bond.
- 7. Effective Date; Execution.** This Bond is entered into and is effective on \_\_\_\_\_, 20\_\_\_\_\_.

*[Signatures are on the following page.]*

SURETY: \_\_\_\_\_  
Business Name

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Name/Title

(Notary Acknowledgment with Notary Seal for Surety and Surety's Power of Attorney Must be Attached)

CONTRACTOR: \_\_\_\_\_  
Business Name

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Name/Title

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Name/Title

CITY COUNCIL ONLY  
REFERENCE ONLY

END OF WARRANTY BOND

## General Conditions

### Article 1 - Definitions

**Definitions.** The following definitions apply to all of the Contract Documents unless otherwise indicated. Defined terms and titles of documents are capitalized in the Contract Documents, with the exception of the words “day,” “furnish,” “including,” “install,” “work day” or “working day.”

**Allowance** means an amount included in the Bid Proposal for Work that may or may not be included in the Project, depending on conditions that will not become known until after bids are opened. If the Contract Price includes an Allowance and the cost of performing the Work covered by that Allowance is greater or less than the Allowance, the Contract Price will be increased or decreased accordingly.

**Article**, as used in these General Conditions, means a numbered Article of the General Conditions, unless otherwise indicated by the context.

**Change Order** means a written document duly approved and executed by City, which changes the scope of Work, the Contract Price, or the Contract Time.

**City** means the City of Fremont, acting through its City Council, officers, employees, City Engineer, and any other authorized representatives.

**City Engineer** means the City Engineer for City and his or her authorized delegee(s) designated to oversee and manage the Project on City's behalf.

**City Standard Specifications** means the current version of City's Standard Specifications in effect at the time bids were submitted.

**Claim** means a separate demand by Contractor for a change in the Contract Time or Contract Price, that has previously been submitted to City in accordance with the requirements of the Contract Documents, and which has been rejected by City, in whole or in part; or a written demand by Contractor objecting to the amount of Final Payment.

**Contract** means the signed agreement between City and Contractor.

**Contract Documents** means, collectively, all of the documents listed as such in Section 2 of the Contract, including the Notice Inviting Bids; the Instructions to Bidders; addenda, if any; the Bid Proposal, and attachments thereto; the Contract; the Notice of Award and Notice to Proceed; the payment and performance bonds; the General Conditions; the Special Conditions; the Project Drawings and Specifications; any Change Orders; and any other documents expressly made part of the Contract Documents.

**Contract Price** means the total compensation to be paid to Contractor for performance of the Work, as set forth in the Contract and as amended by Change Order or adjusted for an Allowance. The Contract Price is not subject to adjustment due to inflation or due to the increased cost of labor, material, or equipment following submission of the Bid Proposal.

**Contract Time** means the number of calendar days for performance of the Work, as set forth in the Contract and as amended by Change Order.

**Contractor** means the individual, partnership, corporation, or joint-venture that has signed the Contract with City to perform the Work.

**Day** means a calendar day unless otherwise specified.

**Design Professional** means the licensed individual(s) or firm(s) retained by City to provide architectural, landscape architectural, or engineering services for the Project. If no Design Professional has been retained for this Project, any reference to Design Professional is deemed to refer to the Engineer.

**DIR** means the California Department of Industrial Relations

**Drawings** means the City-provided plans and graphical depictions of the Project requirements, and does not include Shop Drawings.

**Engineer** means the City Engineer for City and his or her authorized delegates.

**Extra Work** means new or unforeseen work added to the Project, as determined by the Engineer in his or her sole discretion, that: (A) is not covered by Contract unit prices; (B) is not part of or incidental to the scope of the Work; (C) is substantially different from the Work as described in the Contract Documents at bid time; or (D) results from a substantially changed Project condition.

**Field Order** means written instructions from the Engineer that require or authorize minor changes in the Work that do not affect the Contract Price or Contract Time.

**Final Completion** means Contractor has fully completed all of the Work required by the Contract Documents to the Engineer's satisfaction, including all punch list items, and any required commissioning, and has provided the City with all required submittals, including instructions and manuals, and as-built drawings.

**Final Payment** means payment to Contractor of the unpaid Contract Price, including release of undisputed retention, less amounts withheld pursuant to the Contract Documents, including liquidated damages, up to 125% of the amount of any unreleased stop notice, amounts subject to setoff, up to 150% of any unresolved third-party claim for which Contractor is required to indemnify City, and up to 150% of any amount in dispute as authorized by Public Contract Code Section 7107.

**Furnish** means to purchase and deliver for the Project.

**Hazardous Materials** means any substance or material identified now or in the future as hazardous under any federal, state, or local law or regulation, or any other substance or material that may be considered hazardous or otherwise subject to statutory or regulatory requirements governing handling, disposal, or cleanup.

**Including**, whether or not capitalized, means "including, but not limited to," unless the context requires otherwise.

**Inspector** means the individual(s) or firm(s) retained by City to inspect the workmanship, materials, and manner of construction of the Project and its components to ensure compliance with the Contract Documents and all applicable codes, regulations, and permits.

**Install** means to fix in place for materials, and to fix in place and connect for equipment.

**Plans** has the same meaning as Drawings.

**Project** means the public works project referenced in the Contract.

**Project Manager** means the individual designated by City to oversee and manage the Project on City's behalf and may include his or her authorized delegee(s) when the Project Manager is unavailable. If no Project Manager has been designated for this Project, any reference to Project Manager is deemed to refer to the Engineer.

**Request for Information or RFI** means Contractor's written request for information submitted to City, in the manner and format specified by City, about the Contract Documents, the Work or the Project.

**Section** as used in these General Conditions, means a numbered Section of the General Conditions, unless otherwise indicated by the context, such as statutory references.

**Shop Drawings** means drawings, plan details or other graphical depictions prepared by or on behalf of Contractor, and subject to City approval, which are intended to provide details for fabrication, installation, and the like, of items required by or shown in the Drawings and Specifications.

**Specifications** means the technical, text specifications describing the Project requirements, which are prepared for and incorporated into this Project by or on behalf of City, and does not include the Contract, General Conditions or Special Conditions.

**Subcontractor** means an individual, partnership, corporation, or joint-venture retained by Contractor directly or indirectly through a subcontract to perform a specific portion of the Work. The term Subcontractor applies to Subcontractors, suppliers, fabricators, and equipment lessors of all tiers, unless otherwise indicated by the context.

**Technical Specifications** means Specifications.

**Work** means all of the construction and services necessary or incidental to completing the Project in conformance with the requirements of the Contract Documents.

**Work Day or Working Day**, whether or not capitalized, means a weekday when the City is open for business and does not include holidays observed by the City.

**Worksite** means the place or places where the Work is performed.

## Article 2 - Roles and Responsibilities

### 2.1 City.

(A) **Engineer.** The Engineer, acting within the authority conferred by the City Council, is responsible for administration of the Project on behalf of City, including authority to provide directions to the Design Professional and to Contractor, in the form of Field Orders or otherwise, to ensure proper and timely completion of the Project.

(B) **Design Professional.** The Design Professional is responsible for the overall design of the Project and, to the extent authorized by City, may act on City's behalf to ensure performance of the Work in compliance with the Contract Documents. The Design Professional's decision(s) regarding interpretation of the Drawings or Specifications is final and conclusive.

## 2.2 Contractor.

(A) **General.** Contractor must provide all labor, materials, equipment and services necessary to perform and timely complete the Work in strict accordance with the Contract Documents, and in an economic and efficient manner in the best interests of City.

(B) **Responsibility for the Work and Risk of Loss.** Contractor is responsible for supervising and directing all aspects of the Work to facilitate the efficient and timely completion of the Work. Contractor is solely responsible for and required to exercise full control over the Work, including the construction means, methods, techniques, sequences, procedures, and coordination of all portions of the Work with that of all other contractors and Subcontractors, except to the extent that the Contract Documents provide other specific instructions. From the date of commencement of the Work until either the date on which City formally accepts the Project or the effective date of termination of the Contract, whichever is later, Contractor bears all risks of injury or damage to the Work and the materials and equipment delivered to the Worksite, by any cause including fire, earthquake, wind, weather, vandalism or theft.

(C) **Project Administration.** Contractor must provide sufficient and competent administration, staff, and skilled workforce necessary to perform and timely complete the Work in accordance with the Contract Documents. Before starting the Work, Contractor must designate in writing and provide complete contact information, including telephone numbers and email address, for the officer or employee in Contractor's organization who is to serve as Contractor's primary representative for the Project, and who has authority to act on Contractor's behalf. A Subcontractor may not serve as Contractor's primary representative.

(D) **On-Site Superintendent.** Contractor must, at all times during performance of the Work, also provide a qualified and competent full-time superintendent acceptable to City, and assistants as necessary, who must be physically present at the Project site while any aspect of the Work is being performed. The on-site superintendent must be authorized to act on Contractor's behalf concerning the Project, with the authority to sign, send, and receive all notices contemplated or required by the Contract Documents and to direct the Work. City's approval of the superintendent is required before the Work commences. If City is not satisfied with the superintendent's performance, City may request a qualified replacement of the superintendent. Failure to comply may result in temporary suspension of the Work, at Contractor's sole expense and with no extension of Contract Time, until the approved superintendent is physically present to supervise the Work. Contractor must provide written notice to City, as soon as practicable, before replacing the superintendent.

(E) **Pre-Construction Conference.** City will designate a date and time for the mandatory pre-construction conference with Contractor following Contract execution. Project administration procedures and coordination between City and Contractor will be discussed. Contractor must submit a draft version of the baseline schedule required under Section 5.2, below, at least ten days before the scheduled date for the pre-construction conference, unless a shorter period is specified by the City. The draft baseline schedule must specify the time or number of days allocated for completion of each major item, rather than the specific dates. If the City provides comments on the draft baseline schedule before the pre-construction conference, Contractor must prepare responses to the City's comments for review at the pre-construction conference. At the pre-construction conference Contractor must also present City with the information or documents listed below for City's review and acceptance before the Work commences.

Failure to timely comply with any of these pre-construction submittal requirements may operate to delay issuance of the Notice to Proceed and commencement of the Work. Contractor is solely responsible for any resulting delay damages caused by its failure to comply with this provision.

- (1) Qualifications of the proposed on-site superintendent for the Project and his or her 24-hour complete contact information, including email address and telephone numbers during regular hours and after hours;
- (2) List of all other key Project personnel and their complete contact information, including email addresses and telephone numbers during regular hours and after hours;
- (3) Staging plans that identify the sequence of the Work, including any phases and alternative sequences or phases, with the goal of minimizing the impacts on residents, businesses and other operations in the Project vicinity;
- (4) If required, traffic control plans associated with the staging plans that are signed and stamped by a licensed traffic engineer;
- (5) Responses to City comments on the draft baseline schedule for the Work, and if required in the Special Conditions, proof of order and estimated delivery dates for any long lead time items;
- (6) Breakdown of lump sum bid items, and cost distribution schedule of prices (schedule of values), to be used for determining the value of Work completed for future progress payments to Contractor;
- (7) Schedule with a list of Contractor's Project submittals that require City review, and list of the proposed material suppliers;
- (8) Plan for coordination with affected utility owner(s) and compliance with any related permit requirements;
- (9) Videotape and photographs recording the conditions throughout the Project site before any Work begins, showing the existing improvements and current condition of the curbs, gutters, sidewalks, signs, landscaping, streetlights, structures near the Project such as building faces, canopies, shades and fences, and any other features within the Project area limits;
- (10) Contractor's safety program and identification of Contractor's safety officer for the Project;
- (11) Copies of the required documentation for each Subcontractor, including a copy of the contract between Contractor and each Subcontractor and the Subcontractor's California contractor's license and identification of its authorized representative for the Project;
- (12) If requested by City, Contractor's cash flow projections; and
- (13) Any other documents or information specified in the Special Conditions or Notice of Award.

(F) **Standards; Compliance.** Contractor must, at all times, ensure that the Work is performed in an efficient skillful manner following best practices and in full compliance with the Contract Documents and all applicable laws, regulations, codes, standards, and permits, including City's municipal code, rules, and regulations, and any orders of the administrative or judicial bodies with jurisdiction over the Work.

(G) **Progress Meetings.** Contractor, and the Subcontractors requested by City, must attend regular Project progress meetings with City that City will schedule;

(H) **Responsible Party.** Contractor is solely responsible to City for the acts or omissions of any Subcontractors, or any other party or parties performing portions of the Work or providing equipment, materials or services for or on behalf of Contractor or the Subcontractors. Upon City's written request, Contractor must promptly and permanently remove from the Project, at no cost to City, any employee or Subcontractor of Contractor who has proven during the course of the Work to be incompetent, intemperate or disorderly, or who has failed or refused to perform the Work as required under the Contract Documents.

(I) **Correction of Defects.** Contractor must promptly correct, at Contractor's sole expense, any Work that is determined by City to be deficient or defective in workmanship, materials, parts, or equipment. Workmanship, materials, parts or equipment that do not conform to the requirements under the Drawings, Specifications and every other Contract Document, as determined by City, will be considered defective and subject to rejection. Contractor must also promptly correct, at Contractor's sole expense, any Work performed beyond the lines and grades shown on the Plans or established by City, and any Extra Work performed without City's prior written approval. City may elect to retain defective Work and deduct the difference in value, as determined by the Engineer, from payments otherwise due to Contractor.

(J) **Contractor's Records.** Contractor must maintain all of its records relating to the Project in any form, including paper documents, photos, videos and electronic records. Project records subject to this provision include: records relating to preparation of Contractor's bid; Project cost and accounting records; Project employment records; a record copy of the Contract Documents, including the Project Plans and Specifications, Addenda, Change Orders, RFIs and RFI responses, Field Orders, and approved Shop Drawings; contracts with Contractor's suppliers and Subcontractors for the Project; and all notes, daily logs and memoranda relating to the Work.

(1) Contractor's cost and accounting records must include all supporting documentation, including original purchase orders, receipts, invoices, and payroll records, evidencing its direct costs to perform the Work, including, but not limited to, costs for labor, materials and equipment. Each cost record should include, at a minimum, a description of the expenditure with references to the applicable requirements of the Contract Documents, the amount actually paid, the date of payment, and whether the expenditure is part of the original Contract Price, related to an executed Change Order, or otherwise categorized by Contractor as Extra Work. Contractor's failure to comply with this provision as to any claimed cost operates as a waiver of any rights to recover the claimed cost.

(2) Contractor must continue to maintain its Project records in an organized manner, according to generally accepted accounting principles, for a period of four years after City's acceptance of the Project or following Contract termination, whichever occurs first. Subject to prior notice to Contractor, City

is entitled to inspect or audit any of Contractor's records relating to the Project or to investigate Contractor's plant or equipment during Contractor's normal business hours. Contractor must also provide copies of the Project records to City upon request.

(K) **Copies of Project Documents Onsite.** Contractor and its Subcontractors must keep copies, at the Project site, of the Work-related documents, including the Contract, Drawings, Plans, Specifications, Addenda, Contract amendments, Change Orders, RFIs and RFI responses, Field Orders, approved Shop Drawings, and any related written interpretations. The Contract Documents, as-built drawings, and all Worksite copies must be available to City for reference at all times.

### 2.3 Subcontractors.

(A) **General.** All Work which is not performed by Contractor with its own forces must be performed by Subcontractors. City reserves the right to approve or reject any and all Subcontractors proposed to perform the Work, for reasons including the Subcontractor's poor reputation, lack of relevant experience, financial instability, and lack of technical ability or adequate workforce. Each Subcontractor must obtain a City business license before performing any Work. Each Subcontractor must also pay City business tax and registration tax for a business license, under Fremont Municipal Code Chapter 5.05, before performing any Work.

(B) **Contractual Obligations.** Contractor must include a provision in each of its subcontracts that incorporates by reference and requires the Subcontractor to be bound to and comply with, the provisions of the Contract Documents as they apply to the Subcontractor's portion(s) of the Work, and to likewise bind their own Subcontractors or suppliers. Such provisions to be incorporated by reference specifically include, but are not limited to, the following obligations of Contractor under the Contract Documents: indemnification of City; City business tax and registration tax compliance; insurance coverage; and compliance with nondiscrimination and all other applicable laws. Nothing in these Contract Documents creates a contractual relationship between a Subcontractor and City, but City is deemed to be a third-party beneficiary of the contract between Contractor and each Subcontractor.

(C) **Termination.** If the Contract is terminated, each Subcontractor's agreement must be assigned by Contractor to City, subject to the prior rights of any surety, but only if City accepts the assignment by written notification and assumes all rights and obligations of Contractor pursuant to each such subcontract agreement.

(D) **Substitution of Subcontractor.** If Contractor requests substitution of a listed Subcontractor under Public Contract Code Section 4107, Contractor is solely responsible for all costs City incurs in responding to the request, including legal fees and costs to conduct a hearing.

### 2.4 Coordination of Work.

(A) **Concurrent Work.** City reserves the right to perform or to have performed other work on or adjacent to the Project site while the Work is being performed. Contractor is responsible for coordinating its Work with other work being performed on or adjacent to the Project site, including by any utility companies or agencies, and must avoid hindering, delaying, or interfering with the work of other contractors and Subcontractors. To the full extent permitted by law, Contractor must hold harmless and indemnify City against any and all claims arising from or related to Contractor's avoidable, negligent, or willful

hindrance of, delay to, or interference with the work of any utility company or agency or another contractor or Subcontractor.

(B) **Defects.** Before proceeding with any portion of the Work affected by the construction or operations of others, Contractor must give the Project Manager prompt written notification of any defects Contractor discovers which will prevent the proper execution of the Work. Failure to give notice of any known defects will be deemed acknowledgement by Contractor that the work of others is not defective and will not prevent the proper execution of the Work.

**2.5 Submittals.** Unless otherwise specified, Contractor must submit the following to the Project Manager for review: all schedules, Shop Drawings, samples, product data and similar submittals required by the Contract Documents, and any other submittals requested by the Project Manager. Unless otherwise specified, all submittals, including Requests for Information, are subject to the provisions of this Section.

(A) **General.** Contractor is responsible for ensuring that its submittals are accurate and conform to the Contract Documents.

(B) **Time and Manner of Submission.** Contractor must ensure that its submittals are prepared and delivered in a manner consistent with the current approved schedule for the Work and within the applicable time specified in the Contract Documents, or if no time is specified, in such time and sequence so as not to delay the performance of the Work or completion of the Project. For planning purposes, Contractor should assume at least 14 days for City review of each submittal or batch of submittals, and a longer time period for complex submittals or for large batches of submittals.

(C) **Required Contents.** Each submittal must be numbered in sequential order and include the Project name and contract number, Contractor's name and address, the name and address of any Subcontractor or supplier involved with the submittal, the date, and references to applicable Specification section(s) and/or drawing and detail number(s).

(D) **Required Corrections.** If City notes exceptions and requires corrections for any submittal, Contractor must promptly make and submit the required corrections to City in full conformance with the requirements of this Section.

(E) **Effect of Review and Acknowledgement by City.** City's review and acknowledgement of a submittal that results in no exceptions taken by City will not relieve Contractor from complying with the requirements of the Contract Documents. Contractor is responsible for any errors in any submittal, and review and acknowledgement of a submittal by City with no exceptions taken is not an assumption of risk or liability by City.

(F) **Enforcement.** Any Work performed or material used without prior review of a required submittal will be performed at Contractor's risk, and Contractor may be required to bear the costs incident thereto, including the cost of removing and replacing such Work, repairs to other affected portions of the Work, and the cost of additional time or services required of City, including costs for the Design Professional, Project Manager, or Inspector.

(G) **Excessive RFIs.** A Request for Information will be considered excessive or unnecessary if City determines that the explanation or response to the Request for Information is clearly and unambiguously discernable from the Contract Documents or in any Field Order that City has issued. City's costs to review and respond to excessive or

unnecessary Requests for Information may be deducted from payments otherwise due to Contractor.

(H) **Additional Requirements for Submittals.** Any additional requirements for submittals may be included in the Special Conditions or Specifications.

- 2.6 Shop Drawings.** When Shop Drawings are required by the Specifications or requested by the Engineer, they must be prepared according to best practices at Contractor's expense. The Shop Drawings must be of a size and scale to show all necessary details. Unless otherwise specified by City, three copies must be provided to the Engineer for review at least 30 days before the Work will be performed. If City notes exceptions or requires changes, three copies of the corrected Shop Drawings must be resubmitted to the Engineer for review. For all Project components requiring Shop Drawings, Contractor will not furnish materials or perform any Work until the Shop Drawings for those components are reviewed by City. Contractor is responsible for any errors or omissions in the Shop Drawings, shop fits and field corrections, any deviations from the Contract Documents, and for the results obtained by the use of Shop Drawings. Review of Shop Drawings by the Engineer does not relieve Contractor of Contractor's responsibility.

### Article 3 - Contract Documents

#### 3.1 Interpretation of Contract Documents.

(A) **Drawings and Specifications.** The Drawings and Specifications included in the Contract Documents are complementary. If Work is shown on one but not on the other, Contractor must perform the Work as though fully described on both, consistent with the Contract Documents and reasonably inferable from them as being necessary to produce the indicated results. The Drawings and Specifications are deemed to include and require everything necessary and reasonably incidental to completion of the Work, whether or not particularly mentioned or shown. Contractor must perform all work and services and supply all things reasonably related to and inferable from the Contract Documents. In the event of a conflict between the Drawings and Specifications, the Specifications will control. Any arrangement or division of the Drawings and Specifications in sections is for convenience and is not to limit the Work required by separate trades. A conclusion presented in Drawings or Specifications is only a recommendation. Actual locations and depths must be determined by Contractor's field investigation. Contractor may request access to underlying or background information in City's possession that is necessary for Contractor to form its own conclusion. Subject to the limitations of Public Contract Code Section 1104, it is Contractor's responsibility to ascertain the existence of any conditions affecting the cost of the Work.

(B) **Duty to Notify and Seek Direction.** If Contractor becomes aware of a changed condition in the Project, or of any ambiguity, conflict, inconsistency, discrepancy, omission, or error in the Contract Documents, including under the Drawings or Specifications, Contractor must immediately submit a Request for Information to the Engineer and wait for a response from City before proceeding further with the related Work. The Request for Information must notify City of the issue and request clarification, interpretation or direction. The Engineer's clarification, interpretation or direction will be final and binding on Contractor. If Contractor proceeds with the related Work before obtaining City's response, Contractor will be responsible for any resulting costs, including the cost of correcting any incorrect or defective Work that results. City will not extend the Contract Time due to Contractor's failure to submit a timely Request for Information to the Engineer.

(C) **Figures and Dimensions.** Figures control over scaled dimensions.

(D) **Technical or Trade Terms.** Any terms that have well-known technical or trade meanings will be interpreted in accordance with those meanings, unless otherwise specifically defined in the Contract Documents.

(E) **Measurements.** Contractor must verify all relevant measurements at the Worksite before ordering any material or performing any Work, and will be responsible for the correctness of those measurements.

**3.2 Order of Precedence.** Information included in one Contract Document but not in another will not be considered a conflict or inconsistency. Unless otherwise specified in the Special Conditions, in case of any conflict or inconsistency among the Contract Documents, the following order of precedence will apply, beginning from highest to lowest:

- (A) Change Orders;
- (B) Addenda;
- (C) Contract;
- (D) Notice to Proceed;
- (E) Notice of Award;
- (F) Special Conditions;
- (G) General Conditions;
- (H) Payment and Performance Bond;
- (I) Specifications;
- (J) Drawings;
- (K) Contractor's Bid Proposal and attachments;
- (L) Notice Inviting Bids;
- (M) Instructions to Bidders;
- (N) City Standard Specifications;
- (O) City Standard Details; and
- (P) Any other documents prepared by and on behalf of a third party that were not prepared specifically for this Project.

**3.3 Caltrans Standard Specifications.** Any reference in the Contract Documents to or incorporation of the Standard Specifications of the State of California, Department of Transportation ("Caltrans"), including "Standard Specifications," "Caltrans Specifications," "State Specifications," or "CSS," means the most current edition of Caltrans' Standard Specifications, unless otherwise specified ("Standard Specifications"), including the most current amendments as of the date that Contractor's bid was submitted for this Project. The following provisions apply to use of or reference to the Standard Specifications:

(A) **Limitations.** None of the "General Provisions" of the Standard Specifications, i.e., Sections 1 through 9, applies to these Contract Documents with the exception of any specific provisions, if any, which are expressly stated to apply to these Contract Documents.

(B) **Conflicts or Inconsistencies.** If there is a conflict or inconsistency between any provision in the Standard Specifications and a provision of these Contract Documents, as determined by City, the provision in the Contract Documents will govern.

(C) **Meanings.** Terms used in the Caltrans Standard Specifications or Special Provisions are to be interpreted as follows:

- (1) Any reference to the "Engineer" is deemed to mean the City Engineer.
- (2) Any reference to the "Special Provisions" is deemed to mean the Special Conditions, unless the Caltrans Special Provisions, or any portions thereof, are expressly included in the Contract Documents under Section 2 of the Contract.
- (3) Any reference to the "Department" or "State" is deemed to mean City.

**3.4 For Reference Only.** Contractor is responsible for the careful review of any document, study, or report provided by City or incorporated into or appended to the Contract Documents solely for informational purposes and identified as "For Reference Only." Nothing in any document, study, or report so appended and identified is intended to supplement, alter, or void any provision of the Contract Documents. Contractor is advised that City or its representatives may be guided by information or recommendations included in such reference documents, particularly when making determinations as to the acceptability of proposed materials, methods, or changes in the Work. Any record drawings or similar final or accepted drawings or maps that are not part of the Contract Documents are deemed to be For Reference Only. The provisions of the Contract Documents are not modified by any perceived or actual conflict with provisions in any document that is For Reference Only.

**3.5 Current Versions.** Unless otherwise specified by City, any reference to the City Standard Specifications, Standard Plans and Standard Details, technical specifications, or any City or California codes or regulations means the latest specification, code or regulation in effect at the time that bids were due.

#### **Article 4 - Bonds, Indemnity, and Insurance**

**4.1 Payment and Performance Bonds.** Within ten days following issuance of the Notice of Award, Contractor is required to provide a payment bond and a performance bond, each in the penal sum of not less than 100% of the Contract Price, using the bond forms included with the Contract Documents.

(A) **Surety.** Each bond must be issued by a surety admitted in California. If an issuing surety cancels the bond or becomes insolvent, within seven days following written notice from City, Contractor must substitute a surety acceptable to City. If Contractor fails to substitute an acceptable surety within the specified time, City may, at its sole discretion, withhold payment from Contractor until the surety is replaced to City's satisfaction, or terminate the Contract for default.

(B) **Supplemental Bonds for Increase in Contract Price.** If the Contract Price increases during construction by five percent or more over the original Contract Price, Contractor may be required provide supplemental or replacement bonds within ten days of written notice from City pursuant to this Section, covering 100% of the increased Contract Price and using the bond forms included with the Contract Documents.

**4.2 Indemnity.** To the fullest extent permitted by law, Contractor must indemnify, defend, and hold harmless City, including its elected officials, officers, agents, employees, consultants and volunteers (individually, an "Indemnatee," and collectively the "Indemnitees"), from and against any and all liability, loss, damage, claims, expenses (including, without limitation, attorney fees, expert witness fees, paralegal fees, and fees and costs of litigation or arbitration) (collectively, "Liability") of every nature arising out of or in connection with the acts or omissions of Contractor, including its officers, agents,

representatives, employees, Subcontractors and suppliers, in bidding or performing the Work or in failing to comply with any obligation of Contractor under the Contract, except such Liability caused by the active negligence, sole negligence, or willful misconduct of an Indemnitee. This indemnity requirement applies to any Liability arising from alleged defects in the content or manner of submission of Contractor's bid for the Contract. Contractor's failure or refusal to timely accept a tender of defense pursuant to this Contract will be deemed a material breach of the Contract. City will timely notify Contractor upon receipt of any third-party claim relating to the Contract, as required by Public Contract Code Section 9201. Contractor's indemnity obligations under this Contract will survive the expiration or any early termination of the Contract.

**4.3 Insurance.** *The insurance requirements under Section 4.3 of the General Conditions are modified for this Contract, as set forth below. Except as expressly stated below, all other provisions in Section 4.3 are unchanged and remain in full force and effect.*

No later than ten days following issuance of the Notice of Award, and before commencing any Work, Contractor must, at its sole expense, procure the insurance coverage required by this Section and provide acceptable proof of the coverage to the satisfaction of City's Risk Manager. Proof of coverage must be evidenced within the body of the insurance policies or in the form of certificates and endorsements as described below. The required insurance must cover Contractor, including its officers, agents, representatives, employees, Subcontractors and suppliers, for claims now and in the future that may relate to or arise from the performance of the Work. The insurance must remain in full force and effect throughout the duration of the Contract. The insurance must be issued by companies licensed to do business in the State of California, and each such insurer must have an A.M. Best's financial strength rating of "A" or better and a financial size rating of "VII" or better. Contractor's procurement of the required insurance will not be construed to relieve Contractor of any performance obligations, to limit Contractor's liability, or to fulfill Contractor's indemnification obligations under the Contract. Contractor may carry any additional insurance it deems necessary or prudent, at its sole expense.

(A) **Insurance Coverage and Limits.** Any available insurance proceeds related to this Contract that are broader than or in excess of the specified minimum insurance coverage requirements or limits for Contractor must be made available to the additional insureds under this Contract. The requirements for Contractor's coverage and limits are: (1) the minimum coverage and limits specified in this Contract, or (2) the broader coverage and maximum limits of coverage of any insurance policy or proceeds available to the named insureds, whichever is greater. The limits of insurance required in this Contract may be satisfied by a combination of primary and umbrella or excess insurance. Any umbrella or excess insurance must contain or be endorsed to contain a provision that such coverage will also apply on a primary and non-contributory basis for the benefit of City, before City's own insurance or self-insurance will be called upon to protect it as a named insured.

(B) **Minimum Scope of Insurance.** Contractor must procure and maintain all of the following insurance coverage for this Contract, unless otherwise specified in the Special Conditions:

- (1) Insurance Services Office Commercial General Liability ("CGL") insurance that includes:
  - a) Blanket contractual liability coverage;
  - b) Contractor's protected coverage;

- c) Broad form property coverage;
  - d) Personal injury coverage;
  - e) Completed operations coverage; and
- (2) Insurance Services Office Automobile Liability insurance, Code 1 (any auto).
- (3) Workers' Compensation insurance as required by the State of California and Employer's Liability insurance.
- (4) *Pollution Liability Insurance*: The pollution liability insurance policy must be issued on an occurrence basis, for all loss arising out of claims for bodily injury, death, property damage, or environmental damage caused by pollution conditions resulting from the Work.
- (5) Any other insurance coverage City may require in the Special Conditions.
- (C) **Minimum Limits of Insurance.** Contractor must maintain coverage limits of at least the following for this Contract, unless otherwise specified in the Special Conditions:
- (1) CGL insurance: Issued on an occurrence basis, with \$2,000,000 per occurrence for bodily injury, personal injury and property damage and \$4,000,000 general aggregate. If CGL insurance or other form with a general aggregate liability is used, either the general aggregate limit must apply separately to this Contract or the general aggregate limit must be twice the required occurrence limit.
  - (2) Automobile Liability insurance: \$1,000,000 per accident for bodily injury, death and property damage. For owned, loaned, hired and non-owned autos. **Auto policy shall also include an MCS-90 endorsement.**
  - (3) Employer's Liability insurance:
    - a) Bodily Injury by Accident - \$1,000,000 each accident;
    - b) Bodily Injury by Disease - \$1,000,000 policy limit; and
    - c) Bodily Injury by Disease - \$1,000,000 each employee.
  - (4) **Pollution Liability Insurance: Pollution Liability in limits of at least \$5,000,000, which shall include Non-owned Disposal Sites (NODS).**
  - (5) Any other limits City may require in the Special Conditions.
- (D) **Deductibles and Self-Insured Retentions.**
- (1) Any deductible or self-insured retention (SIR) applicable to Contractor's insurance must be declared to and approved by City. At City's option, either:
    - a) the insurer must reduce or eliminate such deductible or SIR with respect to City, including its elected officials, officers, agents, employees, consultants, volunteers and Design Professional; or
    - b) Contractor must procure a bond guaranteeing payment of losses and related investigations, claims administration and defense expenses.
  - (2) Policies containing any SIR provision must provide or be endorsed to provide that the SIR may be satisfied by either the named insured or City.

- (3) City reserves the right to obtain a full certified copy of any insurance policy and endorsement. Failure to exercise this right will not constitute a waiver of the right to exercise it later.

(E) **Endorsements.** The required CGL, automobile liability and builder's risk insurance policies must contain, or be endorsed to contain, the following provisions:

- (1) City, its elected officials, officers, agents, employees, consultants, volunteers and Design Professional, are covered as additional insureds as respects: any alleged liability arising out of activities performed by or on behalf of Contractor; products and completed operations of Contractor; premises owned, occupied or used by Contractor; any automobiles owned, leased, hired or borrowed by Contractor. The coverage will contain no special limitations on the scope of protection afforded to City, its elected officials, officers, agents, employees, consultants, volunteers and Design Professional.
- (2) Any failure to comply with reporting or other provisions of the policies, including breaches of warranties, will not affect coverage provided to City, its elected officials, officers, agents, employees, consultants, volunteers and Design Professional.
- (3) The insurance will apply separately to each insured against whom a claim is made, or suit is brought, except with respect to the limits of the insurer's liability. The inclusion of more than one insured will not operate to impair the rights of one insured against another, and the coverages afforded will apply as though separate policies have been issued to each insured.
- (4) The policy does not exclude explosion, collapse, underground excavation hazard, or removal of lateral support.

(F) **Insurance Certificates and Endorsements.** Contractor must furnish properly executed certificates of insurance from insurance companies acceptable to City, with signed copies of the specified endorsements for each policy as required in Subsection M below. Such documentation must clearly evidence all coverages as required above, including specific evidence of separate endorsements naming City, its elected officials, officers, agents, employees, consultants, volunteers and Design Professional as additional insureds as also required above. The certificates must also provide that such insurance will not be materially changed, terminated or allowed to expire except after 30 days prior written notice thereof has been filed with the City Clerk by certified mail, return receipt requested, unless the change or termination is due to non-payment of premiums, in which case ten days prior written notice thereof must be filed with the City Clerk.

(G) **Completed Operations.** Contractor must maintain the required insurance coverage to the fullest amount allowed by law and must maintain the insurance for a minimum of five years following Final Completion of the Project. In the event Contractor fails to obtain or maintain completed operations coverage as required herein, City at its sole discretion may purchase the coverage required and the cost will be paid by Contractor.

(H) **Cross-Liability.** The CGL policy must include a cross-liability or severability of interest endorsement.

(I) **Failure to Maintain Insurance Coverage.** Contractor's failure, for any reason, to maintain the required insurance coverage will be deemed a material breach of this Contract. City, at its sole option, may terminate this Contract and obtain damages from Contractor resulting from such breach. Alternatively, City may purchase the required insurance coverage and, without further notice to Contractor, deduct from sums due to Contractor any premium costs advanced by City for the insurance.

(J) **Primary and Non-Contributory.** Contractor's insurance coverage under this Contract will be primary insurance as respects City, its elected officials, officers, agents, employees, consultants, volunteers and Design Professional. Any insurance or self-insurance maintained by City, its elected officials, officers, agents, employees, consultants, volunteers or Design Professional, will be excess of Contractor's insurance and will not contribute with it. The additional insured coverage under Contractor's policies will be "primary and non-contributory" and will not seek contribution from City's insurance or self-insurance and will be at least as broad as CG 20 01 04 13.

(K) **Subcontractors.** Contractor must require all Subcontractors to maintain the same levels of insurance and provide the same indemnity that Contractor is required to provide under this Contract, including the requirements related to the additional insureds and waivers of subrogation. Contractor must require each Subcontractor to provide evidence of the required insurance and endorsements prior to the Subcontractor's commencement of any Work. The insurance requirements for Subcontractors do not replace or limit the Contractor's insurance obligations.

(L) **Subrogation Waiver.** Contractor agrees to waive subrogation rights against City, regardless of the applicability of any insurance proceeds, and to require all Subcontractors or others involved in any way with the Work to do likewise. Each required insurance policy must include an endorsement providing that the carrier agrees to waive any right of subrogation it may have against City, its elected officials, officers, agents, employees, consultants, volunteers and Design Professional.

(M) **Verification of Coverage.** Contractor must furnish City with original endorsements effecting coverage required by this Section 4.3. The endorsements must be signed by a person authorized by that insurer to bind coverage on its behalf. All endorsements must be received and approved by City's Risk Manager before the Work commences. Contractor must provide substitute insurance coverage, and written proof of the substitute insurance coverage, to City, in the form of policies, certificates and endorsements acceptable to City's Risk Manager, no later than 30 days prior to the expiration date of any insurance policy required under this Contract.

## Article 5 - Contract Time

**5.1 Time is of the Essence.** Time is of the essence in Contractor's performance and completion of the Work, and Contractor must diligently prosecute the Work and complete it within the Contract Time.

(A) **General.** Contractor must commence the Work on the date indicated in the Notice to Proceed, and must fully complete the Work in strict compliance with all requirements of the Contract Documents and within the Contract Time. Contractor may not begin performing the Work on the Project site before the date specified in the Notice to Proceed.

(B) **Rate of Progress.** Contractor and its Subcontractors must, at all times, provide workers, materials, and equipment sufficient to maintain the rate of progress necessary to ensure full completion of the Work within the Contract Time. If City determines that Contractor is failing to prosecute the Work at a sufficient rate of progress, City may, in its sole discretion, direct Contractor to provide additional workers, materials, or equipment, or to work additional hours or days without additional cost to City, in order to achieve a rate of progress satisfactory to City. If Contractor fails to comply with City's directive in this regard, City may, at Contractor's expense, separately contract for additional workers, materials, or equipment or use City's own forces to achieve the necessary rate of progress. Alternatively, City may terminate the Contract based on Contractor's default.

**5.2 Schedule Requirements.** All schedules must be prepared using standard scheduling software acceptable to City, and must provide schedules in electronic and paper form as requested.

(A) **Baseline (As-Planned) Schedule.** Within three calendar days following City's issuance of the Notice to Award (or as otherwise specified in the Special Conditions), Contractor must submit to City for review a final baseline (as-planned) schedule using critical path methodology showing in detail how Contractor plans to perform and fully complete the Work within the Contract Time. The final baseline schedule must be based on the draft baseline schedule submitted for the pre-construction conference pursuant to Section 2.2, above, and must incorporate City comments as directed during the pre-construction conference. The baseline schedule must show the order of the major items of Work and the dates of start and completion of each item, including when the materials and equipment will be procured. The schedule must also include the work of all trades, reflecting anticipated labor or crew hours and equipment loading for the construction activities, and must be sufficiently comprehensive and detailed to enable progress to be monitored on a day-by-day basis. For each activity, the baseline schedule must be dated, provided in the format specified in the Contract Documents or as required by City, and must include, at a minimum, a description of the activity, the start and completion dates of the activity, the activity's dependence on completion of other activities, and the duration of the activity.

(1) **Specialized Materials Ordering.** The baseline schedule must include ordering and estimated delivery dates for specialized materials or items that are not readily available from suppliers.

(2) **Long Lead Time Items.** The baseline schedule must include realistic estimates of the lead time required for ordering items that require a long lead time, such as items that must be specially fabricated or are subject to special handling or shipping.

(B) **City's Review of Schedules.** City will review and may note or take exceptions to the baseline schedule, and to the progress schedules submitted as required below, to assure completion of the Work within the Contract Time. Contractor is solely responsible for resolving any exceptions taken in a schedule and must, within seven days, correct the schedule to address them.

(C) **Progress Schedules.** After City reviews a final baseline schedule on which no exceptions are taken, Contractor must submit to City an updated progress schedule and three-week look-ahead schedule, in the format specified by City, for review with each application for a progress payment, or when otherwise specified by City, until completion of the Work. The updated progress schedule must: show how the actual progress of the Work as constructed to date compares to the baseline schedule; reflect any proposed

changes in the method of operations, including to achieve Project milestones within the Contract Time; and identify any actual or potential impacts to the critical path. Contractor must also submit periodic reports to City of any changes in the projected material or equipment delivery dates for the Project.

- (1) **Float.** The progress schedule must show early and late completion dates for each task. The number of days between those dates will be designated as the "float." Any float belongs to the Project and not to Contractor.
  - (2) **Failure to Submit Schedule.** Reliable, up-to-date schedules are essential to timely, efficient and cost-effective administration of the Project. If Contractor fails to submit a schedule within the time periods specified in this Section, or submits a schedule to which City has noted exceptions that are not corrected, City may withhold ten percent from payment(s) otherwise due to Contractor until the exceptions are resolved, the schedule is corrected and resubmitted, and City has taken no further exceptions.
- (D) **Recovery Schedule.** If City determines that the Work is more than two weeks behind schedule, within seven days following written notice of such determination, Contractor must submit a recovery schedule, showing how Contractor intends to perform and complete the Work within the Contract Time, based on actual progress to date.
- (E) **Effect of Acknowledgement.** Contractor and its Subcontractors must perform the Work in accordance with the most current schedule unless otherwise directed by City. City's review of a schedule does not operate to extend the time for completion of the Work or any component of the Work, and will not affect City's right to assess liquidated damages for Contractor's unexcused delay in completing the Work within the Contract Time.
- (F) **Posting.** Contractor must at all times prominently post in its on-site office a copy of the most current progress or recovery schedule that has no exceptions taken by City.
- (G) **Reservation of Rights.** City reserves the right to direct the sequence in which the Work must be performed or to make changes in the sequence of the Work in order to facilitate the performance of work by City or others, or to facilitate City's use of its property. The Contract Time or Contract Price may be adjusted to the extent such changes in sequence actually increase or decrease Contractor's time or cost to perform the Work.
- (H) **Authorized Working Days and Times.** Contractor is limited to working Monday through Friday, excluding holidays, from 7:30 a.m. until 4:00 p.m., except as provided in the Special Conditions or as authorized in writing by City. City reserves the right to charge Contractor for additional costs incurred by City due to Work performed on days or during hours not expressly authorized in the Contract Documents, including reimbursement of costs incurred for inspection, testing, and construction management services.
- (I) **Additional Requirements for Work Schedules.** Any additional requirements for Work schedules may be included in the Special Conditions or Specifications.

### 5.3 Delay and Extensions of Contract Time.

- (A) **Excusable Delay.** The Contract Time may be extended if Contractor encounters "Excusable Delay," which is an unavoidable delay in completing the Work within the Contract Time due to causes completely beyond Contractor's control, and which

Contractor could not have avoided or mitigated through reasonable care, planning, foresight, and diligence. Grounds for Excusable Delay may include fire, natural disasters including earthquake or unusually severe weather, acts of terror or vandalism, epidemic, unforeseeable adverse government actions, unforeseeable actions of third parties, encountering unforeseeable hazardous materials, unforeseeable site conditions, or suspension for convenience under Article 13. Contractor is not entitled to an extension of the Contract Time for delay that will not affect the time for Final Completion, based on the critical path in the baseline schedule.

(B) **Non-Excusable Delay.** Delay which Contractor could have avoided or mitigated through reasonable care, planning, foresight and diligence is "Non-Excusable Delay." Contractor is not entitled to an extension of Contract Time or any compensation for Non-Excusable Delay, or for Excusable Delay that is concurrent with Non-Excusable Delay. Non-Excusable Delay includes delay caused by:

- (1) weather conditions which are normal for the location of the Project, as determined by reliable records, including monthly rainfall averages, for the preceding ten years;
- (2) Contractor's failure to order equipment and materials sufficiently in advance of the time needed for timely completion of the Work;
- (3) Contractor's failure to provide adequate notification to utility companies or agencies for connections or services necessary for the timely performance and completion of the Work;
- (4) foreseeable conditions which Contractor could have ascertained from reasonably diligent inspection of the Worksite or review of the Contract Documents or other information provided or available to Contractor; or
- (5) Contractor's financial inability to perform the Work, including insufficient funds to pay its Subcontractors or suppliers.

(C) **Compensable Delay.** Pursuant to Public Contract Code Section 7102, in addition to entitlement to an extension of Contract Time, Contractor is entitled to compensation for costs incurred due to delay caused solely by City, when that delay is unreasonable under the circumstances involved and not within the contemplation of the parties ("Compensable Delay"). Contractor is not entitled to an extension of Contract Time or recovery of costs for Compensable Delay that is concurrent with Non-Excusable Delay, or that does not affect the time for Final Completion, based on the critical path in the baseline schedule.

(D) **Recoverable Costs.** Contractor is not entitled to compensation for Excusable Delay unless it is Compensable Delay, as defined above. Contractor is entitled to recover only the actual, direct, reasonable, and substantiated costs ("Recoverable Costs") for each working day that the Compensable Delay prevents Contractor from proceeding with more than 50% of the critical path Work scheduled for that day, based on the most recent progress schedule reviewed by City. Recoverable Costs will not include home office overhead or lost profit.

(E) **Request for Extension of Contract Time or Recoverable Costs.** A request for an extension of Contract Time or any associated Recoverable Costs must be submitted in writing to City within ten calendar days of the date the delay is first encountered, even if the duration of the delay is not yet known at that time, or any entitlement to the Contract

Time extension or to the Recoverable Costs will be deemed waived. In addition to complying with the requirements of this Article 5, the request must be submitted in compliance with the Change Order request procedures in Article 6 below. Strict compliance with these requirements is necessary to ensure that any delay or consequences of delay may be mitigated as soon as possible, and to facilitate cost-efficient administration of the Project and timely performance of the Work. Any request for an extension of Contract Time or Recoverable Costs that does not strictly comply with all of the requirements of Article 5 and Article 6 will be deemed waived.

- (1) *Required Contents.* The request must include a detailed description of the cause(s) of the delay, and must also describe the measures that Contractor has taken to mitigate the delay and/or its effects, including efforts to mitigate the cost impact of the delay, such as by workforce management or by a change in sequencing. If the delay is still ongoing at the time the request is submitted, the request should also include Contractor's plan for continued mitigation of the delay or its effects.
- (2) *Delay Days and Costs.* The request must specify the number of days of Excusable Delay claimed, or provide a realistic estimate if the duration of the delay is not yet known. If Contractor believes it is entitled to Recoverable Costs for Compensable Delay, the request must specify the amount and basis for the Recoverable Costs that are claimed, or provide a realistic estimate if the amount is not yet known. Any estimate of delay duration or cost must be updated in writing and submitted with all required supporting documentation as soon as the actual time and cost is known. The maximum extension of Contract Time will be the number of calendar days, if any, by which an Excusable Delay or a Compensable Delay exceeds a concurrent Non-Excusable Delay. Contractor is entitled to an extension of Contract Time, or compensation for Recoverable Costs for Compensable Delay, only if, and only to the extent that, such delay will unavoidably delay Final Completion.
- (3) *Supporting Documentation.* The request must also include any and all supporting documentation necessary to evidence the delay and its actual impacts, including scheduling and cost impacts with a time impact analysis using critical path methodology and demonstrating the unavoidable delay to Final Completion. The time impact analysis must be submitted in a form or format acceptable to City.
- (4) *Burden of Proof.* Contractor has the burden of proving that: (a) the delay was an Excusable or Compensable Delay, as defined above; (b) Contractor has made reasonable efforts to mitigate the delay and its schedule and cost impacts; (c) the delay will unavoidably result in delaying Final Completion; and (d) any Recoverable Costs claimed by Contractor were actually incurred and were reasonable under the circumstances.
- (5) *Legal Compliance.* Nothing in this Section 5.3 is intended to require the waiver, alteration, or limitation of the applicability of Public Contract Code Section 7102.
- (6) *No Waiver.* Any grant of an extension of Contract Time, or compensation for Recoverable Costs due to Compensable Delay, will not operate as a waiver of City's right to assess liquidated damages for Non-Excusable Delay.

(7) *Dispute Resolution.* In the event of a dispute over entitlement to an extension of Contract Time or compensation for Recoverable Costs, Contractor may not stop working pending resolution of the dispute, but must continue to comply with its duty to diligently prosecute the performance and timely completion of the Work. Contractor's sole recourse for an unresolved dispute based on City's rejection of a Change Order request for an extension of Contract Time or compensation for Recoverable Costs is to comply with the Dispute Resolution provisions set forth in Article 12 below.

**5.4 Liquidated Damages.** It is expressly understood that if Final Completion is not achieved within the Contract Time, City will suffer damages from the delay that are difficult to determine and accurately specify. Pursuant to Public Contract Code Section 7203, if Contractor fails to achieve Final Completion within the Contract Time, City will charge Contractor in the amount specified in the Contract for each day that Final Completion is delayed beyond the Contract Time, as liquidated damages and not as a penalty.

(A) **Liquidated Damages.** Liquidated damages will not be assessed for any Excusable or Compensable Delay, as set forth above.

(B) **Milestones.** Liquidated damages may also be separately assessed for failure to meet milestones specified elsewhere in the Contract Documents.

(C) **Setoff.** City is entitled to deduct the amount of liquidated damages assessed against any payments otherwise due to Contractor, including unreleased retention. If there are insufficient Contract funds remaining to cover the full amount of liquidated damages assessed, City is entitled to recover the balance from Contractor or its performance bond surety.

(D) **Occupancy or Use.** Occupancy or use of the Project in whole or in part prior to Final Completion does not constitute City's acceptance of the Project and will not operate as a waiver of City's right to assess liquidated damages for Contractor's Non-Excusable Delay in achieving Final Completion.

(E) **No Limitation on Other Remedies.** City's right to liquidated damages under this Section applies only to damages arising from Contractor's Non-Excusable Delay or failure to complete the Work within the Contract Time. City retains its right to pursue all other remedies under the Contract for other types of default or damage, including damage to property or persons, or for defective materials or workmanship. This provision for liquidated damages will not apply to the Contract or limit City in any way if Contractor abandons the Work. In such event, Contractor will be liable to City for all losses incurred.

#### Article 6 - Contract Modification

**6.1 Contract Modification and Changes in Work.** Modifications to the Contract are valid and legally binding only if, duly authorized by a written and signed Field Order or Change Order. City may also make changes in the Work without invalidating the Contract. City may direct changes in the Work, which may include Extra Work as set forth in Subsection (B) below. Any change in the Work, whether directed by City or pursuant to Contractor's request for a Change Order under Section 6.2 below, will not be a valid and binding change to the Contract unless it is formalized in a Change Order, which may include commensurate changes in the Contract Price or Contract Time as applicable. Contractor must promptly comply with City-directed changes in the Work in accordance with the original Contract Documents, even if Contractor and City have not yet reached agreement as to adjustments to the Contract Price or Contract Time for the change in the

Work or for the Extra Work. Contractor is not entitled to extra compensation pursuant to Public Contract Code Section 7101 based on cost reduction changes or "value engineering," unless otherwise specified in the Special Conditions, or unless expressly authorized in advance in writing by City.

(A) **Disputes.** In the event of a dispute over entitlement to or the amount of a change in Contract Time or a change in Contract Price related to a City-directed change in the Work, Contractor must perform the Work as directed and may not delay its Work or cease Work pending resolution of the dispute, but must continue to comply with its duty to diligently prosecute the performance and timely completion of the Work, including the Work in dispute. In the event that City and Contractor dispute whether a portion or portions of the Work are already required by the Contract Documents or constitute Extra Work, or otherwise dispute the interpretation of any portion(s) of the Contract Documents, Contractor must perform the Work as directed and may not delay its Work or cease Work pending resolution of the dispute, but must continue to comply with its duty to diligently prosecute the performance and timely completion of the Work, including the Work in dispute, as directed by City. Contractor's sole recourse for an unresolved dispute related to changes in the Work or performance of any Extra Work is to comply with the dispute resolution provisions set forth in Article 12, below.

(B) **Extra Work.** Contractor must promptly perform any Extra Work authorized by City in accordance with the original Contract Documents, even if Contractor and City have not yet reached agreement on the adjustments to the Contract Price or Contract Time for such work. Contractor must maintain detailed daily records that itemize the cost of each element of Extra Work, and sufficiently distinguish the direct cost of the Extra Work from the cost of other Work performed. Contractor must also provide City with summary report(s) of the Extra Work performed and the related costs, together with copies of certified payroll, invoices, and other documentation substantiating the costs. The Engineer will make any adjustments to Contractor's Extra Work report(s) based on the Engineer's records of the Work. When an Extra Work report(s) is agreed on and signed by both City and Contractor, the report(s) will become the basis for payment under a duly authorized and signed Change Order.

(C) **Remedy for Non-Compliance.** Contractor's failure to promptly comply with a City-directed change is deemed a material breach of the Contract, and in addition to all other remedies available to it, City may, at its sole discretion, hire another contractor or use its own forces to complete the disputed Work at Contractor's sole expense, and may deduct the cost from the Contract Price.

**6.2 Contractor Change Order Requests.** Contractor must submit a request or proposal for a change in the Work or a change in the Contract Price or Contract Time as a written Change Order request or proposal.

(A) **Time for Submission.** Any request for a change in the Contract Price or the Contract Time must be submitted in writing to the Engineer within ten calendar days of the date that Contractor first encounters the circumstances, information or conditions giving rise to the Change Order request, even if the total amount of the requested change in the Contract Price or impact on the Contract Time is not yet known at that time. If City requests that Contractor propose the terms of a Change Order, unless otherwise specified in City's request, Contractor must provide the Engineer with a written proposal for the change in the Contract Price or Contract Time within five working days of receiving City's request, in a form satisfactory to the Engineer.

(B) **Required Contents.** Any Change Order request or proposal submitted by Contractor must include a complete breakdown of actual or estimated costs and credits, and must itemize labor, materials, equipment, taxes, insurance, and subcontract amounts. Any estimated cost must be updated in writing as soon as the actual amount is known.

(C) **Required Documentation.** All claimed costs must be fully documented, and any related request for an extension of time or delay-related costs must be included at that time and in compliance with the requirements of Article 5 of the General Conditions.

(D) **Required Form.** Contractor must use City's form(s), or a format(s) approved by City, for submitting all Change Order requests or proposals, unless otherwise specified by City during the pre-construction conference.

(E) **Certification.** All Change Order requests must be signed by Contractor and must include the following certification:

"The undersigned Contractor certifies under penalty of perjury that its statements and representations in this Change Order request are true and correct. Contractor warrants that this Change Order request is comprehensive and complete, and agrees that any costs, expenses, or time extension request not included herein is deemed waived. Contractor understands that submission of claims which have no basis in fact or which Contractor knows to be false may violate the False Claims Act, as set forth in Government Code Sections 12650 et seq."

**6.3 Adjustments to Contract Price.** The amount of any increase or decrease in the Contract Price will be determined based on one of the following methods, but in the order provided:

(A) **Unit Pricing.** Amounts previously provided by Contractor in the form of unit prices, either in a bid schedule or schedule of values, will apply if unit pricing has previously been provided in Contractor's accepted bid schedule or schedule of values for the affected Work. No additional markup for overhead or profit or other indirect costs will be added to the calculation.

(B) **Lump Sum.** A mutually agreed upon lump sum, with no additional markup for overhead, profit or other indirect costs.

(C) **Time and Materials.** On a time and materials basis, which may include a not-to-exceed limit, calculated as the total of the following sums:

- (1) All direct labor costs, plus 15 percent markup;
- (2) All direct material costs, including sales tax, plus 15 percent markup;
- (3) All direct plant and equipment rental costs, plus 15 percent markup; and
- (4) All direct subcontract costs, plus 15 percent markup for the first \$2,000 in such costs and five percent markup for all subcontract costs in excess of \$2,000.

(D) **Markup.** Markup is deemed to include all indirect costs, including overhead and profit. Any additional bond or insurance premium costs will be considered to be included in the amounts charged to City as set forth above.

- 6.4 Unilateral Change Order.** If the parties dispute the terms of a proposed change order, including disputes over the amount of compensation or extension of time that contractor has requested, the value of deleted or changed work, what constitutes extra work, or quantities used, City may elect to issue a unilateral Change Order, directing performance of the Work, and authorizing a change in the Contract Price or Contract Time for the amount of compensation and added time that the City believes is merited. Contractor's sole recourse to dispute the terms of a unilateral Change Order is to submit a timely Claim pursuant to Article 12, below.
- 6.5 Non-Compliance Deemed Waiver.** Contractor waives its entitlement to any increase in the Contract Price or Contract Time if Contractor fails to fully comply with the provisions of this Article. Contractor will not be paid for unauthorized Extra Work.
- 6.6 Value Engineering.** Unless otherwise specified in the Special Conditions, this Contract does not provide for payment of extra compensation to the Contractor for cost reductions resulting from a proposal submitted by the Contractor, and Contractor will not be entitled additional compensation for value engineering pursuant to Public Contract Code Section 7101.

#### Article 7 - General Construction Provisions

##### 7.1 Permits and Taxes.

(A) **General.** With the exception of City building permit fees, Contractor must obtain and pay for all permits, fees, or licenses required to perform the Work, including a City business license. Contractor and all Subcontractors must pay City business tax and registration tax for the business license under Fremont Municipal Code Chapter 5.05. Contractor must cooperate with and provide notifications to all government agencies with jurisdiction over the Project, as may be required. Contractor must provide City with copies of all notices, permits, licenses, and renewals required for the Work. Contractor will be solely responsible for finalizing and closing out all permits for the Project issued by City's building department and all other government agencies with jurisdiction over the Project.

(B) **Federal Excise Tax.** Contractor must pay for all taxes on labor, material and equipment, except Federal Excise Tax to the extent that City is exempt from Federal Excise Tax.

- 7.2 Temporary Facilities.** Except as otherwise specified in the Special Conditions, and in addition to any requirements in the Specifications pertaining to temporary facilities, Contractor must provide, at Contractor's sole expense, any and all temporary facilities for the Project, including an onsite staging area for material and equipment, a field office, sanitary facilities, utilities, storage, scaffolds, barricades, walkways, and any other temporary structure required to safely perform the Work along with any incidental utility services. The locations of all temporary facilities must be approved by the City prior to installation.

(A) **Standards.** Such structures must be safe and adequate for the intended use, and installed and maintained in accordance with all applicable federal, state, and local laws, codes, and regulations.

(B) **Screening.** Contractor must fence and screen the Project site and staging area, and its operation must minimize inconvenience to neighboring properties.

(C) **Utilities.** Contractor must install and maintain the light, power, water and all other utilities required for the Project site, including the piping, wiring, lamps and related equipment necessary to perform the Work.

(D) **Removal and Repair.** Contractor must promptly remove all such temporary facilities when they are no longer needed or upon completion of the Work, whichever comes first. Contractor must promptly repair any damage to City's property caused by the installation, use, or removal of the temporary facilities, and must promptly restore the property to its original or intended condition.

(E) **Additional Requirements.** Additional provisions pertaining to temporary facilities may be included in the Specifications or Special Conditions.

**7.3 Noninterference and Additional Work Areas.** Contractor must avoid interfering with City's use of its property at or adjacent to the Project site, including use of roadways, entrances, parking areas, walkways, and structures. Contractor must also minimize disruption of access to private property in the Project vicinity. Contractor must coordinate with affected property owners, tenants, and businesses, and maintain some vehicle and pedestrian access to their residences or properties at all times. Temporary access ramps, fencing or other measures must be provided as needed. Before blocking access to a private driveway or parking lot, Contractor must notify the affected parties of the pending closure and allow them to remove vehicles. Private driveways, residences and parking lots must have access to a roadway during non-Work hours.

(A) **Offsite Acquisition.** Unless otherwise provided by City, Contractor must acquire, use and dispose of, at its sole expense, any additional Work areas, easements, and temporary facilities necessary to access and perform the Work.

(B) **Offsite Staging Area and Field Office.** If additional space beyond the Project site is needed, such as for the staging area or the field office, Contractor may need to make arrangements with the nearby property owner(s) to secure the space. Before occupying any property owned by a third party, Contractor must provide City with a copy of the necessary license agreement, easement, or other written authorization from the property owner, together with a written release from the property owner holding City harmless from any related liability.

**7.4 Signs.** No signs may be displayed on or about City's property, except signage which is required by law or by the Contract Documents, without City's prior written approval as to size, design, and location.

**7.5 Worksite and Nearby Property Protections.**

(A) **General.** Contractor is responsible at all times, on a 24-hour basis and at its sole cost, for protecting the Work, the Project site, and the materials and equipment to be incorporated into the Work, until the City has accepted the Project, excluding exceptions to acceptance, if any.. Except as specifically authorized by City, Contractor must confine its operations to the area of the Project site indicated in the Drawings. Contractor is liable for any damage caused by Contractor or its Subcontractors to the Work, City's real or personal property, the real or personal property of adjacent or nearby property owners, and the work or personal property of other contractors working for City, including damage related to Contractor's failure to adequately secure the Work or any Worksite.

- (1) Subject to City's approval, Contractor will provide and install safeguards to protect the Work, the Project site, City's real or personal property, and the real or personal property of adjacent or nearby property owners.
  - (2) Public wastewater systems may not be interrupted. If the Work disrupts existing sewer facilities, Contractor must immediately notify City and establish a plan, subject to City's approval, to convey the sewage in closed conduits back into the sanitary sewer system. Sewage must not be permitted to flow in trenches or be covered by backfill.
  - (3) Contractor must remove with due care, and store at City's request, any objects or material from the Project site that City will salvage or reuse at another location.
- (B) **Securing Project Site.** After completion of Work each day, Contractor must secure the Project site and, to the extent feasible, make the area reasonably accessible to the public unless City approves otherwise. All excess materials and equipment not protected by approved traffic control devices must be relocated to the staging area or demobilized. Trench spoils must be hauled off the Project site daily and open excavations must be protected with steel plates. Contractor and Subcontractor personnel may not occupy or use the Project site for any purpose during non-Work hours, except as may be provided in the Contract Documents or pursuant to prior written authorization from City.
- (C) **Reporting Damage.** If any death, personal injury or property damage occurs in connection with the performance of the Work or otherwise in relation to the Project or the Contract, Contractor must immediately notify City. Contractor must first notify the Project Manager and the City Risk Manager's office by telephone and then promptly submit to the Project Manager and City Risk Manager a written report, in a form acceptable to City, with the following information: (1) a detailed description of the damage or injury, including the location, the circumstances, and the name and address of any injured or deceased person(s) and any affected property owner(s); (2) the name and address of any witnesses to the incident; and (3) the name and address of Contractor's insurance company representatives.
- (D) **Unforeseen Conditions.** If Contractor encounters facilities, utilities, or other unknown conditions not shown on or reasonably inferable from the Drawings or apparent from inspection of the Project site, Contractor must immediately notify City and promptly submit a Request for Information to the Engineer and avoid taking any action which could cause damage to the facilities or utilities pending further direction from the Engineer. The Engineer's written response will be final and binding on Contractor. If the Engineer's subsequent direction to Contractor affects Contractor's cost or time to perform the Work, Contractor may submit a Change Order request as set forth in Article 6 above.
- (E) **Support; Adjacent Properties.** Contractor must provide, install, and maintain all shoring, bracing, and underpinning necessary to provide support to City's property and adjacent properties and improvements thereon. Contractor must provide notifications to adjacent property owners as may be required by law.
- (F) **Post-Construction Restoration.** Contractor must ensure, as part of the Work, that all parts of the construction are properly joined with the previously existing and adjacent improvements and conditions. Contractor must provide all cutting, fitting and patching needed to accomplish that requirement. Contractor must also repair or replace

all existing improvements that are damaged or removed during the Work, both on and off the Project site, including curbs, sidewalks, driveways, fences, signs, utilities, street surfaces and structures. Repairs and replacements must be at least equal to the previously existing improvements, and the condition, finish and dimensions must match the previously existing improvements.

(G) **Additional Requirements.** Any additional requirements for protecting the Work, the Project site and the adjacent or nearby property may be included in the Special Conditions or Specifications.

## 7.6 Materials and Equipment.

(A) **General.** Unless otherwise specified, all materials and equipment required for the Work must be new, free from defects, and of the best grade for the intended purpose, and furnished in sufficient quantities to ensure the proper and expeditious performance of the Work. Contractor must furnish evidence satisfactory to the Project Manager concerning the kind and quality of materials and equipment provided. Contractor must also employ measures to preserve the specified quality and fitness of the materials and equipment. Unless otherwise specified, all materials and equipment required for the Work are deemed to include all components required for complete installation and intended operation, and must be installed in accordance with the manufacturer's recommendation. Contractor is responsible for all shipping, handling, and storage costs associated with the materials and equipment required for the Work. Contractor is responsible for providing security and protecting the Work and all of the required materials, supplies, tools and equipment at Contractor's sole cost until City has formally accepted the Project as set forth in Section 11.1 below. Contractor will not assign, sell, mortgage, or hypothecate any materials or equipment for the Project, or remove any materials or equipment that have been installed or delivered.

(B) **City-Provided.** If the Work includes installation of materials or equipment to be provided by City, Contractor is solely responsible for the proper examination, handling, storage, and installation in accordance with the Contract Documents. Contractor must promptly notify City of any defects discovered in City-provided materials or equipment. Contractor is solely responsible for any loss of or damage to such items which occurs while the items are in Contractor's custody and control, the cost of which may be offset from the Contract Price and deducted from any payment(s) due to Contractor.

(C) **Intellectual Property Rights.** Contractor must, at its sole expense, obtain any authorization or license required, including payment of any royalties or license fees, for the use for or incorporation into the Work of an invention, design, product, material, equipment, device, or process that is patented, copyright-protected, or subject to advance licensure for use. Contractor's indemnity obligations in Article 4 apply to any claimed violation of intellectual property rights in violation of this provision.

(D) **Certificate of Compliance.** When a Certificate of Compliance is specified or for any material produced outside of the United States, Contractor must submit a Certificate of Compliance before incorporating that material into the Project. The Certificate of Compliance must be in a form acceptable to the Engineer, identifying the material and its source, and the lot. The Certificate of Compliance must be signed by the material producer stating that the material fully complies with the applicable requirements of the specifications. Submission of a Certificate of Compliance will not limit Contractor's continuing obligation to use only materials that conform with the requirements of the Contract Documents.

## 7.7 Substitutions.

(A) **“Or Equal.”** Any specification designating a material, product, or thing (collectively, “item”) or service by specific brand or trade name that is followed by the words “or equal” is intended to indicate the quality and type of item or service desired, and Contractor may request use of any equal item or service.

(B) **Request for Substitution.** A post-award request for substitution of an item or service must be submitted in writing to the Engineer for approval in advance, within the applicable time period provided in the Contract Documents. If no time period is specified, the substitution request may be submitted any time within 35 days after the date of award of the Contract, or sufficiently in advance of the time needed to avoid delay of the Work, whichever is earlier.

(C) **Substantiation.** Any available data substantiating the proposed substitute as an equal item or service must be submitted with the written request for substitution. Contractor’s failure to timely provide all necessary substantiation, including any required test results as soon as they are available, is grounds for rejection of the proposed substitution, without further review.

(D) **Burden of Proving Equality.** Contractor has the burden of proving the equality of the proposed substitution at Contractor’s sole cost, City has sole discretion to determine whether a proposed substitution is equal, and City’s determination is final.

(E) **Approval or Rejection.** If the proposed substitution is approved, Contractor is solely responsible for any additional costs or time associated with the substituted item or service. If the proposed substitution is rejected, Contractor must, without delay, install the item or use the service as specified by City with no increase in Contract Price or Contract Time.

(F) **Contractor’s Obligations.** City’s review of a proposed substitution will not relieve Contractor from any of its obligations under the Contract Documents. In the event Contractor makes an unauthorized substitution, Contractor will be solely responsible for all resulting cost impacts, including the cost of removal and replacement and the impact to other design elements.

(G) **Additional Requirements for Substitutions.** Any additional requirements for substitutions may be included in the Special Conditions or Specifications.

## 7.8 Testing and Inspection.

(A) **General.** All materials, equipment, and workmanship used in the Work are subject to inspection and testing by City at all times and locations during construction and/or fabrication and at any Worksite, including at shops and yards as well as at the Project site. All manufacturers' application or installation instructions must be provided to the Inspector at least ten days prior to the first such application or installation. Contractor must, at all times, provide City with safe access to the Worksite and make all portions of the Work available for inspection.

(B) **Scheduling and Notification.** Contractor must cooperate with City in coordinating the inspections and testing. Contractor must schedule all tests required by the Contract Documents in time to avoid any delay to the progress of the Work. Contractor must notify the Engineer no later than two Working Days before any inspection or testing, and must provide timely notice to the other necessary parties as specified in the Contract Documents. If Contractor schedules an inspection or test beyond specified Work hours, or on a Saturday, Sunday, or recognized City holiday, Contractor must notify the Engineer at least two Working Days in advance for approval. If approved, Contractor must reimburse City for the cost of the overtime inspection or testing.

(C) **Responsibility for Costs.** City will bear the initial cost of inspection and testing to be performed by City's inspectors or any independent testing consultants retained by City, subject to the following exceptions:

- (1) Contractor will be responsible for the costs of any subsequent tests which are required to substantiate compliance with the Contract Documents, and any associated remediation costs.
- (2) Contractor will be responsible for inspection costs, at City's established rates, for inspection time lost because the Work is not ready, or Contractor fails to appear for a scheduled inspection.
- (3) If any portion of the Work that is subject to inspection or testing is covered or concealed by Contractor prior to the inspection or testing, Contractor will bear the cost of making that portion of the Work available for the inspection or testing required by the Contract Documents, and any associated repair or remediation costs. If the Engineer requests to see a covered or concealed portion of the Work that was not subject to such testing or inspection, Contractor must promptly uncover the Work but may also submit a request for a Change Order for the cost of uncovering and then re-covering that portion of the Work. However, if the uncovered Work does not conform to the Contract Documents, Contractor must pay all such costs and will not be entitled to any adjustment to the Contract Time or Contract Price.
- (4) Contractor is responsible for properly shoring all compaction test sites deeper than five feet below grade, as required under Section 7.15 below.
- (5) Any Work or material that is defective or fails to comply with the requirements of the Contract Documents must be promptly repaired, removed, replaced, or corrected by Contractor, at Contractor's sole expense, even if that Work or material was previously inspected or included in a progress payment.

(D) **Contractor's Obligations.** Contractor is solely responsible for any delay occasioned by remediation of defective or noncompliant Work or material. Inspection of the Work does not in any way relieve Contractor of its obligations to perform the Work as specified. Any Work done without the required inspection(s) will also be subject to rejection by City.

(E) **Distant Locations.** If required off-site testing or inspection must be conducted at a location more than 100 miles from the Project site, Contractor is solely responsible for the additional travel costs required for testing and/or inspection at such locations.

(F) **Final Inspection.** The provisions of this Section 7.8 apply to final inspection under Article 11, Completion and Warranty Provisions.

(G) **Additional Requirements for Testing and Inspection.** Any additional requirements for inspection and testing may be included in the Special Conditions or Specifications.

**7.9 Worksite Maintenance and Operation.** Contractor must at all times, on a 24-hour basis and at its sole cost, maintain the Project site and staging and storage areas in clean and neat condition and in compliance with all regulatory requirements for air quality and dust control. Contractor must also, on a daily basis and at its sole cost, remove and properly dispose of the debris and waste materials from the Project site.

(A) **Air Emissions Control.** Contractor must not discharge smoke or other air contaminants into the atmosphere in violation of any applicable law, regulation or rule.

(B) **Dust and Debris.** Contractor must minimize and confine dust and debris resulting from the Work. Contractor must abate dust nuisance by cleaning, sweeping, and immediately sprinkling with water excavated areas of dirt or other materials prone to cause dust, and within one hour after the Engineer notifies Contractor that an airborne nuisance exists. The Engineer may direct that Contractor provide an approved water-spraying truck for this purpose. If the Engineer determines that the dust control is not adequate, City may have the work done by others and deduct the cost from the Contract Price. Contractor will immediately remove any excess excavated material from the Worksite and any dirt deposited on public streets.

(C) **Clean up.** Before discontinuing Work in an area, Contractor must clean the area and remove all debris and waste along with the construction equipment, tools, machinery, and surplus materials. Except as otherwise specified, all excess Project materials, and the materials removed from existing improvements on the Project site with no salvage value or intended reuse by City, will be Contractor's property.

(1) Hauling trucks and other vehicles leaving the Project site must be cleaned of exterior mud or dirt before traveling on City streets. Materials and loose debris must be delivered and loaded to prevent dropping materials or debris. Contractor must immediately remove spillage from hauling on any publicly traveled way. Streets affected by Work on the Project must be kept clean by street sweeping.

(2) If the Contract Documents include the Caltrans Standard Specifications, Contractor must comply with the Caltrans requirements for disposal of material outside of the highway right of way.

(D) **Disposal.** Contractor must dispose of all Project debris and waste materials in a safe and legal manner. Contractor may not burn or bury waste materials on the Project site. Contractor will not allow any dirt, refuse, excavated material, surplus concrete or mortar, or any associated washings, to be disposed of onto streets, into manholes or into City's storm drain system.

(E) **Completion.** At the completion of the Work, Contractor must remove from the Worksite all of its equipment, tools, surplus materials, waste materials and debris, presenting a clean and neat appearance. Before demobilizing from the Worksite, Contractor must ensure that all surfaces are cleaned, sealed, waxed, or finished as applicable, and that all marks, stains, paint splatters, and the like have been properly removed from the completed Work and the surrounding areas, leaving those areas in the condition originally found or better.

(F) **Non-Compliance.** If Contractor fails to comply with its maintenance and cleanup obligations or any City clean up order, City may, acting in its sole discretion, elect to suspend the Work until the condition(s) is corrected with no increase in the Contract Time or Contract Price, or undertake appropriate cleanup measures without further notice and the cost will be deducted from any amounts due or to become due to Contractor.

**7.10 Instructions and Manuals.** Contractor must provide to City three copies each of all instructions and manuals required by the Contract Documents, unless otherwise specified. These must be complete as to drawings, details, parts lists, performance data, and other information that may be required for City to easily maintain and service the materials and equipment installed for this Project.

(A) **Submittal Requirements.** All manufacturers' application or installation instructions must be provided to City at least ten days prior to the first such application. The instructions and manuals, along with any required guarantees and warranties, must be delivered to City for review.

(B) **Instruction of Personnel.** Contractor or its Subcontractors must instruct City's personnel in the operation and maintenance of any complex equipment as a condition precedent to Final Completion, if required in the Contract Documents.

**7.11 As-built Drawings.** Contractor and its Subcontractors must maintain at the Project site a separate complete set of Drawings which will be used solely for the purpose of recording changes made in any portion of the Work in order to create accurate record drawings at the end of the Project.

(A) **Duty to Update.** The as-built drawings must be updated as changes occur, on a daily basis if necessary. Progress payments may be delayed, in whole or in part, until the as-built drawings are brought up to date to the satisfaction of City. Actual locations to scale must be identified on the as-built drawings for all runs of mechanical and electrical work, including all site utilities installed underground, in walls, floors, or otherwise concealed. Deviations from the original Drawings must be shown in detail. The location of all main runs, whether piping, conduit, ductwork or drain lines, must be shown by dimension and elevation.

(B) **Final Completion.** Contractor must verify that all changes in the Work are depicted in the as-built drawings and must deliver the complete set of as-built drawings in PDF format to City for review and approval as a condition precedent to Final Completion.

**7.12 Existing Utilities.** As required by Government Code Section 4215, if, during the performance of the Work, Contractor discovers utility facilities not identified by City in the Contract Documents, Contractor must immediately provide written notice to City and the utility. City assumes responsibility for the timely removal, relocation, or protection of existing main or trunkline utility facilities located on the Project site if those utilities are not identified in the Contract Documents. Contractor will be compensated in accordance with the provisions of the Contract Documents for the costs of locating, repairing damage not due to Contractor's failure to exercise reasonable care, and removing or relocating utility facilities not indicated in the Drawings or Specifications with reasonable accuracy, and for equipment on the Project necessarily idled during such work. Contractor will not be assessed liquidated damages for delay in completion of the Work, to the extent the delay was caused by City's failure to provide for removal or relocation of the utility facilities.

**7.13 Notice of Excavation.** Government Code Section 4216.2 requires that, except in an emergency, Contractor must contact the appropriate regional notification center, or Underground Services Alert ("USA") at 800-642-2444 (for Northern California), at least two working days but not more than 14 calendar days before starting any excavation if the excavation will be conducted in an area that is known, or reasonably should be known, to contain subsurface installations, and, if practical, Contractor must delineate with white paint or other suitable markings the area to be excavated. Contractor is required to contact USA before beginning Work on the Project, and take appropriate measures to avoid damaging or obstructing access to subsurface installations.

**7.14 Trenching and Excavations of Four Feet or More.** As required by Public Contract Code Section 7104, if the Work includes digging trenches or other excavations that extend deeper than four feet below the surface, the provisions in this Section apply to the Work and the Project.

(A) **Duty to Notify.** Contractor must promptly, and before the following conditions are disturbed, provide written notice to City if Contractor finds any of the following conditions:

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

(2) Subsurface or latent physical conditions at the Worksite differing from those indicated by information about the Worksite made available to bidders prior to the deadline for submitting bids; or

(3) Unknown physical conditions at the Worksite of any unusual nature, materially different from those ordinarily encountered and generally recognized as inherent in work of the character required by the Contract Documents.

(B) **City Investigation.** City will promptly investigate the conditions and if City finds that the conditions materially differ or involve hazardous waste, and cause a decrease or increase in Contractor's cost of, or the time required for, performance of any part of the Work, City will issue a Change Order.

(C) **Disputes.** In the event that a dispute arises between City and Contractor regarding any of the conditions specified in subsection (A) above, Contractor will not be excused from any scheduled completion date provided for in the Contract Documents, but must proceed with all Work to be performed under the Contract. Contractor will retain

any and all rights provided either by the Contract or by law which pertain to the resolution of disputes between Contractor and City.

- 7.15 Trenching of Five Feet or More.** As required by Labor Code Section 6705, if the Contract Price exceeds \$25,000 and the Work includes the excavation of any trench or trenches of five feet or more in depth, a detailed plan must be submitted to City for acceptance in advance of the excavation. The detailed plan must show the design of shoring, bracing, sloping, or other provisions to be made for worker protection from the hazard of caving ground during the excavation. If the plan varies from the shoring system standards, it must be prepared by a California registered civil or structural engineer. Use of a shoring, sloping, or protective system less effective than that required by the Construction Safety Orders is prohibited.
- 7.16 New Utility Connections.** Except as otherwise specified, City will pay connection charges and meter costs for new permanent utilities required by the Contract Documents, if any. Contractor must notify City sufficiently in advance of the time needed to request service from each utility provider so that connections and services are initiated in accordance with the Project schedule.
- 7.17 Lines and Grades.** Contractor is required to use any benchmark provided by the Engineer. Unless otherwise specified in the Contract Documents, Contractor must engage a California licensed surveyor to provide all lines and grades required to execute the Work. Contractor must also provide, preserve, and replace if necessary, all construction stakes required for the Project. All stakes or marks must be set by a California licensed surveyor or a California registered civil engineer. Contractor must notify the Engineer of any discrepancies found between Contractor's staking and grading and information provided by the Contract Documents. Upon completion, all Work must conform to the lines, elevations, and grades shown in the Plans.
- 7.18 Historic or Archeological Items.**
- (A) **Contractor's Obligations.** Contractor must ensure that all persons performing Work at the Project site are required to immediately notify the Project Manager, upon discovery of any potential historic or archeological items, including historic or prehistoric ruins, burial grounds, archaeological or vertebrate paleontological site, including fossilized footprints or other archeological, paleontological or historical feature on the Project site (collectively, "Historic or Archeological Items").
- (B) **Discovery; Cessation of Work.** Upon discovery of any potential Historic or Archeological Items, Work must be stopped within an 85-foot radius of the find and may not resume until authorized in writing by City. If required by City, Contractor must assist in protecting or recovering the Historic or Archeological Items, with any such assistance to be compensated as Extra Work on a time and materials basis under Article 6, Contract Modification. Any suspension of Work required due to discovery of Historic or Archeological Items will be treated as a suspension for convenience under Article 13.
- 7.19 Environmental Control.** Contractor must not pollute any drainage course or its tributary inlets with fuels, oils, bitumens, acids, insecticides, herbicides or other harmful materials. Contractor must prevent the release of any hazardous material or hazardous waste into the soil or groundwater, and prevent the unlawful discharge of pollutants into City's storm drain system as required below. Contractor and its Subcontractors must at all times in the performance of the Work comply with all applicable federal, state, and local laws and regulations concerning pollution of waterways.

(A) **Stormwater Permit.** Contractor must comply with all applicable conditions of the State Water Resources Control Board National Pollutant Discharge Elimination System General Permit for Waste Discharge Requirements for Discharges of Stormwater Runoff Associated with Construction Activity ("Stormwater Permit").

(B) **Contractor's Obligations.** If required for the Work, a copy of the Stormwater Permit is on file in City's principal administrative offices, and Contractor must comply with it without adjustment of the Contract Price or the Contract Time. Contractor must timely and completely submit required reports and monitoring information required by the conditions of the Stormwater Permit. Contractor also must comply with all other applicable state, municipal or regional laws, ordinances, rules or regulations governing discharge of stormwater, including applicable municipal stormwater management programs.

**7.20 Noise Control.** The noise level from Contractor's operations must not exceed 86 dBA at a distance of 50 feet at any time. In addition, Contractor must comply with all applicable noise control laws, ordinances, regulations and rules, including any noise mitigation requirements in an environmental document applicable to the Project, such as a mitigated negative declaration or environmental impact report. Noise control requirements apply to all equipment used for the Work or related to the Work, including trucks, transit mixers or transient equipment that may or may not be owned by Contractor.

#### Article 8 - Payment

**8.1 Schedule of Values.** Prior to submitting its first application for payment, Contractor must prepare and submit to the Project Manager a schedule of values apportioned to the various divisions and phases of the Work, providing an itemized breakdown of all lump sum pricing previously provided in Contractor's Bid Proposal or Bid Schedule, including mobilization and demobilization. Each line item contained in the schedule of values must be assigned a value such that the total of all items equals the Contract Price. The items must be sufficiently detailed to enable accurate evaluation of the percentage of completion claimed in each application for payment, and the assigned value consistent with any itemized or unit pricing submitted with Contractor's bid.

(A) **Measurements for Unit Price Work.** Materials and items of Work to be paid for on the basis of unit pricing will be measured according to the methods stipulated in the Contract Documents. For progress payments, compensation for unit-priced items will be based on the actual quantities installed during the preceding month, with the exception of items identified by City as a "Final Pay" items on the Bid Schedule, which will be paid for based solely on City's estimated quantities, except as provided in Section 8.8, on Final Payment.

(B) **Deleted or Reduced Work.** Contractor will not be compensated for Work that City has deleted or reduced in scope, except for any labor, material or equipment costs for such Work that Contractor reasonably incurred before Contractor learned that the Work could be deleted or reduced. Contractor will only be compensated for those actual, direct and documented costs incurred, and will not be entitled to any mark up for overhead or lost profits.

**8.2 Progress Payments.** Following the last day of each month, or as otherwise required by the Special Conditions or Specifications, Contractor will submit to the Project Manager a monthly application for payment for Work performed during the preceding month based on the estimated value of the Work performed during that preceding month.

(A) **Application for Payment.** Each application for payment must be itemized to include labor, materials, and equipment incorporated into the Work, and materials and equipment installed in the Project, as well as authorized and approved Change Orders. Each pay application must be supported by Contractor's Bid Schedule or schedule of values and any other substantiating data required by the Contract Documents.

(B) **Payment of Undisputed Amounts.** City will pay the undisputed amount due within 30 days after Contractor has submitted a complete and accurate payment application, subject to Public Contract Code Section 20104.50. City will deduct a percentage from each progress payment as retention, as set forth in Section 8.5, below, and may deduct additional amounts as set forth in Section 8.3, below.

**8.3 Adjustment of Payment Application.** City may adjust or reject the amount requested, in a payment application, including application for Final Payment, in whole or in part, if the amount requested is disputed or unsubstantiated. Contractor will be notified in writing of the basis for the modification to the amount requested. City may also deduct or withhold from payment otherwise due based upon any of the circumstances and amounts listed below. Amounts withheld from payment otherwise due will be released when the basis for that withholding has been remedied and no longer exists.

(A) For Contractor's unexcused failure to perform the Work as required by the Contract Documents, including correction or completion of punch list items, City may withhold or deduct an amount based on the City's estimated cost to correct or complete the Work;

(B) For loss or damage caused by Contractor or its Subcontractors arising out of or relating to performance of the Work or any failure to protect the Worksite City may deduct an amount based on the estimated cost to repair or replace;

(C) For Contractor's failure to pay its Subcontractors and suppliers when payment is due, City may withhold an amount equal to the total of past due payments;

(D) For Contractor's failure to timely correct rejected, nonconforming, or defective Work, City may withhold or deduct any amount based on the City's estimated cost to correct or complete the Work;

(E) For any unreleased stop notice, City may withhold 125% of the amount claimed;

(F) For Contractor's failure to submit any required schedule or schedule update in the manner and within the time specified in the Contract Documents, City may withhold or deduct an amount equal to five percent of the total amount requested;

(G) For Contractor's failure to maintain or submit as-built documents in the manner and within the time specified in the Contract Documents, City may withhold or deduct an amount based on the City's estimated cost to prepare the as-builts;

(H) For Work performed without City review of Shop Drawings, when review of Shop Drawings is required before proceeding with the Work, City may deduct any amount based on the estimated costs to correct unsatisfactory Work or diminution in value;

(I) For fines assessed under the Labor Code, as required by law; or

(J) For any other costs or charges that may be offset against payments due, as provided in the Contract Documents, including liquidated damages.

**8.4 Early Occupancy.** Neither City's payment of progress payments nor its partial or full use or occupancy of the Project constitutes acceptance of any part of the Work.

**8.5 Retention.** City will retain five percent of the amount due on each progress payment, or the percentage stated in the Notice Inviting Bids, whichever is greater, as retention to ensure full and satisfactory performance of the Work.

(A) **Substitution of Securities.** As provided by Public Contract Code Section 22300, Contractor may request in writing that it be allowed, at its sole expense, to substitute securities for the retention withheld by City. Any escrow agreement entered into pursuant to this provision must fully comply with Public Contract Code Section 22300, and will be subject to approval as to form by City's legal counsel.

(B) **Release of Undisputed Retention.** All undisputed retention, less any amounts that may be assessed as liquidated damages, retained for stop notices, or otherwise withheld under Section 8.3 or Section 8.6, will be released as Final Payment to Contractor no sooner than 35 days following recordation of the notice of completion, and no later than 60 days following acceptance of the Project by City's governing body or authorized designee pursuant to Section 11.1(D) below, or, if the Project has not been accepted, no later than 60 days after the Project is otherwise considered complete under Public Contract Code Section 7107(c).

**8.6 Setoff.** City is entitled to set off any amounts due from Contractor against any payments due to Contractor. City's entitlement to setoff includes progress payments as well as Final Payment and unreleased retention.

**8.7 Payment to Subcontractors and Suppliers.** Each month, Contractor must promptly pay each Subcontractor and supplier the value of the portion of labor, materials, and equipment incorporated into the Work or delivered to the Worksite by the Subcontractor or supplier during the preceding month. Such payments must be made in accordance with the requirements of the law, and those of the Contract Documents and applicable subcontract or supplier contract.

(A) **Withholding for Stop Notice.** Pursuant to Civil Code Section 9358, City will withhold 125% of the amount claimed by an unreleased stop notice, a portion of which may be retained by City for the costs incurred in handling the stop notice claim, including attorneys' fees and costs, as authorized by law.

(B) **Joint Checks.** City reserves the right to issue joint checks made payable to Contractor and its Subcontractors or suppliers. As a condition to release of payment by a joint check, the joint check payees may be required to execute a joint check agreement in a form provided or approved by City. The joint check payees will be jointly and severally responsible for the allocation and disbursement of funds paid by joint check. Payment by joint check will not be construed to create a contractual relationship between City and a Subcontractor or supplier of any tier beyond the scope of the joint check agreement.

**8.8 Final Payment.** Contractor's application for Final Payment must comply with the requirements for submitting an application for a progress payment as stated in Section 8.2, above. Adjustments to under-payment or over-payment in previous progress payments, including adjustments to payments for unit-priced items based on actual quantities, may be included in the calculation of Final Payment. However, compensation

items for identified by City as a "Final Pay" item on the Bid Schedule (marked "F") will be based solely on the estimated quantities provided in the Bid Schedule. Only changes in quantities due to design changes will be measured and paid separately pursuant to a Change Order. The date of Final Payment is deemed to be effective on the date that City acts to release undisputed retention as final payment to Contractor, or otherwise provides written notice to Contractor of Final Payment. If the amount due from Contractor to City exceeds the amount of Final Payment, City retains the right to recover the balance from Contractor or its sureties.

- 8.9 Release of Claims.** City may, at any time, require that payment of the undisputed portion of any progress payment or Final Payment be contingent upon Contractor furnishing City with a written release of all claims against City arising from or related to the portion of Work covered by those undisputed amounts, in accordance with Civil Code Section 8120, *et seq.* Any disputed amounts may be specifically excluded from the release.
- 8.10 Warranty of Title.** Contractor warrants that title to all work, materials, or equipment incorporated into the Work and included in a request for payment will pass over to City free of any claims, liens, or encumbrances upon payment to Contractor.

#### Article 9 - Labor Provisions

- 9.1 Discrimination Prohibited.** Discrimination against any prospective or present employee engaged in the Work on grounds of race, color, ancestry, national origin, ethnicity, religion, sex, sexual orientation, age, disability, or marital status is strictly prohibited. Contractor and its Subcontractors are required to comply with all applicable federal and California laws, including the California Fair Employment and Housing Act (Government Code Sections 12900 *et seq.*), Government Code Section 11135, and Labor Code Sections 1735, 1777.5, 1777.6, and 3077.5.
- 9.2 Labor Code Requirements.**
- (A) **Eight Hour Day.** Under Labor Code Section 1810, eight hours of labor constitute a legal day's work under this Contract.
- (B) **Penalty.** Under Labor Code Section 1813, Contractor will forfeit to City as a penalty, the sum of \$25.00 for each day during which a worker employed by Contractor or any Subcontractor is required or permitted to work more than eight hours in any one calendar day or more than 40 hours per calendar week, except if such workers are paid overtime under Labor Code Section 1815.
- (C) **Apprentices.** Contractor is responsible for compliance with the requirements governing employment and payment of apprentices, as set forth in Labor Code Section 1777.5, which is fully incorporated by reference.
- (D) **Notices.** Under Labor Code Section 1771.4, Contractor is required to post all job site notices prescribed by law or regulation.
- 9.3 Prevailing Wages.** Each worker performing Work under this Contract that is covered under Labor Code Section 1720 or 1720.9, including cleanup at the Project site, must be paid at a rate not less than the prevailing wage as defined in Sections 1771 and 1774 of the Labor Code. The prevailing wage rates are available online at <http://www.dir.ca.gov/dlsr>. Contractor must post a copy of the applicable prevailing rates at the Worksite.

(A) **Penalties.** Under Labor Code Section 1775, Contractor and any Subcontractor will forfeit to City as a penalty up to \$200.00 for each calendar day, or portion a day, for each worker paid less than the applicable prevailing wage rate. Contractor must also pay each worker the difference between the applicable prevailing wage rate and the amount actually paid to that worker.

(B) **Federal Requirements.** If this Project is subject to federal prevailing wage requirements in addition to California prevailing wage requirements, Contractor and its Subcontractors are required to pay the higher of the current applicable prevailing wage rates under federal law, available online at <http://www.access.gpo.gov/davisbacon/ca.html>.

**9.4 Payroll Records.** Contractor must comply with the provisions of Labor Code Sections 1776 and 1812 and all implementing regulations, which are fully incorporated by this reference, including requirements for electronic submission of payroll records to the DIR.

(A) **Contractor and Subcontractor Obligations.** Contractor and each Subcontractor must keep accurate payroll records, showing the name, address, social security number, work classification, straight time and overtime hours worked each day and week, and the actual per diem wages paid to each journeyman, apprentice, worker, or other employee employed in connection with the Work. Each payroll record must contain or be verified by a written declaration that it is made under penalty of perjury, stating both of the following:

- (1) The information contained in the payroll record is true and correct; and
- (2) Contractor or the Subcontractor has complied with the requirements of Labor Code Sections 1771, 1811, and 1815 for any Work performed by its employees on the Project.

(B) **Certified Record.** A certified copy of an employee's payroll record must be made available for inspection or furnished to the employee or his or her authorized representative on request, to City, to the Division of Labor Standards Enforcement, to the Division of Apprenticeship Standards of the Department of Industrial Relations, and as further required by the Labor Code.

(C) **Enforcement.** Upon notice of noncompliance with Labor Code Section 1776, Contractor or Subcontractor has ten days in which to comply with requirements of this Section. If Contractor or Subcontractor fails to do so within the ten day period, Contractor or Subcontractor will forfeit a penalty of \$100.00 per day, or portion a day, for each worker for whom compliance is required, until strict compliance is achieved. Upon request by the Division of Apprenticeship Standards, or the Division of Labor Standards Enforcement, these penalties will be withheld from progress payments then due.

**9.5 Labor Compliance.** Under Labor Code Section 1771.4, the Contract for this Project, if awarded on or after January 15, 2015, is subject to compliance monitoring and enforcement by the California Department of Industrial Relations.

## Article 10 - Safety Provisions

**10.1 Safety Precautions and Programs.** Contractor and its Subcontractors are fully responsible for safety precautions and programs, and for the safety of persons and property in the performance of the Work. Contractor and its Subcontractors must comply

with all applicable safety laws, rules and regulations and seek to avoid injury, loss, or damage to persons or property by taking reasonable steps to protect its employees and other persons at the Worksite, materials and equipment stored on or off site, and property at or adjacent to the Worksite.

(A) **Reporting Requirements.** Contractor must immediately provide a written report to City of all recordable accidents and injuries occurring at the Worksite. If Contractor is required to file an accident report with a government agency, Contractor will provide a copy of the report to City.

(B) **Legal Compliance.** Contractor's safety program must comply with the applicable legal and regulatory requirements. Contractor must provide City with copies of all notices required by law or regulation.

(C) **Contractor's Obligations.** Any damage or loss caused by Contractor arising from the Work which is not insured under property insurance must be promptly remedied by Contractor.

(D) **Remedies.** If City determines, in its sole discretion, that any part of the Work or Worksite is unsafe, City may, without assuming responsibility for Contractor's safety program, require Contractor or its Subcontractor to cease performance of the Work or to take corrective measures to City's satisfaction. If Contractor fails to promptly take the required corrective measures, City may perform them and deduct the cost from the Contract Price. Contractor agrees it is not entitled to submit a Claim for damages, for an increase in Contract Price, or for a change in Contract Time based on Contractor's compliance with City's request for corrective measures pursuant to this provision.

**10.2 Hazardous Materials.** Unless otherwise specified in the Contract Documents, this Contract does not include the removal, handling, or disturbance of any asbestos or other Hazardous Materials. If Contractor encounters materials on the Worksite that Contractor reasonably believes to be asbestos or other Hazardous Materials, and the asbestos or other Hazardous Materials have not been rendered harmless, Contractor may continue Work in unaffected areas reasonably believed to be safe, but must immediately cease work on the area affected and report the condition to City. No asbestos, asbestos-containing products or other Hazardous Materials may be used in performance of the Work.

**10.3 Material Safety.** Contractor is solely responsible for complying with Section 5194 of Title 8 of the California Code of Regulations, including by providing information to Contractor's employees about any hazardous chemicals to which they may be exposed in the course of the Work. A hazard communication program and other forms of warning and training about such exposure must be used. Contractor must also maintain Material Safety Data Sheets ("MSDS") at the Worksite, as required by law, for materials or substances used or consumed in the performance of the Work. The MSDS will be accessible and available to Contractor's employees, Subcontractors, and City.

(A) **Contractor Obligations.** Contractor is solely responsible for the proper delivery, handling, use, storage, removal, and disposal of all materials brought to the Worksite and/or used in the performance of the Work. Contractor must notify the Engineer if a specified product or material cannot be used safely.

(B) **Labeling.** Contractor must ensure proper labeling on any material brought onto the Worksite so that any persons working with or in the vicinity of the material may be

informed as to the identity of the material, any potential hazards, and requirements for proper handling, protections, and disposal.

- 10.4 Hazardous Condition.** Contractor is solely responsible for determining whether a hazardous condition exists or is created during the course of the Work, involving a risk of bodily harm to any person or risk of damage to any property. If a hazardous condition exists or is created, Contractor must take all precautions necessary to address the condition and ensure that the Work progresses safely under the circumstances. Hazardous conditions may result from, but are not limited to, use of specified materials or equipment, the Work location, the Worksite condition, the method of construction, or the way any Work must be performed.

## Article 11 - Completion and Warranty Provisions

### 11.1 Final Completion.

(A) **Final Inspection.** When the Work required by this Contract is fully performed, Contractor must provide written notification to City requesting final inspection. Based on that inspection, City will prepare a punch list of items that are incomplete, incorrectly installed, or not operating as required by the Contract Documents. The omission of any such item from this punch list will not relieve Contractor from fulfilling all requirements of the Contract Documents.

(B) **Punch List.** City will deliver the punch list to Contractor and will specify the time by which all of the punch list items must be completed or corrected. The punch list may include City's estimated cost to complete each punch list item if Contractor fails to do so within the specified time. Following the final inspection, City will charge Contractor for City's staff time and any other costs incurred for City's additional inspection(s) and review(s) of incomplete or unacceptable punch list Work.

(C) **Requirements for Final Completion.** Final Completion will be achieved upon completion or correction of all punch list items, as verified by City inspection, and upon satisfaction of all other Contract requirements, including any commissioning required under the Contract Documents and submission of all final submittals, including instructions and manuals as required under Section 7.10, and as-built drawings as required under Section 7.11, all to City's satisfaction.

(D) **Acceptance.** The Project will be considered accepted upon the date specified in the Engineer's written memorandum of acceptance. The City may elect, acting in its sole discretion, to accept the Project as complete subject to exceptions for punch list items that are not completed within the time specified in the punch list. With the exception of warranty work, City's acceptance, subject to any express exceptions, terminates Contractor's duty to perform the Work.

(E) **Final Payment.** Final Payment and release of retention, less any sums withheld pursuant to the provisions of the Contract Documents, will not be made sooner than 35 days after recordation of the notice of completion. If Contractor fails to complete all of the punch list items within the specified time, City may withhold up to 150% of City's estimated cost to complete each of the remaining items from Final Payment.

### 11.2 Warranty.

(A) **General.** Contractor warrants that all materials and equipment will be new unless otherwise specified, of good quality, in conformance with the Contract Documents,

and free from defective workmanship and materials. Contractor further warrants that the Work will be free from material defects not intrinsic in the design or materials required in the Contract Documents. At City's request, Contractor must furnish satisfactory evidence of the quality and type of materials and equipment furnished. Contractor's warranty does not extend to damage caused by normal wear and tear, or improper use or maintenance.

(B) **Warranty Period.** Contractor's warranty must guarantee its Work for a period of one year from the date of City's acceptance of the Project pursuant to Section 11.1(D) (the "Warranty Period"), except when a longer guarantee is provided by a supplier or manufacturer or is required by the Specifications or Special Conditions. Contractor must obtain from its Subcontractors, suppliers and manufacturers any special or extended warranties required by the Contract Documents.

(C) **Warranty Documents.** As a condition precedent to acceptance, Contractor must supply City with all warranty and guarantee documents relevant to equipment and materials incorporated into the Work and guaranteed by their suppliers or manufacturers.

(D) **Subcontractors.** The warranty obligations in the Contract Documents apply to Work performed by Contractor and its Subcontractors, and Contractor agrees to be co-guarantor of such Work.

(E) **Contractor's Obligations.** Upon written notice from City to Contractor of any defect in the Work discovered during the Warranty Period, Contractor or its responsible Subcontractor must promptly correct the defective Work at its own cost. Contractor's obligation to correct defects discovered during the Warranty Period will continue past the expiration of the Warranty Period as to any defects in Work for which Contractor was notified prior to expiration of the Warranty Period.

(F) **City's Remedies.** If Contractor, or its responsible Subcontractor, fails to correct defective Work within ten days following notice by City, or sooner if required by the circumstances, City may correct the defects to conform to the Contract Documents at Contractor's sole expense. Contractor, or its surety, must reimburse City for its costs within 30 days following City's submission of a demand(s) for payment pursuant to this provision. If City is required to initiate legal action to compel Contractor's compliance with this provision, and City is the prevailing party in such action, Contractor and its surety are solely responsible for all of City's attorney's fees and legal costs expended to enforce Contractor's warranty obligations herein in addition to any and all costs City incurs to correct the defective Work.

(G) **Emergency Repairs.** In cases of emergency where any delay in correcting defective Work could cause harm, loss or damage, City may immediately correct the defects to conform to the Contract Documents at Contractor's sole expense. Contractor, or its surety, must reimburse City for its costs within 30 days following City's submission of a demand(s) for payment pursuant to this provision. If City is required to initiate legal action to compel Contractor's compliance with this provision, and City is the prevailing party in such action, Contractor and its surety are solely responsible for all of City's attorney's fees and legal costs expended to enforce Contractor's warranty obligations herein in addition to any and all costs City incurs to immediately correct the defective Work, including any associated overtime charges.

**11.3 Use Prior to Final Completion.** City reserves the right to occupy or make use of the Project, or any portions of the Project, prior to Final Completion if City has determined that the Project or portion of it is in a condition suitable for the proposed occupation or use, and that it is in its best interest to occupy or make use of the Project, or any portions

of it, prior to Final Completion. City will notify Contractor in writing of its intent to occupy or make use of the Project or any portions of the Project, pursuant to this provision.

(A) **Non-Waiver.** Occupation or use prior to Final Completion will not operate as acceptance of the Work or any portion of it, nor will it operate as a waiver of any of City's rights or Contractor's duties pursuant to these Contract Documents, and will not affect nor bear on the determination of the time of substantial completion with respect to any statute of repose pertaining to the time for filing an action for construction defect.

(B) **City's Responsibility.** City will be responsible for the cost of maintenance and repairs due to normal wear and tear with respect to those portions of the Project that are being occupied or used before Final Completion. The Contract Price or the Contract Time may be adjusted pursuant to the applicable provisions of these Contract Documents if, and only to the extent that, any occupation or use under this Section actually adds to Contractor's cost or time to perform the Work.

**11.4 Substantial Completion.** For purposes of determining "substantial completion" with respect to any statute of repose pertaining to the time for filing an action for construction defect, "substantial completion" is deemed to mean the last date that Contractor or any Subcontractor performs Work on the Project prior to City acceptance of the Project, except for warranty work performed under this Article.

#### Article 12 - Dispute Resolution

**12.1 Claims.** This Article applies to and provides the exclusive procedures for any Claim arising from or related to the Contract or performance of the Work.

(A) **Definition.** "Claim" means a separate demand by Contractor, submitted in writing by registered or certified mail with return receipt requested, for change in the Contract Time, including a time extension or relief from liquidated damages, or a change in the Contract Price, that has previously been submitted to City in accordance with the requirements of the Contract Documents, and which has been rejected or disputed by City, in whole or in part.

(B) **Limitations.** A Claim may only include the portion of a previously rejected demand that remains in dispute between Contractor and City. With the exception of any dispute regarding the amount of money actually paid to Contractor as Final Payment, Contractor is not entitled to submit a Claim demanding a change in the Contract Time or the Contract Price, which has not previously been submitted to City in full compliance with Article 5 and Article 6, and subsequently rejected in whole or in part by City.

(C) **Scope of Article.** This Article is intended to provide the exclusive procedures for submission and resolution of Claims of any amount, and applies in addition to the provisions of Public Contract Code Section 9204 and Sections 20104 *et seq.*, which are incorporated by reference herein.

(D) **No Work Delay.** Notwithstanding the submission of a Claim or any other dispute between the parties related to the Project or the Contract Documents, Contractor must perform the Work and may not delay or cease Work pending resolution of the Claim or other dispute, but must continue to diligently prosecute the performance and timely completion of the Work, including the Work pertaining to the Claim or other dispute.

**12.2 Claims Submission.** The following requirements apply to any Claim subject to this Article:

(A) **Substantiation.** The Claim must be submitted to City in writing, clearly identified as a "Claim" submitted pursuant to this Article 12, and must include all of the documents necessary to substantiate the Claim including the Change Order request that was rejected in whole or in part, and a copy of City's written rejection that is in dispute. The Claim must clearly identify and describe the dispute, including relevant references to applicable portions of the Contract Documents, and a chronology of relevant events. Any Claim for additional payment must include a complete, itemized breakdown of all labor, materials, taxes, insurance, and subcontract, or other costs. Substantiating documentation such as payroll records, receipts, invoices, or the like, must be submitted in support of each claimed cost. Any Claim for an extension of time or delay costs must be substantiated with schedule analysis and narrative depicting and explaining claimed time impacts.

(B) **Claim Format.** A Claim must be submitted in the following format:

(1) General introduction, specifically identifying the submission as a "Claim" submitted under this Article 12.

(2) Relevant background information, including identification of the specific demand at issue, and the date of City's rejection of that demand.

(3) Detailed explanation of the issue(s) in dispute. For multiple issues, separately number and identify each issue and include the following for each separate issue:

(a) The background of the issue, including references to relevant provisions of the Contract Documents;

(b) A succinct statement of the matter in dispute, including Contractor's position and the basis for that position;

(c) A chronology of relevant events;

(d) The identification and attachment of all supporting documents (see subsection (A), above, on Substantiation); and

(e) Use of a separate page for each issue.

(4) Summary of issues and damages.

(5) The following certification, executed by Contractor's authorized representative:

"The undersigned Contractor certifies under penalty of perjury that its statements and representations in this Claim are true and correct. Contractor warrants that this Claim is comprehensive and complete as to the matters in dispute, and agrees that any costs, expenses, or delay claim not included herein are deemed waived. Contractor understands that submission of a Claim which has no basis in fact or which Contractor knows to be false may violate the False Claims Act (Government Code Section 12650 *et seq.*)"

(C) **Submission Deadlines.**

(1) A Claim must be submitted within 15 days following the date that City notified Contractor in writing that a request for a change in the Contract Time or Contract Price, duly submitted in compliance with Article 5 and Article 6, has been rejected in whole or in part.

(2) With the exception of any dispute regarding the amount of Final Payment, any Claim must be filed on or before the date of Final Payment, or will be deemed waived.

(3) A Claim disputing the amount of Final Payment must be submitted within 15 days of the effective date of Final Payment, under Section 8.8, above.

(4) Strict compliance with these Claim submission deadlines is necessary to ensure that any dispute may be mitigated as soon as possible, and to facilitate cost-efficient administration of the Project. **Any Claim that is not submitted within the specified deadlines will be deemed waived by Contractor.**

**12.3 City's Response.** City will respond within 45 days of receipt of the Claim with a written statement identifying which portion(s) of the Claim are disputed, unless the 45-day period is extended by mutual agreement of City and Contractor or as otherwise allowed under Public Contract Code Section 9204. However, if City determines that the Claim is not adequately documented, City may first request in writing, within 30 days of receipt of the Claim, any additional documentation supporting the Claim or relating to defenses to the Claim that City may have against the Claim.

(A) **Additional Information.** If additional information is thereafter required, it may be requested and provided upon mutual agreement of City and Contractor.

(B) **Non-Waiver.** Any failure by City to respond within the times specified above may not be construed as acceptance of the Claim in whole or in part, or as a waiver of any provision of these Contract Documents.

**12.4 Meet and Confer.** If Contractor disputes City's written response, or City fails to respond within the specified time, within 15 days of receipt of City's response, or within 15 days of City's failure to respond within the applicable 45-day time period under Section 12.3, respectively, Contractor may notify City of the dispute in writing of the sent by registered or certified mail, return receipt requested, and demand an informal conference to meet and confer for settlement of the issues in dispute. If Contractor fails to dispute City's response in writing within the specified time, Contractor's Claim will be deemed waived.

(A) **Schedule Meet and Confer.** Upon receipt of the demand to meet and confer, City will schedule the meet and confer conference to be held within 30 days, or later if needed to ensure the mutual availability of each of the individuals that each party requires to represent its interests at the meet and confer conference.

(B) **Location for Meet and Confer.** The meet and confer conference will be scheduled at a location at or near City's principal office.

(C) **Written Statement After Meet and Confer.** Within ten working days after the meet and confer has concluded, City will issue a written statement identifying which portion(s) of the Claim remain in dispute, if any.

(D) **Submission to Mediation.** If the Claim or any portion remains in dispute following the meet and confer conference, within ten working days after the City issues the written statement identifying any portion(s) of the Claim remaining in dispute, the Contractor may identify in writing disputed portion(s) of the Claim, which will be submitted for mediation, as set forth below.

## 12.5 Mediation and Government Code Claims.

(A) **Mediation.** Within ten working days after the City issues the written statement identifying any portion(s) of the Claim remaining in dispute following the meet and confer, City and Contractor will mutually agree to a mediator, as provided under Public Contract Code Section 9204. Mediation will be scheduled to ensure the mutual availability of the selected mediator and all of the individuals that each party requires to represent its interests. If there are multiple Claims in dispute, the parties may agree to schedule the mediation to address all outstanding Claims at the same time. The parties will share the costs of mediation equally, except costs incurred by each party for its representation by legal counsel or any other consultants.

(B) **Government Code Claims.**

(1) Timely presentment of a Government Code Claim is a condition precedent to filing any legal action based on or arising from the Contract.

(2) The time for filing a Government Code Claim will be tolled from the time Contractor submits its written Claim pursuant to Section 12.2, above, until the time that Claim is denied in whole or in part at the conclusion of the meet and confer process, including any period of time used by the meet and confer process. However, if the Claim is submitted to mediation, the time for filing a Government Code Claim will be tolled until conclusion of the mediation, including any continuations, if the Claim is not fully resolved by mutual agreement of the parties during the mediation or any continuation of the mediation.

**12.6 Tort Claims.** This Article does not apply to tort claims and nothing in this Article is intended nor will be construed to change the time periods for filing tort-based Government Code Claims.

**12.7 Arbitration.** It is expressly agreed, under California Code of Civil Procedure Section 1296, that in any arbitration to resolve a dispute relating to this Contract, the arbitrator's award must be supported by law and substantial evidence.

**12.8 Damages.** Contractor bears the burden of proving entitlement to and the amount of any claimed damages. Contractor is not entitled to damages calculated on a total cost basis, but must prove actual damages. Contractor is not entitled to consequential damages, including home office overhead or any form of overhead not directly incurred at the Worksite; lost profits; loss of productivity; lost opportunity to work on other projects; diminished bonding capacity; increased cost of financing for the Project; extended capital costs; non-availability of labor, material or equipment due to delays; or any other indirect loss arising from the Contract. The Eichleay Formula or similar formula may not be used for any recovery under the Contract.

**12.9 Multiple Claims.** In the interest of efficiency, City, acting in its sole discretion, may elect to process multiple Claims concurrently, in which case the applicable procedures above will be based on the total amount of such Claims rather than the amount of each

individual Claim. Any such election will not operate to change or waive any other requirements of this Article.

- 12.10 Other Disputes.** The procedures in this Article 12 will apply to any and all disputes or legal actions, in addition to Claims, arising from or related to this Contract, unless and only to the extent that compliance with a procedural requirement is expressly and specifically waived by City. Nothing in this Article is intended to delay suspension or termination under Article 13.

### Article 13 - Suspension and Termination

- 13.1 Suspension for Cause.** In addition to all other remedies available to City, if Contractor fails to perform or correct work in accordance with the Contract Documents, City may immediately order the Work, or any portion of it, suspended until the cause for the suspension has been eliminated to City's satisfaction.
- (A) **Failure to Comply.** Contractor will not be entitled to an increase in Contract Time or Contract Price for a suspension occasioned by Contractor's failure to comply with the Contract Documents.
- (B) **No Duty to Suspend.** City's right to suspend the Work will not give rise to a duty to suspend the Work, and City's failure to suspend the Work will not constitute a defense to Contractor's failure to comply with the requirements of the Contract Documents.
- 13.2 Suspension for Convenience.** City reserves the right to suspend, delay, or interrupt the performance of the Work in whole or in part, for a period of time determined to be appropriate for City's convenience, and not due to any act or omission by Contractor or its Subcontractors. Upon notice by City pursuant to this provision, Contractor must immediately suspend, delay, or interrupt the Work as directed by City. The Contract Price and the Contract Time will be equitably adjusted by Change Order to reflect the cost and delay impact occasioned by such suspension for convenience. However, the time for completing the Project will only be extended if the suspension causes or will cause delay in Final Completion.
- 13.3 Termination for Default.** Contractor may be deemed in default for any material breach of or inability to perform the Contract, including Contractor's: refusal or failure to supply sufficient skilled workers, proper materials, or equipment to perform the Work within the Contract Time; refusal or failure to make prompt payment to its employees, Subcontractors, or suppliers; refusal or failure to correct rejected Work or replace or repair any damage caused by Contractor, its agents, or Subcontractors; disregard of laws, regulations, ordinances, rules, or orders of any public agency with jurisdiction over the Project; lack of financial capacity to complete the Work within the Contract Time; abandonment of the Work; or responsibility for any other material breach of the Contract requirements.
- (A) **Notice of Default.** Upon City's determination that Contractor is in default, City may provide Contractor and its surety a written notice of default. The notice may, in City's sole discretion: provide an opportunity for Contractor to immediately cure the default; inform Contractor of City's intent to cure the default; or inform Contractor of City's intent to terminate the Contract as set forth below.
- (B) **City's Right to Cure.** City may choose to cure the default through use of its own forces and charge Contractor for all resulting expenses. Such expenses may include charges for all City staff time spent and charges for any replacement contractor(s)

engaged to cure the default, and any associated expenses such as for City administrative staff time, consultant fees and attorney's fees. Interest on all expenses will also be charged, in the amount of seven percent per annum from the date of payment for each expense. City may deduct all such expenses and costs from amounts otherwise payable to Contractor under the Contract.

(C) **Notice of Termination.** Within seven calendar days after the written notice of default has been given, unless the default is otherwise cured or arrangements to cure the default have been made and memorialized in writing to City's satisfaction, City may terminate the Contract by providing written notice thereof to Contractor with a copy to Contractor's surety.

(D) **Waiver.** Time being of the essence in the performance of the Work, if Contractor's surety fails to, within seven calendar days from the date of City's notice of termination, arrange for completion of the Work in accordance with the Performance Bond, Contractor's surety will be deemed to have waived its right to complete the Work under the Contract, and City may immediately make arrangements for the completion of the Work through use of its own forces. City may use City staff or hire a replacement contractor(s), or use any other means that City determines advisable under the circumstances. Contractor and its surety will be jointly and severally liable for any additional expenses and costs incurred by City to complete the Work following termination. Such expenses may include charges for all City staff time spent and charges for any replacement contractor(s) engaged to complete the Work, and any associated expenses such as for City administrative staff time, consultant fees, and attorney's fees. Interest on all expenses will also be charged, in the amount of seven percent per annum from the date of payment for each expense. In addition, City will have the right to use any materials, supplies, and equipment belonging to Contractor and located at the Worksite for the purposes of completing the remaining Work.

(E) **Other Rights and Remedies.** No Contract termination by City, or other action City takes following such termination, will prejudice, limit or extinguish any other rights or remedies that will remain available to City by law or under the Contract Documents upon such termination. City may proceed against Contractor following Contract termination to recover all losses and costs City has suffered or incurred relating to Contractor's default.

(F) **Wrongful Termination.** If a court of competent jurisdiction or an arbitrator later determines that the termination for default was wrongful, the termination will be deemed to be a termination for convenience, and Contractor's damages will be strictly limited to the compensation provided for termination for convenience under Section 13.4, below. Contractor waives any claim for any other damages for wrongful termination including consequential damages, lost opportunity costs or lost profits.

**13.4 Termination for Convenience.** City reserves the right to terminate all or part of the Contract for convenience upon written notice to Contractor. Upon receipt of such notice, Contractor must: immediately stop the Work, including under any terms or conditions that may be specified in the notice; comply with City's instructions to protect the completed Work and materials; and use its best efforts to minimize further costs. Subject to City's directions in the notice, Contractor must not place further orders or enter into new subcontracts for materials, equipment, services or facilities, except as may be necessary to complete any portion of the Work that is not terminated. Contractor must also promptly cancel all existing subcontracts that relate to performance of the discontinued Work.

(A) **Compensation to Contractor.** In the event of City's termination for convenience, Contractor waives any claim for damages, including for loss of anticipated

profits from the Project. The following will constitute full and fair compensation to Contractor, and Contractor will not be entitled to any additional claim or compensation:

- (1) *Completed Work.* The value of its Work satisfactorily performed to date, based on Contractor's schedule of values and unpaid costs for items delivered to the Project site that were fabricated for incorporation in the Work;
- (2) *Demobilization.* Actual and substantiated demobilization costs; and
- (3) *Markup.* Five percent of the total value of the Work performed as of the date of notice of termination or five percent of the value of the Work yet to be completed, whichever is less, which is deemed to cover all overhead and profit to date.

**13.5 Effect of Any Contract Termination.** Upon any termination pursuant to this Article, City may enter upon and take possession of the Project and the Work. City may also take possession of, for the sole purpose of completing the Work, all of Contractor's tools, equipment and appliances, and all materials on the Worksite or stored off the Worksite that will be incorporated in the Work. Regardless of any Contract termination, Contractor's obligations for portions of the Work already performed will continue and the provisions of the Contract Documents will remain in effect as to any claim, indemnity obligation, warranties, guarantees, submittals of as-built drawings, instructions, or manuals, or other such rights and obligations arising prior to the termination date.

#### Article 14 - Miscellaneous Provisions

- 14.1 Assignment of Unfair Business Practice Claims.** Under Public Contract Code Section 7103.5, Contractor and its Subcontractors agree to assign to City all rights, title, and interest in and to all causes of action it may have under Section 4 of the Clayton Act (15 U.S.C. Section 15) or under the Cartwright Act (Chapter 2 (commencing with Section 16700) of Part 2 of Division 7 of the Business and Professions Code), arising from purchases of goods, services, or materials pursuant to the Contract or any subcontract. This assignment will be effective at the time City tenders Final Payment to Contractor, without further acknowledgement by the parties.
- 14.2 Provisions Deemed Inserted.** Every provision of law required to be inserted in the Contract Documents is deemed to be inserted, and the Contract Documents will be construed and enforced as though such provision has been included. If it is discovered that through mistake or otherwise that any required provision was not inserted, or not correctly inserted, the Contract Documents will be deemed amended accordingly.
- 14.3 Waiver.** City's waiver of a breach, failure of any condition, or any right or remedy contained in or granted by the provisions of the Contract Documents will not be effective unless it is in writing and signed by City. City's waiver of any breach, failure, right, or remedy will not be deemed a waiver of any other breach, failure, right, or remedy, whether or not similar, nor will any waiver constitute a continuing waiver unless specified in writing by City.
- 14.4 Titles, Headings, and Groupings.** The titles and headings used and the groupings of provisions in the Contract Documents are for convenience only and may not be used in the construction or interpretation of the Contract Documents or relied upon for any other purpose.

**14.5 Statutory and Regulatory References.** With respect to any amendments to any statutes or regulations referenced in these Contract Documents, the reference is deemed to be the version in effect on the date that that bids were due.

END OF GENERAL CONDITIONS

CITY COUNCIL  
REFERENCE ONLY

**ARTICLE 15 – SPECIAL CONDITIONS**

**SECTION 01 00 00 Supplemental to the General Conditions**

1.01 CONTENTS WITHIN THIS SECTION

- A. Contents Within this Section
- B. Intention
- C. Order of Work
- D. Submittals
- E. Hours of Work and City Holidays
- F. Builders Risk Requirement Waived
- G. Permits, Fees and License
- H. Coordination and Cooperation
- I. Maintaining Traffic and Public Safety

1.02 INTENTION

- A. Each section of these Special Provisions shall be considered to include everything necessary and reasonably incidental to the completion of the work of that section as shown and construction as specified on the plans or mentioned herein. These General Requirements and General Conditions of the Contract shall apply to each separate section of these Special Provisions and to each separate trade or contract.

1.03 ORDER OF WORK

- A. Refer to Article 5 of the General Conditions – Contract Time.
- B. As described in Article 5.2.A, after approval of the baseline schedule, the Contractor may place temporary construction fencing. Work shall commence within ten (10) days of installing any Temporary Construction Fence. Temporary construction fencing must be complete and in place before all other phases of work can commence. Failure to begin work within ten (10) days of placing temporary construction fencing shall be deemed breach of contract.
- C. Refer to 01 56 26 “Temporary Construction Fencing” found elsewhere in this section for additional information on acceptable fencing and payment.
- D. At least ten (10) working days prior to the beginning of work, the Contractor shall submit traffic control handling plans for approval. Updated traffic handling plans as required should be submitted prior to each subsequent stage of traffic handling a minimum of ten (10) working days prior to the beginning of work on that stage. Attention is directed to the “Maintaining Traffic” section of these special provisions.
- E. At least five (5) working days prior to the beginning of work, the Contractor shall notify local authorities, including the City of Fremont Police Department of his intent to begin work. The Contractor shall cooperate with the Engineer relative to handling traffic through the area and shall make his own arrangements relative to keeping the working area clear of parked vehicles. The following contact information is provided for the Contractors information only. Contractor is responsible for contacting and coordinating with local authorities and agencies.

- 1. Fremont Police Department – Dispatch (510) 790-6800

2. Fremont Fire Department – Dispatch (925) 422-7594
  3. Paramedic Plus – Operations (510) 746-5700
  4. Paramedic Plus – Dispatch ph.: (925) 422-7595  
fax: (510) 625-1486
  5. U.S. Postal Service – Fremont Main Post Office (510) 792-8655
  6. A.C. Transit – Dispatch (510) 891-4901
  7. East Bay Para Transit (510) 446-2008
  8. Fremont Unified School District – Dispatch (510) 657-1450 x13147
  9. Republic Services “Allied Waste” (Garbage Pickup) (510) 657-3500
  10. BLT – Fremont Recycling Transfer Station (510) 252-0500
- F. The Contractor shall commence construction of the project on the first chargeable work day as specified on the Notice to Proceed, which will be issued on the day of the preconstruction conference.
- G. **24 Hour Contact Number** – The Contractor shall assign a Project Superintendent who has the complete authority to make decisions on behalf of the Contractor. The Project Superintendent shall have the ability to speak, read and write in English. The Project Superintendent shall be on the job at all times during the construction and shall be available and on call 24 hours a day for the duration of the project. The Project Superintendent shall meet with the Engineer at least once per day while the project is actively under construction. Additionally, the Project Engineer shall attend all regularly scheduled job progress meetings. The Contractor shall provide to the Engineer and the Fremont Police Department a 24-hour contact number for the Project Superintendent. This number shall not direct calls to a recorder or other message taking service.
- H. **Advance Public Notification** – Not less than two (2) weeks prior to beginning work, the Contractor shall deliver written notice to all adjoining residents, businesses, tenants and other applicable parties listed above. Notice shall be given for general construction activity to occur, as well as specific activities that will, in any way, inconvenience residents/property owners/tenants or affect their operations or access to their properties. Such notice shall include the expected date for the start of construction, a general description of the construction activities that will take place, expected duration, and the name, address, and contact number of the Contractor’s Project Superintendent and of the City’s Project Engineer. A follow up notice shall then also be distributed no later than three (3) days prior to the start of construction. The follow-up notice from the Contractor should include the specific location and dates of when the work will be done, in accordance with the approved schedule. Copies of both notices shall be provided to the Engineer for approval five (5) working days prior to the initial distribution dates of each notice.
- I. **Order of work:**
1. Temporary Construction Fencing
  2. Tree Protection Fencing and Trunk Wrap Protection
  3. Install Best Management Practices (BMP’s) to prevent erosion
  4. General Construction

1.04 SUBMITTALS

- A. Refer to Article 2.5 of the General Conditions and Section 01 30 00 "Submittals" for additional information for those submittals required at the pre-construction meeting.
- B. Contractor should note that the submittal process shall begin upon issuance of award by City Council, and prior to the issuance of the notice beginning of the Contract Time.
- C. The City **WILL** provide a written notice indicating the Council award and requesting for submittals to begin. It is the Contractor's responsibility to provide submittals as required, and described, in each section of the special provisions.
- D. The intent of beginning the submittal process upon City Council award is to expedite this process and allow the Contractor the ability to begin the order and purchase of materials, especially for long lead-time items, in order to complete the contract work within the stated contract time.

1.05 WORK HOURS AND CITY HOLIDAYS

- A. There are no restrictions to work hours or days for this project. Work hours and days are as stated below and per Article 5 – Contract Time, 5.2 (H).
  - No work allowed on Saturday, without written authorization from the City Project Inspector or Engineer.
  - No work allowed on Sunday, without written authorization from the City Project Inspector or Engineer
- B. Work will not be performed on City holidays (and/or holiday weekends preceding or following identified holidays), without prior approval from Engineer. City recognized holidays are as follows:
  1. Juneteenth – Wednesday, June 19, 2024
  2. Independence Day – Thursday, July 4, 2024
  3. Labor Day – Monday, September 2, 2024
  4. Veterans Day – Observed, Monday, November 11, 2024
  5. Thanksgiving Day – Thursday, November 27, 2024
  6. The day following Thanksgiving Day – Friday, November 28, 2024
  7. The day preceding Christmas Day – Tuesday, December 24, 2024
  8. Christmas Day – Wednesday, December 25, 2024
  9. Day preceding New Year's Day – Tuesday, December 31, 2024
- C. Exceptions to this section will only be permitted upon written authorization from the Engineer.

1.06 POLLUTION LIABILITY INSURANCE REQUIRED AND MINIMUM LIMITS

- A. See General Conditions Insurance Section, Part 4.3.B(4) and Part 4.3.C(4).

1.07 PERMITS, FEES AND LICENSE

- A. Refer to Article 7.1 of the General Conditions – General Construction Provisions
- B. All permits must be obtained by the Contractor prior to the City scheduling a pre-construction meeting. At the pre-construction meeting, the Contractor shall bring the permit and permitted set of drawings to the meeting.

- B. **City of Fremont Business Tax / License:** General Contractor and all Subcontractors shall have and maintain a current City of Fremont business license, demonstrating evidence of valid workers compensation insurance and valid Contractor's license; and will have demonstrated payment of current business license fees to conduct business within the City of Fremont prior to the commencement of the work.
- C. Failure to secure and obtain the appropriate permits does not stop working days from being counted, nor will it be deemed fault of the City for allow the Contractor to proceed with work that is subsequently delayed due to lack of the appropriate permits.
- D. The Business Tax/License Dept. of the City of Fremont can be reached at 494-4790. Office hours are Monday through Friday 8 AM to 4 PM. The address is 39550 Liberty Street, at the corner of Liberty and Kearney. If you have questions about what types of businesses are allowed in residential or commercial locations, please contact the City of Fremont Planning Division at 510-494-4440. The City of Fremont uses the term *business tax* instead of *business license*. If you are a business located outside of Fremont and you will be physically coming into Fremont to conduct business, completion of an Out-of-Town Business Tax Application Form is required by the City of Fremont. Applications are available at the Development Services Center at 39550 Liberty Street at the corner of Liberty and Kearney Streets, one block from Stevenson Blvd. Office hours are Monday through Friday, 8 AM to 4PM. Applications can also be downloaded from: <http://www.ci.fremont.ca.us/business/outoftown.html>.

1.08 VERIFICATION OF CONDITIONS

- A. The Contractor shall verify all existing conditions before commencing work. All discrepancies between the plans and actual field conditions shall be immediately reported to the Engineer who shall determine if modifications in the work are necessary. The Contractor shall not modify the work without prior authorization from the Project Landscape Architect.

1.09 COORDINATION AND COOPERATION

- A. Refer to Article 2.4 of the General Conditions – Coordination of Work.
- B. The work shall be conducted under the general observation of the Engineer and shall be subject to inspection by the City of their representatives to assure strict compliance with the requirements of the Contract Documents, and all applicable building codes and other regulations. The authorized representative of the Engineer on the project site shall be those representatives or consultants designated by the Engineer to act on behalf of the City.
- C. One or more Inspectors shall periodically review the Contractor's work as the project progresses to verify conformance with the Contract Documents. The presence of the Inspectors, however, shall not relieve the Contractor of the responsibility for the proper execution of the work in accordance with all requirements of the Contract Documents and applicable building codes or other regulations. Compliance is distinctly a duty of the Contractor, and said duty shall not be avoided by any act or omission on the part of the Inspector(s).
- D. All materials and articles furnished by the Contractor shall be subject to exhaustive inspection, and no material or articles shall be used in the work until it has been inspected and accepted by the Engineer.
- E. The Contractor shall be responsible for the coordination of all the work and the coordination of the work of the Subcontractors. The Contractor shall not delegate coordination to any Subcontractor. The Contractor's on-site supervisory person shall

be present and represent the Contractor whenever a meeting is held that involves any interface between the City and any Subcontractors or suppliers. The Contractor shall resolve differences or disputes between Subcontractors concerning coordination, interfaces, or extent of work.

- F. The Contractor shall coordinate all inspections governed by permits obtained in conjunction with the work. The Contractor shall schedule all inspections with adequate advance notice, and in accordance with the requirements of the permit issuer, to assure no delays while waiting for an inspector to review the work before proceeding.
- G. It shall be the responsibility of the Contractor to coordinate all necessary utility work with the appropriate utility company. The request for work to be done by the utility company affected shall be made in sufficient time so that the utility company may perform their work in time to prevent delays to the project schedule.

1.10 MAINTAINING TRAFFIC

- A. Refer to Section 01 55 19 "Temporary Controls" found elsewhere in Article 15 herein.

1.11 OBSTRUCTIONS

- A. Protection and repair of damage of laterals and appurtenances shall be the responsibility of the Contractor.
- B. In the event that water services are broken or damaged between the meter and the point of service, the Contractor shall immediately at his own expense, repair such damage, in a manner satisfactory to the Engineer, in order that the water supply will not be interrupted for a period greater than one hour. If such interruption is sustained, it shall be the Contractor's responsibility to notify the occupants of the premises to which said services are connected so that no damage will occur on said premises. Whenever damage is done to water meters, services between the Water District mains and said meters, fire hydrants or other appurtenances, the Water District forces shall make such needed repairs at the Contractor's expense.
- C. In the event damage is done to any gas, electric, or telephone facility by the Contractor, he shall notify the respective utility company. Repairs shall be made by the utility company at the Contractor's expense.
- D. In the event that sanitary sewer laterals are broken or damaged between the point of service and the sanitary main, the Contractor shall immediately, at his own expense, repair such damage, in a temporary manner satisfactory to the Engineer, in order that service will not be interrupted for a period greater than one hour. When such interruption occurs, it shall be the Contractor's responsibility to notify the occupants of the premises to which said service is connected so that no damage will occur on said premises and to notify Union Sanitary District so that permanent repairs may be made at the Contractor's expense.
- E. The Contractor shall take precautions to prevent any damages to existing improvements and landscaping, which is to remain in place, in the work area on both public and private properties. If the existing improvements or landscaping on public or private property are damaged, the Contractor shall repair such damage, at his own expense, to the satisfaction of the Engineer.
- F. The Contractor shall verify the exact location of all existing utilities and shall notify the Engineer and the regional notification center for operator of subsurface installations at least two working days, but not more than 14 calendar days, prior to performing any excavation or other work close to any underground pipeline, conduit, duct, wire, or to the structure. The regional notification center is:

**UNDERGROUND SERVICE ALERT (USA) TEL: 1-800-227-2600**

- G. At those sites not serviced by Underground Service Alert, the Contractor shall be responsible for locating all existing utilities prior to commencing any work. Contractor shall pothole utilities to determine approximate depths of utilities.
- H. Measurement and Payment: Payment for conforming to the provisions in this section "Obstructions" not otherwise provided for, shall be considered as included in the prices paid line for the various items of work involved and no additional compensation will be allowed therefor.

**1.12 WATERING**

- A. It shall be the responsibility of the Contractor to contact the local utility district in order to obtain a temporary water meter, and provide their own source of water for all elements of work in this project. The City shall not provide a source of water.
- B. If the Contractor uses non-potable water on the project, the sources and discharge of non-potable water shall meet the California Department of Health Services water reclamation criteria and the Regional Water Quality Control Board requirements. The Contractor shall obtain either a waste water discharge permit or a waiver from the Regional Water Quality Control Board. Copies of permits or waivers from the Regional Water Quality Control Board shall be delivered to the Engineer before using non-potable water on the project.
- C. Non-potable water, if used, shall not be conveyed in tanks or drain pipes which will be used to convey potable water. There shall be no connection between non-potable water supplies and potable water supplies. Non-potable water supply, tanks, pipes, and other conveyances of non-potable water shall be labeled:

**NONPOTABLE WATER – DO NOT DRINK**

**1.13 SAW CUTTING**

- A. All existing pavement edges shall be saw cut as noted on the plans and as directed by the Engineer.
- B. Where a portion of the existing pavement surfacing is to be removed, the outline of the area to be removed shall be cut on a neat line with a power driven saw to a minimum depth of one third foot (0.33 foot) before removing the surfacing. Surfacing and base shall be removed without damage to surfacing that is to remain in place. At the Contractor's expense, damage to the surfacing which is to remain in place shall be repaired or replaced if ordered by the Engineer to a condition satisfactory to the Engineer.
- C. All required saw cutting of concrete to be removed shall be in a straight line to a minimum depth of one inch completely across the width of the concrete to be removed. The portion being removed shall be taken out in such a manner as to leave an even edge with no chips.

**1.14 CLEAN-UP**

- A. Remove all debris, waste material, tools, equipment, etc., from the project site. All materials removed shall be disposed of in accordance with the provisions in Section 7.9(D) of the General Conditions.

1.15 MEASUREMENT AND PAYMENT

- A. Full compensation for conforming to the provisions in this section “**Supplemental to the General Conditions**”, not otherwise provided for, shall be considered included in the prices paid for the various line items of work requiring testing and no additional compensation will be allowed therefor.

**END OF SECTION**

CITY COUNCIL  
REFERENCE ONLY

CITY COUNCIL  
REFERENCE ONLY

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**PART 1 GENERAL**1.01 RELATED SECTION

A. General Conditions, Part 5.2 "Schedule Requirements".

1.02 INTENTION

- A. Baseline (As-Planned) Schedule: The Project is to be complete within the total maximum working days after the date specified in the City's Notice To Proceed including all punch list items, and acceptance by the City.
- B. Refer to Section 3 of the Notice Inviting Sealed Bids for Contract Time.
1. The Baseline schedule must incorporate delivery of long-lead items without any slack in the schedule.
  2. Progress Schedule shall be the basis for evaluating job progress, payment requests, and time extension requests. Responsibility for developing Critical Path Method (CPM) schedule and monitoring actual progress as compared to Progress Schedule rests with Contractor.
  3. The progress schedule shall clearly show sequence and duration of major construction activities, interim milestones or completion dates required in the Contract, and the controlling operation or operations.
  4. Failure of Progress Schedule to include any element of the Work or any inaccuracy in Progress Schedule will not relieve Contractor from responsibility for accomplishing the Work in accordance with the Contract. City's acceptance of schedule shall be for its use in monitoring and evaluating job progress, payment requests, and time extension requests, and shall not, in any manner, impose a duty of care upon City, or act to relieve Contractor of its responsibility for means and methods of construction.
- C. City Review of Schedules: Refer to General Conditions, Part 5.2.B
1. A schedule must not show completion dates beyond the Contract requirements for the interim target dates, milestones or Contract completion. The Contract completion date shall be based on the working days designated in the Contract and not on a proposed early completion shown in the schedule.
  2. The schedule submitted shall meet, in all respects, the time and order of work requirements of the Contract. The work shall be executed in the sequence indicated in the schedule and subsequent updates and revisions. The Contractor shall be responsible for assuring that all work sequences are logical and the schedule shows a coordinated plan for complete performance of the work. Failure of the Contractor to include any element of the work required for the performance of the Contract in the network shall not relieve the Contractor from completing all work within the time limit specified for completion of the Contract. If the Contractor fails to define any element of work, activity, or logic, and the omission of error is discovered by either the Contractor or Engineer, it shall be corrected by the Contractor at the next scheduled monthly update or revision.
  3. The Contractor shall allow fifteen (15) days for the Engineer to review the schedule and provide any comments, a favorable review of the schedule, or request a meeting to review the schedule. When completed, the agreed upon Progress Schedule shall be the one used by the Contractor for planning, organizing, and

directing the work, and for reporting progress. Upon agreement, this will be deemed the Original Progress Schedule and shall be updated to reflect the current status of work.

D. Progress Schedule: Shall include or comply with following requirements:

1. Time scaled, cost and resource (labor and major equipment) loaded CPM schedule.
2. Identify the activities which constitute the controlling operations or critical path.
3. Individual activities that are not significant in themselves and create a series of parallel paths shall be grouped within major activities or combined to form a more general major activity. The actual number of activities shall be sufficient to assure adequate planning of the project and to permit monitoring and evaluation of progress and analysis of time impacts and not to primarily manage the various resources that may be used by the Contractor.
4. Major activities are defined as single activities or groups of activities that create a significant portion of the project due to location, related type of work, or common completion dates.
5. Major activities shall have durations of not less than five (5) nor more than twenty (20) working days. Milestone or transitional activities may have duration of less than five (5) days. Isolated major activities, concurrent, or combined activities may have more than twenty (20) working days when approved by the Engineer.
6. Activity durations shall be total number of actual work days required to perform that activity.
7. The start and completion dates of all items of Work, their major components, and milestone completion dates, if any.
8. City-furnished materials and equipment, if any, identified as separate activities.
9. Activities for maintaining Project Record Documents.
10. Dependencies (or relationships) between activities.
11. Processing/approval of submittals and shop drawings for all Contract-required material and equipment. Activities that are dependent on submittal acceptance or material delivery shall not be scheduled to start earlier than expected acceptance or delivery dates.
  - a. Include time for submittals, re-submittals, and reviews by City. Coordinate with accepted schedule for submission of shop drawings, samples and other submittals.
  - b. Contractor shall be responsible for all impacts resulting from re-submittal of shop drawings and submittals.
12. Procurement of major equipment, through receipt and inspection at jobsite, identified as separate activity.
  - a. Include time for fabrication and delivery of manufactured products for the Work.
  - b. Show dependencies between procurement and construction.
13. Activity description; what Work is to be accomplished and where.
14. The total cost of performing each activity shall be total of labor, material, equipment, including overhead and profit of Contractor.

15. Responsibility code for each activity corresponding to Contractor or Subcontractor responsible for performing the Work.
16. Interface with the work of other Contractors, City, and agencies such, as but not limited to, utility companies.
17. Show detailed Subcontractor Work activities. In addition, furnish copies of Subcontractor schedules upon which CPM was built.
  - a. Also furnish for each Subcontractor, as determined by City, submitted on Subcontractor letterhead a statement certifying that Subcontractor concurs with Contractor's Original CPM Schedule and that Subcontractor's related schedules have been incorporated, including activity duration, cost and resource loading.
  - b. Subcontractor schedules shall be independently derived and not a copy of Contractor's schedule.
  - c. In addition to Contractor's schedule and resource loading, obtain from electrical, mechanical and plumbing Subcontractors, and other Subcontractors as required by City, productivity calculations common to their trades, such as units per person day, feet of pipe per day per person, feet of wiring per day per person, and similar information.
  - d. Furnish schedule for Contractor/Subcontractor CPM schedule meetings which shall be held prior to submission of Original CPM schedule to City. City shall be permitted to attend scheduled meetings as an observer.
18. Activity durations shall be in Work days with the exception of the Plant Establishment Period.
19. Any such agreement shall be formalized by a Change Order. The City shall not pay for acceleration if the Contractor requests an earlier (Advanced) time of completion.
20. The City is not required to accept an earlier (advanced) schedule, i.e., one that shows early completion dates for the Contract Working Days.
21. The Contractor shall not be entitled to extra compensation in the event agreement is reached on an earlier (advanced) schedule and Contractor completes his Work, for whatever reason, beyond completion date shown in earlier (advanced) schedule but within the Contract Times.
22. A schedule showing the work completed in less than the Contract Times, which has been accepted by City, shall be considered to have Project Float. The Project Float is the time between the scheduled completion of the work and Contract Substantial Completion. Project Float is a resource available to both City and the Contractor.
23. Float Ownership: Refer to 5.2.C (1) of the General Conditions. The Project owns the float. As such, liability for delay of the Completion Date rests with the party whose actions, last in time, actually cause delay to the Completion Date.
  - a. For example, if Party A uses some, but not all of the float and Party B later uses remainder of the float as well as additional time beyond the float, Party B shall be liable for the time that represents a delay to the Completion Date.
  - b. Party A would not be responsible for the time since it did not consume the entire float and additional float remained; therefore, the Completion Date was unaffected.

- E. Recovery Schedule: Refer to General Conditions, Part 5.2.D
- F. Effect of Acknowledgement: Refer to General Conditions, Part 5.2.E
- G. Posting: Refer to General Conditions, Part 5.2.F
- H. Reservation of Rights: Refer to General Conditions, Part 5.2.G
  - 1. The City reserves the right to require additional submittals from the Contractor, to be submitted at the pre-construction meeting, that are not specifically identified herein. If so requested, the Contractor shall provide the Engineer with six (6) copies of any additional submittals, or if directed, provide all submittal electronically, if they do not coincide with a physical product material.
- I. Authorized Working Days and Times: Refer to General Conditions, Part 5.2.H
- J. Additional requirements for Work Schedules:
  - 1. Progress Schedule Updates: An update is defined as a regular monthly submittal and review of the schedule to incorporate actual progress to date by activity; any approved time adjustments, anticipated changes to planned activities, and projected completion dates. A revision is defined as a change in the future portion of the schedule that modifies logic, adds or deletes activities, or alters activities, sequences or durations.
  - 2. When the monthly update is completed, the Contractor shall meet with the Engineer to review Contract progress. At that meeting, the Contractor shall identify and discuss potential problem areas; current and anticipated delaying factors and their impacts; actions taken or proposed; proposed changes in schedule; out of sequence work; and any other topics related to job progress or scheduling. The Contractor shall update the most recent schedule to incorporate all current schedule information, including actual progress, approved adjustments of time and proposed changes in sequence and logic.
  - 3. The Engineer may use these and other information in evaluating the effect of the changes, delays, or time savings on the accepted schedule current at the time to determine the applicable adjustment of time, if any to any target date or completion date due to the changes, delays, or time savings.

**Part 2 PRODUCTS – Not Used**

**Part 3 EXECUTION**

**3.01 MEASUREMENT AND PAYMENT**

- A. Full compensation for conforming to the provisions of this section “**Project Progress Schedule**”, not otherwise provided for, shall be considered as included in prices paid for various contract items of work involved and no additional compensation will be allowed therefor.

**END OF SECTION**

**SECTION 01 25 00 Product Substitution Procedures**

**PART 1 GENERAL**

**1.01 SECTION INCLUDES**

Administrative and procedural requirements for handling requests for substitution made after Intent to Award of Contract.

**1.02 DEFINITIONS**

- A. Substitutions: Changes in products, materials, equipment, and methods of construction required by Contract Documents proposed by Contractor after Intent to Award of Contract are considered to be requests for substitutions. Following are not considered to be requests for substitutions:
1. Revisions to Contract Documents requested by City, Supervising Construction Coordinator, Project Manager, or Project Landscape Architect.
  2. Specified options of products and construction methods included in Contract Documents.
  3. Contractor's determination of and compliance with governing regulations and orders issued by governing authorities.
  4. Substitutions requested during bidding period and accepted by Addendum prior to Intent to Award of Contract, are included in Contract Documents and are not subject to requirements specified in this Section for Substitutions.

**1.03 SUBMITTALS**

- A. Requests for substitutions will not be considered before selection of Contractor. Substitutions will not be considered when:
1. Indicated on shop drawings or product data submittals without separate formal request.
  2. Requested directly by Subcontractor or supplier.
  3. Acceptance will require substantial revision of Contract Documents.
  4. Proposed changes are not in keeping with general intent of Contract Documents.
- B. Requests for substitution will be considered only within thirty-five (35) working days after Contractor selection and Intent to Award to the Contractor.
- C. The Contractor hereby agrees that failure to submit alternative product requests within the stipulated time period shall act as a waiver of any future rights to offer such substitutes, and the Contractor hereby agrees to provide one of the specific products called for in the Contract Documents. Other requests will be considered only when:
1. Specified product or method of construction cannot be provided within Contract Time. Supervising Construction Coordinator will not consider request if product or method cannot be provided as result of failure to pursue Work promptly or coordinate activities properly.
  2. Subsequent information or changes indicate specified product will not perform as intended.
  3. Requested substitution offers City substantial advantage, in cost, time, energy conservation, or other considerations, after deducting additionally responsibilities

City must assume. City's additional responsibilities include compensation to Architect for redesign and evaluation services, compensation to Supervising Construction Coordinator for additional processing and evaluation services, increase costs of other construction by City, and similar considerations.

- a. Supervising Construction Coordinator's time shall be compensated a specified for compensation of time in subsequent article titled Modification of Documents.
4. Specified product or method of construction cannot receive necessary approval by governing authority, and requested substitution can be approved.
5. Specified product or method of construction cannot be provided in manner that is compatible with other materials and where Contractor certified that substitution will overcome incompatibility.
6. Specified product or method of construction cannot be coordinated with other materials and where Contractor certifies that proposed substitution can be coordinated.
7. Specified product or method of construction cannot provide warranty required by Contract Documents and where Contractor certifies that proposed substitution provides required warranty.
- D. Do not order or install substitute products without written acceptance.
- E. Only one (1) request for substitution for each product will be considered. When substitution is not accepted, provide specified product.
- F. Project Manager, or Landscape Architect, will determine acceptability of substitutions.
- G. Submit two (2) copies of each request to the Project Manager, or Landscape Architect, through the Supervising Construction Coordinator. Requests should be on a form entitled "Substitution Request Form". Submit separate form for each substitution, and include the following information, at minimum:
  1. Identify products by Specification Section and Article numbers.
  2. Provide manufacturer's name and address, trade name of products, and model or catalog number.
  3. List fabricators and suppliers as appropriate.
  4. Document each request with complete data substantiating compliance of proposed substitution with requirements of Contract Documents including independent laboratory testing reports, approval numbers, listings, and approved assembly descriptions as requested by Supervising Construction Coordinator, Project Manager, or Project Landscape Architect, or as required by agencies having jurisdiction.
  5. Attach product data as specified in Section 01 30 00.
  6. Give itemized comparison of proposed substitution with specified product, listing variation, and reference to Specification Section and Article numbers.
  7. Give quality and performance comparison between proposed substitution and specified product.
  8. Submit written certification from manufacturer that proposed substitution is appropriate for this application.
  9. List availability of maintenance services and replacement materials.

10. State effect of substitution on construction schedule, and changes required in other Work or products.

H. By making request for substitutions, Contractor:

1. Represents that Contractor has personally investigated proposed substitute product and determined that it is equal to or superior in all respects to that specified.
2. Represents that Contractor will provide same warranty for substitution that Contractor would for that specified.
3. Will coordinate installation of accepted substitute, making such changes as may be required for Work to be compatible with substrates and adjacent materials, and complete in all respects.
4. Waive claims for additional time related to substitution which may later become apparent.
5. Certifies that cost data presented is complete and includes related costs under this Contract, including redesign costs, and waives claims for additional costs related to substitution which may later become apparent.

I. Modification of Documents: Where substitution required, for proper installation, changes to design of Work as indicated on accepted Shop Drawings, furnish drawings and specifications prepared by and bearing seal of licensed architect and engineers as appropriate, revising Contract Documents.

1. Submit revised Documents for acceptance in accordance with Section 01 30 00.
2. Revised Drawings: Sufficiently complete for proper installation of substitution and related Work.
3. If, in the City's Project Manager, or Landscape Architect's, sole judgment, proposed substitution is of such significance or deals with product or system affecting basic design or aesthetics, Contractor shall pay the Project Manager, or Project Landscape Architect, for changes required to Contract Documents as follows:
  - a. Reimburse City for time spent in changing Contract Documents at rate of 3.25 times rate of Direct Personnel Expense (DPE). DPE is defined as direct salaries of personnel engaged on Project and portion of costs of mandatory, and customary contributions and benefits related thereto, including employment taxes and other statutory employee benefits, insurance, sick leave, holidays, vacations, pensions, and similar contribution and benefits.
4. Contractor: Responsible for cost of revised Documents, obtaining and paying for review and plan check by authorities having jurisdiction, and cost of revised construction.
5. Revised drawings: Submit with Record Documents.

#### 1.04 SUBMITTAL PROCEDURES

A. Supervising Construction Coordinator's Action: If necessary, Project Manager, or Project Landscape Architect, through Supervising Construction Coordinator, will request additional information or documentation for evaluation within one (1) week of receipt of request for substitution. Supervising Construction Coordinator will notify Contractor of acceptance or rejection of substitution within two (2) weeks of receipt of request of additional information or documentation, whichever is later. Acceptance will be in form of a Field Order or Field Change Order.

1. Supervising Construction Coordinator, Project Manager, or Landscape Architect, will not make exhaustive attempt to determine products proposed for substitution are equivalent to, or can be modified in order to be equivalent to specified products.
  - a. Where extensive investigation is required by Project Manager, or Landscape Architect, as determined by Supervising Construction Coordinator, Contractor shall reimburse City for Supervising Construction Coordinator, Project Manager, or Landscape Architect's time spent in processing additional re-submittals at rate of 3.25 times rate of Direct Personnel Expense (DPE).
  - b. Use product specified if the Project Manager, Landscape Architect, or Supervising Construction Coordinator cannot make decision on use of proposed substitute with time allocated.
  - c. If accepted by the Project Manager, or Landscape Architect, products proposed for substitution are accepted subject to modifications by manufacturer, if necessary, to meet detailed requirements of Drawings, and Specifications.
- B. For Accepted Products: Submit shop drawings, product data, and samples in accordance with Section 01 30 00.
- C. Contractor's submittal, and Architect's and Supervising Construction Coordinator's acceptance of Shop Drawings, Product Data, or Samples for construction activities not complying with Contract Documents to not constitute acceptable or valid request of substitution, nor do they constitute approval.

## **PART 2 PRODUCTS**

Not Used.

## **PART 3 EXECUTION**

### **3.01 MEASUREMENT AND PAYMENT**

- A. Full compensation for conforming to the provisions in this section "**Product Substitutions**," not otherwise provided for, shall be considered as included in prices paid for the various contract items of work involved and no additional compensation will be allowed therefor.
- B. No additional payment over the original bid prices will be allowed when approved substitutes are used in lieu of the originally specified materials.

**END OF SECTION**

**SECTION 01 30 00**

**Submittals**

**PART 1 GENERAL**

**1.01 RELATED DOCUMENTS**

**A. General**

Drawings and General Conditions of the Contract, including Division 1 Specifications, apply to this Section.

1. Refer to General Conditions, Part 2.5 "Submittals"
2. Section 01 60 00 "Product Requirements" for Product Options
3. Section 01 63 00 "Product Substitution Procedures" for product substitutions.

**B. Timing and Manner of Submission:**

1. Submittals shall begin to be provided to the City immediately after award of contract by City Council. Do not submit all at one time. Submit in accordance with the sequence of procurement, fabrication and construction.
2. Make submittals far enough in advance of scheduled dates of installation to allow the time required for reviews, for securing necessary approvals, for possible revision and re-submittal, and for placing orders and securing delivery.
3. For items with long lead times, those items will be submitted first in order to get review and approvals, and submit for requisition of that items.4.

Submittal quantities:

- a. If submitted electronically, provide 1 copy in .pdf format, and all electronic .pdf submittals must be followed up with 1 hard copy mailed to the City to ensure the submittal is received.
- b. If hard copies are submitted, provide six (6) hard copy submittals.
- c. Samples: Provide 1 product sample at the required dimensions described elsewhere in these specifications, for the appropriate products.

**C. Required Content**

1. Identify each submittal and re-submittal with the following information:
  - a. Project name and address as they appear on the Contract Documents.
  - b. Contract name and number.
  - c. Contractor's name and address.
  - d. Date of submission.
  - e. Numbering System: Submittals shall be identified by sequential numbering (i.e., 001, 002, 003, etc.) Any re-submittals shall be numbered sequentially according to the original submittal number, followed by the subscript ".1, .2, .3" (i.e., 001.1, 001.2, etc.). Submittals and re-submittals shall be kept intact with the original number. Do not add new drawing or information outside the scope of the original submittal, unless specifically requested. Do not assign a new number for a re-submittal.
  - f. Reference: List Specification Section number and product reference as a cross reference for each submittal.

- g. Do not submit separate submittals for items that can be in combined submittals. Only provide separate submittals if specific items in question require re-submittal due to a "revise and resubmit" request.
2. Identify each submittal with the following additional identification:
- a. Contractor's stamp with initials or signature, certifying to review of submittal, compliance with Contract Documents, coordination with other impacted work, and verification of field measurements.
  - b. Drawing and Specification Section numbers to which the submittal applies.
  - c. Subcontractor's or supplier's name and address.
  - d. Name and telephone number of the individual to contact for additional information regarding the submittal.
  - e. Whether it is an original or a re-submittal.
3. Coordination of Submittals: Prior to submittal for the Project Manager's review, as applicable, fully coordinate material as follows:
- a. Determine and verify field dimensions and conditions, materials, catalog numbers, and similar data.
  - b. Coordinate shop drawing submittals with previously issued Addenda and Information Bulletins.
  - c. Coordinate with the various types of Work and public agencies involved.
  - d. Secure necessary approvals from public agencies and others and signify by stamp, or other means, that approvals have been secured.
  - e. Unless otherwise specifically permitted by the Project Manager, make submittals in groups containing all associated items.
4. Completeness: Submittals shall be complete; partial submittals will be rejected for not complying with the Contract Documents.
- D. Required Corrections and Re-submittals:
- 1. Subject to same terms and conditions as original submittal.
  - 2. Project Manager will accept not more than one (1) re-submittal.
    - a. Should additional re-submittals be required, Contractor shall reimburse City for Construction Manager's account and Project Manager's account for time spent in processing additional re-submittals at rate of 3.25 times rate of Direct Personnel Expense (DPE). Direct Personnel Expense is defined as direct salaries of Construction Manager's and Project Manager's personnel engaged on Project and portion of costs of mandatory, and customary contributions and benefits related thereto, including employment taxes and other statutory employee benefits, insurance, sick leave, holidays, vacations, pensions, and similar contributions and benefits.
- E. Effect of Review and Acknowledgement by City
- 1. The Project Manager, as applicable, will review the Submittals or shop Drawings; mark the submittal or shop drawings with required revisions; stamp the submittal or shop drawings and indicate "No Exceptions Taken," "Make Changes Noted," or "Revise and Resubmit". "Revise and Resubmit" stamps shall not be construed by the Contractor as a valid reason for an extension of time request.

2. Review the returned submittal or shop drawings and take appropriate action as indicated.
    - a. If submittal or shop drawings are marked "Revise and Resubmit," make revisions and indicate them with a "cloud," stamp and date, and resubmit in the same manner and number as for the original submittal.
    - b. If submittal or shop drawings are marked "No Exceptions Taken" or "Make Changes Noted", print and distribute copies for City and Inspector, as well as those required for Contractor and Subcontractors.
  3. The Project Manager, as applicable, may review at their discretion up to one re-submittal and take action, as appropriate, in the same manner as for the original submittal. If more than one re-submittal is required, any associated costs as a result of additional reviews shall be an extra service of the Project Manager, or his consultants, and will be processed as a deductive Change Order.
  4. As with the original submittal, review the returned submittals or shop drawings and take appropriate action as indicated. As specified hereinabove, resubmit and revise until final action by the Project Manager, as applicable. Final action is signified by the markings "No Exceptions Noted," or "Make Changes Noted," on the returned shop drawings.
  5. Following final action by the Project Manager, the Contractor shall make copies and distribute as required for accomplishment and inspection of the indicated Work.
  6. Only those submittals or shop drawings which bear stamps showing final review of the Contractor, or the Project Manager, or the Project Manager's consultants, or the City's consultants, as applicable, shall be used.
  7. ~~Reproduction and Mailing Costs:~~ The Contractor shall pay the reproduction and mailing costs of the sepias and all prints.
- F. Enforcement: Refer to General Conditions, Part 2.5
- G. Excessive RFI's: Refer to General Conditions, Part 2.5
- H. Additional Requirements for Submittals: See Part 3.01 herein

1.02 SHOP DRAWINGS, SUBMITTALS, PRODUCT DATA, SAMPLES, AND OTHER SUBMITTALS

- A. Shop Drawings:
  1. Submit copies, as required herein.
- B. Product Data:
  1. Comply with all requirements for submittals of material chemical content, ventilation requirements during installation, maintenance requirements, and emissions test data specified in Division 1 and technical Specification Sections.
  2. Submit in the quantity required to be returned, together with four additional copies each of brochures, catalog cuts, and similar material for mechanical, electrical, hardware, and elevator items; and three additional copies for all others.
  3. Review, processing, and distribution of Product Data shall be the same as that

for Shop Drawings.

C. Samples:

1. Submit in the size specified in the individual Specification SECTIONS, and in the quantity required to be returned, together with one additional Sample, which will be retained by the Project Manager or his consultants, or the City's consultants, as applicable.
2. Where Samples have natural variations in texture, color, or dimension, submit Samples showing the extreme range plus the middle range of variation.
3. Ship samples to the Project Manager's or consultant's office, carriage prepaid. Samples to be returned to the Contractor will be shipped, carriage collect.
4. Patterns and Colors: Unless the exact pattern and color of a product are indicated in the Contract Documents, whenever a choice of pattern or color is available for a product, submit accurate color charts and pattern charts to the Project Manager for his review and selection.
5. Other Submittals: Submit as specified in the individual Specification Section.
6. Certificates of Compliance:
  - a. Submit certificates of compliance with the associated Shop Drawings, Product Data, Samples, and other submittals required for the product.
  - b. Submit on 8-1/2 x 11 inch white paper.
  - c. Submit six (6) copies.
  - d. The Project Manager will retain the certificates of compliance; no review reply is intended.

**PART 2 PRODUCTS**

Not Used

**PART 3 EXECUTION**

**3.01 SUBMITTAL PRIOR TO BEGINNING OF WORK**

- A. At least ten (10) working days prior to the beginning of work, The Contractor shall submit traffic control handling plans for approval. Updated traffic handling plans as required should be submitted prior to each subsequent stage of traffic handling a minimum of ten (10) working days prior to the beginning of work on that stage. Attention is directed to the "Maintaining Traffic" section of these special provisions.
- B. At least five (5) working days prior to the beginning of work, the Contractor shall notify local authorities, including the City of Fremont Police Department of his intent to begin work. The Contractor shall cooperate with the Engineer relative to handling traffic through the area and shall make his own arrangements relative to keeping the working area clear of parked vehicles. The following contact information is provided for the Contractors information only. Contractor is responsible for contacting and coordinating with local authorities and agencies.
- C. **Advance Public Notification** – Not less than two (2) weeks prior to beginning work, the Contractor shall deliver written notice to all adjoining residents, businesses, tenants and other applicable parties listed above. Written notice shall include posting of Notices at affected court areas for the park and court

users. Notice shall be given for general construction activity to occur, as well as specific activities that will, in any way, inconvenience residents/property Citys/tenants or affect their operations or access to their properties. Such notice shall include the expected date for the start of construction, a general description of the construction activities that will take place, expected duration, and the name, address, and contact number of the Contractor's Project Superintendent and of the City's Engineer. A follow up notice shall then also be distributed no later than three (3) days prior to the start of construction. The follow-up notice from the Contractor should include the specific location and dates of when the work will be done, in accordance with the approved schedule. Copies of both notices shall be provided to the Engineer for approval five (5) working days prior to the initial distribution dates of each notice.

### 3.02 SUBMITTALS REQUIRED AT THE PRECONSTRUCTION MEETING

- A. The Contractor shall provide six (6) copies of each of the following submittals to the Engineer at the pre-construction meeting, if these have not been previously provided:
1. Designation of Superintendent
  2. A list of all permits and licenses the Contractor has obtained indicating the agency that issued the permit or if the permit has not been obtained, the expected date of receipt of the permit.
  3. **24 Hour Contact Number** - The Contractor shall assign a Project Superintendent who has the complete authority to make decisions on behalf of the Contractor. The Project Superintendent shall have the ability to speak, read and write in English. The Project Superintendent shall be on the job at all times during the construction and shall be available and on call 24 hours a day for the duration of the project. The Project Superintendent shall meet with the Engineer at least once per day while the project is actively under construction. Additionally, the Project Engineer shall attend all regularly scheduled job progress meetings. The Contractor shall provide to the Engineer and the Fremont Police Department a 24-hour contact number for the Project Superintendent. This number shall not direct calls to a recorder or other message taking service.
  4. Construction Schedule
  5. A **Waste Handling Plan** (See Section 01 50 50) is required within 10 days of the issuance of a Notice to Proceed.
  6. Health and Safety Plan (HASP): The Contractor shall submit a preliminary HASP at the pre- construction meeting for the review and approval of the Engineer. All edits and questions must be addressed and resolved, and a final HASP must be submitted prior to start of Work. The HASP shall conform to the requirements of Title 8 of the CCR and title 29 of the CFR, as well as all other relevant statutes and requirements.
  7. Site Operations Work Plan (SOW): A preliminary SOW shall be submitted for review and approval by the Engineer at the pre-construction meeting. The SOW shall include a detailed description of any conflicts between proposed equipment locations and landscape /tree protection measures, along with a proposed remedial plan. All edits and questions must be addressed and resolved, and a final SOW must be submitted prior to start of Work. The SOW shall identify the work areas, including a site plan showing location of offices, access, proposed stockpile/staging areas, equipment operation and storage

areas, landscape maintenance, and storm water runoff control measures. The SOW shall describe the Contractor's sequence and schedule of detailed activities for demolition, including: mobilization; termination of utilities at the property boundaries or as directed by the City; removal, segregation, and control of materials identified as potentially hazardous requiring disposal off-site; general building salvaging, recycling, and demolition; removal and disposal of hazardous and non-hazardous materials off-site; providing, placing, and compaction of fill material in basement excavation; grading; site work, and demobilization. The SOW shall also include a list of the equipment to be used for each phase of work, as well as minimum operating distances from active utilities, existing trees to remain, the skate park, the library, existing parking lots, hardscapes to remain, and a discussion of anticipated problems or difficulties and possible responses. The Contractor shall submit, as part of the SOW, a plan for minimizing the amount of dust and noise affecting the corporation yard.

8. General Contractor shall provide a list of all proposed project submittals, if not previously submitted for review.
9. Certified Payroll Reports and Statements of Compliance.

### 3.03 MEASUREMENT AND PAYMENT

Full compensation for conforming to the provisions in this section "Submittals," not otherwise provided for, shall be considered as included in prices paid for the various contract items of work involved and no additional compensation will be allowed therefor.

END OF SECTION

## SECTION 01 32 30 Photographic Documentation

### PART 1 GENERAL

#### 1.01 GENERAL

- A. Photographic documentation performed by the General Contractor and their Subcontractors for various milestones in the projects as described herein.

#### 1.02 PHOTOGRAPHIC DOCUMENTATION

- A. The Contractor shall take photographs of the existing conditions of the entire jobsite prior to the start of demolition and construction and monthly after the start of construction, and upon encountering unforeseen underground utilities or other conditions.
  - 1. Prior to construction to document conditions within the work area;
  - 2. Start of construction, including clearing and grubbing and demolition operations, as applicable;
  - 3. Upon encountering unforeseen underground utilities and other conditions;
  - 4. Anytime a problem arises that may result in a Notice of Potential Claim and the problem can be illustrated by photographs;
  - 5. Highlights of all formal Inspections; and
  - 6. Highlights of all undergrounding work and utility crossings; and
  - 7. Highlights of the Final Inspection and Acceptance by the City.
- B. Photographs shall be provided digitally, by email on thumb drives, or burned to CD's, capable of being downloaded to a personal computer on pdf or jpg format with the following requirements:
  - 1. Minimum resolution: 1024 x 768 pixels
  - 2. Colors: 24 bits per pixal.
- C. Photographs shall show an unobtrusive time and date indicator on each photo, accurately depicting the time and date when the photography was performed.
- D. CD's or thumb drives shall be labeled with the same identifying information specified above for photographs.
- E. The following information shall be furnished for each digital photograph in a manner approved by the Engineer.
  - 1. Title of Contract and Contract Number;
  - 2. Identification of subject shown;
  - 3. Station point of camera and direction of view;
  - 4. Time and date taken.

#### 1.03 DISPUTES AND POTENTIAL CLAIMS

- A. In the event a problem arises or dispute occurs which may result in a Notice of Potential Claim under Section 9-1-04 of the Caltrans Standard Specifications and the problem or dispute can be illustrated by photographs and DVD recordings, the Contractor shall provide such photographs and DVDs.

### PART 2 PRODUCTS – Not Used

**PART 3 EXECUTION**

**3.01 MEASUREMENT AND PAYMENT**

Full compensation for conforming to the provisions in this section "**Photographic Documentation**," not otherwise provided for, shall be considered as included in prices paid for the various contract items of work involved and no additional compensation will be allowed therefor.

**END OF SECTION**

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**SECTION 01 40 00 Testing and Inspection**

**PART 1 GENERAL**

1.01 RELATED SECTIONS

- A. General Conditions, Article 7.8 "Testing and Inspection"
- B. Section 01 45 00 "Quality Control"

1.02 SCOPE

- A. Testing is not a duty of the City and is solely at the discretion of the Project Engineer. Non-testing by the City does not release the Contractor from their responsibility to perform all work in conformance to the Standard Specifications and these Special Provisions.
- B. At the City's discretion, compaction testing will be performed by the City's testing laboratory and staff, or by an independent testing laboratory, currently on call through an existing Master Service Contract.

1.03 INSPECTIONS AND TESTS BY CITY

- A. The Contractor shall coordinate with the City Project Inspector to arrange all scheduling and on-site inspection and testing as needed to satisfy permit requirements for the project.
- B. It is the responsibility of the Contractor to coordinate as needed and described herein and elsewhere in these special provisions to arrange for testing and inspection. The Contractor shall notify the City Project Inspector when permitted work is ready for specified tests and inspections.
- C. Contractor Responsibilities in Inspections and Tests:
  - 1. Advanced Notification: Refer to Article 7.8 (B) of the General Conditions.
- D. Additional Testing and Inspection: Refer to Article 7.8 I, "Responsibility for Costs".

**PART 2 PRODUCTS**

**Not used**

**PART 3 EXECUTION**

3.01 MEASUREMENT AND PAYMENT

Full compensation for conforming to the provisions in this section "Testing and Inspection," not otherwise provided for, shall be considered included in the prices paid for the various line items of work requiring testing and inspection and no additional compensation will be allowed therefor.

**END OF SECTION**

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## SECTION 01 41 00 Regulatory Requirements

### PART 1 GENERAL

#### 1.01 SUMMARY

This section includes regulatory and environmental requirements applicable to Contract.

#### 1.02 SECTION INCLUDES

- A. Compliance with Regulatory Requirements
- B. Compliance with Americans with Disabilities Act

#### 1.03 RELATED SECTIONS

- A. Section 01 56 39 "Tree Protection"
- B. Section 01 57 19 "Temporary Environmental Controls"

#### 1.04 REFERENCES TO REGULATORY REQUIREMENTS

- A. Codes, laws, ordinances, rules and regulations applicable to the Work shall have full force and effect as though printed in full in the Contract. Codes, laws, ordinances, rules and regulations are not furnished to Contractor, since Contractor is assumed to be familiar with their requirements. The listing herein of applicable codes, laws and regulations for hazardous waste abatement work is supplied to Contractor as a courtesy and shall not limit Contractor's responsibility for complying with all applicable laws, regulations or ordinances having application to the Work. Where conflict among the requirements or with these specifications exists, the most stringent requirements shall be used.
- B. Contractor's work shall conform to all applicable codes, laws, ordinances, rules and regulations which are in effect on date of contracting.
- C. References on the Drawings or in the Specifications to "code" or "building code" not otherwise identified shall mean the codes specified below, together with all additions, amendments, changes, and interpretations adopted by code authorities of the jurisdiction.
- D. Codes which apply to Contract include, but are not limited to, the following:
  - 1. California Electrical Code (Part 3, Title 24, C.C.R.)
  - 2. California Mechanical Code (Part 4, Title 24, C.C.R.)
  - 3. California Plumbing Code (Part 5, Title 24, C.C.R.),
  - 4. National Electrical Code
- E. Laws, Ordinances, Rules and Regulations
  - 1. Refer to Section 01 41 10 "Regulatory Requirements Hazardous Waste", Part 1.04.
  - 2. During prosecution of Work to be done under Contract, comply with applicable laws, ordinances, rules and regulations, including, but not limited to, the following:
    - 3. Federal
      - a. Americans with Disabilities Act
      - b. Federal Water Pollution Control Act
      - c. 29 CFR, Section 1910.1001, Asbestos
      - d. 40 CFR, Subpart M, National Emission Standards for Asbestos

4. Executive Order 11246
5. State of California
  - a. California Code of Regulations:
    - I. Title 5: Education
    - II. Title 8: Industrial Regulations
    - III. Title 14: Natural Resources
    - IV. Title 17: Public Health
    - V. Title 19: Public Safety
    - VI. Title 21: Public Works
    - VII. Title 22: Social Security
    - VIII. Title 24: California Building Standards Code
    - IX. Title 25: Housing and Community Development
    - X. Title 27: Environmental Protections
  - b. California Education Code
  - c. California Public Contract Code
  - d. California Health and Safety Code
  - e. California Government Code
  - f. California Labor Code
  - g. California Civil Code
  - h. California Code of Civil Procedure
  - i. CPUC General Order 95, Rules for Overhead Electric Line Construction
  - j. CPUC General Order 128, Rules for Construction of Underground Electric Supply and Communications Systems
  - k. California Occupational Safety and Health Administration (Cal OSHA)
  - l. Occupational Safety and Health Administration (OSHA): Hazard Communications Standards.
6. State of California Agencies
  - a. California Business, Consumer Services and Housing Agency
  - b. Office of the State Fire Marshall
  - c. Office of Statewide Health Planning and Development
7. Local Agencies:
  - a. Bay Area Air Quality Management District
  - b. California Green Building Standard
  - c. City of Fremont
    - I. Per the City of Fremont Municipal Code, Title 8, 12, 18
  - d. County of Alameda and Alameda County Flood Control and Water Control District

8. Other Requirements:

- a. National Fire Protection Association (NFPA): Pamphlet 101, Life Safety.
- b. Building Energy Efficient Standards – Title 24, Part 6

1.05 COMPLIANCE WITH AMERICANS WITH DISABILITIES ACT

Contractor acknowledges that, pursuant to the Americans with Disabilities Act (ADA), programs, services and other activities provided by a public entity to the public, whether directly or through a Contractor, must be accessible to the disabled public. Contractor shall provide the services specified in this Agreement in a manner that complies with the ADA and any and all other applicable federal, state and local disability rights legislation. Contractor agrees not to discriminate against disabled persons in the provision of services, benefits or activities provided under this Agreement and further agrees that any violation of this prohibition on the part of Contractor, its employees, agents or assigns shall constitute a material breach of this Agreement.

**PART 2 PRODUCTS – Not Used**

**PART 3 EXECUTION**

3.01 MEASUREMENT AND PAYMENT

Full compensation for conforming to the provisions of this section “**Regulatory Requirement**” not otherwise provided for, shall be considered as included in prices paid for various contract items of work involved and no additional compensation will be allowed therefor.

**END OF SECTION**

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**SECTION 01 42 13 Reference Standards**

1.01 GENERAL

- A. Wherever in these Specifications references are made to the standards, specifications, or other published data of the various national, regional, or local organizations, such organizations may be referred to by their acronym or abbreviation only. As a guide to the user of these specifications, the following acronyms or abbreviations which may appear in these specifications shall have the meanings indicated herein.
- B. Additional plan specific abbreviations will be listed on the title sheet, or in related sections

1.02 SECTION INCLUDES

- A. Reference Standards
- B. Reference Standards File
- C. Abbreviations

1.03 REFERENCE STANDARDS

- A. The Contract Documents contain references to various standard specifications, codes, practices, and requirements for materials, equipment, work quality, installation, inspections, and tests, which references are published and issued by the organizations, societies, and associations listed herein by abbreviations and name. Such references are hereby made a part of the Contract Documents.
- B. Whenever a reference standard contains an administrative requirements, including measurement and payment provisions, such as the standard specification of various government entities, utility districts and other agencies, such administrative requirements will not apply to the Work of this Contract. References to such Standards will be applicable to the pertinent technical provisions only.
- C. In case of conflict between codes, reference standards, drawings and the other Contract Documents, the most stringent requirements shall govern. All conflicts shall be brought to the attention of the Engineer for clarification and directions prior to ordering or providing any materials or labor. The Contractor shall bid the most stringent requirements.
- D. All material, equipment and workmanship, specified by the number symbol, or title of a referenced standard will comply with the latest edition or revision thereof and all amendments and supplements thereto in effect on the date of the Invitation to Bid, except where a particular edition or revision thereof is indicated in the reference.
- E. Unless otherwise specified, references in the Contract Documents to "Caltrans Standard Specifications" or "Standard Specifications" will mean Caltrans Standard Specifications, 2018 Edition, including any revised standard specifications in effect on the date of the Invitation to Bid.
- F. References in the Contract Documents to the "Fremont Standard Details" or City Standard Details" will mean the City of Fremont Standard Details, current edition on the date of the Invitation to Bid.
- G. References in the Contract Documents to the "Fremont Standard Specifications" or "City Standard Specifications" will mean the City of Fremont Standard Specifications, current edition on the date of the Invitation to Bid.

1.04 REFERENCE STANDARDS FILE

- A. Referenced standards will be obtained by the Contractor and maintained in the Contractor's office. Referenced standards will be made readily available for use by the Engineer and the Contractor's staff in carrying out the quality assurance and quality control programs specified in the Contract Documents, and to assure compliance with the requirements of the codes, specifications, test methods, practices, and other standards referenced in the Contract Documents.

1.05 ABBREVIATIONS AND ACRONYMS

Wherever in the Contract Documents an organization's abbreviation or acronym is used, it will be understood to mean the full name of the respective organization as specified in the various Specification Sections, and as follows:

AA	Aluminum Association
AABC	Associated Air Balance Council
AAMA	American Architectural Manufacturer's Association
AAN	American Association of Nurserymen
AAR	Association of American Railroads
AASHTO	American Association of State Highway and Transportation Officials
ACEH	Alameda County Health Agency – Environmental Health
ACI	American Concrete Institute
ACFCD	Alameda County Flood Control District
ACWD	Alameda County Water District
AEIC	Association of Edison Illuminating Companies
AGC	Associated General Contractors
AFBMA	Anti-friction Bearing Manufacturer's Association
AI	The Asphalt Institute
AIMA	Acoustical and Insulating Materials Institute
AISC	American Institute of Steel Construction
AISI	American Iron and Steel Institute
AITC	American Institute of Timber Construction
AMCA	Air Moving and Conditioning Association
ANSI	American National Standards Institute, Inc.
APA	American Plywood Association
API	American Petroleum Institute
APTA	American Public Transportation Association
APWA	American Public Works Association
AREMA	American Railway Engineering and Maintenance of Way Association
ARI	Air Conditioning and Refrigeration Institute
ASHRAE	American Society of Heating, Refrigeration, Engineer, Inc and Air Conditioning

ASCE	American Society of Civil Engineers
ASME	American Society of Mechanical Engineers
ASNT	American Society of Non-Destructive Testing
ASQC	American Society for Quality Control
ASTM	American Society for Testing and Materials
AWPA	American Wood Preserver's Association
AWPI	American Wood Preserver's Institute
AWS	American Welding Society
AWWA	American Water Works Association
BAAQMD	Bay Area Air Quality Management District
BBC	Basic Building Code, Building Officials and Code Administrators International
BHMA	Builders Hardware Manufacturer's Association
BSI	Building Stone Institute
Cal-OSHA	California Occupational Safety and Health Administration
CALTRANS	State of California Department of Transportation
CARB	California Air Resources Board
CEQA	California Environmental Quality Act
CBC	California Building Code
CBSC	California Building Standards Commission
CLFMI	Chain Link Fence Manufacturer's Institute
CMAA	Crane Manufacturer's Association of America
CPUC	California Public Utilities Commission
COF	City of Fremont
CRSI	Concrete Reinforcing Steel Institute
CS	Commercial Standards, United States Department of Commerce
DEMA	Diesel Engines Manufacturer's Association
DHI	Door and Hardware Institute
DSI	Dimensional Stone Institute
DOT	United States Department of Transportation
DTSC	California Department of Toxic Substances Control
EEL	Edison Electric Institute
EIA	Electronic Industries Association
FFD	Fremont Fire Department
FGMA	Flat Glass Marketing Association
FM	Factory Mutual System,
FMC	Fremont Municipal Code

FS	Federal Specifications
ICC	International Code Council
ICEA	Insulated Cable Engineers Association
IEEE	Institute of Electrical and Electronic Engineers
IES	Illuminating Engineering Society
IMSA	International Municipal Signal Association
IPCEA	Insulated Power Cable Engineers Association
ICBO	International Conference of Building Officials
ISO	International Organization for Standardization
ITE	Institute of Traffic Engineers
JIC	Joint Industrial Council
LSD	Landscape Standard Details
MIA	Marble Institute of America
MSS	Manufacturer's Standardization Society
NAAMM	National Association of Architectural Metal Manufacturer's
NBFU	Nation Board of Fire Underwriters
NEBB	National Environmental Balancing Bureau
NACE	National Association of Corrosion Engineers
NBS	National Bureau of Standards
NEC	National Electrical Code
NEMA	National Electrical Manufacturer's Association
NFPA	National Fire Protection Association
NLMA	National Lumber Manufacturer's Association
NRCA	National Roofing Contractors Association
NTMA	National Terrazzo and Mosaic Association
OSHA	Occupational Safety and Health Administration (Federal)
PCA	Portland Cement Association
PCI	Pre-stressed Concrete Institute
PDI	Plumbing and Drainage Institute
PEI	Porcelain Enamel Institute
PG&E	Pacific Gas and Electric Company
PS	U.S. Products Standards
PSD	Park Standard Details
SMACNA	Sheet Metal and Air Conditioning Contractors National Association
SSPC	Steel Structures Painting Council
SWI	Sealant and Waterproof Institute

TCA	Tile Council of America
UBC	Uniform Building Code
UL	Underwriters Laboratories, Inc.
UMC	Uniform Mechanical Code
UPC	Uniform Plumbing Code
USBPR	United States Bureau of Public Roads
USD	Union Sanitary District
WCLA	West Coast Lumberman's Association
WCLIB	West Coast Lumber Inspection Bureau
WH	Warnock Hersey
WIC	Woodwork Institute of California

**END OF SECTION**

**CITY COUNCIL  
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**SECTION 01 43 00 Quality Assurance**

**PART 1 GENERAL**

1.01 SECTION INCLUDES

- A. Engineer's monitoring.
- B. Engineer's inspections and test.
- C. Inspections and Tests by Governing Authorities
- D. Inspections and Tests by Serving Utilities
- E. Test Reports.
- F. Construction Quality Assurance Records Review.
- G. Certificates of Compliance.

1.02 RELATED SECTIONS

- A. Contractor's quality control requirements are specified in Article 15 – Special Conditions, Section 01 45 00 "Quality Control".

1.03 ENGINEER'S MONITORING AND OBSERVATION

- A. The Engineer will perform inspection of the Contractor's on-site construction activities. Inspection consists of a review, observation, or inspection of Contractor personnel, material, equipment, processes, and test results, performed at random or at selected stages of the construction operations. The purpose of surveillance inspection is to determine if an action has been accomplished or if documents have been prepared in accordance with selected requirements of the Contract Documents.

1.04 ENGINEER'S INSPECTIONS AND TESTS

- A. The Engineer may perform inspections and tests as necessary to determine the Contractor's compliance with Contract Document requirements.
- B. Unless otherwise specified, samples and test specimens required under the Contract Documents will be furnished by the Contractor and prepared for testing in ample time for the completion of the necessary tests and analyses before the subject materials or articles are to be used. The Contractor will furnish all required test specimens at its own expense.
- C. For inspections and tests by the Engineer, the Engineer may provide the services of a qualified testing laboratory, soils engineer, or inspector, selected and paid for by the City.
- D. Except as otherwise provided in the Contract Documents, performance of the required initial test will be by the City or their representative, and all costs therefore will be borne by the City. The cost of any failed re-tests after the first test will be borne by the Contractor.
- E. A City-employed testing laboratory may supervise the preparation and selection of samples required for testing, as necessary.
- F. Unless otherwise specified, all testing will be in accordance with the methods prescribed in the current specified published standards, as applicable to the class and nature of the articles or materials considered. However, the City reserves the right to use any generally accepted system of sampling and testing which, in the opinion of the Engineer, will assure the City that the quality of the workmanship is in full accord with the Contract Documents.

- G. Failure of any portion of the work to meet any of the requirements of the Contract Documents will be reasonable cause for the Engineer to require the removal or correction and reconstruction of any such work at the Contractor's sole cost and expense.
- H. Testing is not a duty of the City and is solely at the discretion of the Engineer. Non-testing by the City does not release the Contractor from their responsibility to perform all work in conformance with the Contract Documents.
- I. Verification of Quality: Work will be subject to verification of quality by Engineer in accordance with provisions of the General Conditions of the Contract, the City of Fremont's Quality Assurance Program, and these Contract Documents.
  - 1. Contractor will cooperate by making Work available for inspection by the Engineer.
  - 2. Such verification may include field inspection as required.
  - 3. Contractor shall provide access to all parts of the Work.
  - 4. Whenever Contractor is ready to backfill, bury, cast in concrete, hide, or otherwise cover or make inaccessible any Work under the Contract, the Contractor shall notify the Engineer not less than four calendar days in advance of beginning such work.
  - 5. Failure by Contractor to notify Engineer shall be reasonable cause for the Engineer to require uncovering of any such work, at no cost to the City, and no applicable delay to the Contract.
- J. Provide all information and assistance, as required, for verification of quality by Engineer.
- K. Contract modifications, if any, resulting from such verification activities will be governed by applicable provisions in the General Conditions of the Contract.
- L. Rejection of Work: City reserves the right to reject all Work not in conformance to the requirements of the Drawings and Specifications.
- M. Correction of Non-Conforming Work: Non-conforming Work will be modified, replaced, repaired or redone by the Contractor at no change in Contract Price or Contract Time.
- N. Acceptance of Non-Conforming Work: Acceptance of nonconforming Work, without specific written acknowledgement and approval from the Engineer, will not relieve the Contractor of the obligation to correct such Work.
- O. Contract Adjustment for Non-Conforming Work: Should the Engineer determine that it is not feasible or in the City's interest to require non-conforming Work to be repaired or replaced, an equitable reduction in Contract Price will be made by agreement between City and Contractor. If equitable amount cannot be agreed upon, a Construction Change Order will be issued and the amount in dispute resolved in accordance with Article 12 – Dispute Resolution of the General Conditions.

1.05 INSPECTIONS AND TESTS BY THE CITY

- A. It is the responsibility of the Contractor to coordinate all aspects of work, inspection, and observation required by governing authorities having jurisdiction over the Work under this Contract. Such authorities include, but are not limited to, the City of Fremont Public Works Department, City of Fremont Building Department, City of Fremont Fire Department, and similar agencies.

- B. Except as specifically noted, scheduling and conducting such inspections is the Contractor's responsibility and will be performed at the Contractor's expense.
- C. Contractor must notify the Engineer no later than four calendar days before any inspection or testing, and must provide timely notice to the other necessary parties as specified in the Contract Documents. If Contractor schedules an inspection or test beyond specified Work hours Contractor must notify the Engineer at least four calendar days in advance for approval. If approved, Contractor must reimburse City for the cost of the overtime inspection or testing.
- D. The City may engage an inspection and testing firm. The inspection and testing firm may provide any or all of the following:
1. Provide qualified personnel at site. Cooperate with Engineer in performance of services. Engineer may direct firm, as necessary, to location of field tests.
  2. Perform specified inspection, sampling, and testing in accordance with specified standards.
  3. Ascertain compliance of materials with requirements of Contract Documents.
  4. Promptly notify Engineer of observed irregularities or non-conformance of work or products.
  5. Perform additional inspections and tests required by Engineer.
- E. Reports by City Testing and Inspection Firm: After each inspection and test, one copy of report may be submitted to the Engineer.
1. Reports may identify any of the following:
    - a. Date issued.
    - b. Project name and number.
    - c. Identification of product and Specifications Section in which Work is specified.
    - d. Name of inspector.
    - e. Date and time of sampling or inspection.
    - f. Location in Project where sampling or inspection was conducted.
    - g. Type of inspection or test.
    - h. Date of test.
    - i. Results of tests.
    - j. Comments concerning conformance with Contract Documents and other requirements.
  2. Test reports may indicate specified or required values and may include statement whether test results indicate satisfactory performance of products.
  3. Test reports and samples taken but not tested will be reported.
  4. Test reports may confirm that methods used for sampling and testing conform to specified test procedures.
  5. When requested, testing and inspection firm may provide interpretations of test results.
  6. Verification reports may be prepared, stating that tests and inspections specified or otherwise required for the project, have been completed and that material and workmanship comply with the Contract Drawings and Specifications.

F. Contractor Responsibilities in Inspections and Tests:

1. Advanced Notification: Refer to Article 7.8 (B) of the General Conditions.
2. Deliver adequate samples of materials proposed to be used, which require advance testing, together with proposed mix designs, to laboratory or designated location.
3. Cooperate with testing and inspection firm personnel and Engineer. Provide access to Work areas and off-site fabrication and assembly locations, including during weekends and after normal work hours.
4. Provide incidental labor and facilities to provide safe access to Work to be tested and inspected, to obtain and handle samples at the Project site or at source of products to be tested, and to store and cure test samples.

1.06 INSPECTIONS AND TEST SERVING UTILITIES

- A. It is the responsibility of the Contractor to coordinate all site visits of the serving utilities, as needed for the various aspects of Work.
- B. Scheduling and conducting tests and inspections required by serving utilities will be the Contractor's responsibility and will be performed at the Contractor's expense.
- C. Contractor must notify the Engineer no later than four calendar days before any inspection or testing, and must provide timely notice to the other necessary parties as specified in the Contract Documents. If Contractor schedules an inspection or test beyond specified Work hours, or on a Saturday, Sunday, or recognized City holiday, Contractor must notify the Engineer at least four calendar days in advance for approval. If approved, Contractor must reimburse the City for the cost of the overtime inspection or testing.

1.07 TEST REPORTS

- A. The Engineer will make available to the Contractor copies of all test reports for tests performed by the Engineer.

1.08 CONSTRUCTION QUALITY ASSURANCE RECORDS REVIEW

- A. The Engineer may review the Contractor's, Subcontractor's, and Supplier's quality control records and performance. The Contractor will ensure that all quality control records and places of work are open and available to the Engineer for inspection. The Engineer will give 7 calendar days notice of intention to review specific activities or installations.

1.09 CERTIFICATES OF COMPLIANCE

- A. Materials used on the basis of a certificate of compliance may be sampled and tested by the Engineer at any time. The fact that material is used on the basis of a certificate of compliance will not relieve the Contractor of its responsibility for incorporating material in the Work which conforms to the requirements of the Contract, and any such material not conforming to such requirements will be subject to rejection, whether in place or not.
- B. The City reserves the right to reject a certificate of compliance and require submittal and execution of sampling and testing procedures described herein.

**PART 2 PRODUCTS – Not Used.**

**PART 3 EXECUTION**

3.01 MEASUREMENT AND PAYMENT

Full compensation for conforming to the provisions in this Section, "**Quality Assurance**", unless specified otherwise, will be considered as included in the price paid for various contract items of work and no additional compensation will be allowed therefor.

**END OF SECTION**

CITY COUNCIL  
REFERENCE ONLY

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**SECTION 01 45 00 Quality Control**

**PART 1 GENERAL**

**1.01 SITE INVESTIGATION AND CONTROL**

- A. The Contractor shall verify all dimensions in the field and shall check all field conditions continuously during the Work. The Contractor shall be solely responsible for any inaccuracies built into the Work.
- B. The Contractor shall inspect related and appurtenant work and shall report in writing to the Engineer, any conditions which will prevent proper completion of the Work. Any required removal, repair, or replacement caused by unsuitable conditions shall be done by the Contractor at its sole cost and expense.

**1.02 RELATED SECTIONS**

- A. Section 01 33 00 "Submittal"
- B. Section 01 43 00 "Quality Assurance"

**1.03 INSPECTION OF THE WORK**

- A. General: The Work shall be conducted under the general observation of the Engineer and shall be subject to inspection by representatives of the City to assure strict compliance with the requirements of the Contract Documents.
- B. The authorized representative of the Engineer on the project site shall be those representatives or consultants designated by the Engineer to act on behalf of the City. The presence of the Inspectors, however, shall not relieve the Contractor of the responsibility for the proper execution of the Work in accordance with all requirements of the Contract Documents. Compliance is distinctly a duty of the Contractor and said duty shall not be avoided by any act or omission on the part of the inspector(s).
- C. All materials and articles furnished by the Contractor shall be subject to rigid inspection, and no material or articles shall be used in the Work until it has been inspected and accepted by the Engineer or the City.
- D. At all times during the construction, the Contractor shall prevent the formation of any airborne dust nuisance. If the Contractor fails to remove the nuisance within 2 hours, the City may order that the work be done and all expenses incurred for the performance of this work will be deducted from payments to the Contractor.

**1.04 QUALITY CONTROL**

- A. Contractor's Quality Control: Contractor shall ensure that products, services, workmanship and site conditions comply with requirements of the Drawings and Specifications by coordinating, supervising, testing and inspecting the work and by utilizing only suitably qualified personnel.
- B. Quality of Products: Unless otherwise indicated or specified, all products shall be new, free of defects and fit for the intended use.
- C. Quality Requirements: Work shall be accomplished in accordance with quality requirements of the Drawings and Specifications, including, by reference, all Codes,

laws, rules, regulations and standards. When no quality basis is prescribed, the quality shall be in accordance with the best accepted practices of the construction industry for the locale of the Project, for projects of this type.

- D. Quality of Installation: All Work shall be produced plumb, level, square and true, or true to indicated angle, and with proper alignment and relationship between the various elements.
- E. Quality Control Personnel: Contractor shall employ and assign knowledgeable and skilled personnel as necessary to perform quality control functions to ensure that the Work is provided as required.
- F. Protection of Completed Work: Take all measures necessary to preserve completed Work free from damage, deterioration, soiling and staining, until Acceptance by the City.
- G. Standards and Code Compliance and Manufacturer's Instructions and Recommendations: Unless more stringent requirements are indicated or specified, comply with manufacturer's instructions and recommendations, reference standards and building code research report requirements in preparing, fabricating erecting, installing, applying, connecting and finishing Work.
- H. Deviations from Standards and Code Compliance and Manufacturer's Instructions and Recommendations: Document and explain all deviations from reference standards and building code research report requirements and manufacturer's product installation instructions and recommendations, including acknowledgement by the manufacturer that such deviations are acceptable and appropriate for the Project.

#### 1.05 LABORATORIES

- A. Laboratory QC testing shall be conducted by qualified testing laboratories, hired through task order by the City, or performed by the City itself at its laboratory.

#### 1.06 CONTRACTOR'S QUALITY CONTROL TESTING

- A. All construction processes, procedures, and workmanship shall be inspected by the Contractor's construction Quality Control (QC) inspectors. Inspection observations, measurement, results, non-conformances, and corrective actions shall be documented on forms acceptable to the City. Inspection observation and documentation shall include description of construction activity and location by Contract Specifications Section.
- B. All materials are subject to inspection, sampling, and testing at any time before Final Acceptance of the Work.
  - 1. References in the Contract to a test designation of the American Society for Testing and Materials (ASTM) or other recognized national organization shall mean the latest revision of that test method or specification for the work, unless otherwise noted.
  - 2. Materials will be sampled and tested by the Contractor's construction QC testers and samplers. Copies of all test results will be furnished to the Contractor's Representative, the QA Manager, and the City. The exception to this is when a test is done for the Contractor as process control assuring that its process and materials source is producing an acceptable product. Process control tests usually

occur when an operation is begun and when changes occur in the source of materials or method of production.

3. The City may observe any testing performed by the Contractor's construction QC testers and samplers. If the City observes a deviation from the specified sampling or testing procedures, the City shall verbally describe the observed deviation to the Construction QC Manager, followed by a written Non-Conformance Report (NCR) covering the deviation to the Construction QC Manager and Contractor's Representative within twenty-four hours.

#### 1.07 SAMPLING AND TESTING

- A. Unless otherwise specified, all sampling and testing shall be done by the City, or their consultants, in accordance with the methods prescribed in the current standards of the ASTM or other specified published standards, as applicable to the class and nature of the article or materials considered; however, the City reserves the right to use any generally-accepted system of sampling and testing which, in the opinion of the Engineer, or the City's consultants will assure the City that the quality of the workmanship is in full accord with the Contract Documents.

#### 1.08 TIME OF INSPECTIONS AND TESTS

- A. Samples and test specimens required under the Contract Documents shall be furnished by the Contractor and prepared for testing in ample time for the completion of the necessary tests and analyses before the subject materials or articles are to be used. The Contractor shall furnish all required test specimens at its own expense. Except as otherwise provided in the Contract Documents, performance of the required initial test and first re-test will be by the City, and all costs therefore will be borne by the City; except, that the cost of any test after the first re-test shall be borne by the Contractor.
- B. Whenever the Contractor is ready to backfill, bury, cast in concrete, hide, or otherwise cover or make inaccessible any work under the Contract, the Contractor shall notify the Engineer not less than 48 hours in advance of beginning any such work of backfilling, burying, casting in concrete, hiding, covering, or making inaccessible any portion of the Work to be inspected, so that the required inspections can be scheduled and performed. Failure of the Contractor to notify the Engineer at least 48 hours in advance of any such inspections shall be reasonable cause for the Engineer to require sufficient delay in the Contractor's schedule to allow time for such inspections and any remedial or corrective work required, and all costs of such delays, including its impact or effect upon other portions of the Work shall be borne by the Contractor.
- C. Provide timely coordination for inspection by permit and code authorities.

#### 1.09 INDEPENDENT REFEREE LABORATORY

- A. The City will retain the services of an independent certified laboratory on an "on-call" basis to act as a "referee" laboratory for resolution of disputes regarding sampling and testing results reported by the City's verification samplers and testers and the Contractor's construction QC samplers and testers.
  1. The services of the "referee" laboratory may be requested by the City or by the Contractor.

2. The frequency and location of sampling and testing will be mutually agreed by the City and the Contractor prior to the referee laboratory's performing its work.
  3. The sampling and testing results determined by the "referee" laboratory shall be final and binding on both parties and not subject to disputes resolution.
- B. The party whose sampling and testing results are not confirmed and/or supported by the "referee" laboratory (i.e., the unsuccessful party) shall be responsible for payment for the "referee" services.
1. If the City is the unsuccessful party, it will make payment directly to the "referee" laboratory.
  2. If the Contractor is the unsuccessful party, the cost of the "referee" laboratory services will be deducted from the monthly progress payment(s) otherwise due, and the City will make payments to the "referee" laboratory on behalf of the Contractor.
  3. If the sampling and testing results obtained by the referee laboratory are inconclusive and do not clearly identify which party's results are correct, the cost of the referee laboratory's services will be shared equally between the Contractor and the City. The City will make full payment to the referee laboratory and the Contractor's share will be deducted from the next progress payment.
- C. The "referee" laboratory will not be associated with the Contract in any capacity or be affiliated with any party to the Contract or with any Principal Participant, the Designer and/or Subcontractor. The "referee" laboratory shall not be a department, agency, or office of any stakeholder.

#### 1.10 DOCUMENTATION

- A. Construction: The Contractor shall collect and preserve each of the following types of data in written form concurrently during the Contractor's performance of the Work, all of which shall be in a format acceptable to the City. The Contractor may use forms provided by the City or its own forms providing equivalent information. Refer to Contract Specifications Section 01 43 00, Quality Assurance for additional requirements.
1. Daily manpower and equipment reports for the Contractor and each Subcontractor for construction-related activities shall be prepared and maintained by the Contractor.
  2. A daily log for construction-related activities in a narrative form recording all significant occurrences on the Contract, including, unusual weather; asserted occurrences; events and conditions causing or threatening to cause any significant delay, disruption, or interference with the progress of any of the Work; significant injuries to persons or property; and a listing of each activity depicted on the current monthly plan update which is being actively prosecuted.
  3. For utility-related work such data shall be maintained separately for each utility facility.
  4. For harmful/hazardous material remediation work, such data shall be maintained separately for each site.
  5. Records shall document all QC operations, inspections, activities, and tests performed, including the work of Subcontractors. Such records shall include any delays encountered and work noted that does not conform to the requirements of

the Contract and design together with the corrective actions taken regarding such work.

6. Records shall document the measurement of quantities for all unit priced items, if any.

B. Test Reports:

1. Within five Days after completion of testing performed by or for the Contractor, submit test results of such tests to the City of Fremont.
  - a. Identify test reports with the information specified for Submittals in Contract Specifications Section 01 30 00, Submittal Procedures.
  - b. Include the name and address of the organization performing the test and the date(s) of the tests.
2. Test reports shall include the following information:
  - a. Actual test results compared with the Contract requirements and identification of all non-conforming items.
  - b. Calibration certificates.
3. The City of Fremont will make available to the Contractor copies of all test reports of tests performed by the City of Fremont.

C. Weekly Documentation: The Contractor shall complete and submit appropriate weekly documentation that includes factual evidence that required activities or tests have been performed, including the following:

1. The type, number, and results of QC and control activities, including reviews, inspections, tests, audits, monitoring of work performance, and materials analysis;
2. Closely-related data such as qualifications of personnel, procedures, and equipment used;
3. The identity of the QC inspector or data recorder, the type of test or observation employed, the results, the acceptability of the work, and action taken in connection with any deficiencies noted;
4. The nature of non-conforming work and causes for rejection;
5. Proposed corrective action;
6. Corrective actions taken; and
7. Results of corrective actions.

1.11 SOURCE OF MATERIALS

- A. In accordance with Contract Specifications the Contractor shall notify the City of Fremont in writing of the sources from which the Contractor proposes to obtain materials requiring City approval, certification or testing.
- B. The Contractor may use certificates of compliance for certain materials and products in lieu of the specified sampling and testing procedures.
  1. Submit any certificates required for demonstrating proof of compliance of materials with specification requirements with each lot of material delivered to the Work. The lot so certified shall be clearly identified by the certificate. Certificates shall be signed by an authorized representative of the producer or manufacturer and shall state that the material complies in all respects with Contract requirements.

2. The Project Schedules shall indicate the date scheduled for submittal of the certificates as specified in Section 01 01 00 "Project Progress Schedule". In the case of multiple shipments, each of which shall be accompanied by a certificate of compliance, the scheduled date on the Project Schedules shall indicate the initial submittal only.
3. The certificate of compliance shall be accompanied by a certified copy of test results or shall state that such test results are on file with the producer or manufacturer and shall be furnished to the City on request. The certificate shall give the name and address of the organization performing the tests, the date of the tests, and the quantity of material shipped information as specified in Contract Specifications Section 01 30 00, Submittal.
4. Materials used on the basis of a certificate of compliance may be sampled and tested by the City of Fremont at any time. The fact that material is used on the basis of a certificate of compliance shall not relieve the Contractor of its responsibility for incorporating material in the Work that conforms to the requirements of the Contract, and any such material not conforming to such requirements will be subject to rejection, whether in place or not.
5. The City reserves the right to refuse to permit the use of certain materials on the basis of a certificate of compliance.

**PART 2 PRODUCTS – Not Used**

**PART 3 EXECUTION**

3.01 MEASUREMENT AND PAYMENT

Full compensation for conforming to the provisions in this section "Quality Control" not otherwise provided for, shall be considered as included in prices paid for the various contract items of work involved and no additional compensation will be allowed therefor, unless specified otherwise.

**END OF SECTION**

**SECTION 01 50 50**

**Construction and Demolition Debris Management**

**PART 1 GENERAL**

1.01 SUMMARY

- A. This section specifies requirements for diversion of construction and demolition debris from the landfill and accepted hauling practices.
- B. Related requirements specified elsewhere include, but are not limited to:
  - 1. Fremont Municipal Code
  - 2. California Building Standards Code, most current version
  - 3. Alameda County Waste Management Authority Ordinance 2008-01

1.02 PERFORMANCE REQUIREMENT

- A. Performance Requirement: The performance requirement for this project is to divert:
  - 1. 50% of remaining construction and demolition debris to be reused or recycled
- B. The Performance Requirement shall be satisfied by providing all of the following:
  - 1. An approved Waste Handling Plan within 10 days of Notice to Proceed
  - 2. Two Debris Diversion & Disposal Reports that include:
    - receipts, weigh tags or other acceptable documentation from authorized recycling facilities or vendors that clearly indicate the materials management performance requirement was met.
    - the City of origin listed as Fremont
    - the type and weight of material reused or recycled
    - the weight of material landfilled (garbage).

1.03 DEFINITIONS

- A. **“Approved Recycling Service or Facility”** means an off-site service or facility that provides processing of material for recycling, composting or other diversion from landfill and is approved by the City of Fremont.
- B. **“Construction or Demolition Debris”** shall mean brick, mortar, concrete, plaster, scrap wood, scrap metal, sheet rock, and other such bulky wastes associated with construction, demolition, refurbishing, renovation, excavation or other similar work on or related to a structure or property.
- C. **“Conversion Rate”** means the rate set forth in the standardized Conversion Rate Table approved by the City of Fremont for use in estimating the weight or volume of materials identified in the Waste Handling Plan and Debris Diversion & Disposal Report.
- D. **“Divert”** means to use material for any purpose other than disposal in a landfill and includes reuse and recycling.
- E. **“Generator”** means an City or responsible party for a Commercial facility, which generates Recyclable Materials as a result of its business, facility or property activity, including construction sites.
- F. **“Hauler”** means any person or entity that transports garbage, recyclables, yard waste or other discarded material.

- G. **“Municipal Solid Waste”** means all putrescible and non-putrescible solid, semisolid and liquid wastes, including garbage, trash, refuse, paper, rubbish, ashes, industrial waste, Construction and Demolition Waste, and other discarded wastes.
- H. **“Recyclable Materials”** mean materials which may be returned to the economic mainstream as commodities for reuse, or for processing to create new or reconstituted products, which if not segregated from garbage would otherwise become garbage. The Recyclable Materials must be segregated from garbage. Recyclable Materials include Single Commodity Construction and Demolition Debris.
- I. **“Self-Haul”** means Generators who transport his or her own materials by using a vehicle owned by the Generator and driven by the Generator’s employees rather than using the hauling services of the City’s franchise hauler or a third party hauling company.
- J. **“Single Commodity Construction and Demolition Debris”** means Single Commodity Recyclable Materials from Commercial Generators which is source separated, and are a result of construction, remodeling, repair or demolition on pavement, houses, commercial buildings, multi-family dwellings and other structures, including construction job sites and may include single commodity materials such as bricks, mortar, scrap wood, scrap metal, and sheet rock. Soil, asphalt and concrete are exempt from this definition.

#### 1.04 SUBMITTALS

- A. The Contractor is required to submit a schedule that will describe all construction, demolition and removal procedures, sequence of activities, and schedule of activities. The schedule must be submitted within 10 calendar days after receipt of Notice to Proceed, prior to any demolition or construction activities, and must be approved by the Project Manager.
- B. The Contractor is required to submit a Waste Handling Plan to indicate how materials will be diverted from landfill and which facility or service will be used. The Waste Handling Plan must be submitted within 10 calendar days after receipt of Notice to Proceed and must be approved prior to any demolition or construction activities. Submit this form to: City Project Manager (See Notice to Bidders for contact information).
- C. The Contractor is required to submit a completed Debris Diversion & Disposal Report including receipts, weigh tags or other acceptable documentation at 50 percent completion of the Work. The report should be submitted within 30 calendar days of 50% completion of the Work.
- D. The Contractor is required to submit a completed Debris Diversion & Disposal Report including receipts, weigh tags or other acceptable documentation at 100 percent completion of the Work. The report should be submitted within 30 calendar days of the completion of the Work. Final payment will not be issued until the documentation is approved or outstanding fines resolved.
- E. Contractors who choose to self-haul construction debris instead of using Republic Services debris box will be required to submit monthly Debris Diversion & Disposal Reports.

#### 1.05 QUALITY ASSURANCE

- A. Republic Services is the only hauler authorized to haul garbage and construction debris from Fremont. The Contractor must subscribe to debris box service with Republic Services for all materials, except soil, asphalt and concrete.
- B. **Alternately, the Contractor may self-haul the construction and demolition debris, using their own employees, equipment, and vehicles, to an approved facility, if the debris**

**being hauled is an incidental part of construction or demolition services provided by the Contractor.**

- C. A City of Fremont Business tax (license) is required of all persons working in Fremont, including all Contractors, Subcontractors, and vendors.
- D. Soil, asphalt and concrete resulting from construction, remodeling, repair or demolition on pavement, houses, commercial buildings, multi-family dwellings and other structures, including construction job sites should be source separated from each other and other materials. Any hauler who pays their business tax may haul soil, asphalt, and concrete in a debris box.

1.06 **WASTE HANDLING PLAN DEVELOPMENT and IMPLEMENTATION**

- A. The Waste Handling Plan is an estimate of the amount and type of debris that will be generated from the project. It is important to create a Waste Handling Plan prior to starting the project to identify costs, potential savings and ensure proper recycling of the materials needed to achieve the diversion requirement. Estimate the amount and type of debris generated from the project, and then develop a plan for diverting the required percentage of construction and demolition debris from the landfill.
  - 1. Identify each type of debris item generated during the project (wood, scrap metal, etc.). Propose means and methods for collecting and separating each type of debris deemed reusable or recyclable. *Recommended Handling and Storage Procedures* with suggested actions for salvage or recycling of each type of demolition and construction debris are provided at the end of this section.
  - 2. Estimate the weight or volume, by number of tons or cubic yards (CY), of each item that will be reused, recycled, or disposed in a landfill. Enter this number in the appropriate columns. If the materials are to be reused on site, list that in Reuse column: i.e., "wood waste chipped on site for mulch."
  - 3. Include an estimate of each type of construction debris generated by the project. Items subject to the estimate and diversion requirement include:
    - a. Asphalt & Concrete
    - b. Brick/Masonry/Tiles
    - c. Building Materials (doors, windows, fixtures, etc.)
    - d. Cardboard
    - e. Carpet/Padding/Foam
    - f. Ceiling Tiles (acoustic)
    - g. Dirt/Soil/Clean Fill
    - h. Drywall/Sheetrock
    - i. Electrical Components (light fixtures, cables, etc.)
    - j. Landscape Debris (Plant & Tree Trimmings)
    - k. Metal
    - l. Mixed C&D (3+ materials in one load that will be taken to an approved facility for recycling)
    - m. Mechanical Debris (ducts, plumbing fixtures, etc.)
    - n. Plastic
    - o. Trash/Garbage

- p. Universal waste (thermostats, batteries, fluorescent tubes, etc.)
  - q. Wood and Pallets
4. All the asphalt/concrete must be reused or recycled. All plant debris must be separated from other materials and composted or used for mulch and delivered only to facilities approved by the city of Fremont. 65% of the remaining debris must be reused or recycled to comply with the CalGreen Building Code. Asphalt, concrete and plant debris do not count toward meeting the 65% diversion requirement.
  5. List the name of an approved recycling facility for each type of debris. Contact the facility and verify that they can accept that debris item in the proposed quantities anticipated. Schedule each debris item and list the recycling service and recycling company name, telephone number, address, and person contacted. Number, address, and person contacted.
  6. Implementation
    - a. Maintain a log of each load, of each debris category item diverted from landfill and materials sent to recycling facilities. Log any debris sent to a Class III landfill separately. Maintain the receipts and weigh tags from all disposal and recycling activities.
    - b. Include the following information in the log: type of load, load weight, name of recycling service or facility, and date accepted by recycling service or by facility.
    - c. The Project Manager reserves the right to audit the log at any time. Contractor shall retain and provide to Project Manager all weight tickets, copies of receipts, invoices, and any other documentation related to the recycling or disposal of generated debris.
    - d. Units of measure: Use same units as stated in the approved plan "good faith" estimate of construction or demolition debris (tons or cubic yards).
  7. Designate specific on-site area(s) to facilitate separation of materials for potential reuse, salvage, and recycling. Do not mix garbage with materials designated for reuse, recycling or composting. Loads designated for recycling may not contain more than 10% garbage by weight or volume.
    - a. Keep garbage bins and pile areas neat and clean. Signage is required to clearly mark bins for each category of debris.
    - b. When ordering a debris box, be sure to specify that the materials must be recycled, not landfilled. Inform the debris box vendor that you will require documentation that clearly states the city of origin as Fremont, identifies the type and weight of material reused or recycled.
    - c. Landscape/plant debris: Separate plant and tree debris from other materials. The landscape debris must be composted, chipped, used for mulch or fuel. It is illegal to dispose of plant debris in an Alameda County landfill. Landscape debris shall not be taken out of county to avoid this requirement.
  8. Training and Coordination
    - a. Provide on-site instruction of appropriate salvage, reuse, separation, handling, and recycling methods to be used by all entities at the appropriate stages of the Project.
      - i. Provide copies of the Waste Handling Plan to all on-site supervisors, each Subcontractor, and the Project Manager.
      - ii. Include construction debris management on the agenda of meetings. At a minimum, discuss mandatory recycling requirements and debris management issues at the following meetings:

9. Pre-demolition/pre-construction meeting
  - a. Regularly scheduled job-site meeting.

**PART 2 PRODUCTS**

**2.01 MATERIALS, EQUIPMENT AND FACILITIES**

- A. Furnish all materials, tools, equipment, devices, appurtenances, and services required for performing the salvage, demolition, and construction. Dispose of debris in a safe, acceptable manner, at approved facilities. Burying of trash and debris on the site is not permitted.
- B. Republic Services is the only approved hauler for materials in Fremont. The Contractor must subscribe to debris box service for garbage and recycling with Republic Services.
- C. The Contractor may self-haul construction and/or demolition debris to an approved recycling/disposal facility, only if they use their own equipment, vehicles and employees, as part of a total construction or demolition project. Such debris removal must be provided incidentally to construction or demolition services provided by the Contractor. It is illegal to subcontract with a third party to haul garbage. Contractor can continue to self-haul construction debris off-site if all these conditions are met:
  1. Contractor is providing a construction or demolition service on site and the debris removal is an incidental part of the work performed; and
  2. Contractors use their own employees, company vehicles and equipment; and,
  3. Contractors deliver the construction debris to an approved facility (see list of approved facilities)
  4. All Contractors and Subcontractors must be licensed to do business in Fremont.
  5. The following facilities and service providers are approved to accept Construction & Demolition Debris for recycling:

Name of Facility	Address	Phone
Fremont Recycling & Transfer Station	41149 Boyce Road, Fremont	(510) 252-0500
Newby Island Landfill	1601 Dixon Landing Road, Milpitas	(408) 432-1234
Zanker Material Processing Facility	675 Los Esteros Road, San Jose	(408) 263-2384
Davis Street Recycling and Transfer Station	2615 Davis Street, San Leandro	(510) 563-4257
Berkeley Transfer Station	1201 2 <sup>nd</sup> St, Berkeley	(510) 981-7270
Vasco Road Landfill	4001 N. Vasco Rd, Livermore	(925) 447-0491
Guadalupe Landfill	15999 Guadalupe Mines Road, San Jose	(408) 268-1670

- a. Approved services for specific construction debris types:

<i>Type of Material</i>	<i>Approved Hauling Options</i>
<b>All Garbage and Construction / Demolition debris</b>	<ul style="list-style-type: none"> <li>• Republic Services debris box or</li> <li>• Contractor self-haul to approved facility in list</li> </ul>
<b>Source separated recyclable material</b> (wood, plant debris/green waste, sheetrock)	<ul style="list-style-type: none"> <li>• Republic Services debris box or</li> <li>• Contractor self-haul to approved facility in list</li> </ul>
<b>Source separated recycling commodity</b> (metal, cardboard)	<ul style="list-style-type: none"> <li>• Republic Services debris box or</li> <li>• Contractor self-haul to approved facility or</li> <li>• Any approved debris box from metal recycler (Schnitzer Steel, Sims Metals etc.)</li> </ul>
<b>Source separated inerts</b> (concrete, asphalt, soil)	<ul style="list-style-type: none"> <li>• Republic Services debris box or</li> <li>• Contractor self-haul to approved facility/quarry or</li> <li>• Any approved debris box from inert recycler (Vulcan Materials, etc.)</li> </ul>
<p><b>The following materials cannot be collected in Republic Services debris box containers:</b>            asbestos, batteries and other universal waste, hazardous waste, liquids, paint, oils, medical waste, tires, televisions, monitors and appliances containing chlorofluorocarbons(CFCs)</p>	

**PART 3 EXECUTION**

3.02 GENERAL

- A. Conduct construction and demolition to minimize interference with adjacent building areas.
- B. Conduct operations with minimum interference to public or private access.
- C. Maintain protected egress and access at all times.
- D. Perform demolition work in accordance with ANSI A10.6 and the accepted demolition plan or program.
- E. Remove items indicated for demolition within the limits of the work, and as required to complete the work of this contract. Do not remove anything beyond the limits of work indicated without prior written approval by the Project Manager. If in doubt whether to remove an item, obtain written approval by the Project Manager prior to proceeding.
- F. Remove materials from site as work progresses, at least weekly. Remove debris from the site so that its presence will not delay the progress of the work. Debris shall be the property of the Contractor and shall be removed and disposed of in a legal manner off the City's property.

3.03 MEASUREMENT AND PAYMENT

Full compensation for conforming to the provisions in this section '**Construction and Demolition Waste Management**,' not otherwise provided for, shall be considered included in prices paid for the various contract items of work involved and no additional compensations will be allowed therefor, unless specified otherwise.



**Waste Handling Plan – Form 1  
(Pre-Demolition/Pre-Construction)**

Permit BLD/PWC # \_\_\_\_\_ Project Name: \_\_\_\_\_  
 Project Address: \_\_\_\_\_ Date: \_\_\_\_\_  
 Contractor: \_\_\_\_\_ Contact: \_\_\_\_\_  
 Phone: \_\_\_\_\_ Email: \_\_\_\_\_

To complete the form:

Place an "X" in the box next to each type of material that will be generated from the project

- For materials that will go in a **debris box**, place the **X** in that column
- For materials that the **Contractor will self-haul** using their own equipment and vehicles, place the **X** in that column
- For materials that the Contractor will self-haul, provide the name of an approved recycling facility where the materials will be delivered. Approved facilities are listed in Section 01505.
- Return form to Project Manager within 10 days of the Notice to Proceed

Material	Republic Services Debris Box	Other Debris Box	Self-Haul by Contractor	Name of Recycling Facility
Asphalt / Concrete / Soil (100% recycle required)				
Plant or Tree Debris – (100% compost required)				
Cardboard				
Metal				
Mixed Construction & Demolition debris (i.e., wood, metal, drywall, plastic)				
Wood – unpainted/pallets				
Garbage				
Universal Waste (thermostats, batteries)				
Other:				

**Recycling requirements:**

- **RECYCLE 100%** of asphalt and concrete and non-contaminated dirt/soil.
- **RECYCLE 65%** of remaining materials generated
- **SEPARATE** plant/tree debris from other material, and **COMPOST 100%** of plant debris

**SAVE ALL RECEIPTS FOR SUBMITTAL WITH A FINAL DIVERSION REPORT**

**Failure to provide proper documentation may result in a \$1000/ton penalty for each ton not recycled.**

### Waste Handling Plan Acknowledgment

**The Foreman for each Subcontractor that comes on site is to receive a copy of the Construction Waste Handling Plan and complete this Acknowledgment Form.**

I have read the Waste Handling Plan for the project; I understand the goals of this plan and agree to follow the procedures in the Fremont Municipal Code (*Fremont Municipal Code § 8.40-Solid Waste, Recyclables and Organics Management Ordinance* [www.fremont.gov](http://www.fremont.gov)).

DATE	SUBCONTRACTOR	FOREMAN NAME	SIGNATURE

All Subcontractors shall comply with the project's Waste Handling Plan, and will provide weight and waste diversion data for their debris. Foremen shall sign the Acknowledgment Sheet.

Subcontractors who fail to comply with the Waste Handling Plan will be subject to backcharges or withholding of payment, as deemed appropriate. For instance, Subcontractors who contaminate debris boxes that have been designated for a single material type will be subject to back charge or withheld payment.

1. The project's debris diversion requirements are 100% of asphalt, concrete, inerts, plant debris.
2. 65% of the remaining waste that is generated on this jobsite will be diverted from the landfill and recycled for other use.
3. The Waste Handling Plan identifies the materials that will be generated from the project, and the diversion strategy for each material type.
4. Waste prevention and recycling activities will be discussed at the beginning of Subcontractor meetings. As each new Subcontractor comes on-site, the Contractor will present him/her with a copy of the Plan and provide a tour of the jobsite to identify materials to be salvaged and the procedures for handling jobsite debris. All Subcontractor foremen will acknowledge in writing that they have read and will abide by the Plan. The Waste Handling Plan will be posted at the jobsite trailer.
5. Salvage: Excess materials that cannot be used in the project should be returned to the vendor, the City, or donated to charity if feasible.
6. Republic Services debris boxes will be delivered to the Fremont Recycling and Transfer Station. As site conditions permit, additional debris boxes should be used for particular phases of construction (e.g., concrete and wood waste) to ensure the highest amount of diversion possible.
7. In the event that the waste diversion rate is projected to be lower than what is required, then a strategy of source-separated waste diversion and/or waste stream reduction will be implemented. Source separated waste refers to jobsite waste that is not mixed but is instead allocated to a debris box designated for a single material type, such as clean wood or metal.
8. In the event that site use constraints (such as limited space) restrict the number of debris boxes that can be used for collection of designated waste the project Superintendent will, as deemed appropriate, allocate specific areas onsite where individual material types are to be consolidated. These collection points are not to be contaminated with non-designated waste types.



**Debris Diversion & Disposal Report  
(After Demolition/Construction)**

**Attach copies of receipts, gate tags, or other verifying documentation.**

**Applicant must reuse or recycle 100% of asphalt/concrete and 65% of remaining items.** Failure to provide documentation will result in a \$1000 per ton penalty for each ton not recycled or documented properly.

Permit BLD/PWC: \_\_\_\_\_ Project Name: \_\_\_\_\_  
 Project Address: \_\_\_\_\_ + \_\_\_\_\_ Date: \_\_\_\_\_  
 Contractor: \_\_\_\_\_ Contact: \_\_\_\_\_  
 Phone: \_\_\_\_\_ Email: \_\_\_\_\_  
 Type of Project: \_\_\_\_\_

Material	Tons/CY Reused	Tons/CY Recycled	Tons/CY Landfilled	Name of Recycling Facility or Service
Asphalt/ Concrete <b>(100% reuse/recycle required)</b>			N/A	
Plant or Tree Debris <b>(100% reuse/compost required)</b>			N/A	
Dirt/Clean Fill			N/A	
Brick				
Building Materials (doors, etc.)				
Cardboard				
Carpet/Foam/Padding				
Dry Wall/Sheetrock (scrap)				
Film Plastic				
Metal				
Mixed Const & Demo (C&D) (ie, wood, metal, drywall, film plastic)				
Plastic				
Wood - unpainted or pallets				
Wood - treated/painted	N/A	N/A		
Garbage	N/A	N/A		
Other:				
<b>Totals:</b>				

**PROJECT SUMMARY**

- A. Total tons of materials salvaged, reused, or recycled (except A/C): \_\_\_\_\_
- B. Total tons of materials landfilled (not recycled): \_\_\_\_\_
- C. Total tons of materials generated for the project (Line A+B): \_\_\_\_\_
- D. Percentage of materials recycled/reused (divide A by C x100%): \_\_\_\_\_ %

<b>For City Use Only:</b>	<b>Approved</b> _____ <b>Waived</b> _____	<b>Not Approved</b> _____ <b>Staff Initials</b> _____
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**Instructions for Completing the Debris Diversion & Disposal Report (DDDR)**

The Debris Diversion & Disposal Report lists the actual amount of debris that was generated from the construction or demolition project.

1. Identify each type of debris item generated during the project (wood, scrap metal, etc.)
2. Enter the total weight or volume (by number of tons or cubic yards (CY)), of each item that was reused, recycled, or disposed in a landfill. Enter this number in the appropriate columns.
3. All the asphalt/concrete was to be reused or recycled. 65% of everything else must be reused or recycled to comply with the mandatory debris recycling ordinance. The asphalt and concrete tonnage will not count towards the 65% diversion requirement.
4. Attach receipts from each of the approved facilities or service providers who recycled/processed that material. Approved facilities are listed below. The receipts must indicate "Fremont" as the City of origin to be accepted.
5. If the materials were reused on site, list that in Reuse column: i.e., "wood waste chipped on site for mulch" with an estimate of the weight or volume.

**Attach all receipts from all facilities and vendors for each type of debris item. The totals on the form should match the receipts. This report is due within 30 days of completing your project. An approved report and the receipts are needed before Final Permit Approval is issued from the City and the Building Inspector. Failure to provide documentation will result in a \$1000 per ton penalty for each ton not recycled.**

**Approved Construction & Demolition Recycling Facilities**

**Fremont Recycling & Transfer Station:**

41149 Boyce Road, Fremont 510-252-0500  
[www.fremont-recycling.com](http://www.fremont-recycling.com)

**Newby Island Landfill/Recycling Facility**

1601 Dixon Landing Road, Milpitas 408-262-1401

**Zanker Material Processing Facility**

675 Los Esteros Road, San Jose 408-263-2384

**Guadalupe Landfill**

15999 Guadalupe Mines Road, San Jose 408-268-1670

**Davis St Transfer Station**

2615 Davis Street, San Leandro 510-563-4257

**Stevens Creek Quarry (concrete, asphalt, dirt only)**

12100 Stevens Canyon Rd, Cupertino 408-253-2512

## Recommended Handling & Storage Procedures

Item or Material by Division	Suggested Action
<b>02 SITEWORK</b>	
Asphalt Paving	<i>Salvageable</i> – reuse for temporary road construction
Chain Link Fencing	<i>Salvageable</i> – roll up chain link and cut off posts to maximum length allowable – all accessories (tops, clamps, bolts, straps, etc.) should be kept together in a container
Wood Fencing	<i>Salvageable</i> – if possible, dismantle in sections for easy re-erection – cut posts off at ground level
<b>03 CONCRETE</b>	
Cast-in-place Concrete	Recyclable – typically too large for salvage and reuse
Precast Concrete	Recyclable – typically too large for salvage and reuse
<b>04 MASONRY</b>	
Concrete Block	<i>Salvageable</i> – if not concrete filled – recyclable if filled with concrete
Paving Stones	<i>Salvageable</i> – stack and palletize for easy removal
Brick	<i>Salvageable</i> – if set with lime-based mortar – recyclable if set with concrete
Decorative Concrete Block	<i>Salvageable</i> – if not concrete filled – recyclable if filled with concrete
<b>05 METALS</b>	
Reinforcing Steel (rebar)	Recyclable – usually imbedded in concrete, therefore not reusable
Steel Flashing	Recyclable – usually not in suitable condition for reuse
Interior Metal Wall Studs	Recyclable – usually too time-consuming to save in suitable condition for reuse, therefore not cost effective
Structural Steel	<i>Salvageable</i> – includes I-Beams, H-Beams, Square Tubing, Pipe, and Chanel Iron – ensure care is taken to keep straight – separate by size
Cast Iron	Recyclable – usually too old and brittle for reuse
Copper	Recyclable – rarely salvageable due to the possibility of damage while salvaging
Aluminum Soffit	Recyclable – usually not in suitable condition for reuse
Misc. Steel	<i>Salvageable</i> – includes Pipe, Q-decking, Square-tubing, and Wilson joists – prior to reuse must determine the item's structural ability to meet current Building Code – recyclable if item is bent or structural ability is compromised
<b>06 WOOD &amp; PLASTICS</b>	
Regular Wood Framing	<i>Salvageable</i> – all lumber should be slated, stacked and banded according to dimension and lengths – stacks should be kept uniform (ensure piles fit in accordance with truck deck, 2 piles side by side – each pile a maximum width of 4' each including dunnage, height of piles should be kept to 3' to 4' maximum)
Pressure Treated Wood Framing	<i>Salvageable</i> – same as regular wood framing
Regular Plywood Sheathing	<i>Salvageable</i> – stack in piles keeping full sheets together and partial sheets together in lots of 50 pieces – separate by ¼", ½", ¾" etc. – recommend stacking nail side to nail side – materials should be kept dry by covering with plastic sheeting (which also allows for air flow)
Pressure Treated Plywood Sheathing	<i>Salvageable</i> – same as regular plywood sheathing
Laminated Beams	<i>Salvageable</i> – beams should be kept dry by covering with plastic sheeting (which also allows for air flow) – beams should be supported in such a manner as to keep them straight and should be slated to allow air flow when stacked
Wood Truss Joists	<i>Salvageable</i> – joists should be supported in such a manner as to keep them straight and should be slated to allow air flow when stacked
Heavy Timbers/Posts	<i>Salvageable</i> – all timber should be sorted according to dimension and length – timber should be slated to allow air flow – all damaged ends should be trimmed
Washroom Counters	<i>Salvageable</i> – if fixtures are removed, counters can be stored vertically (like doors) – should be kept dry

<b>07 THERMAL &amp; MOISTURE PROTECTION</b>	
Roofing Gravel	<i>Salvageable</i> – reusable
Fiberglass Bat Insulation	<i>Salvageable</i> – prevent from getting wet
Rigid Fiberglass Insulation	<i>Salvageable</i> – prevent from getting wet
Plastic sheeting Rigid Insulation	<i>Salvageable</i> – stack and band for easy transport
Copper Flashing	Recyclable – usually too time-consuming to save in suitable condition for reuse, therefore not cost effective
Roof Drains, Metal	Recyclable – usually too time-consuming to save in suitable condition for reuse, therefore not cost effective
<b>08 DOORS &amp; WINDOWS</b>	
Doors, Metal	<i>Salvageable</i> – remove with full frame and hardware – apply a metal self-tapping screw through the top of the door to hold it in the frame as a unit – label keys belonging to each door
Doors, Wood	<i>Salvageable</i> – remove with full frame and hardware – nail the door through the frame to hold it from falling out of jam – label keys belonging to each door
Bi-Fold Doors, Metal	<i>Salvageable</i> – remove all hardware parts and attach to door (e.g. in plastic zip lock bags) – wrap track on edge of door with duct tape
Bi-Fold Doors, Wood	<i>Salvageable</i> – remove all hardware parts and attach to door (e.g. in plastic zip lock bags) – screw track on edge of door
Overhead Doors	<i>Salvageable</i> – must be removed carefully (as doors have spring assembly) – all door hardware should be kept together – (hinges, screws, rollers, guides etc.) – door panels should be stacked face to face – track should be marked left and right – note, it is very important to keep all parts
Patio Doors	<i>Salvageable</i> – remove and stand vertically with drains to the bottom
Metal Sliding Doors	<i>Salvageable</i> – dependent on size and condition of doors and hardware – recyclable otherwise if too large or not in suitable condition
Mechanical Closures	<i>Salvageable</i> – dependent on age and physical condition
Panic Hardware	<i>Salvageable</i> – keep all parts together (e.g. in plastic zip lock bags)
Pre-Finished Aluminum Thermal Windows	<i>Salvageable</i> – dependent on the size – smaller windows should always be salvaged but larger windows can be difficult to resell (especially if fixed/non-opening)
Metal Sash Windows	<i>Salvageable</i> – if small but limited marketability – recyclable otherwise by removing glass and recycling metal frame
Glass Panels	<i>Salvageable</i> – limited marketability – store vertically or horizontally – ensure panels are level or supported in order to prevent damage to the seal
Unframed Glass Mirrors	<i>Salvageable</i> – store vertically on either a carpet, cardboard, or rubber surface for protection – recommend storing face to face
Store Fronts	<i>Salvageable</i> – best to be kept in one unit – store on A-frame rack and tie back
Skylights	<i>Salvageable</i> – ensure that seal is not broken – store where not affected by wind
<b>09 FINISHES</b>	
Carpet/Carpet Tiles	<i>Salvageable</i> – if in very good condition
Terra Cotta Tile	<i>Salvageable</i> – dependent on quantities available, since sometimes difficult to match if product is obsolete
Metal Base Board	Recyclable – usually too time-consuming to save in suitable condition for reuse, therefore not cost effective
Wood Base Board	<i>Salvageable</i> – remove, de-nail (if possible), stack face to face, and hold together with duct tape – keep sizes and lengths together (if possible)
Hardwood Flooring	<i>Salvageable</i> – if tongue and groove flooring – remove, de-nail, stack face to face, and hold together with duct tape – keep lengths together (if possible) – thin strip flooring is not salvageable (i.e. too thin for refinishing)
Gypsum Panels	Recyclable
Wood Paneling	<i>Salvageable</i> – if in suitable condition (otherwise not cost effective) – recyclable otherwise (with clean wood)
Metal Suspension System	Recyclable – usually too time-consuming to save in suitable condition for reuse, therefore not cost effective

Specialty Wood Finishes	<i>Salvageable</i> – includes mantels, built-in shelving, bookcases, crown moldings, and window sash – keep all trim work where possible
Cabinets	<i>Salvageable</i> – includes kitchen and bathroom cabinets – if possible, take a picture of the cabinet in place prior to removal as this will give potential purchasers a better idea of how the cabinets look in place
<b>10 SPECIALTIES</b>	
Toilet Partitions	<i>Salvageable</i> – must ensure all hardware is available
Framed Glass Mirrors	<i>Salvageable</i> – store vertically on either a carpet or rubber surface for protection – recommend storing face to face
Towel Racks, Soap Dispensers, and Other Washroom Accessories	<i>Salvageable</i> – for commercial products ensure all keys to open units are included
Shower Stalls	<i>Salvageable</i> – if acrylic stalls – ensure the stall is suitable condition and not cracked or overly worn
Chalk boards and White boards	<i>Salvageable</i> – limited marketability
Metal Lockers	<i>Salvageable</i> – for ease of handling and resale, break into units of 6 or less
Old Hardware	<i>Salvageable</i> – includes glass door knobs, hinges, and antique items
<b>11 EQUIPMENT</b>	
Household appliances	<i>Salvageable</i> – if in suitable condition – includes fridges, stoves, stove hoods, dish washers, freezers, washers, and dryers
<b>12 FURNISHINGS</b>	
Metal File Cabinets	<i>Salvageable</i> – only if in very good condition
Metal Shelving Unit	<i>Salvageable</i> – when dismantling ensure all bolts, nuts and additional parts are kept together – recommend marking sections in order to make it easier to re-erect
Commercial Metal Racking	<i>Salvageable</i> – when dismantling ensure all bolts, nuts and additional parts are kept together – recommend marking sections in order to make it easier to re-erect
Metal Desks	<i>Salvageable</i> – if in suitable condition – recyclable otherwise
Wood Desks	<i>Salvageable</i> – if in suitable condition
<b>14 CONVEYING SYSTEMS</b>	
Winches	<i>Salvageable</i> – if in suitable mechanical condition – recyclable otherwise
<b>15 MECHANICAL</b>	
Toilets	<i>Salvageable</i> – limited marketability due to current Plumbing Codes (white toilets offer the best resale opportunities) – recyclable otherwise (sink with concrete and taps with metals)
Urinals	<i>Salvageable</i> – ensure there are no cracks and the hardware is working – recyclable otherwise (sink with concrete and taps with metals)
Ceramic Sinks	<i>Salvageable</i> – if in suitable condition, recyclable otherwise (sink with concrete and taps with metals)
Stainless Steel Tanks	<i>Salvageable</i> – dependent on previous usage (sometimes required to destroy for contamination reasons) – recyclable otherwise
Janitor Sinks	<i>Salvageable</i> – dependent on its condition – recyclable if made of old cast iron
Bath Tubs	<i>Salvageable</i> – dependent on its condition and color (white bath tubs and old claw foot tubs offer the best resale opportunities)
Radiators	<i>Salvageable</i> – dependent on size (for ease of handling, 20 to 25 ribs would be the maximum suitable size for salvaging) and condition – recyclable otherwise
Hot Water Tanks	<i>Salvageable</i> – if year 1995 or newer – recyclable otherwise
Suspended Blow Heaters	<i>Salvageable</i> – if year 1990 or newer – recyclable otherwise
Wall Mount Radiators	<i>Salvageable</i> – dependent on its condition – recyclable otherwise
Wall Mount Electric Radiators	<i>Salvageable</i> – dependent on its condition – recyclable otherwise
Mechanical Water Pumps & Tanks	<i>Salvageable</i> – dependent on its condition – recyclable otherwise
Oil Interceptor	Recyclable

Oil Storage Tank	<i>Salvageable</i> – dependent on previous usage (sometimes required to destroy for contamination reasons) – recyclable otherwise
Ventilation Ducting	<i>Salvageable</i> – dependent on size and condition – recyclable otherwise
Metal Ducting\Ventilation	<i>Salvageable</i> – dependent on size and condition – recyclable otherwise
Stainless Steel Ducting\Ventilation	<i>Salvageable</i> – dependent on size and condition – recyclable otherwise
Copper Ducting\Ventilation	<i>Salvageable</i> – dependent on size and condition – recyclable otherwise
Aluminum Ducting\Ventilation	<i>Salvageable</i> – dependent on size and condition – recyclable otherwise
Piping	<i>Salvageable</i> – dependent on size and condition – recyclable otherwise
Exhaust Hood, Galvanized Metal	<i>Salvageable</i> – dependent on size and condition – recyclable otherwise
Exhaust Hood, Stainless Steel	<i>Salvageable</i> – dependent on size and condition – recyclable otherwise
Supply Air Units	<i>Salvageable</i> – dependent on age, condition, and marketability – specialty item
Return Air Metal Grill	<i>Salvageable</i> – if in suitable condition or collectable, recyclable otherwise (with metals)
Fresh Air Metal Diffuser	<i>Salvageable</i> – if in suitable condition or collectable, recyclable otherwise (with metals)
Fire Bells	<i>Salvageable</i> – if in suitable condition or collectable, recyclable otherwise (with metals)
Air Receiver Tank	<i>Salvageable</i> – based on marketability – specialty item
Compressor Tank	<i>Salvageable</i> – based on marketability – specialty item
Compressor Motor	<i>Salvageable</i> – dependent on age and condition – recyclable otherwise
After Cooler	<i>Salvageable</i> – based on marketability – specialty item
Boilers (hot water heating)	<i>Salvageable</i> – dependent on age, size and condition – recyclable otherwise
HVAC Roof Systems	<i>Salvageable</i> – dependent on age and condition – recyclable otherwise
Gas Furnaces	<i>Salvageable</i> – dependent on size and condition and if year 1995 or newer – recyclable otherwise
<b>16 ELECTRICAL</b>	
Transformers	Usually tested for PCBs and if confirmed, then handled as a special waste – <i>salvageable</i> otherwise
Switch Boxes	<i>Salvageable</i> – dependent on age, size and condition – recyclable otherwise
Receptacle Switches	<i>Salvageable</i> – dependent on age and condition – landfilled otherwise
Receptacle Plugs	<i>Salvageable</i> – dependent on age and condition – landfilled otherwise
Heat Detectors	<i>Salvageable</i> – dependent on age, size and condition – landfilled otherwise
Exhaust Fans	<i>Salvageable</i> – dependent on age, size and condition – recyclable otherwise
Electrical Ceiling Blade-Fans	<i>Salvageable</i> – dependent on age, size and condition – recyclable otherwise
Incandescent Light Fixtures	<i>Salvageable</i> – dependent on age, size and condition – recyclable or landfilled otherwise
Fluorescent Light Fixtures	Usually tested for PCBs and if confirmed, then handled as a special waste – <i>salvageable</i> otherwise – dependent on age and condition
Battery Lighting Fixtures (wall mount)	<i>Salvageable</i> – dependent on age (as sometimes batteries are limited to holding a charge) – landfilled otherwise
Exit Lights	<i>Salvageable</i> – dependent on age (as sometimes batteries are limited to holding a charge) – landfilled otherwise
Panel Boxes	<i>Salvageable</i> – dependent on age, size and condition – recyclable otherwise
Commercial Vapor Lights	<i>Salvageable</i> – dependent on age and condition – landfilled otherwise
Street Lights on Poles	<i>Salvageable</i> – dependent on age, size and condition – recyclable otherwise

END OF SECTION

## SECTION 01 51 00 Mobilization and Temporary Construction Facilities

### PART 1 GENERAL

#### 1.01 RELATED SECTIONS

- A. Section 01 55 00 "Site Access and Storage"
- B. Section 01 56 20 "Temporary Construction Fencing"
- C. Section 02 41 19 "Site Demolition"
- D. Caltrans Standard Specifications, May 2018

#### 1.02 DESCRIPTION

Work includes: Mobilization, temporary facilities and controls required for this work, at all sites include, but are not limited to: staging areas; temporary utilities such as water, electricity and telephone; haul roads; enclosures such as tarpaulins, barricades, and canopies; sanitary facilities; scaffolding and safety equipment, and for all other work and operations which must be performed or costs incurred prior to beginning work on the various contract items on the project site. All such temporary facilities for all sites shall be located for convenience and safety and maintained in a safe and sanitary condition at all times until completion of the Contract, then removed from the site and disposed of as required or as directed.

#### 1.03 COMPLIANCE WITH CODES AND REGULATIONS

Compliance with all requirements of pertinent safety regulations is described in the General Conditions of the Contract for Construction and shall include, but not necessarily be limited to: Federal Occupational Health Administration (OSHA) and latest edition, Uniform Building Code (with California Amendments) and ADA (American Disability Act).

#### 1.04 PRODUCT HANDLING

Use all means necessary to maintain all temporary facilities and controls in proper and safe condition throughout progress of the work. In the event of damage or loss, immediately make all repairs and replacements necessary and at no additional cost to the City.

#### 1.05 SUBMITTALS

General Arrangement and Layout Drawings showing arrangement of all temporary facilities including all offices, parking, material storage warehouses, shops, material laydown, staging and storage areas, fences, and roads, within 30 Days of Notice to Proceed.

#### 1.06 GOVERNING LAWS

Temporary facilities shall be in compliance with applicable federal, State, county, municipal, and local utility laws, rules, and regulations. Nothing in these Contract Documents shall be construed to permit work not conforming to such codes and regulations.

#### 1.07 TOOLS AND SUPPLIES

Provide engineering equipment and facilities, construction tools, equipment, materials, and supplies of the types and quantities necessary to facilitate the timely execution of the Work.

### PART 2 PRODUCTS

#### 2.01 PROJECT IDENTIFICATION SIGNS

- A. Coordinate with City within 5 days of Notice of Proceed for City-supplied construction

signs to be hung at the work site.

B. Contractor to install signage on construction fencing.

## 2.02 TEMPORARY UTILITIES

- A. The Contractor shall notify all Utility Companies of their Work. Notice will give sufficient time for inspection and disconnect of the utilities by the said Utility Companies.
- B. The Contractor shall pay all charges of gas, electric, and telephone utilities for temporary connections, disconnections and service to the work.
- C. Provide safe distribution of required utilities to the job areas for use of all trades.
- D. The Contractor shall pay all charges of water, sewage and drainage for temporary services and connection/disconnection charges to the work. The City will pay for all permanent service charges for electrical, water, sewer and storm drainage.

## 2.03 TEMPORARY WATER

- A. It shall be the responsibility of the Contractor to contact the local utility district in order to obtain a temporary water meter, and provide their own source of water for all elements of work in this project. The City shall not provide a source of water. The City will not allow for connection to any City facility to supply water, in lieu of a permission from ACWD for a temporary meter.
- B. Provide, maintain and pay for suitable quality water service required for construction operations as required for the work, at the Contractor's expense. Closest availability of water will be determined by the Contractor and will be approved by authorities having jurisdiction before making the connection.
- C. The Contractor shall not make connection to, or take water from, any fire hydrant or pipeline without first obtaining permission from Alameda County Water District (ACWD) or other authority having jurisdiction over the use of said fire hydrant or pipeline and from the Fremont Fire Department (FFD).
- D. For each such connection made, the Contractor shall first attach to the fire hydrant or pipeline a valve and a construction meter supplied by ACWD or said other authority or agency.
- E. Furnish and install all necessary temporary piping and, upon completion of the work, remove all such temporary piping.
- F. If necessary, extend branch piping with outlets located so water is available by hoses with threaded connections. Provide temporary pipe insulation to prevent freezing, if necessary.
- G. Removal of Water Connections: Before final acceptance of the Work on the project, all temporary connections and piping installed by the Contractor shall be entirely removed, and all affected improvements shall be restored to their original condition, or better, to the satisfaction of the Engineer, the City, and/or other agency owning the affected utilities.
- H. If the Contractor uses non-potable water on the project, the sources and discharge of non-potable water shall meet the California Department of Health Services water reclamation criteria and the Regional Water Quality Control Board requirements. The Contractor shall obtain either a waste water discharge permit or a waiver from the Regional Water Quality Control Board. Copies of permits or waivers from the

Regional Water Quality Control Board shall be delivered to the Engineer before using non-potable water on the project.

- I. Non-potable water, if used, shall not be conveyed in tanks or drain pipes which will be used to convey potable water. There shall be no connection between non-potable water supplies and potable water supplies. Non-potable water supply, tanks, pipes, and other conveyances of non-potable water shall be labeled:

**NON\_POTABLE WATER.  
NOT FOR HUMAN CONSUMPTION. DO NOT DRINK**

2.04 TEMPORARY ELECTRICITY

- A. Electrical Services: Provide and maintain during the course and progress of the Work all electrical power and wiring requirements to facilitate the work of all trades and services associated with the Work. Electrical power will be provided at the Contractor's expense. The Contractor will request the utility company to install temporary power poles in locations required. All temporary wiring, feeders, and connections will be furnished by the Contractor, as required.
- B. All wiring for temporary electric light and power will be properly installed and maintained and will be securely fastened in place. All electrical facilities will conform to the requirements of CCR: Title 8, Industrial Relations, Subchapter Sub-chapter 5, Electrical Safety Orders, and Subpart K of OSHA Safety and Health Standards for Construction.
- C. All temporary electrical facilities and connections will be subject to approval of the City Engineer and the power company representative. And shall be removed in like manner at the Contractor's expense prior to final acceptance of the Work by the City.
- D. Removal of Electrical Connections: Before final acceptance of the Work on the project, all temporary connections and piping installed by the Contractor shall be entirely removed, and all affected improvements shall be restored to their original condition, or better, to the satisfaction of the Engineer, the City, and/or other agency owning the affected utility.

2.05 TEMPORARY TELEPHONE

Contractor is responsible for providing site telephone and fax as required. Existing telephones at the project site is not available for use. Maintain in the Contractor's field office or in a protected location on the job site for the use of the Subcontractors. Superintendent may opt for a cellular phone.

2.06 TEMPORARY SANITARY FACILITIES

- A. Provide and maintain required facilities and enclosures.
- B. Provide adequate fixed or portable chemical toilet conveniences whenever needed for the use of employees, including, washing facilities, and drinking water for the use of all employees and persons engaged on or about the Work, including Subcontractors and their employees.
- C. Drinking water shall be potable and drinking water facilities shall be clean and sanitary.

- D. Locate sanitary facilities where approved by City staff. To be determined in the field prior to construction and delivery
  - E. Maintain clean and sanitary conditions during the course of the Work. Keep such facilities adequately supplied with toilet paper, paper toweling, paper cups, and related supplies as required. At minimum, provide a weekly service schedule for cleaning and servicing.
  - F. Sanitary and Other Organic Wastes: The Contractor shall establish a regular collection of all sanitary and organic wastes. All refuse from sanitary facilities provided by the Contractor or organic material wastes from any other source related to the Contractor's operations shall be disposed of away from the site in a manner satisfactory to the Engineer and in accordance with all laws and regulations pertaining thereto.
  - G. At completion of the Work, sanitary facilities shall be properly disinfected and all evidence of same removed from the Jobsite.
  - H. Comply with all minimum requirements of the Health Department or other public agency having jurisdiction. Maintain in a sanitary condition at all time – secure toilets in non-work hours from vandalism.
- 2.07 CONTRACTOR'S FIELD OFFICE (OPTIONAL)
- A. At the Contractor's option, furnish and install a field office, not less than 8 feet by 12 feet and equipped with a table or shelf large enough for easy perusal of drawings, as well as drawing racks and shelves to maintain order and neatness. Field office shall be used to store record drawings, display permits and licenses, and permit periodic meetings with Subcontractors, City and Architect. Field Office shall also have a fax machine.
  - B. The Contractor's field office shall contain a complete set of Contract Documents.
  - C. The Contractor shall make arrangements and pay all costs associated with the temporary field office.
- 2.08 STORAGE AND PARKING AREAS FOR CONTRACTOR'S PERSONNEL AND PUBLIC
- A. The Contract Drawings may indicate work areas available to the Contractor for storage of materials and for parking of construction equipment. If so indicated, these areas will be provided to the Contractor for the durations indicated in the Contract Specifications. Additional work and storage space, if required, shall be provided by the Contractor at Contractor's expense.
  - B. The Contractor shall provide temporary parking facilities for the Contractor's personnel, Subcontractors, Supplier's delivery vehicles, and authorized visitors. Off the Jobsite parking facilities (if any) shall not impair or interfere with existing community parking and traffic conditions, regulations, and restrictions.
  - C. Parking of vehicles by construction personnel shall be limited to areas within the existing parking lot outside the limits-of-work, or within the staging areas, as designated by the Project Landscape Architect, or on the plans.
  - D. Contractor, Contractor's personnel, Subcontractors, Supplier's delivery vehicles, and authorized visitors, shall maintain vehicular ingress and egress through all drive aisles in Central Park during the duration of the contract. The drive aisles may not be blocked preventing traffic circulation at any given time.

2.09 ENCLOSED STORAGE AND SHOPS

- A. The Contractor shall provide all temporary storage and shop rooms that may be required at the Jobsite for safe and proper storage of tools, materials, and equipment. Construct such rooms only in locations indicated or as approved by the Supervising Construction Coordinator, and so as not to interfere with the proper installation and completion of other work.
- B. Remove such rooms within 3 Days of receipt of notices from the Supervising Construction Coordinator that removal is necessary and incur all expenses for such removal.
- C. Storage of gasoline or similar fuels shall conform to National Fire Protection Association (NFPA) regulations and local fire department regulations and shall be confined within definite boundaries apart from buildings as approved by the Supervising Construction Coordinator and the jurisdictional fire marshal.

2.10 PROTECTIVE BARRICADES AND SAFETY PRECAUTIONS

- A. Construct and maintain barricades, lights, shoring, and warning signs as required by federal and State safety ordinances and as required to protect the City's property from damage or loss and as necessary for the protection of the public and adjacent properties. Provide walks around obstructions made in a public place for prosecuting the Work. Leave all protection in place and maintain until removal is authorized.
- B. Guard and protect all workers, pedestrians, and the public from excavations, construction equipment, obstructions, and other dangers with adequate railings, guard rails, temporary walks, barricades, warning signs, directional signs, overhead protection, planking, decking, danger lights, and other suitable safeguards.
- C. Flaggers shall be provided to direct or divert pedestrian or vehicular traffic when necessary.

2.11 PUMPING

Keep the site, excavations, and structures free of accumulation of water at all times, whether from underground seepage, rainfall, drainage, or broken utility lines at no expense to the City.

2.12 FIRE PROTECTION

Temporary fire extinguishers shall be provided and available at the job site in accordance with the appropriate NFPA Bulletins and good practice.

2.13 BARRIERS AND ENCLOSURES

- A. See "Temporary Construction Fencing" found herein Article 15 and Section 01 56 20.
- B. Provide barriers to prevent unauthorized entry to construction areas and to protect existing facilities and properties from damage from construction operations and demolition in accordance with OSHA and governing authorities having jurisdiction.

2.14 TEMPORARY ACCESS FACILITIES

- A. The Contractor shall construct, maintain, and later remove temporary access bridges, driveways, roadways, and other items needed for Contractor access to and within the Jobsite.
- B. Contractor shall be responsible for any damage to streets, curbs and sidewalks due to the use of such facilities, and such damaged portions shall be repaired as required to place them in the same condition as existed prior to the commencement of the work.

- C. Contractors shall comply in every respect with applicable Building Codes regarding the use of public streets and sidewalks and provide the proper barricading and lighting of public thoroughfares surrounding the construction activities.
- D. Use all means necessary to maintain all temporary facilities and controls in proper and safe condition throughout progress of the work. In the event of damage or loss, immediately make all repairs and replacements necessary and at no additional cost to the City.
- E. All areas affected by Contractor-constructed temporary facilities shall be restored to their original condition upon removal of the temporary facilities.
- F. Extend and relocate access and parking space usage as Work progress requires. Provide and maintain access to fire hydrants, free of obstructions. Provide means of removing mud from vehicle wheels before entering streets.

2.15 PROTECTION OF INSTALLED WORK

- A. All work installed, completed and accepted per the direction herein to phase construction, shall be protected from damage by other phases of construction work.
- B. Contractor shall control activity in immediate work area to prevent damage.
- C. Provide temporary and removable protection for installed Products, as needed.
- D. Provide protective coverings at walls, projections, jambs, sills, and soffits of openings.
- E. Protect finished floors, stairs, and other surfaces from traffic, dirt, wear, damage, or movement of heavy objects, by protecting with durable sheet materials.

2.16 SECURITY

- A. Provide such watchmen, patrols, fencing, alarm system and other security means as required to adequately protect the work and to protect materials and equipment stored at the site of the work and elsewhere, and to protect the interests of the Contractor, the City, and all parties having such interest, until completion of the work and its Acceptance of the Work by the City.
- B. Storage areas will be suitably fenced and lighted and routinely patrolled by security guards.
- C. The City assumes no responsibility for protection of structures and finished work or for loss of materials and equipment from the time that Contract operations have commenced until Acceptance of the Work.
- D. If watchman/security service is deemed necessary by the Contractor, such protection shall be provided by the Contractor, and all costs therefore shall be paid for by the Contractor.
- E. Damaged, lost, or stolen materials and equipment, whether or not stored or already installed, shall be replaced by the Contractor with new specified materials and equipment, including reinstallation where applicable, at no additional cost to the City.

2.17 PROGRESS CLEANING AND WASTE REMOVAL

- A. Maintain areas free of waste materials, debris, and rubbish. Maintain site in a clean and orderly condition.
- B. Collect and remove waste materials, debris, and rubbish from site as specified in Section 01 50 50 "Construction and Demolition Waste Management".

2.18 POSTING OF REGULATIONS

Comply with industry standards and applicable laws and regulations of authorities having jurisdiction in the posting of regulations.

**PART 3 EXECUTION**

3.01 MATERIAL STORAGE AND PROTECTION

- A. During the progress of the work, products and materials shall be neatly stored in accordance with the appropriate manufacturer's recommendations and shall be properly cared for and protected from weather, vandalism and theft.
- B. All installed products and materials shall be adequately protected until such time as the City accepts the Project.

3.02 SPECIAL CONDITIONS OF THE SITE

- A. The area to be set aside for the use of the Contractor is indicated on the Drawings as "Limit of Work" and "Staging Area" except for sub-surface utility work, curb and gutter, temporary roads and any other work specifically shown or noted, the Contractor shall confine his operations within the limits-of-work so indicated.
- B. Work shall not proceed for the site or buildings until all temporary work such as utilities, barricades, field office and sanitary facilities are furnished and installed.

3.03 CONDITIONS AT THE SITE

- A. The Contractor shall make all necessary inspections of the job site and of the work to be fully aware of the conditions of all temporary facilities and controls at all times.
- B. The Contractor shall take all steps necessary to prohibit any part of the premises, the buildings, or structures to be overloaded by setting thereon any material or equipment, or performing thereon any of his work, which could cause any loss, damage, and/or injury to person or property.
- C. The Contractor shall make a close inspection of all materials as delivered and shall promptly return all defective materials without waiting for their rejection by the Architect.

3.04 REMOVAL

Maintain all temporary facilities and controls as long as needed for the safe and proper completion of the work. Remove all such temporary facilities and controls as rapidly as progress of the work will permit.

3.05 RESTORATION OF AREAS

Upon completion of the project, all temporary facilities shall be removed from the site and all areas not otherwise improved but which were adversely affected by the Contractor's work shall be returned to their original condition.

3.06 FINAL SITE CLEAN-UP

Prior to final inspection, thoroughly clean the entire site and restore to a neat, acceptable condition. Remove from the entire site all construction waste and unused materials, dunnage, loose rock and stones, excess earth, roots, weeds, and all debris of any description resulting from the work. Hose down and scrub where necessary all new concrete and asphalt pavement and paved walks, and all existing concrete and asphalt pavement and walks dirtied

as a result of the work. Thoroughly remove mortar drippings from concrete walks and other pavements, where they occur – do not power spray concrete decks with high pressure.

3.07 CLOSEOUT

- A. Upon completion of the Work, or prior thereto when required by the Supervising Construction Coordinator, remove temporary facilities' structures and installations from the City's property.
- B. Return exterior areas utilized for temporary facilities to their original, natural state or, when called for on the Contract Documents, complete such areas as indicated.

3.08 MEASUREMENT AND PAYMENT

The lump sum price paid for "**Mobilization**" shall include full compensation for furnishing all labor, materials, tools, equipment, incidentals, and other work as described herein, and for doing all the work covered in this section, complete and in place as shown on the plans, as required by the Special Provisions, and as required by the Engineer.

**END OF SECTION**

CITY COUNCIL REFERENCE ONLY

**SECTION 01 55 00 Site Access and Storage**

**PART 1 GENERAL**

**1.01 GENERAL**

- A. The Contractor shall take all necessary precautions for the protection of the Work and the safety of the public. The Contractor shall, at the Contractor's elective option, station guards, or other deterrent devices, as may be required to deter vandalism or theft, including but not limited to barricades, fencing and other obstructions, and security lighting. The Contractor shall secure any open access points to the project area during all hours when Contractor is not actively engaged in the performance of the Work.

**1.02 RELATED SECTIONS**

- A. Refer to General Conditions, Article 2.2, Article 7.2, Article 7.3, Article 7.5 and Article 7.9 regarding staging and temporary facilities.
- B. Section 01 51 00 "Mobilization and Temporary Facilities"

**1.03 HIGHWAY LIMITATIONS**

- A. The Contractor shall make its own investigation of the condition of available public and private roads and of clearances, restrictions, bridge load limits, and other limitations affecting transportation and ingress and egress to and from the project site. It shall be the Contractor's responsibility to construct and maintain any access or haul roads required for its demolition operations.
- B. All hauling by motor vehicles shall be confined to truck routes, except where otherwise authorized in writing by the Engineer. Truck routes are those shown on the map titled "City of Fremont Truck Routes, Adopted by City Council 4-26-1988" incorporated into these specifications, and as designated in the Fremont Municipal Code. The Contractor is responsible for acquiring all oversize/overweight vehicle permits from agencies having jurisdiction when transporting materials or equipment with size and weight exceeding established hauling criteria.

**1.04 CONTRACTOR'S WORK, STAGING, AND STORAGE AREA**

- A. **At or before the pre-construction meeting the Contractor shall submit to the Supervising Construction Coordinator, as part of the Site Operations Work plan (SOW) required per Section 01 30 00 "Submittal", a Project site plan, drawn to scale, indicating the proposed layout and use of the site for access and staging. At minimum the plan will show the location and configuration of temporary construction fencing / tree protection fencing and gates, site access, storage, staging, temporary offices, Subcontractor parking, storm water runoff control measures, and access for Contractors doing work under concurrently under other contracts. The SOW will also show the stages of work in order to allow access to areas of the park that is within the project's limit of work.**
- B. The Contractor shall make its own arrangements for any necessary off-site storage or shop areas necessary for the proper execution of the Work. Off-site shall be defined as any area outside the temporary fencing required. If the site is located on public property, the Contractor shall submit a site plan, drawn to scale, of the proposed storage, trailer, and/or staging site for the Engineer's approval. If the site is on private property, the Contractor shall submit evidence of the property City's approval of the use of the site.

- C. During construction, to the best extent possible, the Contractor shall maintain ingress and egress in to the parking lots to allow for continued public use.

1.05 TEMPORARY USE OF PUBLIC FACILITIES

- A. Street Use: Nothing herein shall be construed to entitle the Contractor to the exclusive use of any public street, alley, way, or parking area during the performance of the Work hereunder, and it shall so conduct its operations as not to interfere unnecessarily with the public's use of the surrounding public area, or the authorized of the City, utility companies, or other agencies in such streets, alleys, ways, or parking areas.
- B. Fire hydrants on or adjacent to the Work shall be kept accessible to firefighting apparatus
- C. Temporary provisions shall be made by the Contractor to assure the use of the sidewalks and the proper functioning of all gutters, sewer inlets, and other drainage facilities.

**PART 2 PRODUCTS – Not used.**

**PART 3 EXECUTION**

3.01 MEASUREMENT AND PAYMENT

Full compensation for conforming to the provisions in this section "**Site Access and Storage**", not otherwise provided for, shall be considered as included in prices paid for the various contract items of work involved and no additional compensation will be allowed therefor, unless specified otherwise.

**END OF SECTION**

## SECTION 01 56 00 Protection of Existing Facilities

### PART 1 GENERAL

#### 1.01 EXISTING FACILITIES

- A. The Contractor shall protect all existing utilities, trees, shrubbery, lawn, landscaping, irrigation facilities, wells, buildings, fences, roadside signs, poles, park signs, and all other improvements not designated for demolition and removal, and shall restore damaged or temporarily relocated utilities and other improvements as listed above to a condition equal to or better than they were prior to such damage or temporary relocation, all in accordance with requirements of the Contract Documents.
- B. Potholing: The Contractor shall verify the exact locations and depths of all utilities shown and the Contractor shall make exploratory excavations of all utilities that may interfere with the Work. All such exploratory excavations shall be performed as soon as practicable after Notice to Proceed and, in any event, a sufficient time in advance of demolition to avoid possible delays to the Contractor's works. When such exploratory excavations show the utility location as shown to be in error, the Contractor shall notify the City.
- C. The number of exploratory excavations shall be that number which is sufficient to determine the alignment and grade of the utility
- D. All reference markings made by the Contractor shall be done with spray chalk or approved equal and shall be removed by the Contractor when no longer needed.
- E. The Contractor is responsible for any and all damages resulting from insufficient weather protection. Contractor is to coordinate exterior work to avoid damage.
- F. The Contractor shall be completely responsible for the care and condition of the project improvements in their entirety until completion of the maintenance period and acceptance by the City. The Contractor shall provide such watchmen, guards, and security devices as deemed necessary to prevent destruction of property and vandalism.

#### 1.02 PROTECTION OF SURVEY MARKS

- A. The Contractor shall not destroy, remove, or otherwise disturb existing survey markers without proper authorization. No pavement breaking or excavation shall be started until all survey or other permanent marker points that will be disturbed by the Work have been properly referenced for easy and accurate restoration.
- B. It shall be the Contractor's responsibility to notify the proper representative of the City of the time and location that work will be done. Such notification shall be sufficiently in advance of demolition so that there will be no delay due to waiting for survey points to be satisfactorily referenced for restoration. All survey markers or point disturbed by the Contractor without proper authorization of the Engineer, will be accurately restored by the City at the Contractor's expense after all contract work has been completed.

#### 1.03 EXISTING UTILITIES AND IMPROVEMENTS

- A. General: The Contractor shall protect all underground utilities and other improvements, which may be impaired during the Work. It shall be the Contractor's responsibility to ascertain the actual location of all existing utilities and other improvements that will be encountered in its demolition operations, and to see that such utilities and other improvements are adequately protected from damage due to

such operations. The Contractor shall take all possible precautions for the protection of unforeseen utility lines to provide for uninterrupted service and to provide such special protection as may be necessary.

- B. Underground utilities exist in work areas; use extreme caution. Pothole to verify actual depth/ location of utilities. Notify city Engineer in writing if existing conditions interfere with any construction.
- C. Locations shown on the plan are approximate and for general information only. Notify underground service alert (USA) at least 48 hours prior to an excavation on this project (phone: 800-227-2600). Locate and mark all utilities prior to start of construction.
- D. For utilities within the project site, a private utility locating firm may be required, at the option of the contractor, to identify underground utilities which may not be identified through USA.
- E. Remove materials carefully, to extent shown or required. Provide neat and orderly junctions between existing and new materials.
- F. Perform work so as to provide the least interference and most protection to existing facilities and improvements to remain.
- G. Utilities to be Moved: In case it shall be necessary to remove from the property any public utility or franchise holder, such utility or franchise holder, will, upon the request of the Contractor, be notified by the City to move such property within a specified reasonable time. When utility lines are to be removed are encountered within the area of operations, the Contractor shall notify the Engineer a sufficient time in advance for the necessary measures to be taken to prevent interruption of service.
- H. Where proper completion of the Work requires the temporary or permanent removal and/or relocation of an existing utility or other improvement, which is shown the Contractor shall remove, and, without unnecessary delay, temporarily replace or relocate such utility or the facility. In all cases of such temporary removal or relocation, restoration to former location shall be accomplished by the Contractor in a manner that will restore or replace the utility or improvement as nearly as possible to its former locations and to as good or better condition than found prior to removal.
- I. City's Right of Access: The right is reserved to the City and to the City's of public utilities and franchises to enter at any time upon any public property, right-of-way, or easement for the purpose of making changes in their facilities made necessary by the Work of this contract.
- J. Underground Utilities Not Shown or Indicated:
  - 1. Existing utility lines that are shown or the locations of which are made known to the Contractor prior to excavation and that are to be retained, and all utility lines that are constructed during excavation operations shall be protected from damage during excavation and backfilling and, if damaged, shall be immediately repaired by the Contractor.
  - 2. In the event that the Contractor damages any existing utility lines that are not shown or the locations of which are not made known to the Contractor prior to excavation, a written report thereof shall be made immediately to the City. If directed by the City, repairs shall be made by the Contractor under the provisions for changes and extra work.
- K. Approval of Repairs: All repairs to a damaged improvement are subject to inspection and approval by an authorized representative of the improvement City before being concealed by backfill or other work.

- L. Maintaining Service: All oil and gas pipelines, power, and telephone or other communication cable ducts, gas and water mains, irrigation lines, wells, sewer lines, storm drain lines, poles, and overhead power and communication wires and cables encountered along the line of the Work shall remain continuously in service during all operations under the Contract, unless other arrangements satisfactory to the City are made with the City of said pipelines, duct, main, irrigation line, sewer, storm drain, pole, wire or cable. The Contractor shall be responsible for and shall repair all damage due to its operations, and the provisions of this Section shall not be abated even in the event such damage occurs after backfilling or is not discovered until after completion of the backfilling.

1.04 TREES, MOWING IRRIGATION, AND OTHER VEGETATION WITHIN PROJECT LIMITS

- A. General: The Contractor shall exercise all necessary precautions so as not to destroy or damage any trees, or other vegetation, including that landscaping material lying within the project limits, and shall not trim or remove any trees unless such trees have been approved for trimming or removal by the City. All existing trees and other vegetation, which become damaged during demolition, shall be trimmed or replaced by the Contractor in consultation with the City's Urban Forester to the satisfaction of the City and/or agency. Tree trimming and replacement shall be accomplished as approved and directed by the Engineer and City's Landscape Architect or Urban Forester.
- B. Contractor protection of existing trees, including protective fencing around the tree drip line is required.
- C. Replacement: The Contractor shall immediately notify the City and/or other jurisdictional agency if any tree is damaged by the Contractor's operations. Refer to Section 01 56 39 "Tree Protection" for repair compensation. If, in the opinion of the City or said other agency, the damage is such that replacement is necessary, the Contractor shall replace the tree at its own expense. The tree shall be of a like size and variety as the tree damaged, or, if of a smaller size, the Contractor shall pay the City of said tree a compensatory payment acceptable to the tree City, subject to the approval of the City or other jurisdictional agency. The size of the trees shall not be less than 1-inch diameter nor less than 6 feet in height. Fines will be assessed against the Contractor for removal of trees without the prior written approval of the City. The minimum amount of the fine or restitution to the City will be the replacement of the tree removed, with one of equal or greater size and maturity and as approved by the City. Larger fines may be assessed against the Contractor depending on the circumstances and type of tree removed, especially in the case of trees listed in the City's Historical Tree List.
- D. Irrigation: All irrigation elements, equipment and components within the project limits, and those elements, equipment and components outside the project limits of work, indicated to remain in working order, shall be the responsibility of the Contractor to remain, and be maintained, in working order over the duration of the project, including the plant establishment period. This includes all equipment connected to components within the project limits of work to be removed, relocated, or re-routed. At no point shall City crews enter the project limits of work to perform maintenance on the irrigation system. If City enters the site, at the request of the Contractor, or at the direction of the City due to negligence of the Contractor to perform maintenance, keep the system running, and adequately water existing lawn, trees, and other plant material, the Contractor shall be charged on a time and materials basis, by the City, and the cost for performing said work shall be retained from their contract, and deducted.

1.05 PROTECTION OF ADJACENT STRUCTURES

- A. The Contractor shall take steps to protect adjacent structures from damage during all project activities, including, but not limited to, building and construction, hazardous materials removal, salvage/recycling, demolition, basement demolition, backfilling, grading and landscaping operations.
- B. Any and all damage to adjacent structures shall be the responsibility of the Contractor.
- C. If damage occurs, the Contractor will take immediate steps to remedy the situation in the field.

1.06 VERIFICATION OF CONDITIONS

The Contractor shall verify all existing conditions before commencing work. All discrepancies between the plans and actual field conditions shall be immediately reported to the Engineer who shall determine if modifications in the work are necessary. The Contractor shall not modify the work without prior authorization from the Project Landscape Architect.

1.07 OBSTRUCTIONS

- A. Protection and repair of damage of laterals and appurtenances shall be the responsibility of the Contractor.
- B. In the event that water services are broken or damaged between the meter and the point of service, the Contractor shall immediately at his own expense, repair such damage, in a manner satisfactory to the Engineer, in order that the water supply will not be interrupted for a period greater than one hour. If such interruption is sustained, it shall be the Contractor's responsibility to notify the occupants of the premises to which said services are connected so that no damage will occur on said premises. Whenever damage is done to water meters, services between the Water District mains and said meters, fire hydrants or other appurtenances, the Water District forces shall make such needed repairs at the Contractor's expense.
- C. In the event damage is done to any gas, electric, or telephone facility by the Contractor, he shall notify the respective utility company. Repairs shall be made by the utility company at the Contractor's expense.
- D. In the event that sanitary sewer laterals are broken or damaged between the point of service and the sanitary main, the Contractor shall immediately, at his own expense, repair such damage, in a temporary manner satisfactory to the Engineer, in order that service will not be interrupted for a period greater than one hour. When such interruption occurs, it shall be the Contractor's responsibility to notify the occupants of the premises to which said service is connected so that no damage will occur on said premises and to notify Union Sanitary District so that permanent repairs may be made at the Contractor's expense.
- E. The Contractor shall take precautions to prevent any damages to existing improvements and landscaping, which is to remain in place, in the work area on both public and private properties. If the existing improvements or landscaping on public or private property are damaged, the Contractor shall repair such damage, at his own expense, to the satisfaction of the Engineer.
- F. The Contractor shall verify the exact location of all existing utilities and shall notify the Engineer and the regional notification center for operator of subsurface installations at least two working days, but not more than 14 calendar days, prior to performing any excavation or other work close to any underground pipeline, conduit, duct, wire, or to the structure. The regional notification center is:

1. UNDERGROUND SERVICE ALERT (USA) TEL: 1-800-227-2600
  2. At those sites not serviced by Underground Service Alert, the Contractor shall be responsible for locating all existing utilities prior to commencing any work. Contractor shall pothole utilities to determine approximate depths of utilities.
- G. Measurement and Payment: Payment for conforming to the provisions in this section "Obstructions" not otherwise provided for, shall be considered as included in the prices paid line for the various items of work involved and no additional compensation will be allowed therefor.

1.08 PROTECTION

- A. Provide as necessary to protect public, the City's employees, existing finishes, improvements to remain, existing utilities, and adjoining property from damage, all in accordance with applicable regulations.
- B. Dust Control: All necessary precautions, including watering, shall be taken to control air-borne dust to within reasonable limits. If serious problems and/or complaints arise due to air-borne dust, and when directed by the City's Engineer, or Project Inspector, operations causing such problems shall be temporarily discontinued.
- C. Explosives: Use of explosives will not be permitted.

1.09 NOTIFICATION BY THE CONTRACTOR

Prior to any excavation in the vicinity of any existing underground facilities, including all water, sewer, storm drain, gas petroleum products, or other pipelines; all buried electrical power, communications, or television cables; all traffic signal and street lighting facilities; and all roadway and state highway right-of-ways the Contractor shall notify the Underground Service Alert Agency (800-227-2600) and the respective authorities representing the City's or agencies responsible for such underground facilities not less than 48 hours prior to excavation so that a representative of said City's or agencies can mark the utility alignment or be present during such work if they so desire.

1.10 MEASUREMENT AND PAYMENT

Full compensation for conforming to the provisions in this section "**Protection of Existing Facilities**," not otherwise provided for, shall be considered as included in prices paid for the various contract items of work involved, including mowing and irrigation of existing sod, and no additional compensation will be allowed therefor, unless specified otherwise.

**END OF SECTION**

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## SECTION 01 56 20 Temporary Construction Fencing

### PART 1 GENERAL

#### 1.01 SECTION INCLUDES

- A. Temporary Construction Fencing.

### PART 2 PRODUCTS

#### 2.01 TEMPORARY CONSTRUCTION FENCING

- A. Temporary construction fences shall be furnished, installed, and maintained, at the project site by the Contractor, as shown on the plans and as specified in these specifications and special provisions, and as directed by the Project Inspector, or Supervising Construction Coordinator.
- B. The Contractor shall be responsible for adjusting the layout of the fences as necessary to accommodate its work, to accommodate other Contractors doing work, and accessing the site and building(s).
- C. Temporary construction fencing shall be placed around the work area intended for use by the Contractor but will not impede movement along the sidewalk by the public.
- D. The property is available for use by the Contractor for staging. The Contractor shall submit a plan showing the location of their staging area for review by the City.
- E. Temporary construction fencing and gates shall be chain link, type CL-6, six feet (6') high, as a minimum and shall conform to the specifications for permanent fencing of similar character as provided in Section 80, "Fences" of the Standard Specifications and these special provisions.
- F. **COLOR AND MESH:** Chain link fence shall also include privacy mesh capable of a minimum 85% visual blockage into the site and have 2" polypropylene webbing for edge reinforcement and brass grommets for fastening. **COLOR: Green.**
- G. Construction fencing and gates shall be simple to install, maintain, relocate, and remove. Concrete footings for metal posts will not be required. The temporary fences and gates shall be of a type that extends fully to the ground. The Contractor may upgrade the fence in height or quality to meet the conditions at the site.
- H. Posts and footings shall be installed by the Contractor so as to fulfill the requirements outlined in this section and shall be crowned at the top to shed water.
- I. Materials may be commercial quality providing the dimensions and sizes of said materials are equal to, or greater than, the dimensions and sized specified by the Standard Specifications.
- J. Used materials may be used providing such used materials are good, sound, and are suitable for the purposed intended. The Contractor shall be the approval of the Engineer prior to installing construction fencing and gates using used materials.
- K. The Contractor shall get approval from the Engineer for location of temporary fences and gates prior to installing any materials.
- L. Temporary construction fencing that is damaged from any cause, including vandalism, during the progress of the work, shall be immediately repaired or replaced by the Contractor at this expense. Any damage caused by the use of temporary fences and gates to existing features including, but not limited to, existing turf areas, holes in the ground, damage to existing vegetation, etc. shall be repaired or replaced

by the Contractor at this expense, including any holes caused by the use of temporary fences and gates.

### **PART 3 EXECUTION**

#### **3.01 ORDER OF WORK**

- A. First order of work is to secure the site with temporary construction fencing prior to installing erosion control best management practices (BMP's).
- B. No form of demolition work or remediation work shall proceed until the site is secured.
- C. Contractor shall not enclose the entire project site if the area is not being worked on to prevent closure and maintain access into the park. Access into the park shall be maintained at all times.

#### **3.02 CONDITIONS AT THE SITE**

- A. The Contractor shall make all necessary inspections of the job site and work in order to be fully aware of the conditions at all times of all temporary construction fencing.
- B. The Contractor shall take all steps necessary to prohibit any part of the premises, the buildings, or structures to be overloaded by setting thereon any material or equipment, or performing thereon any of his work, which could cause any loss, damage, and/or injury to person or property.
- C. Maintain all temporary construction fencing as long as needed for the safe and proper completion of the work.

#### **3.03 FINAL SITE CLEAN-UP**

- A. See Section 01 77 00 "Project Closeout".

#### **3.04 MEASUREMENT AND PAYMENT**

- A. The linear foot unit price paid for "**Temporary Construction Fencing**" shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals and for doing all the work covered in this section, complete and in place as shown on the plans, as required by the Special Provisions, and as required by the Project Engineer.

**END OF SECTION**

**SECTION 01 56 30 Tree Removal, Tree Pruning and Root Pruning**

**PART 1 GENERAL**

**1.01 RELATED DOCUMENTS**

- A. Refer to all other sections, determine the extent and character of related work, and coordinate all work so that all work associated with this section is complete.
- B. This section is complete in its entirety and is not supplemental to the standard specifications for Caltrans except where specifically noted.
- C. Related Sections
  - 1. Section 01 56 39 "Tree Protection"

**1.02 DESCRIPTION OF WORK**

- A. The work in this section includes furnishing all labor, materials, equipment and services necessary to complete the work described on the Demolition Plans, and as specified herein but is not limited to:
  - 1. Air Spade or Hand Excavation at Tree Roots – This shall include root pruning, as directed at the direction of the City's Assigned Arborist and as described in the attached Arborist reports.

**1.03 SUBMITTALS**

- A. Product data: Submit complete materials list of items to be provided under this Section. Include manufacturer's literature.
- B. Submit qualifications of Certified Arborist and California licensed Pest Control Advisor.
- C. Resume of arborist including certifications, licenses, and list of employees.

**1.04 QUALITY ASSURANCE**

- A. General Responsibility: The Contractor shall be directly responsible for protection and welfare of existing trees, which are noted to remain. This responsibility shall continue throughout all phases of work until the entire project is completed and accepted by the City and through completion of the maintenance period.
- B. Qualifications of workmen: Tree pruning, root pruning and trimming shall be performed only by a certified arborist, or certified tree worker, certified by the International Society of Arborists, in compliance with ISA or ANSI standards. Contractor shall be responsible for scheduling City's Assigned Arborist, and shall have the arborist on site continuously while existing trees are being pruned or remedial work is being performed.
- C. Reference Standards: Published specification, standards, tests, or recommended methods of trade industry apply to work of this section.
- D. City Approved Arborist for Tree and Root Pruning:
  - 1. A Plus Tree: 510-593-5969
  - 2. Arbortech: 510-881-8733
  - 3. J.T.S. Tree Experts: 844-822-8677
  - 4. Newark Tree Service: 510-793-9791

- E. Work shall be done according to approved submittals and field direction from City's Assigned Arborist.

1.05 REFERENCE STANDARDS

- A. Published specifications, standards, tests or recommended methods of ISA or governmental organizations apply to work of this Section.
  - 1. All tree pruning shall be in conformance with ISA standards for Crown Thinning and Crown Reduction.
  - 2. Tree Pruning Guidelines, International Society of Arboriculture (ISA); 1995 edition.
  - 3. American National Standards institute (ANSI) A300. 1996. "Standard Practices for Tree, Shrub and Other Woody Plant Maintenance"
  - 4. Cal-OSHA Tree Work Safety Regulations. Title 8: Article 12
  - 5. Code of Ethics, Western Chapter ISA; 1995 edition.
  - 6. Glossary Of Terms, Western Chapter ISA; 1995 edition.
  - 7. Pruning Standards, Western Chapter ISA; 1995 edition.
  - 8. Standard for Tree Care Operations, American National Standards Institute, (Z133.1); latest edition.
  - 9. International Society of Arboriculture (ISA) "Guide for Establishing Values of Trees and Other Plants," prepared by the Council of Tree and Landscape Appraisers.
  - 10. All climbing techniques shall be in accordance with the Reference Standards.

1.06 SCHEDULE

- A. Work shall be done according to an approved schedule submitted in "Submittals".

1.07 WARRANTY

- A. Contractor shall warrant that all trees other than those slated for removal covered by the provisions of this Section will be healthy and in flourishing condition of active growth one year from the date of Project Completion and Acceptance.
- B. Requirements of the warranty shall apply if failure of Contractor to take specified precautions and work within restrictions of this Section contributes to destruction of or injury to a tree, in the judgment of the City Urban Forster.
- C. If a tree is destroyed or injured so that in the judgment of the Parks Supervisor it should be replaced, it shall be removed at Contractor's expense. The Contractor shall replace in kind up to the appraised value of the tree lost.

**PART 2 PRODUCTS**

2.01 EQUIPMENT

- A. Root Pruning: All work shall be done by hand using chain saws, hand saws, Sawz-all, or other method that allows for surgical removal. The use of mechanical root pruning tools, such as a Vermeer Root Pruner may be allowed so along as the equipment does not result in the roots being broken, fractured, or split horizontally beyond the vertical cut.
- B. Vacuum Excavator: Roots may be exposed using a water and vacuum excavator, Ditch Witch FX20, FX30, FX60 or equal product.

- C. Backhoe: Roots within radial trench may be removed using a backhoe after roots have been cut clean.
- D. Stump Removal: Vermeer Stump Cutter, or approved equal.
- E. Herbicide: To kill turf around trees, use a contact herbicide. Translocated herbicides will not be acceptable, or used near the trees.
- F. All equipment used for completing the work covered in this section shall conform to the requirements of CAL-OSHA Tree Work Safety Regulations Title 8: Article 12.

2.02 CERTIFIED ARBORIST

- A. Root pruning shall be performed only by a certified arborist, or certified tree worker, certified by the International Society of Arborists; in compliance with ISA or ANSI standards and on the City of Fremont's approved Arborist list
- B. Contractor, or certified arborist performing tree removal, tree pruning, and root pruning, shall be responsible for obtaining and scheduling the City's Assigned Arborist for site inspection, and shall have the City's Assigned Arborist on site continuously while existing trees or roots are being pruned or remedial work is being performed.

2.03 CITY ASSIGNED ARBORIST/CONSULTING ARBORIST

- A. The City shall retain Hortscience as the City's Assigned Arborist/Consulting Arborist, for on-call work related to this project, if it is determined that the Contractor's construction activity may be detrimental to the health of existing trees.
- B. The City's Assigned Arborist/Consulting Arborist shall be brought on site during construction to observe construction activities in and around the root zone of existing trees, make determinations on how to preserve the root zone, make determinations on roots to be cut, and direct the Contractor's operations within the drip line and root zone of the tree.
- C. It will be the Contractor's responsibility to coordinate, and take direction from, and implement the direction of the City's Assigned Arborist/Consulting Arborist in the field under their supervision.
- D. The City may determine that it is not necessary to have the consulting arborist on site and will have the City Urban Forester observe and direct tree removal, tree pruning, crown thinning, or root pruning instead. The contractor Subcontractor will be required to schedule and coordinate with the City Urban Forester to ensure work is done to the City's satisfaction.
- E. Schedule should be submitted at least 1 week before anticipated work on site is to be performed.
- F. City Urban Forester – Dennis Montes, 510-494-4746

**PART 3 EXECUTION**

3.01 PRE-CONSTRUCTION TREATMENTS AND RECOMMENDATIONS

- A. The Contractor shall meet with the Consulting Arborist or City Urban Forester before beginning work to discuss work procedures, tree protection and tree pruning.
- B. Where possible, cap and abandon all existing underground utilities within the Tree Protection Zone (TPZ) in place. Removal of utility boxes by hand is acceptable but no trenching should be performed within the TPZ in an effort to remove utilities, irrigation lines, etc.

- C. Install Tree Protection Fencing at all trees to be retained to completely enclose the Tree Protection Zone prior to demolition, grubbing or grading. Tree Protection Fences shall be 6 ft. chain link or equivalent as described in Section 01 56 39. Tree Protection Fences are to remain until all grading and construction is completed.
- D. All tree work shall comply with the Migratory Bird Treaty Act as well as California Fish and Wildlife code 3503-3513 to not disturb nesting birds. Tree pruning and removal should be scheduled outside of the breeding season to avoid scheduling delays. Breeding bird surveys should be conducted prior to tree work. Qualified biologists should be involved in establishing work buffers for active nests.
- E. Tree(s) to be removed that have branches extending into the canopy of tree(s) to remain must be removed by a qualified arborist and not by construction Contractors. The qualified arborist shall remove the tree in a manner that causes no damage to the tree(s) and understory to remain. Tree stumps shall be ground 12" below ground surface.
- F. Any brush clearing required within the TPZ shall be accomplished with hand-operated equipment.
- G. Trees to be removed shall be felled so as to fall away from TPZ and avoid pulling and breaking of roots of trees to remain. If roots are entwined, the consultant may require first severing the major woody root mass before extracting the trees, or grinding the stump below ground.
- H. All down brush and trees shall be removed from the TPZ either by hand, or with equipment sitting outside the TPZ. Extraction shall occur by lifting the material out, not by skidding across the ground.
- I. Apply and maintain 4-6" of wood chip mulch within the TPZ.

3.02 AIR SPADE OR HAND EXCAVATION AROUND TREES

- A. Clear and grub and excavate within the drip line and root zone of the existing trees to achieve new subgrade, facilitate utility trenching and establish finished grade.
- B. Excavate to new subgrade to accommodate full concrete section per the project plans and details.
- C. When excavation is to occur around, and within the drip line of trees, as indicated on the plans, all excavation work shall be done by hand within the tree root zone or by using a water or vacuum excavator (air spade) to minimize damage to root system. Mechanical excavation will not be allowed. Mechanical excavation will not be allowed.
- D. Hand dig, or water/vacuum excavate a trench at the edge of the area where excavation will be required to construct paving, curb and gutter. Depth of the trench should be determined by the depth of the excavation required, including aggregate base, to construct the paving, curb and gutter, or concrete paving.
- E. Main lateral roots and taproots shall not be cut. Smaller roots that interfere with installation of new work may be cut with prior approval as described elsewhere herein.
- F. Roots shall be completely exposed to at least 2 inches below the bottom of the roots. Main lateral roots and taproots shall only be pruned under the direction of the City's Arborist. An attempt shall be made to preserve all roots ½" diameter and larger. Roots under two (2) inches in diameter, that interfere with installation of new work, may be cut and removed after field review and approval of such proposed cuts by the City's Arborist.

- G. Roots shall be relocated in backfill areas wherever possible. If large, main lateral roots are encountered, they shall be exposed beyond excavation limits as required to bend and relocate without breaking. If relocation of roots is not practical, roots shall be cut and removed from within the excavation limits after field review and approval of such cuts by the City's Arborist.
- H. Exposed roots shall not be allowed to dry out before permanent backfill is placed. Temporary earth cover shall be provided, or roots shall be packed with peat moss and covered with a layer of burlap and temporarily supported and protected from damage until covered with backfill. The cover over the roots shall be wetted twice a day, during day and evening, at the Contractor's expense, and no additional payment shall be made therefore.
- I. The above excavations should be carried out by a certified arborist or certified tree worker, and monitored by the City's Arborist. At that time, the City's Arborist should evaluate any damage which has already occurred and the extent of the root damage that would be required to construct the proposed improvements. It will be determined at that time whether the tree is a satisfactory candidate for preservation. If the tree is to be preserved, the City's Arborist should direct and monitor the pruning of roots and removal of loose bark as needed.

3.03 REPAIR COMPENSATION

- A. Damage to existing tree crown or roots over 1-inch in diameter shall be immediately reported to the Engineer in writing, and, at the direction of the Engineer, with recommendations from the City's Assigned Arborist, repair damage immediately at the Contractor's expense and monitored by a the City's Assigned Arborist.
- B. The City's Assigned Arborist shall direct repair of trees damaged by construction operations. Repairs shall be made promptly after damage occurs to prevent progressive deterioration of damaged tree.
- C. Damaged tree limbs or trees which have died as a result of injury during construction shall remain the property of the City and shall remain or be removed by the Contractor as directed by the Engineer, with recommendations from the City's Urban Forester.
- D. Any tree to remain which is damaged or destroyed owing to the Contractor's negligence or failure to provide adequate protection shall be compensated for according to the full appraisal value using the "trunk formula" method in accordance with the latest edition of The Guide for Plant Appraisal, 9<sup>th</sup> edition (published in 2000 by the International Society of Arboriculture, Savoy IL) and the Species Classification and Group Assignment (2004), a publication of the Western Chapter of the International Society of Arboriculture.
- E. The Contractor shall immediately notify the City and/or other jurisdictional agency if any tree is damaged by the Contractor's operations. If, in the opinion of the City, the City's Assigned Arborist, or other said agency, the damage is such that tree replacement is necessary, the Contractor shall replace the tree at their expense. The tree shall be of a like size and variety as the tree damaged, or, if of a smaller size, the Contractor shall pay the City of said tree a compensatory payment acceptable to the tree City, subject to the approval of the City or other jurisdictional agency. The size of the trees shall not be less than 1-inch diameter nor less than 6 feet in height. Fines will be assessed against the Contractor for removal of trees without the prior written approval of the City. The minimum amount of the fine or restitution to the City will be the replacement of the tree removed, with a tree of equal or greater size and maturity and as approved by the City. Larger fines may be assessed against the Contractor depending on the circumstances and type of tree removed, especially in

the case of trees listed in the City's Landmark Tree List. The value of such a tree shall be based, at minimum, on the full appraised value using the "trunk formula" method in accordance with the latest edition of The Guide for Plant Appraisal, 9<sup>th</sup> edition (published in 2000 by the International Society of Arboriculture, Savoy IL) and the Species Classification and Group Assignment (2004), a publication of the Western Chapter of the International Society of Arboriculture).

### 3.04 ROOT PRUNING

- A. Upon demolition of existing site conditions, the Contractor shall excavate around tree roots requiring further field investigation at the direction of the City's Arborist. Roots shall be exposed to allow an unimpeded view around the entire root circumference.
- B. **Saw cutting of asphalt or concrete to full depth, should not occur adjacent to trees until the exposed roots have been adequately evaluated and there is assurance from the City's Assigned Arborist that full depth saw cutting will not result in detrimental damage to the root structure of the trees in question.**
- C. Once exposed, the City's Arborist shall make a determination regarding which roots to cut, where to cut them, approve the tools used to make the cuts and observe the root cuts; or, once exposed the arborist may determine that the tree will simply require removal, as root pruning may structurally weaken the tree, or, the arborist may determine that the roots do not require any pruning and the Contractor may then install base material to achieve the new road section, or curb and gutter section.
- D. The Contractor shall coordinate with the City's Assigned Arborist to have them on-site to help coordinate and direct the root pruning operation.
- E. If the underground root conditions differ from the direction and information shown on the plans, the Contractor shall excavate, root prune, tree trim, or remove trees at the City Arborist's direction in the field.
- F. All excavation of tree roots, root pruning, and tree trimming work, performed by the Contractor, shall be observed and directed by the City's Arborist
- G. Roots shall be cut within the trench, or excavation limits, with a root cutting machine, rock cutter, sawz-all, or other approved root pruning equipment.
- H. Any roots 1-inch in diameter or larger requiring removal shall be cut cleanly in live tissue. Cut and exposed roots and the surrounding soil shall be moistened and covered with a thick mulch (4 inches) to prevent desiccation. No pruning seals or paints shall be used on wounds. A water absorbent mater (i.e. burlap) shall be secured at the top of the trench and shall be draped over the exposed roots. This material shall be kept moistened and soil shall be replaced as soon as practicable.
- I. After root cutting is complete along the edge of the proposed trench or excavation, it is acceptable to either grub out or grind out with a 24 inch stump grinder surface roots which are more than 8 feet from the trunk.
- J. Do not encroach closer than 8 feet to the trunk of each tree.
- K. While excavation is commencing the Contractor shall coordinate to have the City's Assigned Arborist on site to observe the excavation and direct root pruning as needed to expedite construction effort.
- L. All work described in this section shall be performed according to the following published specifications, standards, tests or recommended methods:
  - 1. Tree Pruning Guidelines, International Society of Arboriculture (ISA); current edition.

2. Cal-OSHA Tree Work Safety Regulations. Title 8: Article 12
3. Code of Ethics, Western Chapter ISA; current edition.
4. Glossary Of Terms, Western Chapter ISA; current edition.
5. Pruning Standards, Western Chapter ISA; current edition.
6. Standard for Tree Care Operations, American National Standards Institute, (Z133.1); current edition.

3.05 MEASUREMENT AND PAYMENT

- A. Payment for tree removal and stump grinding shall be considered as included in the lump sum price paid for "**General Demolition**" and no separate payment will be made therefor.
- B. Full compensation for conforming to the provisions of "**Hand Excavate at Trees**" in this section, not otherwise provided for, shall be considered as included in prices paid for the various contract items of work involving excavation, trenching and backfilling of various utilities, and no additional compensation will be allowed therefor.

**END OF SECTION**

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**SECTION 01 56 39 Tree Protection**

**PART 1 GENERAL**

**1.01 DESCRIPTION**

- A. Section includes protecting and maintaining existing trees, not specifically designated for removal, affected by this Work, whether or not tree trunk is located within project site. Includes pruning and remedial work, protection and irrigation during removal work, site work and construction.
- B. Tree Protection Measures shall be applied to all Landscape Trees designated for preservation with tree protection fencing as indicated on plans. These measures shall include but not be limited to all items listed within the "Tree Preservation Notes" and the "Tree Preservation Detail" including all Tree Protection fences.
- C. General: The Contractor shall exercise all necessary precautions so as not to destroy or damage any trees, or other vegetation, including that landscaping material lying within the project limits, and shall not trim or remove any trees unless such trees have been approved for trimming or removal by the City or other jurisdictional agency. All existing trees and other vegetation, which become damaged during demolition, shall be trimmed, or replaced by the Contractor in consultation with a certified arborist to the satisfaction of the City and/or agency. Tree trimming and replacement shall be accomplished as approved and directed by the Engineer.
- D. Replacement: Refer herein to Section 3.05 "Tree Replacement"
- E. All trees to be preserved and protected shall be watered by whatever means necessary to keep the trees in a healthy condition.

**1.02 RELATED SECTIONS**

- A. Section 01 56 30 "Tree Removal, Tree Pruning and Root Pruning"
- B. Section 02 41 19 "Site Demolition"
- C. Section 31 00 00 "Earthwork"
- D. Landscape Standard Details, LSD-9 & LSD-10, or most current revision.

**1.03 DEFINITIONS**

- A. DBH – Diameter at Breast Height
- B. "Drip line" is defined as outermost extent of tree canopy, encompassing tree canopy, trunk, roots and soil. In no case shall drip line encompass an area less than a 10 foot diameter circle.
- C. "Injury" is defined, without limitation, as any bruising, scarring, tearing, or breaking of roots, branches or trunk; or soil compaction or contamination resulting in decline of health of tree.
- D. "Critical Root Zone" is defined as a minimal distance from the trunk where roots must be protected from construction related activities
- E. "Root Pruning": All pruning shall be done by a State of California Licensed Tree Contractor (C61/D49). All pruning shall be done by Certified Arborist or Certified Tree Worker in accordance with the Best Management Practices for Pruning (International Society of Arboriculture, 2008-Revised) and adhere to the most recent editions of the American National Standard for Tree Care Operations (Z133.1) and Pruning (A300).

- F. Consulting Arborist: Refer to Section 01 56 30 "Tree Removal, tree Pruning, and Root Pruning", Part 2.03.
- G. Certified Arborist or Certified Tree Worker: A worker that has been certified by the International Society of Arboriculture (ISA), in compliance with ISA standards, as experienced and capable of tree trimming and root pruning per the ISA guidelines, or the requirements as defined herein.
- H. Landscape Standard Details (LSD): Included as part of the Fremont City Standard Details for Improvements within Public Right of Way; Approved by City Council, Resolution No 2006-31, April 1985; amended December 13, 2011; and last revised September 5, 2012.
- I. Infrastructure: The limits of work of the project as delineated on the plans, described in the special provisions, and as described by the Standard Specifications.

1.04 QUALITY ASSURANCE

- A. General Responsibility: The Contractor shall be directly responsible for protection and welfare of existing trees, which are noted to remain. This responsibility shall continue throughout the full construction period until the entire project is completed and accepted by the City and through completion of the maintenance period.
- B. Qualifications of workmen: Trimming shall be performed only by a certified arborist, or certified tree worker, certified by the International Society of Arborists; in compliance with ISA or ANSI standards. Contractor shall be responsible for obtaining and scheduling arborist, and shall have an arborist on site continuously while existing trees or roots are being pruned or remedial work is being performed. Arborist must be approved by the City of Fremont Urban Forester in writing.
- C. Reference Standards: Published specification, standards, tests, or recommended methods of trade industry apply to work of this section.
- D. International Society of Arboriculture (ISA) "Guide for Establishing Values of Trees and Other Plants," prepared by the Council of Tree and Landscape Appraisers.

1.05 JOB CONDITION

- A. Contractor shall install tree protection fencing before any construction equipment enters the site, and must not be removed for the duration of the project. Fencing can be adjusted during the demolition, grading and construction activities.
- B. Sequencing schedule: Coordinate and cooperate with other trades to enable the work to proceed as rapidly and efficiently as possible.

1.06 GUARANTEE

- A. Contractor shall guarantee that all plants covered by the provisions of this Section will be healthy and in flourishing condition of active growth one year from the date of final completion.
- B. During the warranty period the Contractor shall be liable for damages to all trees covered by the provisions of this Section.

**PART 2 PRODUCTS**

2.01 TREE PROTECTION FENCING

- A. Tree Protection Fence: 6-foot high chain link fence, sturdy and capable of acting as a barrier against objects, vehicles, etc., and designed so as to allow for access to inside for care of tree as required. It shall be continuously maintained and repaired as necessary. Metal shall be galvanized.

- B. Refer to LSD-9 and Tree Protection Details and notes incorporated into the project plans.
- C. Install tree protection fencing around trees to be preserved at a distance required from the base of the trunk to the drip line of the tree. Fencing shall remain until landscape work has commenced, and it shall be removed when authorized by the Engineer.
- D. Fence Relocation: During the course of construction, relocation of the fence may be required to facilitate construction. Contractor shall request authorization to relocate fence. Requests for Authorization shall be in writing to the City's Engineer 48 hours prior to anticipate relocation at no cost to the City.

2.02 TRUNK WRAP PROTECTION

- A. Trunk wrap protection will be installed as delineated on the plans.
- B. Trunk wrap protection shall consist of 2"x4" nominal wood slats, spaced 3 inches apart, around the trunk of the existing tree. Minimum three (3) slats per tree, and wrapped with orange construction fencing, a minimum of three (3) layers on the outside of the slats, per the contract plan details.
- C. Refer to the contract plan details for additional information.

2.03 TREE BARK MULCH

Prior to beginning construction, install tree protection fencing. For trees being protected using chain link fencing, immediately after fencing is installed, cover the entire soil area inside the fence with a three-inch thick layer of mulch, holding the mulch back from the tree trunk a minimum of 6 inches. Mulch shall be cedar walk-on bark, or approved equal. Refer to 2.05 on Section 32 90 00 "Planting",

**PART 3 EXECUTION**

3.01 TREE PROTECTION, TRUNK WRAP PROTECTION, AND TREE PRESERVATION

- A. Tree Preservation Notes per City's Standard Detail LSD-9, LSD-10, and the contract plan details:
  1. Current standard detail at city engineering division shall prevail.
  2. Tree protection measures must be in place before construction, demolition and/or grading activities commence. City of Fremont will stop construction if tree protection measures are not in place and maintained throughout the construction period.
  3. Trees called out for preservation shall be fenced at the drip line. Fencing may occur at the combined drip lines of groves of trees. Place a three-inch thick layer of bark mulch beneath drip lines of trees to be preserved. Keep bark mulch back from the tree trunk a minimum of 6 inches.
  4. Fencing shall be 6 feet tall chain link fencing with steel posts embedded in the ground.
  5. No grading shall occur within the drip lines/fenced area of existing trees unless required by the plans, or the nature of the work.
  6. No construction materials or construction vehicles may be stored within the drip lines/fenced area of existing trees.
  7. Construction vehicles or machinery may not pass between two or more existing trees identified for preservation if their canopies are within 10 feet of touching. Additional fencing may be required by the city as needed.

8. The Contractor is required to have an arborist certified by the International Society of Arboriculture (ISA), approved by the city, on site if site construction efforts require removal of existing roots or branch pruning. Roots approved for cutting must be cut cleanly with a saw. Ripping or shredding roots subject to fine/penalty.
  9. Unauthorized tree removal is subject to replacement equal to the appraised value of the tree lost per FMC 4-5108.
  10. The Contractor is required to water, fertilize and attend to other maintenance needs of existing trees to maintain healthy growth throughout the construction period. An earthen berm measuring minimum 6 feet in diameter, and 6 inches in height shall be constructed at the base of each tree to function as a temporary watering basin during the construction period. Trees shall be watered according to weather and tree species requirements.
  11. If trees are being relocated: relocation of existing trees shall occur under the observation and direction of a certified arborist approved by the city of Fremont.
  12. Trunk wrap protection shall occur for trees situated adjacent to pathway construction activities, as delineated on plans.
- B. Contractor shall install tree protection fencing before any construction equipment enters the site and must not be removed during the demolition or grading process. If fencing is installed, fencing can be adjusted during the demolition, grading and construction activities.
  - C. Install tree protection fencing around trees to be preserved at a distance required from the base of the trunk to the drip line of the tree. Fencing shall remain until landscape work has commenced, and it shall be removed when authorized by the Engineer.
  - D. Immediately after fencing is installed, cover soil area inside fence with three-inch thick layer of mulch. Mulch shall be held back from the base of the tree trunk a minimum of 6 inches.
  - E. During the course of construction, relocation of the fence may be required to facilitate construction. Contractor shall request authorization to relocate fence. Requests for Authorization shall be in writing to the City's Engineer 48 hours prior to anticipate relocation at no cost to the City.

### 3.02 PROTECTION OF TREES

- A. Water: Provide ample water supply of potable quality and sufficient quantity for all operations required in this section. The Contractor shall provide a schedule to the Project Manager outlining the proposed watering schedule for trees affected by construction.
- B. Trees shall not be allowed to deteriorate and shall be maintained in a healthy and vigorous condition during the course of construction and maintenance period.
- C. During the course of construction, the Contractor shall take all necessary precautions, as outlined herein, to protect the existing trees to be preserved from injury or death. Protection shall be given to the roots, trunk, and foliage of all existing trees to remain. Trees, subject to the provisions of this Section, which have been injured, or may be affected by construction, shall be assessed by the City's Arborist, and then repaired immediately by a certified tree worker, under the direction of the City's Arborist. Repair may include removal of rough edges and sprung bark and severely injured branches, or other necessary work, as determined by the City's Arborist.

- D. Irrigation system servicing trees that will be affected by construction shall be repaired, replaced, or relocated according to the plans, within 30 days of removal. If the existing irrigation system is turned off, removed, or out of service for more than 30 days, all trees shall be hand watered, or watered by whatever means necessary to keep the trees in a healthy and vigorous condition during the course of construction and maintenance period.
- E. Tree protection fencing shall be installed for the protection of existing trees to be preserved. No construction, demolition, or work of any nature will be allowed within the fenced area without prior written approval by the Engineer.
1. Approval by the City's Engineer for work within the fenced area shall not release the Contractor from any of the provisions specified herein for the protection of existing trees to be preserved.
  2. During the course of construction of approved work within the fenced area, no roots larger than two inches in diameter shall be cut without prior written approval the City's Engineer.
  3. During construction, the existing site surface drainage patterns shall not be altered within the area.
  4. Take necessary measures to maintain healthy living conditions for existing trees to be preserved. Such measures shall include but not limited to periodic washing of leaves for removal of dust, irrigation, redistribution of bark mulch, etc.
  5. No construction, demolition, or work of any nature will be allowed within the fenced area without prior written approval by the City's Engineer. Approval by the City's Engineer for work within the fenced area shall not release the Contractor from any of the provisions specified herein for the protection of existing trees to be preserved. During the course of construction of approved work within the fenced area, no roots larger than two inches in diameter shall be cut without direction from the City's Arborist in the field.
- F. Do not permit the following within drip line of any existing tree to be preserved.
1. Storage or parking of automobiles or other vehicles.
  2. Stockpiling of building materials or refuse of excavated materials.
  3. Skinning or bruising of bark.
  4. Use of trees as support posts, power poles, or signposts; anchorage for ropes, guy wires, or power lines; or other similar functions.
  5. Dumping of poisonous materials on or around trees and roots. Such material includes but is not limited to paint, petroleum products, contaminated water, or other deleterious materials.
  6. Cutting of tree roots by utility trenching, foundation digging, placement of curbs and trenches, and other miscellaneous excavation without prior approval of the Engineer and monitored by a certified arborist.
  7. Damage to trunk, limbs or foliage caused by maneuvering vehicles or stacking material or equipment too close to the tree.
  8. Compaction of the root area by movement of trucks or grading machines; storage of equipment, gravel, earth fill, or construction supplies.
  9. Excessive water or heat from equipment, utility line construction, or burning of trash under or near shrubs or trees.

10. Damage to root system from flooding, erosion, and excessive wetting and drying resulting from dewatering and other operations.

3.03 EXCAVATION AROUND TREES

A. Refer to Section 01 56 30 "Tree Removal, Tree Pruning and Root Pruning"

3.04 REPAIR COMPENSATION

Refer to Section 01 56 30 "Tree Removal, Tree Pruning and Root Pruning"

3.05 TREE REPLACEMENT

A. The Contractor shall immediately notify the City and/or other jurisdictional agency if any tree is damaged by the Contractor's operations. If, in the opinion of the City or said other agency, the damage is such that replacement is necessary, the Contractor shall replace the tree at their expense. The tree shall be of a like size and variety as the tree damaged, or, if of a smaller size, the Contractor shall pay the City of said tree a compensatory payment acceptable to the tree City, subject to the approval of the City or other jurisdictional agency.

B. The size of the trees shall not be less than 1-inch diameter nor less than 6 feet in height.

C. Fines will be assessed against the Contractor for removal of trees without the prior written approval of the City. The minimum amount of the fine or restitution to the City will be the replacement of the tree removed, with one of equal or greater size and maturity and as approved by the City. Larger fines may be assessed against the Contractor depending on the circumstances and type of tree removed, especially in the case of trees listed in the City's Historical Tree List.

3.06 IRRIGATION SYSTEM

A. If system is in place, protect existing irrigation system service point from damage.

B. If repair or relocation is required, make repairs, or perform relocation, ensure it is automated, and re-activate the system in order to water trees that may be affected by excavation, root pruning or crown thinning.

C. Set up a watering program to ensure that existing trees are provided with adequate water to prevent drying out during construction

D. Full compensation for conforming to the provisions in "Irrigation System" and the replacement, relocation and activation of the existing irrigation system shall be considered as included in the units price paid for "Irrigation Modifications" and no additional compensation will be allowed therefore.

3.07 MAINTENANCE

Contractor shall be responsible to perform periodic inspections of existing trees to be preserved and submit written proposals to the City's Engineer for additional maintenance work as may be required to ensure the health and general well-being of the trees. Contractor shall retain, at the direction of the Engineer, a certified arborist to perform or monitor this work.

3.08 MEASUREMENT AND PAYMENT

A. The linear foot quantity for "**Tree Protection Fencing**", shall include full compensation for furnishing all labor, materials, tools, equipment and incidentals and for doing all the work covered in this Section to protect trees, including placement of bark mulch, related maintenance, watering, and the relocation of fencing to facilitate construction, complete in place as shown on the plans, as required by the Special

Provisions, and as required by the City's Engineer, Landscape Architect or Certified Arborist.

**END OF SECTION**

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## SECTION 01 57 19 Temporary Controls

### PART 1 GENERAL

#### 1.01 SECTION INCLUDES

- A. Pedestrian and patron controls
- B. Traffic plans and controls
- C. Construction operations under traffic
- D. Pollution Abatement – General Requirements
- E. Dust control.
- F. Erosion and Sediment Control and Water Pollution Control
- G. Rubbish control.
- H. Mud control.
- I. Noise and vibration control.
- J. Chemicals.

#### 1.02 REFERENCES

- A. State of California, Department of Transportation (Caltrans), Standard Specifications 2018.
- B. State of California, Department of Transportation (Caltrans), California Manual of Uniform Traffic Control Devices (California MUTCD), Part 1, Temporary Traffic Control.
- C. State of California, Vehicle Code.
- D. State of California General Permit Order 2009-0009-DWQ (as amended by 2010-0014-DWQ and 2012-006-DWQ) or most current version.
- E. California Regional Water Quality Control Board San Francisco Bay Municipal Regional Storm water NPDES Permit, Order No. R2-2015-0049.
- F. American National Standards Institute (ANSI) S1.4: Specification for Sound Level Meters.
- G. Refer to Article 7.9 of the General Conditions for Worksite Maintenance and Operation including:
  - 1. Air quality and air emissions control
  - 2. Dust and debris
  - 3. Clean up
  - 4. Disposal and Completion
  - 5. American National Standards Institute (ANSI) S1.4: Specification for Sound Level Meters.

#### 1.03 RELATED SECTIONS

- A. Section 01 41 00 – Regulatory Requirements.
- B. Section 01 57 23 – Statewide Construction General Permit (SWPPP)

#### 1.04 SUBMITTALS

- A. General: Refer to Contract Specifications Section 01 30 00, Submittals.
- B. Water Pollution Control Plans
- C. Noise and Vibration Monitoring Plan as described in Part 1.12, herein.

## 1.05 PEDESTRIAN AND PATRON CONTROLS

### A. **Pedestrian Handling Plan**

1. The Contractor will prepare a pedestrian handling plan for the Work within Park property to reflect any changes in pedestrian and patron paths including the accessible path. The accessible path will be as determined by the City in accordance with the requirements of California Building Code and the Americans with Disabilities Act and Architectural Barriers Act Accessibility Guidelines. The pedestrian handling plan will include drawing(s) showing proposed pedestrian handling devices including temporary signage and wayfinding signs. The Contractor will submit the plan for review and approval by the City's Engineer. All pedestrian handling devices and signage will be in compliance with the accessibility requirements of the California Building Code and the Americans with Disabilities Act and Architectural Barriers Act Accessibility Guidelines.
2. Include pedestrian handling plans for each phase of the work requiring different pedestrian diversion patterns and methods of control. Include for each phase detailed schedules for performance of work and include proposed pedestrian handling devices.
3. Where overhead protection is required for walkways during construction, the requirement for Covered Walkways of Chapter 33 of California Building Code will be followed.

### B. **Work Area Controls**

1. All construction work within and around the Park facilities will be separated from the public with appropriate barriers to prevent public access to construction areas and to contain construction hazards.
2. When the construction work is not within the Worksite perimeter fence, a barrier will be placed around the construction work area to prevent public access to the work area and to protect the public from construction operations. The area to be enclosed within barriers will not encroach into an exit path nor block the access path to elevators, escalators or stairways. Barriers on the platform level will not be closer than 7 feet from the platform edge. Barriers on the concourse level will not interfere with access to fare gates or automatic fare collection vending equipment unless approved by the Engineer in writing.
3. A barrier that will be removed at the end of the work hours or work shift is a short-term barrier. Work performed within a short-term barrier must be able to be safely secured and not present a hazard to the public when the barrier is removed. Short-term barriers can be portable crowd control barriers, traffic delineator connected with rails, etc. to form a solid barrier, or other field constructed barriers approved by the Engineer.
4. A barrier that protects work that cannot be safely secured, is a hazard to the public, or remains in place after the end of the work hours or work shift is a long-term barrier. Long-term barriers will be a minimum of 8 feet in height. Long-term barriers will be constructed in accordance with the Barrier Design requirements of Chapter 33 of the California Building Code, and will be constructed with fire resistant materials. The use of fire retardant treated lumber and plywood is acceptable. Long-term barriers will be painted and maintained free of graffiti; paint color to be selected by the Engineer.

## 1.06 TRAFFIC PLANS AND CONTROLS

- A. The Contractor will prepare a traffic control plan required for the Work. The traffic plan will include drawings showing proposed traffic control devices including temporary signage and temporary pavement markings and striping. Traffic control shall conform to the provisions of Part 6, Temporary Traffic Control of the latest California Manual on Uniform Traffic Control Devices.
- B. The Contractor shall furnish, install, operate, maintain, and remove when no longer required, all traffic control and protective devices required for the approved traffic plan.

- C. The traffic control plan will be submitted to the Engineer in accordance with Article 15 – Special Conditions, and Section 01 30 00 Submittals.

1.07 CONSTRUCTION OPERATIONS UNDER TRAFFIC

- A. "Construction equipment" is defined as all types of equipment, vehicles, and tools used in connection with construction work. The term "workers" includes every person or firm performing work in or adjacent to public streets.
- B. When in traffic lanes, all vehicles and equipment will be operated at normal traffic speeds. If this is not practicable, a slow moving vehicle emblem will be displayed in accordance with the California Vehicle Code. Construction equipment will not be parked in any lane intended for use by normal traffic. Equipment parked or stored at the work site will be behind a guard rail, barrier, curb, or other protective device.
- C. One-Way Traffic: No construction equipment will be operated in traffic lanes, except in the designated direction of travel for respective lanes.
- D. Equipment Travel:
  - 1. No construction equipment other than that designated and used for general highway transportation will be moved on streets during hours of darkness or periods of adverse weather conditions that reduce normal visibility.
  - 2. Any construction equipment or material required for construction operations which exceeds the maximum vehicle dimensions specified in the Motor Vehicle Code, will be moved only in accordance with established State and local regulations. No such oversize load will be moved over public streets without first obtaining approval of the appropriate jurisdictional authority.
- E. When flagging is required, provide certified flaggers and flagging in accordance with the requirements of the California MUTCD, Part 6.
- F. All temporary control devices in connection with construction work will be removed at the close of the workday, unless the state of the work is such that warning devices are still needed and are adapted for night closing.

1.08 POLLUTION ABATEMENT – GENERAL REQUIREMENTS

- A. Conduct construction operations in a manner that will minimize pollution of the environment surrounding the area of the Work by all practicable means and methods. Apply specific controls as specified in the Contract Specifications and as follows:
  - 1. Waste Materials: No waste or eroded materials shall be allowed to enter natural or man-made water or sewage removal systems. Eroded materials from excavations, borrow areas, or stockpiled fill shall be contained within the Jobsite. The Contractor shall develop methods for control of erosion as specified in the project SWPPP and BMP's.
  - 2. Burning: No burning of waste materials or debris will be permitted.
  - 3. Burying: No burying of waste materials and debris will be permitted within the limits of the City's property.
- B. Provide for and maintain the flow of all sewers, drains, building or inlet connections, and all water courses which may be encountered during progress of the Work. Do not allow the contents of any sewer, drain, or building or inlet connection to flow into trenches. Immediately remove from proximity of the Work all offensive matter, using such precautions as are required by local authorities having jurisdiction.

1.09 DUST CONTROL

- A. Refer to Article 7.9 of the General Conditions, "Worksite Maintenance and Operations"

- B. Schedule operations to prevent dust and other contaminants, resulting from Contractor's activities and cleaning operations, from contaminating neighboring residences and other structures and businesses.
- C. The Contractor shall furnish all labor, equipment, and means required and shall carry out effective measures wherever and as often as necessary to prevent its operation from producing dust in amounts damaging to property, cultivated vegetation, or domestic animals, or causing a nuisance to persons living in or occupying buildings in the vicinity. The Contractor shall be responsible for any damage resulting from any dust originating from its operations. The dust abatement measures shall be continued until the Contractor is relieved of further responsibility by the City.
- D. Upon failure of the Contractor to remove the nuisance dust as specified in Paragraph B within 2 hours after notification by the Supervising Construction Coordinator, the City may order that such work be done by others, and all costs therefore shall be deducted from monies owned or to be owed the Contractor.
- E. It is understood that the provisions in Section 10, "Dust Control" will not prevent the Contractor from applying water or dust palliative for his convenience if he so desires; however, the Contractor shall endeavor, whenever possible to restrict the use of water to control dust for his convenience due to the current need to conserve water.
- F. As a part of the SWPPP, the Contractor shall submit a Dust Control Plan describing proposed methods and equipment to be used for dust control, street sweeping and cleaning operations.
- G. Contractor shall provide dust control at all times, including holidays and weekends, as required to abate dust nuisance on and about the Jobsite which is a result of construction activities.
- H. Quantities and equipment for dust control shall be sufficient to effectively prevent dust nuisance on and about the Jobsite; and when weather conditions warrant, sprinkler equipment shall be on hand at all times for immediate availability.
- I. The City Inspector, City Engineer or Project Manager shall have authority to order dust control work whenever conditions warrant, and there shall be no additional cost to the City therefor. Dust control shall be effectively maintained whether or not the City Inspector, City Engineer or Project Manager orders such work.
- J. Complaints from the public shall be reported to the City Inspector, City Engineer or Project Manager and shall be acted on immediately.
- K. Where earthwork operations are in progress, keep exposed earth surfaces dampened continuously. Also, keep dirt access ways and roads dampened continuously.
- L. If portions of the Jobsite are temporarily inactive or abandoned for whatever reason, provide dust control and abatement continuously during such periods of inactivity.
- M. Where dust resulting from construction activities has collected on public sidewalks and streets, hose down such sidewalks and streets to abate flying dust parts. Clean all sidewalks and streets from accumulated dirt and dust.

#### 1.10 RUBBISH CONTROL

- A. During the progress of the Work, the Contractor shall keep the site of the Work and other areas used by it in a neat and clean condition, and free from any accumulation of rubbish. The Contractor shall dispose of all rubbish and waste materials of any nature occurring at the Work site, and shall establish regular intervals of collection and disposal of such materials and waste. The Contractor shall also keep its haul roads free from dirt, rubbish, and unnecessary obstructions resulting from its operations. Disposal of all rubbish and surplus materials shall be off the site of construction in accordance with local codes and ordinances

governing locations and methods of disposal, and in conformance with all applicable laws and regulations.

1.11 MUD CONTROL

- A. Contractor shall take proper measures to prevent tracking of mud onto public streets, drives, and sidewalks. Such measures shall include, but are not limited to, covering muddy areas on the Jobsite with clean, dry sand.
- B. All egress from the Jobsite shall be maintained in a dry condition, and any mud tracked onto streets, sidewalks, or drives shall be immediately removed, and the affected area shall be cleaned. The City Inspector, City Engineer or Project Manager may order such work at any time the conditions warrant.
- C. Contractor shall provide and maintain truck wheel washes and cleaning stations either at all points of haul route ingress and egress to public right-of-way or at a central location within the Jobsite. Wash water sedimentation removal and discharge quality shall be in accordance with regulatory requirements for discharge into receiving utilities or bodies of water. All trucks, or other vehicles leaving the Jobsite, shall be cleaned of mud and dirt, including mud and dirt clinging to exterior body surfaces of vehicles.
- D. All trucks coming to the Jobsite or leaving the Jobsite with materials or loose debris shall be loaded in a manner that will prevent dropping of materials or debris on streets. Spillage resulting from hauling operations along or across any public traveled way shall be removed immediately.
- E. Contractor shall engage a street sweeping and cleaning service or otherwise provide for the sweeping and cleaning of haul routes and work areas within public right-of-way. Street sweeping and cleaning operations shall comply with City of Fremont requirements. The duration of this activity shall be concurrent with excavation, hauling, and stockpiling operations. The minimum cleaning and sweeping frequency shall be continuous during continuous hauling operations and as needed during intermittent operations. The City Inspector, City Engineer or Project Manager may order additional street sweeping and cleaning at no additional expense to the City as conditions warrant.
- F. The applicable requirements for mud control shall be included in the Contractor's SWPPP.

1.12 NOISE AND VIBRATION CONTROL

- A. Refer to Article 7.20 "Noise Control" of the General Conditions.
- B. Requirements: Minimize noise caused by construction operations, and provide working machinery and equipment fitted with efficient noise suppression devices. Employ other noise abatement measures as necessary for protection of employees and the public. In addition, restrict working hours and schedule operations in a manner that will minimize, to the greatest extent feasible, disturbance to residents in the vicinity of the Work.
- C. Definitions:
  - 1. Daytime refers to the period from 7:00 a.m. to 5:00 p.m. local time daily except Sundays and legal holidays.
  - 2. Nighttime refers to all other times including all day Sunday and legal holidays.
  - 3. Construction Limits are defined for the purpose of these noise and vibration control requirements as the City right-of-way lines, construction easement boundaries, or property lines as shown in the Contract Drawings.
- D. Contractor shall submit a Noise and Vibration Monitoring Plan describing proposed noise and vibration monitoring and recording equipment and positioning.

- E. Noise Control Requirements: Contractor shall employ noise-reducing construction practices such that construction noise does not exceed the limits specified herein. Employ other noise abatement measures as necessary for protection of employees and the public. Measures to be employed may include but are not limited to the following:
1. Restrict working hours and schedule operations in a manner that will minimize, to the greatest extent feasible, disturbance to residents in the vicinity of the Work.
  2. Use equipment with enclosed engines and/or high performance mufflers.
  3. Locate stationary equipment as far as possible from noise-sensitive uses.
  4. Construct noise barriers, such as temporary walls or piles of excavated material between noise activities and noise sensitive uses.
- F. Re-route construction-related traffic along roads that will result in the least amount of disturbance to residences.
- G. Vibration Control Requirements: Contractor will employ vibration-reducing construction practices such that construction vibration does not exceed 80 VdB (more than 1 hour per Day), 90 VdB (less than 1 hour per day), or 100 VdB (less than 10 minutes per Day), or a peak particle velocity damage threshold of 0.20 inch per second for fragile buildings or structures. Measures to be employed may include but are not limited to the following.
1. Locate vibration-generating equipment as far as possible from vibration-sensitive land uses.
  2. Avoid simultaneous operation of multiple pieces of vibration-generating equipment.
  3. Avoid nighttime construction in residential areas.
  4. Avoid construction processes that generate high vibration levels
  5. Avoid the use of vibratory rollers near vibration-sensitive uses.
- H. Monitoring:
1. Monitor noise and vibration levels of work operations to assure compliance with the noise limitations specified herein. Retain record of noise measurements for inspection by the City Inspector, City Engineer or Project Manager.
  2. Promptly inform the City Inspector, City Engineer or Project Manager of any complaints received from the public regarding noise and vibration. Describe the action proposed and the schedule for implementation, and subsequently inform the City Inspector, City Engineer or Project Manager of the results of the action.
  3. Monitor noise and vibration levels day and night and for each new activity or piece of equipment. Start by measuring three times a Day that work operations occur plus once a night for 3 consecutive Days that work operations occur. Monitor noise and vibration levels at least once a week thereafter.
- I. Measurement Procedure:
1. Except where otherwise indicated, perform all noise measurements using the A-weight network and "slow" response of an instrument complying with the criteria for a Type 2 General Purpose sound level meter as described in ANSI S1.4.
  2. Measure impulsive or impact noises with an impulse sound level meter complying with the criteria of IEC 179 for impulse sound level meters. As an alternative procedure, a Type 2 General Purpose sound level meter on C-weighting and "fast" response may be used to estimate peak values of impulsive or impact noises. Transient meter indications of 125 dBc "fast" or higher will be considered as indications of impulsive noise levels of 140 dBA or greater.

3. Measure noise levels at buildings affected acoustically by the Contractor's operations at points between 3 feet and 6 feet from the building face to minimize the effect of reflections.
  4. Measure noise levels at points on the outer boundaries of Construction Limits for noise emanating from within.
  5. Where more than one criterion of noise limits is applicable, use the more restrictive requirement for determining compliance.
- J. Continuous Construction Noise: Prevent noise from stationary sources, parked mobile sources, or any source or combination of sources producing repetitive or long-term noise lasting more than a few hours from exceeding the following limits:
1. Maximum Allowable Continuous Noise Level, dBA:

<u>Affected Residential Areas</u>	<u>Daytime</u>	<u>Nighttime</u>
Single family residences	60	50
Arterials or in multi-family residential areas, including hospitals	65	55
Semi-residential/commercial areas, including hotels	70	60
<u>Affected Commercial Areas</u>	<u>At All Times</u>	
Semi-residential/commercial areas, including schools	65	
Commercial areas with no nighttime residency	70	
<u>Affected Industrial Areas</u>		
All locations	80	

- K. Intermittent Construction Noise: Prevent noises from non-stationary mobile equipment operated by a driver or from any source of non-scheduled, intermittent, non-repetitive, short term noises not lasting more than a few hours from exceeding the following limits:
1. Maximum Allowable Intermittent Noise Level, dBA:

<u>Affected Residential Areas</u>	<u>Daytime</u>	<u>Nighttime</u>
Single family residences	75	60
Arterials or in multi-family residential areas, including hospitals	75	65
Semi-residential/commercial areas, including hotels	80	70
<u>Affected Commercial Areas</u>	<u>At All Times</u>	
Semi-residential/commercial areas, including schools	80	
Commercial areas with no nighttime residency	85	

1.13 CHEMICALS

All chemicals used during project construction or furnished for project operation, whether defoliant, soil-sterilant, herbicide, pesticide, disinfectant, polymer, reactant or of other classification, shall show approval of either the U.S. Environmental Protection Agency or the U.S. Department of Agriculture. Use of all such chemicals and disposal of residues shall be in strict accordance with the printed instructions of the manufacturer.

1.14 MEASUREMENT AND PAYMENT

Full compensation for conforming to the provisions in this section "**Temporary Controls**" not otherwise provided for, shall be considered as included in prices paid for the various contract items of work involved and no additional compensation will be allowed therefor, unless specified otherwise.

END OF SECTION

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## SECTION 01 57 23 Water Pollution Control

### PART 1 GENERAL

#### 1.01 SECTION INCLUDES

Water pollution control shall conform to the provisions of Section 7.19 "Environmental Control" of these General Conditions and the following Special Conditions and these Project Specifications.

#### 1.02 RELATED SECTIONS

- A. Erosion, sediment, noise, dust, and exhaust control requirements are specified in Contract Specifications Section, 01 57 19 "Temporary Environmental Controls".
- B. California State Water Resources Control Board (SWRCB): Order No. 2009-0009-DWQ.
- C. Section 401 of the Clean Water Act Section, Water Quality Certification issued by the Regional Water Quality Control Board (RWQCB).
- D. Section 402 of the Clean Water Act, National Pollutant Discharge Elimination System – General Permit for Stormwater Discharges Associated with Construction issued by the State Water Resources Control Board (SWRCB) located at the following website:  
[http://www.waterboards.ca.gov/water\\_issues/programs/npdes/](http://www.waterboards.ca.gov/water_issues/programs/npdes/).
- E. Land Disturbance Activities Order No. 2009-0009-DWQ, NPDES NO. CAS000002.
- F. Fremont Municipal Code (FMC) Chapter 11 – "Storm Water Management and Discharge Control Ordinance."
- G. City's Stormwater NPDES (National Pollutant Discharge Elimination System) Permit No. CAS612008.
- H. Construction General Permit, 99-08-DWQ.

#### 1.03 SUBMITTALS

- A. General: Refer to Contract Specifications Section 01 30 00 "Submittals".
- B. Erosion and Sediment Control or Storm Water Pollution Prevention Plan (SWPPP)

#### 1.04 FEDERAL WATER POLLUTION CONTROL ACT

Refer to Section 01 57 19, Temporary Environmental Controls.

#### 1.05 WATER POLLUTION CONTROL PLAN

- A. A Water Pollution Control Plan shall be submitted by the Contractor to the Engineer for approval prior to proceeding with any work on this project. This plan shall be designed to implement the BMP's (fiber rolls, stabilized construction entrance, drain inlet protection, etc.) and any other BMP's the Contractor deems necessary to keep dirt, debris, and construction waste away from storm drains and local waterways. Contractor shall implement and maintain the plan, and or update the plan to provide temporary erosion and sediment control (Water Pollution Control Plan) for the duration of the project.
- B. Contractor shall implement and maintain temporary erosion and sediment control for the project as detailed in the most recent version of the Erosion Control and Sediment Control Field Manual for California, and the most recent California Stormwater Quality Association (CASQA) BMP Handbook, Construction, for the entire duration of the project.

## **PART 2 PRODUCTS**

2.01 Best Management Practice (BMP) products shall be as specified in the most recent CASQA BMP Handbook, Construction.

## **PART 3 EXECUTION**

### **3.01 EXECUTION OF WATER POLLUTION CONTROL PLAN**

- A. Erosion and sediment control work shall consist of applying BMP's to control the discharge of stormwater pollutants from the project site. BMP's shall be used to cover all temporary erosion and sediment control situations that arise during construction including unanticipated field conditions year-round. These erosion and sediment control measures shall control and contain erosion-caused silt deposits and provide for the safe discharge of silt-free storm water into existing and proposed storm facilities.
- B. The Water Pollution Control Plan shall be designed to ensure the project site is protected during all storm events for the entire duration of the project.
- C. Contractor shall implement and maintain all Water Pollution Control Plan work for the project that shall include:
  1. Construction of any and all necessary systems to eliminate contaminants from entering the storm system.
  2. Clean up and control of the work site materials, spoils and debris.
  3. Removal of contaminants produced by equipment used for the construction of the project.
  4. Prohibition of illicit discharge (non-rain water) into the storm system.
  5. Provision of all labor, materials, equipment and apparatus not specifically mentioned herein or noted on the plans, but which are incidental and necessary to complete the work specified.
- D. The Water Pollution Control Plan must be approved by the Engineer prior to any construction work commencing on this project, as required by Section 2.5 of the General Conditions and Section 01 30 00, Submittals, of the Project Specifications.
- E. Contractor shall be responsible for ensuring that all sub-contractors and suppliers are aware of all water pollution control measures and that they implement such measures. Failure to comply with the storm water quality regulations and specifications will result in the issuance of verbal or written corrective notices, citations, fines, and/or a project stop order.
- F. Contractor shall maintain erosion and sediment control measures daily. The name of the person responsible for the daily maintenance of these facilities shall be on record with the Engineer and Project Inspector, along with a phone number where they can be reached twenty-four (24) hours a day.
- G. Erosion and Sediment Control: Temporary erosion and sediment control work shall consist of applying erosion control materials to embankment slopes, excavation slopes and other areas designated on the Water Pollution Control Plan, and installing sediment control such as, but not limited to, fiber roll, silt fence, inlet protection, gravel bags, headwall protection and stabilized construction entrances and exits, or other measures as specified in the Water Pollution Control Plan.
- H. Removal of Temporary Structures: Erosion and sediment control structures and facilities shall be removed from the Jobsite upon completion of the affected work.

### **3.02 FEDERAL WATER POLLUTION CONTROL ACT**

The Contractor's attention is directed to the Federal Water Pollution Control Act amendments of 1972 (Public Law 92-500) which requires a Corps of Engineers permit under Section 404 of the

Act, for the discharge of one cubic yard or more of any dredged or fill material into “navigable waters” as defined in “Permits for Activities in Navigable Waters or Ocean Waters,” Paragraph (d) (2), Federal Register of 25 July 1975, page 3134.

3.03 MEASUREMENT AND PAYMENT

Full compensation for conforming to the provisions in this section “**Water Pollution Control**” not otherwise provided for, shall be considered as included in prices paid for the various contract items of work involved and no additional compensation will be allowed therefor, unless specified otherwise.

**END OF SECTION**

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**SECTION 01 58 00 Project Identification Signage**

**PART 1 GENERAL**

1.01 SECTION INCLUDES

- A. Contract Identification and Construction Signage
- B. Mounting post, bolts and footing
- C. Removal and backfill of post holes

1.02 DESCRIPTION OF WORK

- A. The Contractor is responsible to furnish and erect two (2) professionally made project information signs.

1.03 PROJECT INFORMATION CONSTRUCTION SIGN

- A. Size: 4' H x 6' W
- B. Sign material shall be .080 sheet aluminum, with 1" radius corners. Fastening hardware shall be commercial quality.
- C. Sign to be mounted on minimum 4" wood posts embedded in the ground, with 6'-6" clearance beneath the bottom of the sign.
- D. Any deviations shall be approved by the project manager prior to fabrication.
- E. City will provide an electronic version of the sign graphic to the Contractor or their sign shop. Refer to the end of this section for graphic example.
- F. Excavate post holes, provide mounting fastener.
- G. Location: The signs shall be placed at two locations to be determined by City prior to construction.

1.04 INSTALLATION AND MAINTENANCE

- A. Installation: Sign mounting and sign parts shall be installed in accordance with Caltrans Standard Plans for Roadside Signs – Wood Post.
- B. Maintenance: Keep signs clean and in good repair until Contract Completion.

1.05 SUBMITTALS

- A. Refer to Contract Specifications Section 01 30 00, Submittal Procedures.
- B. Submit Shop Drawings of Contract funding signs and field office signs including designs, layouts, sizes, and proposed locations within 15 Days of Notice to Proceed.

**PART 2 PRODUCTS**

Not Used

**PART 3 EXECUTION**

3.04 MEASUREMENT AND PAYMENT

- A. Full compensation for conforming to the provisions in this section "**Project Identification Signage**" not otherwise provided for, shall be considered as included in prices paid for the various contract items of work involved and no additional compensation will be allowed therefor, unless specified otherwise.

**END OF SECTION**

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**PART 1 GENERAL**1.01 SECTION INCLUDES

- A. Administrative and procedural requirements governing Contractor's selection of products for use in Project.

1.02 RELATED SECTIONS

- A. Section 01 30 00 "Submittals"
- B. Section 01 25 00 "Product Substitution Procedures"

1.03 DEFINITIONS

- A. Definitions used in this Article are not intended to change meaning of other terms used in Contract Documents, such as "specialties," "systems," "structure," "finishes," "accessories," and similar terms. Such terms are self-explanatory and have well-recognized meanings in construction industry.
  1. Products: Items purchased for incorporation in Work, whether purchased for Project or taken previously purchased stock. Term "product" includes terms "material," "equipment," "system," and terms of similar intent.
    - a. Names Products: Items identified by manufacturer's product name, including make or model number or other designation, shown or lists in manufacturer's published product literature, that is current as of date of Contract Documents.
  2. Materials: Products substantially shaped, cut, worked, missed, finished, refined or otherwise fabricated, processed, or installed to form part of Work.
  3. Equipment: Product with operational parts, whether motorized or manually operated, that requires service connections, such as wiring or piping.

1.04 SUBMITTALS

- A. Product List: Prepare list showing products specified in tabular form acceptable to Construction Manager and Project Landscape Architect. Include generic names of products required. Include manufacturer's name and proprietary product names for each item listed.
- B. Refer to Section 01 30 00 "Submittals"

1.05 QUALITY ASSURANCE

- A. Source Limitations: To fullest extent possible, provide products of same kind from single source.
- B. Compatibility of Options: When given option of selecting between two (2) or more products for use on Project, product selected shall be compatible with products previously selected, even if previously selected products were also options.
- C. Nameplates: Except for required labels and operating data, do not attach or imprint manufacturer's or producer's nameplates or trademarks on exposed surfaces of products that will be exposed to view in occupied spaces or on exterior.
  1. Labels: Locate required product labels and stamps on concealed surfaces or, where required for observation after installation, on accessible surfaces that are not conspicuous.

2. Equipment Nameplates: Provide permanent nameplate on each item of service-connected or power-operated equipment. Locate on easily accessible surface that is inconspicuous in occupied spaces. Nameplate shall contain following information and other essential operating data:
  - a. Name of product and manufacturer
  - b. Model and serial number
  - c. Capacity
  - d. Speed
  - e. Ratings

#### 1.06 PRODUCT DELIVERY, STORAGE, AND HANDLING

- A. Deliver, store, and handle products according to manufacturer's recommendations, using means and methods that will prevent damage, deterioration, and loss, including theft.
  1. Schedule delivery to minimize long-term storage at site and to prevent overcrowding of construction spaces.
  2. Coordinate delivery with installation time to assure minimum holding time for items that are flammable, hazardous, easily damaged, or sensitive to deterioration, theft, and other losses.
  3. Deliver products to site in undamaged condition in manufacturer's original sealed container or other packaging system, complete with labels and instructions for handling, storing, unpacking, protecting, and installing.
  4. Inspect products upon delivery to ensure compliance with Contract Documents and to ensure that products are undamaged and properly protected.
  5. Store products at site in manner that will facilitate inspection and measurement of quantity or counting of units.
  6. Store heavy materials away from Project structure in manner that will not endanger supporting construction.
  7. Store products subject to damage by elements above ground, under cover in weather-tight enclosure, with ventilation adequate to prevent condensation. Maintain temperature and humidity within range required by manufacturer's instructions.

### **PART 2 PRODUCTS**

#### 2.01 PRODUCT SELECTION

- A. General Product Requirements: Provide products that comply with Contract Documents, that are undamaged and, unless otherwise indicated, new at time of installation.
  1. Provide products complete with accessories, trim, finish, safety guards, and other devised and details needed for complete installation and intended use and effect.
  2. Standard Products: Where available, provide standard products of types that have been produced and used successfully in similar situations on other projects.
- B. Product Selection Procedures: Contract Documents and governing regulations govern product selection. Procedures governing product selection include following:
  1. Nonproprietary Specifications: When Specifications list products or manufacturers that are available and may be incorporated in Work, but do not restrict Contractor

to use of these products only, Contractor may propose any available product that complies with Contract requirements. Comply with Section 01 63 00 to obtain approval for use of unnamed product.

2. Products Specified by Indicating Basis for Design: Design and approval is based on Systems, products, and assemblies of manufacturer indicated. Equivalent systems, products, and assemblies of other named manufacturers may be used; however, Contractor is responsible for additional approvals required, for coordination with remainder of Contract Documents, and for costs of redesign or recalculation required. Comply with Section 01 63 00 to obtain approval for use of unnamed product.
3. Descriptive Specification Requirements. Where Specifications describe product or assembly, listing exact characteristics required, with or without use of brand or trade name, provide product or assembly that provides characteristics and otherwise complies with Contract requirements.
4. Performance Specification Requirements. Where Specifications require compliance with performance requirements, provide products that comply with these requirements and are recommended by manufacturer for application indicated.
  - a. Manufacturer's recommendations may be contained in published product literature or by manufacturer's certification of performance.
5. Compliance with Standards, Codes, and Regulations: Where Specifications only require compliance with imposed code, standard, or regulation, select product that complies with standards, codes, or regulations specified.
6. Visual Matching: Where Specifications require matching established Sample, Architect's decision will be final on whether proposed product matches satisfactorily.
  - a. Where no product available within specified category matches satisfactorily and complies with other specified requirements, comply with provisions of Section 01 63 00 for selection of matching product in another product category.
7. Visual Selection: Where specified product requirements include phase "as selected from manufacturer's standard colors, patterns, textures" or similar phase, select product and manufacturer that complies with other specified requirements. Architect will select color, pattern, and texture from product line selected.

### **PART 3 EXECUTION**

#### **3.01 INSTALLATION OF PRODUCTS**

- A. Comply with manufacturer's instructions and recommendations for installation of products in applications indicated. Anchor each product securely in place, accurately located and aligned.
  1. Clean exposed surfaces and protect as necessary to ensure freedom from damage and deterioration at time of Substantial Completion.

#### **3.02 MEASUREMENT AND PAYMENT**

Full compensation for conforming to the provisions in this section "**Product Requirements**", not otherwise provided for, shall be considered as included in prices paid for the various contract items of work involved and no additional compensation will be allowed therefor.

**END OF SECTION**

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## SECTION 01 74 14     **Cleaning**

### **PART 1     GENERAL**

#### 1.01     SECTION INCLUDES

- A. Cleaning and cleanup during construction.
- B. Dust control.
- C. Disposal of debris.
- D. Final cleaning of station facilities and ancillary buildings.
- E. Final site cleanup.

#### 1.02     RELATED SECTIONS

- A. Section 01 57 19, Temporary Controls.
- B. Section 02 41 19, Site Demolition.

#### 1.03     CLEANING AND CLEANUP DURING CONSTRUCTION

- A. The entire site of the Work, including the Contractor's work and storage areas, shall be kept in a neat, clean, and orderly condition at all times during the course of this Contract. The City's Engineer may, at any time during construction, order a general cleanup of the site as a part of the Work, and there shall be no additional cost to the City therefore. The Contractor shall provide general daily clean-up and disposal service for removal of waste, rubbish, trash, and debris away from the Worksite.
- B. Perform cleaning of all facilities and ancillary buildings as required during construction to prevent accumulations of dust, dirt, soil, trash, and debris, so that a clean and safe working environment will be present at all times.
- C. Walkways over exposed earth surfaces shall also be kept neat and free of pebbles and other obstacles to walking comfortably, equivalent to broom clean of paved surfaces.
- D. The Contractor shall remove all graffiti placed during the course of the Work within the Contractor's enclosed secured areas at the work site. The Contractor shall remove the graffiti within 24 hours after its detection in these areas.

#### 1.04     DISPOSAL OF DEBRIS, WASTE MATERIALS AND RECYCLING

- A. Regulations for Hauling and Disposal: Comply with all Federal, State, and Local Agency hauling and disposal regulations, and comply with all pertinent regulations of OSHA and local codes and practices to dispose of waste, trash, and debris in a safe, acceptable manner..
- B. Bury no waste material and debris on the site.
- C. Burning of trash and debris on the site will not be permitted.
- D. Refer to Section 01 50 50 "Construction and Demolition Waste Management" for coordination of disposal of trash and debris with Republic Services. Materials required to be recycled shall be done so in accordance with this section.
- E. Location of disposal site for trash and debris and length of haul are the Contractor's responsibility.
- F. Remove all materials, including all debris, waste material, tools, equipment, etc., from the project site upon, completion of work.

- G. All waste materials generated from soil preparation activities, including excavated materials, rocks and other debris shall be removed and disposed of at the contractor's expense.

1.05 FINAL SITE CLEANUP

- A. Remove all debris, waste material, tools, equipment, etc., from the project site. All materials removed shall be disposed of in accordance with the provisions in Section 7.9(D) of the General Conditions.
- B. Prior to Final Inspection, thoroughly clean the entire site and put it into a clean and neat, acceptable condition. Remove from the site all construction waste and unused materials, dunnage, loose rock and stones, excess earth, and debris of any description resulting from the Work. Hose down and scrub clean where necessary all pavement, vertical surfaces of concrete and masonry, and paved walks. Any runoff from this activity must be vacuumed or diverted as necessary away from the underground storm drain system.
- C. Thoroughly remove mortar droppings from concrete slabs and pavement where they occur.
- D. Free and clear all new and existing drainage systems.
- E. Clean and protect all conduit openings.
- F. Prior to Final Inspection, the Contractor shall remove all markings from streets, sidewalks, walls and other City facilities within the enclosed secured area at the work site.

**PART 2 PRODUCTS**

2.01 CLEANING PRODUCTS

- A. Utilize cleaning products that meet the requirements of the Green Seal GS-37 standard or comply with the requirements and maximum VOC limits of Title 17, California Code of Regulations, Division 3, Chapter 1, Subchapter 8.5, Article 2, Regulation for Reducing VOC Emissions from Consumer Products (September 2001).
- B. Utilize janitorial paper products and trash bags that meet the minimum percentages of post-consumer recycled content and recovered content requirements of EPA's Comprehensive Procurement Guidelines.

**PART 3 EXECUTION**

3.01 MEASUREMENT AND PAYMENT

Full compensation for conforming to the provisions in this Section, "Cleaning", not otherwise provided for, shall be considered as included in the price paid for various contract items of work and no additional compensation will be allowed therefor.

**END OF SECTION**

**PART 1 GENERAL**

1.01 SECTION INCLUDES

- A. Requirements preparatory to final inspection.
- B. Final inspection.
- C. Acceptance of the Work and final payment.

1.02 RELATED SECTIONS

- A. Article 11 "Completion and Warranty Provisions" of the General Conditions.

1.03 REQUIREMENTS PREPARATORY TO FINAL INSPECTION

- A. Prior to final inspection, the Contractor will perform or provide the following, as applicable:
  - 1. Temporary facilities, except as may be required for punch list work, will be removed from the site.
  - 2. The site and all applicable appurtenances and improvements will be cleaned as specified in Section 01 74 14 "Cleaning".
  - 3. Record ("As-Built") drawings and specifications will be completed, signed, and submitted to the Engineer as specified in Section 01 78 39 "Project Record Documents".
  - 4. All underground utility stub outs shall be identified in the field with wooden stakes, denoting the end of the utility run, location of capped facility, and depth labeled to the facility, to facilitate the ease of identification for the next phase of work.
- B. The Contractor will be represented by its principal superintendent and such Subcontractors and Suppliers as may be necessary to answer the questions of the Engineer's inspection team.
- C. Certain elements of the Work, such as mechanical and electrical work, may be scheduled separately at appointed times in order to keep the preliminary inspection more focused and the number of persons in the City's Engineer's inspection team to a minimum.
- D. From the information gathered from this inspection, the City's Engineer will prepare a punch list of work to be performed, corrected, or completed.
- E. All work on the punch list will be completed by the Contractor prior to requesting the final inspection.

1.04 FINAL INSPECTION

- A. When all requirements of the above prepared punch list have been completed, the Contractor will request the final inspection.
- B. The request will be made in writing, addressed to the City's Engineer, at least 14 calendar days in advance of the requested date of the final inspection.
- C. The Contractor will be represented by its principal superintendent and such Subcontractors and Suppliers as may be necessary to verify the completion of the Work including punch list items.
- D. Depending on the extensiveness of the punch list items, certain elements of the Work may be scheduled separately for final inspection at appointed times.

1.05 ACCEPTANCE OF THE WORK AND FINAL PAYMENT

- A. Acceptance of the Work will be made in accordance with Article 8.4, and Article 11.1(D) of the General Conditions.
- B. Final payment will be made in accordance with Article 11.1I of the General Conditions.

**PART 2 PRODUCTS – Not Used**

**PART 3 EXECUTION**

3.01 MEASUREMENT AND PAYMENT

Full compensation for conforming to the provisions in this Section, **“Project Closeout”**, not otherwise provided for, shall be considered as included in the price paid for various contract items of work and no additional compensation will be allowed therefor.

END OF SECTION

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## SECTION 01 78 39 Project Record Documents

### PART 1 GENERAL

#### 1.01 SECTION INCLUDES

- A. Maintenance of Record Documents and Samples.
- B. Drawings
- C. Specifications
- D. Submittal of Record Documents and Samples.

#### 1.02 MAINTENANCE OF RECORD DOCUMENTS AND SAMPLES

- A. Maintain at the Worksite one copy of the following documents for record purposes:
  - 1. Conformed Contract Documents
  - 2. Change Orders
  - 3. Approved Submittals
  - 4. Clarifications or Explanatory details or Request for Information (RFI)
  - 5. Inspection Reports
  - 6. Laboratory Test Records
  - 7. Field test Reports and Records.
  - 8. Factory Test Reports and Records
  - 9. Manufacturer's certificates.
- B. Maintain for record purposes at a location approved by the City engineer, electronic files for those documents which are required to be submitted electronically. Ensure that backups of electronic files are made on a regular basis and stored at a remote location.
- C. Store Record Documents and samples in field office apart from documents used for construction. Do not use record documents for construction for fabrication purposes.
- D. Provide files, racks, and secure storage for record documents and samples.
- E. Maintain record documents in a clean, dry and legible condition. Do not use record documents for construction purposes.
- F. Label and file record documents and samples in accordance with section number listings in table of contents of this project manual. Label each document "PROJECT RECORD" in neat, large, printed letters.
- G. Keep record documents and samples available for inspection by Engineer at all times.

#### 1.03 RECORDING

- A. Record information on a set of black line opaque drawings, and in a copy of a project manual. At completion of the project, transfer information from the black line prints onto media as directed by the City.
- B. Maintain separate colors for each major system, for record information.
- C. Record information concurrently with construction progress. Do not conceal any work until required information is recorded.

- D. Contract drawings and shop drawings: Legibly mark each item to record actual construction, including:
  - 1. Measured horizontal locations for water, storm drainage, and sanitary sewer drainage piping and measured horizontal and vertical locations for all other underground utilities, referenced to permanent surface improvements.
  - 2. Measured locations of internal utilities and appurtenances concealed in construction, referenced to visible and accessible features of construction.
  - 3. Field changes of dimension and detail.
  - 4. Changes made by modifications, including all RFI's.
  - 5. Details not on original contract drawings or SK drawings.
  - 6. References to related shop drawings and modifications.
- E. Other Documents: Maintain manufacturer's certifications, inspection certifications, field test records, and other documents required by individual specification sections.

1.04 SUBMITTALS

- A. At Contract closeout, deliver Record Documents and samples
- B. Transmit with cover letter in duplicate, listing:
  - 1. Date.
  - 2. Project title and number.
  - 3. Contractor's name, address, and telephone number.
  - 4. Number and title of each Record Document.
  - 5. Signature of Contractor or authorized representative.
- C. Product Data and Contact List:
  - 1. Preparation of Submittals:
    - a. Table of contents: Provide title of project; names, addresses, and telephone numbers of Architect/Engineer and Contractor with name of responsible parties; schedule of products and systems, indexed to content of the volume.
    - b. For each product or system: List names, addresses and telephone numbers of Subcontractors and suppliers, including local source of supplies and replacement parts.
    - c. Product data: Mark each sheet to clearly identify specific products and component parts, and data applicable to installation; delete inapplicable information.
    - d. Drawings: Supplement product data to illustrate relations of component parts of equipment and systems, to show control and flow diagrams. Do not use project record documents as informational drawings.
    - e. Typed Text: As required to supplement product data. Provide logical sequence of instructions for each procedure, incorporating manufacturer's instructions specified in Section 01 45 00 – Quality Control.
    - f. Warranties and Bonds: Bind in copy of each.
  - 2. Form of Submittals:
    - a. Prepare data in the form of an instructional manual.

- b. Binders: 8-1/2 x 11-inch three-ring binders with hardback, cleanable, plastic covers; 3-inch maximum ring size. When multiple binders are used, correlate data into related consistent groupings.
  - c. Cover: Identify each binder with typed or printed title "Product DATA and Contact List"; list title of Project and identify subject contents.
  - d. Arrange content by systems, under section numbers and sequence of Table of Contents of this Project Manual.
  - e. Provide tabbed fly leaf for each separate product and system, with typed description of product and major component parts of equipment.
  - f. Text: Manufacturer's printed data, or typewritten data on 20 lb. paper.
  - g. Drawings: Provide with reinforced punched binder tab. Bind in with text; fold larger drawings to size of text pages.
  - h. Record Drawings/Documents: At Contract closeout, a Mylar copy and an electronic version (.pdf and .jpg on DVD media) of improvement plans revised to reflect "Record Drawings" conditions by the Engineer of Record shall be submitted to the City and approved by the City Engineer prior to final acceptance of work.
3. Time of Submittals:
- a. Submit one (1) copy of completed volumes in final form 15 days prior to final inspection. Copy will be returned after final inspection, with City Engineer's comments. Revise content of documents as required prior to final submittal.
  - b. Submit two (2) copies of revised volumes of data in final form within 10 days after final inspection.

## **PART 2 PRODUCTS**

**Not Used.**

## **PART 3 EXECUTION**

### **3.01 MEASUREMENT AND PAYMENT**

Full Compensation for conforming to the provision in this section "**Project Record Documents**" not otherwise provided for, shall be considered as included in prices paid for the various contract items of work involved and no additional compensation will be allowed therefor.

END OF SECTION

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## DIVISION 2 – EXISTING CONDITIONS

### SECTION 02 41 00 SITE DEMOLITION

#### PART 1 GENERAL

##### 1.01 SCOPE

- A. Site Demolition work includes the furnishing of labor, materials of any kind, tools, equipment, implements, machinery, methods of process, and services necessary to clear the site as shown on the plans, described by these Special Provisions, and as directed by the Engineer. The work shall include, but shall not necessarily be limited to, the following:
1. Installation of temporary construction fencing
  2. General demolition, including clearing and grubbing, inspection, protecting existing drainage structures and confirm functionality, dust control, utilities and facilities to remain and be protected.
  3. Sawcut, remove and dispose of existing pervious concrete paving
  4. Sawcut, remove and dispose of existing asphalt paving
  5. Remove and dispose of existing decomposed granite and base material
  6. Remove and dispose of existing gravel and base material
  7. Remove and dispose of existing concrete curb
  8. Remove existing steel edge
  9. Remove existing tree and stump grinding. See Section 01 56 30 "Tree Removal, Tree Pruning and Root Pruning."
  10. Pothole to verify the locations, depth and alignment of all underground utilities to be protected and utilized in locations where demolition will occur.
  11. Refer to "Sawcutting" found elsewhere in this Section.
  12. Coordinate with City for installation of construction signs.

##### 1.02 RELATED SECTIONS

- A. Section 01 00 00 "Supplemental to the General Requirements"
- B. Section 01 30 00 "Submittal Procedures"
- C. Section 01 32 30 "Photographic Documentation"
- D. Section 01 71 13 "Mobilization and Temporary Construction Facilities"
- E. Section 01 72 40 "Conformance Survey"
- F. Section 01 74 19 "Construction and Demolition Debris Management"
- G. Section 01 56 00 "Protection of Existing Facilities"
- H. Section 01 56 26 "Temporary Construction Fencing"
- I. Section 31 00 00 "Earthwork"
- J. Section 32 84 00 "Irrigation"
- K. Section 11A and 11B, City of Fremont Standard Trench Backfill Specification, Standard Specifications, dated January 1995 (amended).

- L. All Technical Sections found herein
  - M. Public Safety: Refer to the Special Provisions herein, Section 01 00 00 "Supplemental to the General Conditions" and Caltrans Standard Specifications.
- 1.03 SUBMITTALS
- A. Submit under provisions of Section 01 30 00 "Submittal Procedures"
  - B. Proposed Protection Measures: Submit informational report, including Drawings that indicate the measures proposed for protecting individuals and property to dust control, noise and other environmental conditions.
  - C. Indicate proposed location of construction fencing
  - D. Schedule – Submit for:
    - 1. Demolition schedule review as a part of construction schedule
    - 2. Waste Handling Plan, see Section 01 74 19
  - E. Detailed information on methods and sequencing for accomplishing this Work shall be submitted to Project Landscape Architect no later than 10 days prior to commencement.
  - F. The Contractor shall provide copies of written agreements from private land, City, landfill operators, or other agencies accepting disposal of any demolished material prior to any work.
  - G. The Contractor shall submit to the City a haul route plan for approval, prior to commencing any work.
  - H. Truck Movement is limited between the hours of 7 am and 4 pm, PST.
- 1.04 REFERENCE SPECIFICATIONS, CODES, AND STANDARDS
- A. USA Underground Service Alert
  - B. CAL-OSHA
- 1.05 DISPOSAL AND CLEAN UP
- A. All debris, waste material, tools, equipment, shall be removed from the project site and disposed of in accordance with the provisions in Section 7.9(D) of the General Conditions.
  - B. Materials required to be recycled shall be done so in accordance with Section 01 74 19 Construction and Demolition Debris Management. Regulations.
  - C. Remove all materials, including all debris, waste material, tools, equipment, etc., from the project site upon, completion of work.
  - D. Regulations for Hauling and Disposal: Comply with all Federal, State, and Local Agency hauling and disposal regulations, and comply with all pertinent regulations of OSHA and local codes and practices.
- 1.06 JOB CONDITIONS
- A. UTILITIES: Underground utilities exist in work areas; use extreme caution. Pothole to verify actual depth/ location of utilities. Notify city Engineer in writing if existing conditions interfere with any construction. Locations shown on the plan are approximate and for general information only. Notify underground service alert (USA) at least 48 hours prior to an excavation on this project (phone: 800-227-2600). Locate and mark all utilities prior to start of construction.

- B. For utilities within the project site, a private utility locating firm may be required, at the option of the contractor, to identify underground utilities which may not be identified through USA.
- C. Remove materials carefully, to extent shown or required. Provide neat and orderly junctions between existing and new materials.
- D. Protect from damage existing trees, structures and facilities that are to remain.
- E. Perform Work so as to provide the least interference and most protection to existing facilities and improvements to remain.
- F. Provide not less than 72 hours' notice of activities that will affect operations of adjacent occupied buildings.
- G. Maintain access to existing walkways, exits, and other facilities used by adjacent residents and occupants of adjacent buildings.
  - 1. Do not close or obstruct walkways, exits, or other facilities used by occupants of adjacent buildings without written permission from the City or other authorities having jurisdiction.

1.07 PROTECTION

- A. Provide as necessary to protect public, the City's employees, existing finishes, improvements to remain, existing utilities, and adjoining property from damage, all in accordance with applicable regulations.
- B. Dust Palliation: All necessary precautions, including watering, shall be taken to control air-borne dust to within reasonable limits. If serious problems and/or complaints arise due to air-borne dust, and when directed by the City's Engineer, or Project Inspector, operations causing such problems shall be temporarily discontinued.
- C. Explosives: Use of explosives will not be permitted.

1.08 QUALITY ASSURANCE

- A. Codes and Regulations: Comply with governing codes and regulations. Use experienced workers.

**PART 2 MATERIALS/PRODUCTS**

1.01 TEMPORARY CONSTRUCTION FENCING

- A. Refer to Section 01 56 26, "Temporary Construction Fencing" for further information.

**PART 3 EXECUTION**

3.01 MOBILIZATION

- A. Refer to Section 01 71 13, "Mobilization and Temporary Construction Facilities" for additional information.

3.02 TEMPORARY CONSTRUCTION FENCING

- A. As first order of work, the contractor shall install all new temporary construction fencing to secure the site, staging area, and work zone.
- B. Establish and clearly mark the accessible route to the project site entry.
- C. Section 01 56 26, the contractor shall be responsible for adjusting the layout of the fences as necessary to accommodate their work, and to accommodate other contractor's doing work, accessing the site, accessing any buildings.

D. No additional payment will be made for adjusting the layout of the temporary construction fencing.

3.03 CONSTRUCTION SURVEYING, STAKING AND CONFORMANCE SURVEYING

A. Refer to Section 01 72 40 "Conformance Surveying" for additional information.

3.04 SITE DEMOLITION

A. Occupancy and Water Pollution Control

1. Water sprinkling, temporary enclosures, chutes, watering trucks, and other suitable methods shall be used to limit dust and dirt rising and scattering in the air. The Contractor shall comply with all government regulations pertaining to environmental protection.
2. Water shall not be used in a manner that creates hazardous or objectionable conditions such as ice, flooding, muddy conditions, or pollution.
3. Implement all best Management Practices per the Contractor's Water Pollution Control Plan.
4. The site shall be kept neat and orderly during the demolition to the maximum extent practical.
5. Public right-of-way and private property shall be kept free of debris at all times. Stockpiles of demolished items or materials shall be removed from the site on a daily basis or stored in waste containers which shall be emptied on a weekly basis or as conditions require in order to manage the accumulation of waste. Accumulations of flammable materials shall not be permitted.

B. Inspection

1. Prior to all work of this section, Contractor shall carefully inspect site and all objects designated to be removed and to be preserved.
2. Locate all existing active utility lines traversing the site and determine the requirements for their removal and/or protection.
3. Where existing conditions conflict with representations of the Contract Documents, notify the Engineer and obtain written clarification prior to commencement of demolition.
4. Do not commence Demolition Work until unsatisfactory conditions have been corrected.

C. Potholing

1. Prior to rough grading, excavation and trenching for utilities, and any removal of vegetation, the Contractor shall locate all underground utility facilities so that proper precautions may be taken to not damage such facilities. Failure to follow this procedure places the responsibility for repairing any damage resulting from work upon the Contractor, and all repairs shall be done at the Contractor's expense.
2. The Contractor shall backfill all voids created by clearing and grubbing work with on-site native material, backfilled in a slightly convex mound to compensate for settling. Backfill material in all non-paved areas may be selected from the on-site excavations to be performed and shall be clean, free of lumps and debris greater than one inch and shall be cohesive.

3. Notify the Project inspector of any conflicts regarding the depth of existing underground utilities that may be affected by, or come into contact with new work.
4. Any underground utilities damaged by the contractor due to not adequately potholing to determine depth, and not adequately protected shall be repaired at the contractor's expense.

D. Saw Cutting

1. All existing pavement edges shall be saw cut as noted on the plans and as directed by the Engineer.
2. All saw cutting and concrete removal will be done joint to joint.
  - a. Where a portion of the existing surfacing is to be removed, the outline of the area to be removed shall be cut on a neat line with a power-driven saw to a minimum depth of one-third foot (0.33) completely across the width of the concrete, before removing the surfacing. All required saw cutting of concrete to be removed shall be in a straight line. The portion being removed shall be taken out in such a manner as to leave an even edge with no chips.
  - b. Surfacing and base shall be removed without damage to surfacing that is to remain in place. At the Contractor's expense, damage to the surfacing which is to remain in place shall be repaired or replaced if ordered by the Engineer to a condition satisfactory to the Engineer.

E. Utilities and Facilities to Remain and be Protected

1. Protect all existing utility boxes, including junction boxes not identified to be demolished or removed.
2. Junction boxes shall remain at the existing elevations in the field and new surfacing work shall conform to those elevations and positively drain away from those boxes and facilities.

3.05 DEMOLITION OF EXISTING CONCRETE STRUCTURES

- A. Demolish and remove existing concrete structures including, but not limited to pervious concrete paving and concrete curb
- B. All existing edges shall be saw cut as noted on the plans and as directed by the Engineer.
- C. All concrete material to remain shall be neat and uniform. Damage to pavement and curbs to remain in place shall be repaired or replaced to a condition satisfactory to the Engineer.

3.06 DEMOLITION OF EXISTING ASPHALT PAVING

- A. Demolish and remove existing asphalt paving, including base materials.
- B. All existing edges shall be saw cut as noted on the plans and as directed by the Engineer.
- C. The asphalt material to remain shall be neat and uniform. Damage to pavement to remain in place shall be repaired or replaced to a condition satisfactory to the Engineer.

3.07 DEMOLITION OF EXISTING DECOMPOSED GRANITE

- A. Demolish and remove existing decomposed granite, including base materials, and aluminum edging.

3.08 DEMOLITION OF EXISTING GRAVEL

- A. Demolish and remove existing gravel and subgrade to a minimum of 6" depth.

3.09 MEASUREMENT AND PAYMENT

- A. Refer to 01 56 26 "**Temporary Construction Fencing**" for measurement and payment of "Temporary Construction Fencing"
- B. The contract lump sum payment for "**General Demolition**" shall include full furnishing all labor, materials, tools, equipment, and incidentals and doing all the work, including sawcutting, demolition of pervious concrete paving, concrete curb, asphalt paving, decomposed granite, gravel, steel edge, tree removal and stump grinding, clean-up, disposal, including off haul and disposal of excess excavated on-site soil, and complying with applicable regulations, complete in place as shown on the plans, as required by these Special Provisions, and as directed by the City Engineer or their designee and no separate payment will be made therefor.
- C. Payment for "**Inspection**", "**Potholing**", "**Dust Control**", "**Utility and Facilities to Remain and be Protected**", "**Clean-up**", "**Disposal**", and "**Regulations**" shall be considered as included in the various contract items and no additional payment will be made therefor.

END OF SECTION

## DIVISION 3 – CONCRETE

### SECTION 03 11 00 CONCRETE FORMWORK

#### PART 1 – GENERAL

##### 1.01 SCOPE

Supply and install all formwork for all cast-in-place concrete as shown on the plans and as specified herein.

##### 1.02 COORDINATION

- A. All pipes, sleeves, anchors and bolts, angle frames, inserts, supports, ties and other materials in connection with concrete construction shall be placed and secured in position before the concrete is placed.
- B. The Contractor shall obtain information and instructions from other trades and suppliers in ample time to schedule and coordinate the installation of items furnished by them to be embedded in concrete so that provision for their work can be made without delaying the project.
- C. Cutting and/or patching made necessary by failure or delay in complying with these requirements shall be done at no cost to the City.

##### 1.03 CLEAN-UP

During the progress of the work and at the completion of the work, the Contractor must conform to the requirements of Division 1, General Requirements of these Special Provisions.

#### PART 2 – MATERIALS

##### 2.01 MATERIALS

- A. Forms for Slabs and Exposed Concrete: Forms for flat, exposed surfaces shall be 5-Ply Exterior B-B (Concrete Form) panels conforming to the requirements of U.S. Department of Commerce Product Standard PS 1-66. See requirements for thickness hereinafter. Panels with raised or separated face veneers shall not be used for exposed concrete.
- B. Form Facing Material
  1. Provide non-porous surface such as steel, plastic, or high-density overlaid plywood with watertight joint seals to prevent leakage.
  2. Plywood panels shall have a smooth surface treatment to prevent any development of bond or adhesion to concrete and to seal plywood surfaces against moisture.
- C. Form Ties: Fiberglass rods tinted to match concrete.
- D. Form Release: Burke Form Sealer, manufactured by W.J. Burke Company, or approved equal, shall be used and shall be applied in strict accordance with the manufacturer's directions, or approved equal.
- E. Rough Hardware: Nails, bolts, screws, anchors, etc., as shown or needed shall be furnished and set.

#### PART 3 – EXECUTION

3.01 WORKMANSHIP

- A. Footings shall rest on firm, undisturbed or compacted soil at a minimum depth below finish or natural grade as stated on the plans.
- B. Forms for concrete shall be complete and of such strength and construction as to prevent any spread, shifting, or settling of same when concrete is deposited therein and tight enough to avoid any leakage or washing out of cement mortar from the concrete.
- C. All forms and false-work shall be designed in a manner so that the stresses in the different members can be determined, including the details. They shall have sufficient rigidity so as to resist deflection more than one-eighth inch (1/8") between supports after the concrete has been placed therein, and to assure a smooth and even appearance of the surfaces. Any plywood forms shall be not less than one-quarter inch (1/4") thick. If necessary to prevent deflections, plywood shall be backed with other material.
- D. Bolts, rods and other approved devices shall be used for internal ties and spreaders. These shall be of such construction that when the forms are removed, no metal shall be within one inch (1") of an exterior face.
- E. Pipes exceeding one-third (1/3) of slab thickness shall not be placed in structural concrete unless approved by the Engineer. Pipes may be placed through structural concrete in sleeves, but may not be embedded therein.
- F. Special care shall be taken that forms are true to the required lines, grades and surfaces so as to give a uniform neat and workmanlike finish to all concrete surfaces and to make form supports of sufficient strength, properly braced and on adequate foundations so that there shall be no settling or distortion when the weight of concrete is added.
- G. All dirt, chips, sawdust, rubbish, water etc., shall be completely removed from the forms by water hosing and air pressure before any concrete is deposited therein. No wooden ties nor blocking shall be left in concrete except where indicated for attachment of other work.
- H. Any wood forms other than plywood shall be thoroughly water soaked before placing any concrete. The wetting of forms shall be started at least twelve (12) hours before concreting.
- I. Upon removal of forms, all bolts, wires for anchoring, etc., shall be either removed, cut off to lengths as directed or left in place for anchorage of other work as specified.
- J. When a concrete pour has been stopped for a sufficient length of time so that shrinkage or warp has separated the forms and the concrete, provisions shall be made to draw the forms into firm contact with the concrete before placing additional concrete. Care must be taken to prevent any shoulder or ledge being formed at a cold joint.
- K. Forms to be reused shall be in good condition and shall be thoroughly cleaned before being reused.
- L. Construction details shall be in conformance with the Standard Specifications and City of Fremont Standard Detail for curb, gutter and sidewalk, except where modified herein, or as detailed on the plans.
- M. Construction joints shall be made and located generally as indicated on the plans and in a manner so as not to impair the strength of the structure and only at locations as approved by the Engineer.

N. Anchor bolts shall be set into concrete the distance specified by the manufacturer.

3.02 MEASUREMENT AND PAYMENT

A. Payment for “**Concrete Formwork**” is considered to be included in the contract price paid for various concrete items of work that require formwork and shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals and for doing all the work covered in this section, complete in place as shown on the plans, as required by the Special Provisions, and as required by the Engineer, and no separate payment will be made therefor.

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## SECTION 03 20 00 CONCRETE REINFORCEMENT

### PART 1 GENERAL

#### 1.01 SCOPE

Supply and install all reinforcing steel as shown and called for on the plans, structural drawings and in these special provisions.

#### 1.02 COORDINATION

This Contractor and other trades whose work makes it necessary for them to cooperate, shall coordinate their work so as not to interfere with each other. Interferences between items of various trades shall be resolved before any concrete is poured.

#### 1.03 STORAGE

Reinforcement shall be stored in a manner that will avoid excessive rusting or coating with grease, oil, dirt or other objectionable materials.

#### 1.04 CLEAN-UP

During the progress of the work and at the completion of the work, the Contractor must conform to the requirements of Division 1, General Requirements of these Special Provisions.

### PART 2 MATERIALS

#### 2.01 REINFORCING BARS – FLAT WORK AND CURB WORK

- A. Reinforcing detailing, fabrication, and placement shall conform to the California Building Code (CBC), "The Manual of Standard Practice of the Concrete Reinforcing Steel Institute" and the "Building Code Requirements for Structural Concrete and Commentary", ACI 318 unless otherwise noted.
- B. Reinforcing steel shall conform to the following standards:
  1. Deformed bars #3 – ASTM A615, Grade 40
  2. Deformed bars #4 and larger – ASTM A615, Grade 60
- C. Reinforcing fabrication and placing shall conform to the Manual of Standard Practice of the Western Concrete Reinforcing Institute, unless otherwise noted.
- D. All reinforcing shall be marked so identification can be made when the final in-place inspection is made. Reinforcing spacing shown are the maximum on center and all reinforcing is continuous, unless noted otherwise.
- E. All reinforcing bars shall be corrosion-resistant types at locations in contact with exposed surfaces. Reinforcing shall be clean of rust, grease and other materials likely to impair bond.
- F. All reinforcing shall be made cold
- G. Supports for reinforcing bars in footings shall be of sufficient strength to adequately support the bars, and shall be of the type approved by the Engineer.
- H. Supports or spacers for bars in walls shall be such that exterior face of wall will not be marred when forms are stripped and final finish has been completed.
- I. Tie wire shall be No. 16 American Wire Gauge or heavier, black annealed. All reinforcing shall be properly and securely wired and properly supported above grade and away from forms to establish proper clearances.

- J. Miscellaneous Reinforcing Accessories: Spacers, chairs, dobies, ties, and other devices necessary for properly placing, spacing, supporting, and fastening reinforcement in place.

2.02 DOWELING

- A. Dowels must be #4 deformed bars and comply with ASTM A615, Grade 60
- B. Dowels shall be twelve (12") inches long, #4 deformed bar, spaced twenty-four (24") inches on center, and extend a minimum of four (4") inches into the existing concrete.
- C. Epoxy for doweling shall conform to the provisions in Section 95, "Epoxy," of the 2018 Caltrans Standard Specifications. The Contractor shall prepare the pavement surface prior to application according to the manufacturer's recommendations.

2.03 EPOXY

- A. Epoxy for doweling shall conform to the provisions in Section 95, "Epoxy," of the 2018 Caltrans Standard Specifications.
- B. The Contractor shall prepare the pavement surface prior to application according to the manufacturer's recommendations.

**PART 3 EXECUTION**

3.01 WORKMANSHIP

- A. All work shall comply with the requirements set forth in the "Manual of Standard Practice for Detailing Reinforced Concrete Structures", published by the American Concrete Institute except where more exacting requirements are specified in the Contract Documents.
- B. Bars shall be accurately bent and placed as indicated on the plans.
- C. Bars shall be securely fastened and supported so that they may be walked upon without displacement and to prevent movement during placing of concrete.
- D. Any construction joints in members added by the Contractor shall be reinforced as directed by the Engineer at no additional expense to the City.
- E. Termination and continuation of concrete pours: Concrete pours that are to be terminated longitudinally along a pathway, due to amount of square foot to be poured in a single day, or other reason, shall be formed at the terminal edge where a deep joint is to be placed. The terminal edge shall be a cold joint and be prepared to accept the next concrete pour. Edge shall be tooled as delineated in the plan details, and doweled as described elsewhere herein.

3.02 CONNECTION TO EXISTING CONCRETE AND COLD JOINTS

- A. Wherever sidewalk, mow band or curb is removed, the entire section of sidewalk or curb between deep joints shall be removed and replaced. Horizontal dowels for proposed curb, gutter and sidewalk to be tied into existing curb, gutter and sidewalk to connect new work to existing.
- B. Where a concrete pour end with the intent to be continued, that cold joint edge shall be tooled and doweled to accept the next concrete pour.
- C. Cold joints shall occur where a deep joint was anticipated, based on the spacing outlined in the plans and details for the various sidewalk width, or plaza layouts.

- D. Epoxy rebar dowels into drilled holes. Dowels shall be placed prior to placement of new adjacent concrete.

3.03 PLACING REINFORCING STEEL

- A. Reinforcement shall be placed in accordance with the details in the drawings.
- B. Reinforcement shall be accurately placed and securely tied at intersections with No. 16 gauge black annealed wire. It shall be maintained in proper position by chairs, bar supports, or other approved devices. Bars in footings shall be supported on precast concrete blocks.
- C. Bars shall lap 30 diameters at splices. Splices in adjoining horizontal bars shall be staggered at least six feet (6'). Where this is not feasible, submit suggestions for the Engineer's consideration. Horizontal bars shall be hooked around corners not less than 24 diameters, with a minimum of twelve inches (12") as per typical details.
- D. Welding of rebar is not permitted unless approved by the Engineer.
- E. Concrete protection of reinforcement shall be not less than the following:
- F. Three inches (3") where concrete is poured against ground or poured against forms, but may be in contact with ground.
- G. Clear distance between bars shall be not less than one and one-half inches (1-1/2") or one and one-half (1-1/2) bar diameters, not less than one and one-third (1-1/3) times the maximum size of coarse aggregate. Wherever conduits, piping, inserts, sleeves, etc. interfere with the placing of reinforcing steel as shown or called for, the Contractor must consult the Engineer and secure from them the method of procedure before pouring any concrete.

3.04 MEASUREMENT AND PAYMENT

Payment for "**Concrete Reinforcement**" is considered to be included in the contract price paid for various concrete items of work that require reinforcement and shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals and for doing all the work covered in this section, complete in place as shown on the plans, as required by the Special Provisions, and as required by the Engineer, and no separate payment will be made therefor.

**END OF SECTION**

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## SECTION 03 30 00 CAST IN PLACE CONCRETE

### PART 1 GENERAL

#### 1.01 SCOPE

- A. Supply and install all cast-in-place concrete work as shown on the plans. The work shall include, but shall not necessarily be limited to, the following:
1. Concrete Paving
  2. 6" and 12" Concrete Curb
  3. 6" and 12" Concrete Band
  4. Type "A" Curb and Gutter
  5. Type "B" Curb and Gutter
  6. Concrete Seatwall
  7. Pilaster
  8. Brick on Concrete Base
  9. Concrete Footings
  10. Other Miscellaneous Concrete

#### 1.02 DEFINITIONS

- A. All concrete noted above, not described as structural concrete, shall be defined as "Minor Concrete" as described in Caltrans specifications Section 90-2 "Minor Concrete", and shall meet all other requirements of Section 90.
- B. Steel Arbor Footing Concrete Design: Refer to Sheet L5.0, "Construction Details - Steel Arbor"

#### 1.03 DOCUMENTS

- A. Related Sections
1. Section 03 11 00 "Concrete Formwork"
  2. Section 03 20 00 "Concrete Reinforcement"
  3. Section 31 00 00 "Earthwork"
  4. Section 32 33 00 "Site Furnishings"
  5. Section 32 11 23 "Aggregate Base Course"
- B. Caltrans
1. 2018 Standard Specifications, Section 26 "Aggregate Bases"
  2. 2018 Standard Specifications, Section 90 "Concrete".

#### 1.04 REFERENCES

- A. California Building Code (CBC), California Code of Regulations, Title 24, Part 2.
- B. American Concrete Institute (ACI):
1. ACI 117 – Standard Specifications for Tolerances for Concrete Construction and Materials; American Concrete Institute International; 2006.

2. ACI 211.1 – Standard Practice for Selecting Proportions for Normal, Heavyweight, and Mass Concrete; American Concrete Institute International; 1991 (Reapproved 2002).
  3. ACI 301 – Structural Concrete for Buildings
  4. ACI 302.1R – Guide for Concrete Floor and Slab Construction.
  5. ACI 304R – Guide for Measuring, Mixing, Transporting, and Placing Concrete; American Concrete Institute International; 2000
  6. ACI 305.1 – Hot Weather Concreting.
  7. ACI 306.1 – Cold Weather Concreting.
  8. ACI 308.1 – Standard Specification for Curing Concrete.
  9. ACI 318 – Building Code Requirements for Structural Concrete
- C. American Society for Testing and Materials:
1. ASTM C 33 – Standard Specification for Concrete Aggregates.
  2. ASTM C 39/C 39M – Standard Test Method for Compressive Strength of Cylindrical Concrete Specimens.
  3. ASTM C 94/C 94M – Standard Specification for Ready-Mixed Concrete..
  4. ASTM C 150 – Standard Specification for Portland Cement.
  5. ASTM C 171
  6. ASTM C 260 – Standard Specification for Air-Entraining Admixtures for Concrete.
  7. ASTM C309 – Standard Specification for Liquid Membrane-Forming Compounds for Curing Concrete.
  8. ASTM C 494/C 494M – Standard Specification for Chemical Admixtures for Concrete.
  9. ASTM C 618 – Standard Specification for Coal Fly Ash and Raw or Calcined Natural Pozzolan for Use in Concrete.
  10. ASTM C 979 – Standard Specification for Pigments for Integrally Colored Concrete.
  11. ASTM D 994 – Standard Specification for Preformed Expansion Joint Filler for Concrete (Bituminous Type).
- D. California Test (CT)
1. CT 518, Concrete density
  2. CT 539, Concrete Compressive Strength
  3. CT 540, Test cylinders
  4. CT 521, Curing and Test
  5. All California Test not listed herein, but defined in the 2018 Standard Specifications related to concrete and minor concrete.

1.05 SUBMITTALS

- A. Product Data: For each type of manufactured material and product indicated.

B. Color: Submit product data and manufacturer's instructions for material and product indicated:

1. Color additives.
2. Curing compounds.
3. Form facing materials.
4. Form release agents.
5. Proprietary cleaning agents.
6. Surface retarders.
7. Epoxy Grout

C. Samples:

1. Test Panel/Mock-up: 14 days prior to placement prepare a sample panel at the site, using approved materials. One test panel shall be constructed for each specified concrete mix and finish. Each panel shall be 6-foot x 6-foot square and installed as specified herein. All edge conditions and surface finishes should be included in the mock-up. If the test panel does not meet the specifications contained herein and in the project details, the panel shall be rebuilt at the Contractor's expense for approval by the Project Landscape Architect before proceeding with the work. Once the test panel has been approved, the contractor shall retain the test panel during construction as the standard for judging the completed work.
2. On the basis of review of the samples, the City Project Landscape Architect may require minor modifications to be made. Upon request, re-submittal may be required at no cost to City.
3. Remove mock-up when directed by City's Authorized Representative.

D. Construction Joint and Deep Joint Plan

1. Construction and deep joints are delineated for reference and are diagrammatic.
2. The Contractor shall show all construction joints, deep joints, and expansion joints in plan, for review and approval, prior to field layout.
3. Clearly identify joints that vary from the contract plans with a cloud, or circling the delineations, and adding notes "Engineer Verify" or "Architect Verify" to the proposed joints beyond those shown on the drawings for curbs, gutter, mow bands, concrete slabs, seat walls and retaining walls.

#### 1.06 QUALITY ASSURANCE

- A. All work shall be accomplished using Caltrans 2018 Standard Specifications as a reference and standard for quality and performance.
- B. Concrete work shall be detailed and constructed in accordance with the guidelines of American Concrete Institute (ACI, 2017 & 2014).
- C. Perform work of this section in accordance with ACI 301 and ACI 318.
- D. Follow recommendations of ACI 305R when concreting during hot weather.
- E. So-called flat spots or bird baths in the finished surface will not be acceptable. Surfaces must drain and shall not vary more than 1/8 inch in 5 feet on any paved area.

- F. Perform work in accordance with ACI 301, Section 6 – Architectural Concrete, and the Standard Specifications as a reference and standard for quality and performance.
  - G. Conform to ACI 305 during hot weather.
  - H. Conform to ACI 306 during cold weather.
  - I. Contraction, construction, and isolation joints shall conform ACI 302 (ACI, 2017).
  - J. Maintain 3-inch, or thicker, concrete cover over all reinforcing steel where concrete is in contact with soil, in accordance with Section 20.6 of ACI Concrete Institute (ACI) Committee 318 (ACI, 2014).
  - K. Obtain each material from same source and maintain high degree of consistency in workmanship throughout Project.
  - L. Installer Qualifications: Concrete work shall be by firm with five (5) years of experience with work of similar scope and quality.
  - M. Cure time and Concrete Testing: Minimum cure time will be 7 days before placement of synthetic safety surfacing or other. No work which places stress, tension, or loading on new concrete prior to 7 days. Contractor will proceed at their own risk if work is to occur prior to 7 days cure time.
  - N. Edge and Joint Conditions, including window pane edging, shall be included in the mock up.
- 1.07 PRODUCT DELIVERY
- A. Weight and delivery certificates for each load of material shall be delivered to the Engineer.
  - B. The delivery certificates shall state the material by the approved material designation, the weight or volume, the date, time and delivery, vehicle name or number.
- 1.08 COORDINATION
- A. The Contractor shall obtain information and instructions from other trades and suppliers in ample time to schedule and coordinate the installation of items furnished by them to be embedded in concrete under this Section so that provision for their work can be made without delaying the project.
- 1.09 PROTECTION
- A. Protect and prevent damage to adjacent properties and improvements that may be caused by the Contractor's operations.
  - B. Cutting and/or patching made necessary by failure or delay in complying with these requirements shall be done at no cost to the City.
  - C. Any damage to the finished pavement surface from subsequent construction, shall be repaired to a clean, smooth, true and uniform surface. Existing or new paving which has been damaged due to the Contractor's operations, and which cannot be repaired to the satisfaction of the Engineer, shall be removed and replaced at the direction of the Engineer at the Contractor's own expense before final payment is made.
  - D. Locate all existing underground utilities including irrigation lines in the areas of work. If existing lines are to remain in place, provide adequate means of protection during construction.
  - E. Should uncharted or incorrectly charted existing utilities including irrigation lines be encountered during construction, consult the Engineer immediately for directions as to procedure. Cooperate with City and utility companies in keeping respective

services and facilities in operation. Repair damaged utilities or irrigation lines to the satisfaction of the City or utility owner.

- F. Do not interrupt existing utilities including irrigation lines serving facilities occupied and used by the City or others except when permitted in writing by the Engineer, and then only after acceptable temporary utility service or irrigation lines have been provided.

1.10 LAYOUT OF WORK

- A. Refer to Section 01 00 00, "Supplemental to the General Conditions", for information regarding layout of work.

1.11 TOLERANCES

- A. Over-excavating beyond the established excavation lines done for the Contractor's convenience shall be backfilled at the Contractor's expense.
- B. Grade to a tolerance of plus or minus one tenth (0.1) of a foot under paved areas.

1.12 TESTS AND INSPECTIONS

- A. Cylinder tests and inspections shall be performed by the City's independent testing firm for structural footing concrete only.
- B. Furnish all material for test cylinders and any other samples the Engineer requires for analysis of concrete work. Give Engineer adequate notice prior to any anticipated pour.
- C. Portland cement concrete is designated by class based on 28-day compressive strengths (when tested in accordance with ASTM C39, as specified herein).
- D. Cement content to be verified by California Test 518.

1.13 DISPOSAL

- A. All materials removed shall be disposed of in accordance with Article 15, Section 01 50 50 "Construction and Demolition Debris Management".

1.14 CLEAN-UP

- A. During the progress of the work and at the completion of the work, the Contractor must conform to the requirements of Division 1, General Requirements of these Special Provisions.

**PART 2 MATERIAL**

2.01 STRUCTURAL CONCRETE

- A. Refer to Sheet L5.0 for Steel Arbor footing requirements.

2.02 MINOR CONCRETE

- A. The following shall meet the requirements of "Minor Concrete" as defined elsewhere herein. Minor concrete shall apply to all seat walls, concrete paving, mow bands, curbs, trench drain concrete curb, tree grate curb/mow band and retaining walls, and concrete footings.

1. Minor concrete must contain at least 505 pounds of cementitious material and the mix may contain fly ash.
2. Maximum aggregate size of ¾ inch (3/4")

3. Color: **1 lbs lamp black per cubic yard**, unless otherwise indicated.
  4. Minimum 28-day compressive strength of 2,500 psi,
  5. Minimum slump of 3" inches (3") and maximum slump of 4 inches (4")
  6. Aggregate: Shall meet the requirements of "Minor Concrete", or Section 90 of the 2018 Standard Specifications.
  7. Water: Shall meet the requirements of "Minor Concrete", or Section 90 of the 2018 Standard Specifications.
- B. All underground concrete, including all footings and thrust blocks, shall meet the requirements of "Minor Concrete", except **no lamp black** will be required if the footings are held short of finished grade or finished surface. If flush with finished surface, finish shall match adjacent finishes, and lamp black will be included.
1. Slope top of footings at grade, minimum 1%.

2.03 CONCRETE CURB AND GUTTER

- A. Curb and gutter shall conform to the provisions in Section 73, "Concrete Curbs and Sidewalks," of the Standard Specifications and these Technical Specifications.
- B. Portland Cement Concrete shall conform to the provisions in Section 90, "Portland Cement Concrete," of the State Standard Specifications and these Technical Specifications.
- C. Minor concrete shall contain not less than 550 pounds of cementitious material per cubic yard unless otherwise specified.
- D. The final surface of new sidewalk shall be broom finished to match adjoining concrete finish.
- E. Concrete shall be darkened with one pound of lamp black per cubic yard. Full compensation or adding lampblack to the concrete mixture shall be considered as included in the price paid for various contract items of work involved, and no additional compensation shall be allowed therefor.

2.04 PROPORTIONING AND DESIGN OF MIXES

- A. Submit concrete mix design for City Engineer's approval prior to pouring of any concrete.
  1. Produce concrete of required consistency and strength which will present an appearance satisfactory to the City Engineer. Color of all exposed concrete shall match color of adjacent existing concrete when dry.

2.05 CONCRETE REINFORCEMENT

- A. Concrete reinforcement shall conform to the requirements of Section 03 20 00 "Concrete Reinforcing" of these Special Provisions.

2.06 DOWELING

- A. Refer to Section 03 20 00 "Concrete Reinforcing"

2.07 EPOXY GROUT

- A. Epoxy shall conform to the provisions in Section 95, "Epoxy," of the Standard Specifications. The Contractor shall prepare the pavement surface prior to application according to the manufacturer's recommendations.

- B. Non-Shrink Grout: Master Builders "Embeco," Grace "Vibrofoil," Hallemite "PorRok," or approved equal.
- C. Grout Color: Shall match adjoin walkway.

2.08 CURING COMPOUND

- A. Curing compound shall comply with ASTM C309.
- B. Provide W-1000 Clear Cure & Seal manufactured by Davis Colors, or approved equal.

2.09 FORMS

- A. Refer to Section 03 11 00, "Concrete Formwork".
- B. Form Facing Material:
  - 1. Provide non-porous surface such as steel, plastic, or high-density overlaid plywood with watertight joint seals to prevent leakage.
- C. Form Ties: Fiberglass rods tinted to match concrete.
- D. Form Release: Burke Form Sealer, or approved equal

2.10 EXPANSION FELT, JOINT CAPS AND BACKER ROD

- A. At all transitions from flat concrete work to vertical concrete work, or placement of pre-cast elements, place 3/8" expansion felt in the cold joint between the two pours.
- B. Top of the expansion felt shall be capped with a zip strip or equal, backer rod and caulk.
- C. Pre-molded strips, non-extruding and resilient bituminous type, 3/8" thick joint filler for concrete conforming to ASTM D1751, unless otherwise noted on the plans ad shall conform the Section 51 "Concrete Structures" of the 2018 Standard Specifications.
- D. Expansion Joint material shall be 3/8" asphalt impregnated compressible filler material per ASTM D-994, or approved equal.
- E. Expansion Joint Cap: A 3/8" polystyrene expansion cap with a removable top, Void Cap, Zip Strip, or approved equal, can be placed over all types of expansion joint. Constructed of Heavy-duty PVC with UV inhibitors that shield the cap from the damaging ultra-violet (UV) rays from the sun.
- F. Backer Rod: 1/4" closed cell, highly flexible, polyethylene foam placed in the void of the expansion joint cap. Backer rod by Grainger, HPI Products Corporation, or approved equal.
- G. Concrete joint sealant: Shall be installed where horizontal concrete joints meet vertical walls, and shall be gun-grade silicone, or approved equal; suitable to form a dry water barrier. Color to match mortar joints.

2.11 CONCRETE JOINT SEALANT

- A. Sealant, where specified or shown in the plans, shall be installed on all concrete joints, both vertical and horizontal and shall be gun-grade silicone, or approved equal; suitable to form a dry water barrier. Color to match mortar joints.
- B. Product shall be a premium-grade, high-performance, moisture-cured, 1-component, polyurethane-based, non-sag elastomeric sealant. Meets Federal specification TT-S-00230C, Type II, Class A. Meets ASTM C-920, Type S, Grade NS, Class 25; Sikaflex 1a, or approved equal.

- C. Sika colors, or approved equal, shall be submitted for review and approval before application.
- D. When utility boxes are within colored fields, joints shall be sealed with the noted color above for the specific concrete color.
- E. Joint sealant shall not be used on the City Sidewalk in the public right of way.

2.12 AGGREGATE BASE

- A. Refer to Section 32 11 16 "Aggregate Base" for additional information.

**PART 3 EXECUTION**

3.01 ROUGH GRADING AND EXCAVATION

- A. Refer to Section 31 00 00 "Earthwork"
- B. All footings shall be excavated to the depths delineated on the plans to accommodate footings to be poured "neat".
- C. Subgrade Compaction: Refer to Section 31 00 00 "Earthwork" for subgrade compaction requirements.

3.02 DOWELED CONNECTION TO EXISTING CONCRETE

- A. Refer to Section 03 20 00 "Concrete Reinforcement".

3.03 REINFORCING BARS

- A. Refer to Section 03 20 00 "Concrete Reinforcement"

3.04 AGGREGATE BASE

- A. Refer to Section 32 11 16 "Aggregate Base"

3.05 CONCRETE MIXING

- A. Concrete shall be mixed and delivered to the site in conformance with Section 90 of the Standard Specifications.
- B. All concrete shall be kept continuously agitated until discharged into the hopper at the job site.

3.06 CONVEYING AND PLACING CONCRETE

- A. All pipes, sleeves, anchors and bolts, angle frames, inserts, supports, ties and other materials in connection with concrete construction shall be placed and secured in position before the concrete is placed.
- B. For reinforcement and doweling, refer to Section 03 20 00 "Concrete Reinforcement".
- C. Before placing concrete, mixing and conveying equipment shall be wet cleaned, the forms and space to be occupied by concrete shall be thoroughly cleaned, and the forms shall be wetted. Ground water shall be removed until the completion of the work.
- D. No concrete shall be placed in any unit of work until all formwork has been completely constructed, all reinforcement has been secured in place, all items to be built into concrete are in place, and form ties at construction joints tightened.
- E. Concrete placement, once started, shall be carried on as a continuous operation until the section of approved size and shape is completed. Pour cut-offs must be of approved detail and location.

- F. Concrete shall be handled as rapidly as practicable from the mixer to the place of final deposit by methods which prevent the separation or loss of ingredients. It shall be deposited as nearly as practicable, in its final position to avoid re-handling or flowing. Concrete shall not be dropped freely where reinforcing bars will cause segregation, nor shall be dropped freely more than six feet (6'). Concrete shall be deposited to maintain a plastic surface approximately horizontal.
- G. Concrete that has partially hardened shall not be deposited in the work.
- H. All concrete shall be thoroughly and properly compacted using approved mechanical vibrators.
- I. Internal vibration must be by direct action in the concrete. Each pour shall be vibrated until the water shows indications of rising, but not until the water has risen.
- J. Along the faces of the forms, suitable tools shall be used during the pour to force large particles away from the forms and bring mortar to the surface of the forms. The responsibility for providing fully filled out, smooth, clean and properly aligned surfaces free from objectionable pockets and blemishes shall rest entirely with the Contractor.

3.07 CONCRETE PAVING FINISHES AND EDGES

- A. Structural Footing and other footings: No finish required if held short of the surface. If flush with the surface, finish shall be a Medium Broom Finish, unless designated otherwise.
- B. Concrete Paving: Medium Broom Finish – Medium hair broom, non-slip finish. Brooming shall be perpendicular to the path of travel and so executed that the corrugations thus produced will be uniform in character and width. Edges of concrete paving shall have a 6 inch wide smooth trowelled finish around all edges and along deep joints.
- C. All flange marks resulting from tooling of edges shall be trowelled out and designated finish shall continue in its entirety to the beginning of the radius at the edge of the concrete.
- D. If flange marks remain after concrete has set, all joints and edges shall be ground smooth.
- E. Concrete flatwork shall be constructed with medium broom finish unless otherwise indicated on the plans. Surfaces shall be troweled smooth then given a transverse scored texture by drawing a hair broom across the surface. The operation shall follow immediately after the first steel troweling and while the surface is still sufficiently soft to be marked by the broom. The texturing shall be run in a continuous motion from edge to edge or joint to joint.

3.08 CURB AND GUTTER

- A. Wherever sidewalk or curb is removed, the entire section of sidewalk or curb between score marks shall be removed and replaced.
- B. The Contractor shall provide all required saw cutting of existing concrete. The concrete shall be saw cut in a straight line to a minimum depth of two (2") inches completely across the sidewalk and a minimum depth of three (3") inches completely across driveways. The limits of all concrete to be removed shall be to an expansion joint or score line unless otherwise marked in the field by the Engineer and saw cutting shall be required at any score line less than one-half inch (1/2") deep. The portion of the concrete to be removed shall be taken out in such a manner as to leave an even edge without chips or breaks on the remaining concrete. Cutting of the boundary line with picks or pneumatic pavement breakers will not be permitted except where score lines

are one-half inch (1/2") deep or more. If for any reason the concrete does not break on the line marked by the Engineer, the Contractor shall saw cut at the next score line and remove the broken portion and replace with new concrete to meet City specifications at no cost to the City. The Contractor shall remove and dispose of all concrete and debris daily.

- C. Horizontal dowels for proposed curb, gutter and sidewalk to be tied into existing curb, gutter and sidewalk shall be Grade 60, #3 steel reinforcing bars and shall conform to Section 52, "Reinforcement," of the Standard Specifications and Section 03 20 00 "Concrete Reinforcement" found elsewhere in these Contract Specifications.
- D. Horizontal dowels shall be 12 inches long and epoxied in holes drilled in the existing concrete. Dowels shall be placed prior to placement of new adjacent concrete.
- E. Epoxy grout shall conform to the provisions in Section 95, "Epoxy" of the Standard Specifications.
- F. Contractor is required to replace existing markings or letters or install new markings or letters on face of curb to identify existing utility service locations.
- G. Unless noted otherwise, Contractor shall protect and adjust to final grade all existing street furniture (i.e. water valve boxes, water meters, etc.) within the sidewalk area.
- H. All concrete work shall be water tested in the presence of the Engineer before final acceptance.
- I. All minor concrete shall be allowed to cure for a minimum of ten (10) days after the concrete has been placed such that a minimum compressive strength of 2,400 psi is obtained prior to the placement of asphalt concrete adjacent to the concrete. Alternatively, the Contractor may submit a concrete mix design for approval by the Engineer which shows a minimum compressive strength of 2,400 psi may be obtained in less than the required ten (10) day curing period.
- J. If the Contractor elects to use the curing compound method for curing minor concrete, the curing compound shall be Curing Compound as specified in Subsection F as specified in Section 90-7.01B, "Curing Compound Method," of the Standard Specifications. The curing compound shall be applied in a manner that will provide a complete coating of all exposed faces of the concrete surface. Curing compounds that discolor pigmented concrete shall not be used.
- K. The maximum time period between removal and reconstruction of concrete sidewalk is seven (7) calendar days.
- L. **Asphalt Pavement** – Asphalt pavement adjacent to curb and gutter shall be replaced with minimum 12" thickness hot mix asphalt after construction is complete. Payment of asphalt replacement shall be included in linear foot price paid for Type "A" and Type "B" Curb and Gutter".

### 3.09 FINISHES ON FORMED SURFACES

- A. Acid wash concrete surfaces after curing as necessary to remove effervescing mineral deposits.
- B. If any rock pockets or honey combing has occurred, refer herein to sacked finish repair.

### 3.10 DEEP JOINTS

- A. Location and detail of deep joints shall be as indicated on the plans, or as specified, and shall be installed to ¼ depth of the slabs or thickness of curbs and gutters, unless otherwise noted.

- B. Deep Joints shall be tooled with a radius edging tool, per the detail requirements.
- C. At the Project Inspector's discretion, with consultation with the Project Landscape Architect, deep joint locations may be relocated in the field in order to control cracking.
- D. The contractor shall also suggest changes to deep joint locations in order to control cracking. These changes must be suggested 1 week prior to pouring concrete in order to allow the Project Inspector and Project Landscape Architect time to evaluate and approve the proposed changes.
- E. Concrete paving shall have deep joints placed minimum every 10 feet, unless otherwise stated, and score joints between deep joints
- F. Mow bands: Shall have deep joints placed a minimum of 4 feet on center.
- G. Perimeter Fence and Mow band: shall have deep joints at each post location and 1 joint between post.
- H. Deep joints that do not meet the appropriate  $\frac{1}{4}$  depth of the slabs or thickness of curbs and gutters, due to insufficient tools, poor workmanship, or other method, will result in the removal and replacement of all concrete deemed unacceptable by the Project Landscape Architect or Project Inspector. See "Workmanship" herein.

### 3.11 CONCRETE REPAIR – SACKED FINISH

- A. If concrete has integral color, the contractor shall include the appropriate color, at the appropriate weight, in the sacking mortar. Contractor shall determine the appropriate weight and mix.
- B. Repair and patch tie holes, honeycombs and defective areas and trowel too smooth finish. Remove fins and other projections completely and smoothed.
- C. Thoroughly wet surface to prevent absorption.
- D. Coat entire surface with sacking mortar as soon as surface of concrete approaches surface dryness.
- E. Thoroughly and vigorously rub mortar over area with clean burlap pads to fill all voids.
- F. While mortar is still plastic but partially set (so it cannot be pulled from voids) sack-rub surface with dry mix of sacking mortar (leave out water). There should be no discernable thickness of mortar on concrete surface, except in voids; all surfaces should be uniformly textured.
- G. Immediately begin a continuous moist cure for 72 hours.

### 3.12 PROTECTION AND CURING

- A. If the Contractor elects to use the curing compound method for curing concrete, the curing compound shall be as specified in Section 90 "Curing Compound Method," of the 2018 Standard Specifications. The curing compound shall be applied in a manner that will provide a complete coating of all exposed faces of the concrete surface.
- B. Concrete shall be protected from injurious action of the elements and defacement of any nature during construction operations. Watchmen will be required at such times as required until concrete has set for a period of ten (10) hours. Damage resulting from the vandalism may require removal and replacement of complete units of work at no cost to the City.
- C. All forms shall be kept sufficiently wet to prevent drying out of the concrete.

- D. All concrete surfaces shall be cured in conformance with the Standard Specifications after concrete is deposited.
- E. Slabs and exposed corners of concrete shall be protected from traffic or use which will damage them in any way.
- F. Maintain concrete between 65° and 85°F (18° to 29°C) during curing.
- G. Apply per manufacturer's recommendations after all bleed water and surface sheen has evaporated, finishing has been completed and concrete has achieved initial set.
- H. Apply to surfaces that are dry or damp, but not wet
- I. Protect surrounding structures from overspray.
- J. Apply when ambient and surface temperature is above 45°F (7°C) and expected to remain above that for at least 12 hours.
- K. Apply with an airless or pump sprayer that is free of any resin, oil or solvent residue.
- L. Use sprayer on lightest setting for maximum atomization of spray. Ordinary pump canister sprayers for garden or construction use will NOT atomize adequately. Use canister sprayers designed for application of wood finishes or form release agents with the smallest available flat fan spray tip (.10) to (.30 GPM).
- M. Apply a thin coat uniformly over the surface. Fog lightly over sloped surfaces or impressions to prevent runs and streaks
- N. Do not allow sprayer to spit or sputter. Unclog nozzle and re-pressurize before continuing.
- O. If clogging continues, empty sprayer back into jug. Clean and flush sprayer with hot water. Then pour sealer through fine strainer or cheesecloth when refilling sprayer.
- P. Allow 24 hours to dry completely after application is complete.
- Q. If efflorescence appears, it will be the contractor's responsibility to contact the concrete supplier, or Davis color representative, to determine the best method for cleaning the concrete surface. Potential surface treatment chemicals are SuperBlue, by EZChemUSA, P.O. Box 1485 • Canton, GA 30169 • (T)770-479-1764 • [www.ezchemusa.com](http://www.ezchemusa.com)

### 3.13 PATCHING AND CLEANING

- A. After forms are removed, the Engineer shall inspect all concrete surfaces. All surface defects, including projecting fins, bolts, form ties, nails, etc., not necessary for the work, shall be removed or cut back one inch (1") from the surface, and joint marks and fins in exposed work shall be smoothed off and cleaned as directed and to the satisfaction of the Engineer.
- B. Use the same patching materials and techniques that were approved on test panel.
- C. Clean exposed concrete surfaces and adjoining work stained by the leakage of concrete to meet the approval of the Engineer.
- D. Efflorescence: Remove efflorescence as part of final cleaning.
- E. Use least aggressive cleaning techniques possible.
- F. Wear protective eye wear, gloves, and clothing suitable to work and as required by cleaner manufacturer.
- G. If proprietary cleaning agents are used, test cleaning agent on a small, inconspicuous area, and check effects prior to proceeding. Begin cleaning and wash from edge to

edge. Thoroughly rinse afterwards with clean water. Follow cleaner manufacturer's instructions.

H. Do not use muriatic acid (hydrochloric) acid on colored concrete.

### 3.14 TOLERANCES

- A. All concrete work shall be water tested in the presence of the Project Inspector or Project Engineer before final acceptance to ensure there will be no ponding water and the surfaces drain adequately.
- B. Minor variations in appearance of colored concrete, which are similar to natural variations in color and appearance of uncolored concrete, are acceptable.
- C. As with any natural material, some variation in appearance is a normal design feature of concrete, whether colored or not. It is normal for the color of concrete to lighten as it cures; allow up to 28 days for process to occur.

### 3.15 WORKMANSHIP

- A. Concrete shall be constructed on a graded and prepared subgrade and rock base as shown on the plans and as specified in these Special Provisions and in accordance with Caltrans 2015 Standard Specifications except that references to measurement and payment shall not be applicable to this work.
- B. The concrete work shall conform to the requirements of Division XI "Materials" of these Special Provisions and the 2018 Standard Specifications.
- C. Defective Work: Remove and replace (R&R), when directed by the Engineer, all surfaces which show excessive shrinkage cracks, spalling, or other defects in workmanship.

### 3.16 DEFECTIVE CONCRETE

- A. Concrete work which does not meet the Contract Specifications or Contract Drawings shall be considered defective concrete.
- B. Color and finish of all concrete work shall match. Inconsistent color, and finishing shall be considered defective concrete.
- C. All walls shall be plumb, straight with top of wall held level. Walls which are not plumb, straight, or level shall be considered defective concrete.
- D. All joints shall be straight and true. Joints which are not straight shall be considered defective concrete.
- E. Concrete work which ponds, does not conform to ADA requirements, does not match grading, is of poor finish, has poor scoring depth, map cracking, chipped, cracked, or otherwise deemed non-acceptable shall be considered defective concrete.
- F. Defective concrete shall be repaired or replaced as directed by the Engineer, at no added expense to the Contract. Repair materials may include specialty cements, reinforcement grouts, dry pack, admixtures, epoxy and aggregates as necessary.
  - 1. Engineer's authorization for the Contractor to repair defective concrete work does not provide an acceptance of defective concrete work. All final repair work that does not meet the approval of the Engineer shall be rejected, removed and replaced at no additional cost to the contract.
  - 2. In general, minor defective work may be repaired by use of dry pack. If defective work is serious or affects the strength of the structure or the appearance, the Engineer may require the removal and replacement of the portion of the structure.

3. Immediately after removing forms, all concrete surfaces shall be inspected any poor joints voids, rock pockets, tie holes, except as specified, etc., shall be patched at once, but not until the surfaces have first been reviewed by the Engineer. Submit patching mixture and method proposed for use, for review prior to commencing work.
4. Repaired or Replaced work shall match existing work. Work which does not match may require full removal and replacement.
5. All labor, materials, equipment, incidentals, and work related to the repairs or replacement of Concrete work shall be done at no additional cost to the Contract.

### 3.17 MEASUREMENT AND PAYMENT

- A. The contract square foot price paid for “**Concrete Paving**” shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals and for doing all the work covered in this section, including aggregate base course, installation of City-furnished survey monuments, expansion joints, reinforcement, and formwork, complete in place as shown on the plans, as required by the Special Provisions, and as required by the Engineer.
- B. The contract linear foot price paid for “**6” Concrete Band**” and “**12” Concrete Band**” shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals and for doing all the work covered in this section, including aggregate base course, joints, reinforcement, and formwork, complete in place as shown on the plans, as required by the Special Provisions, and as required by the Engineer.
- C. The contract linear foot price paid for “**6” Concrete Curb**” and “**12” Concrete Curb**” shall include full compensation for furnishing all labor, materials, tools, equipment, tapering, curb cuts, and incidentals and for doing all the work covered in this section, including aggregate base course, joints, reinforcement, and formwork, complete in place as shown on the plans, as required by the Special Provisions, and as required by the Engineer.
- D. The contract linear foot price paid for “**Type ‘A’ Curb and Gutter**” and “**Type ‘B’ Curb and Gutter**” shall include full compensation for furnishing all labor, materials, tools, equipment, tapering, curb cuts, and incidentals and for doing all the work covered in this section, including sawcutting, aggregate base course, expansion joints, AC plug, reinforcement, and formwork, complete in place as shown on the plans, as required by the Special Provisions, and as required by the Engineer.
- E. The lump sum price paid for “**Concrete Seatwall**” shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals and for doing all the work covered in this section, including bricks, granite stone veneer, precast concrete caps, City-furnished plaques, mortar, aggregate base, expansion joints, reinforcement, and formwork, complete in place as shown on the plans, as required by the Special Provisions, and as required by the Engineer.
- F. The contract unit price paid for “**Pilaster**”, shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals and for doing all the work covered in this section, including bricks, concrete caps, aggregate base, expansion joints, reinforcement, and formwork, complete in place as shown on the plans, as required by the Special Provisions, and as required by the Engineer.
- G. The contract square foot price paid for “**Brick on Concrete Base**” shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals and for doing all the work covered in this section, including concrete slab, mortar,

aggregate base, joints, reinforcement, and formwork, complete in place as shown on the plans, as required by the Special Provisions, and as required by the Engineer.

**END OF SECTION**

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## DIVISION 5 – METALS

### SECTION 05 50 00 METAL FABRICATION

#### PART 1 GENERAL

##### 1.01 DOCUMENTS

- A. The general provisions of the Contract, including General and Supplementary Conditions and Division 1, General Requirements, apply to the work specified in this Section.
- B. Refer to all other sections, determine the extent and character of related work, and coordinate all work to produce a complete, properly constructed product.

##### 1.02 SCOPE OF WORK

- A. Project Intent is for the trellis to be a fully welded corten/weathering steel trellis, as noted on the drawings, including, but not limited to, all footing excavation, concrete base and rebar.
- B. Shop fabricate weathering steel (Corten) trellis post, beams and arms including all material, labor, equipment and services necessary for the fabrication, erection and completion of all structural steel including all bracing and shoring required for erection and installation, including miscellaneous metal, and related work.
  - 1. These items will require coordination on the Contractor's part to ensure proper materials and methods are used in creation of these elements. In addition, the Contractor will be charged with coordinating the schedule of installation of these items.
  - 2. All other metal fabricated items shown on plans shall be constructed/fabricated by the Contractor.

##### 1.03 RELATED SECTIONS

- A. Section 03 20 00 "Concrete Reinforcement"
- B. Section 03 30 00 "Cast-in-Place Concrete"

##### 1.04 REFERENCES AND STANDARDS

The following references and standards are hereby made a part of this Section and miscellaneous metal material and installation shall conform to the applicable requirements therein except as otherwise specified herein or shown on the Drawings.

- A. Shop detailing and fabrication practices: Conform to the standards of the National Association of Architectural Metal (NAAMM) in the Architectural Metal Handbook, latest edition.
- B. Welding: Conform with requirements of the American Welding Society (AWS).
- C. "Specifications for the Design Fabrication, and Erection of Structural Steel for Buildings", American Institute of Steel Construction, latest edition.
- D. American Iron and Steel Institute's "Specifications for Design of Light Gauge Cold Formed Stainless Steel Structural Members".
- E. American Society for Testing and Materials (ASTM).
  - 1. ASTM A 36/A 36M - Standard Specification for Carbon Structural Steel; 2005.
  - 2. ASTM A 53/A 53M - Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless; 2007.

3. ASTM A 123/A 123M - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products; 2002.
4. ASTM A242 – Standard Specification for High-Strength Low-Alloy Structural Steel
5. ASTM A 325 - Standard Specification for Structural Bolts, Steel, Heat Treated, 120/105 ksi Minimum Tensile Strength; 2007a.
6. ASTM A370-17 – Test Methods and Definitions for Mechanical Testing of Steel Products
7. ASTM A588 – Standard Specification for High-Strength Low-Alloy Structural Steel, up to 50 ksi Minimum Yield Point, with Atmospheric Corrosion Resistance
8. ASTM A700-14 – Practices for Packaging, Marking, and Loading Methods for Steel Products for Shipment
9. ASTM A751-14a – Test Methods, Practices, and Terminology for Chemical Analysis of Steel Products
10. ASTM A829 – Alloy Structural Steel Plates
11. ASTM A847/A847M-14 – Standard Specification for Cold-Formed Welded and Seamless High-Strength, Low-Alloy Structural Tubing with Improved Atmospheric Corrosion Resistance
12. ASTM A871 – High Strength Low-Alloy Structural Steel Plate with Atmospheric Corrosion Resistance
13. ASTM F3125 – Standard Specification for High Strength Structural Bolts, Steel and Alloy Steel, Heat Treated, 120ksi and 150 ksi Minimum Tensile Strength, Inch and Metric Dimensions
14. ASTM G101-04(2015) – Standard Guide for Estimating the Atmospheric Corrosion Resistance of Low-Alloy Steels
15. AWS A2.4 - Standard Symbols for Welding, Brazing, and Nondestructive Examination; American Welding Society; 2007.
16. AWS D1.1/D1.1M - Structural Welding Code - Steel; American Welding Society; 2006 and Errata.
17. SSPC-Paint 20 - Zinc-Rich Primers (Type I, "Inorganic," and Type II, "Organic"); Society for Protective Coatings; 2002 (Ed. 2004).

F. State of California, California Administrative Code:

1. Title 22, Division 7, Chapter 7, (CAC Title 22).
2. Title 24, Part 2 (CAC Title 24).

G. California Code of Regulations. Title 24, 2001, edition also known as California Building Code (CBC).

H. American Welding Society (AWS)

1. AWS A2.4 – Standard Symbols for Welding, Brazing, and Nondestructive Examination; American Welding Society; 2007.
2. AWS D1.1/D1.1M – Structural Welding Code - Steel; American Welding Society; 2006 and Errata.
3. SSPC-Paint 20 – Zinc-Rich Primers (Type I, "Inorganic," and Type II, "Organic"); Society for Protective Coatings; 2002 (Ed. 2004).

## 1.05 SUBMITTALS

- A. See Section 01 30 00 "Submittals"
- B. Shop Drawings: Indicate profiles, sizes, connection attachments, anchorage, size and type of fasteners, and accessories.
- C. Shop Drawings: Prepare complete shop drawings showing bolt and anchor setting plans, and all details of layout fabrication and erection. All details must reference detail callouts on the construction documents. Submit to City Engineer / Landscape Architect for review and approval before the start of fabrication. Shop drawing submittals that do not meet these requirements will be returned for correction without review. Shop drawings shall indicate type and location of shop and field connections; and type, size, extent and sequence of welds. Shop drawings shall also include fabrication tolerances for all steel. Secure all field measurements as necessary to complete this work. Provide holes, welded studs, etc. as necessary to secure work of other sections. This review is of a general nature only, and all responsibility for conformance with drawings and specifications and for dimensions shall remain with the Contractor. Product Data: Manufacturer's specifications, catalog cuts, data sheets, and installation instructions.
  1. Sufficient technical data to demonstrate compliance with the specified requirements.
  2. Shop Drawings: Complete shop drawings showing all details including cuts, copes, connections holes, threaded fasteners, pipe diameter sizes, concrete column to footing attachment details, concrete base requirements, installation bolts, proposed cuts, radius, welded connections, materials, dimensions, finishes, and welds in accordance with AWS A2.0, and in accordance with the details shown on the plans and noted below:
- D. Welding
  1. Certification of welder's qualifications
  2. Welding procedures: Descriptive data to illustrate welding procedures to be performed
  3. Field Welding Equipment: Descriptive data for field welding equipment including type, voltage and amperage.
- E. Proof of Compliance for Materials:
  1. All steel shall conform to the requirements of CBC State Section 2701(a)
  2. All steel which cannot be identified per CBC State Section 2701(b) shall have:
    - a. Certified reports of ladle analysis for all steel.
    - b. Certified report of tensile, elongation and bend test.
- D. Samples
  1. A pipe sample to be provided for trellis, painted per the required paint finish system.
  2. Grout color sample

## 1.06 PERFORMANCE REQUIREMENTS

- A. Loading: Design and size components to withstand dead loads and live loads caused by positive and negative wind loads acting normal to the plane of enclosure including building corners in accordance with ASCE 7, BOCA and OSHA code requirements. Components also sized in consideration of regional geographic wind consideration.

1.07 PROJECT CONDITIONS

- A. Field Measurements: Where trellis systems is indicated to fit to other construction, check actual dimensions of other construction by accurate field measurements before fabrication; show recorded measurements on final shop drawings. Coordinate fabrication schedule with construction progress to avoid delaying the Work.
- B. Where field measurements cannot be made without delaying the Work, guarantee dimensions and proceed with fabricating trellis systems without field measurements. Coordinate other construction to ensure that actual dimensions correspond to guarantee dimensions.

1.08 QUALITY ASSURANCE

- A. Shop Drawings: Manufacturer shall provide complete shop drawings for City review & approved prior to manufacturing.
- B. Shop Drawings shall include:
  - 1. Steel types
  - 2. Weld types & locations
  - 3. Complete dimensioning
  - 4. Connection system from trellis to footing
- C. Steel Materials Testing:
  - 1. The Contractor shall provide all certification, verifications, and other test data that is or may be required to substantiate specified material properties at no additional cost to the City.
  - 2. No testing of materials is required if:
    - a. All members are appropriately identified in accordance with UBC 2203.2 (heat number, grade stencil, etc.).
    - b. The Contractor/Fabricator shall submit to the City's Testing Laboratory and the City Engineer or Landscape Architect certified mill test reports for the members, and shall furnish an affidavit confirming that all materials used in the fabrication and shipped to the job are from the grades specified and match the certificates supplied.
  - 3. Testing is required for unidentified steel to verify  $F_y$  and  $F_u$  values when engineering requirements exceed  $F_y = 25\text{ksi}$  for design; generally all structural shapes. All tests shall conform to ASTM A6. All tests shall be performed by a recognized testing laboratory.
  - 4. The City's Testing Laboratory will review all submittals and testing on materials.
- D. Welding Inspection:
  - 1. All structural welds shall be inspected and certified by the City's Testing Laboratory, unless the fabricating shop is certified acceptable by ICBO or the Local Building Official. Certification shall be submitted to the Architect/Engineer for review and the Building Official for approval.
  - 2. Qualification of Welders: The welding inspector will verify that all the welders are properly qualified prior to steel fabrication. State the qualifications of each welder in the welding inspection report.

3. Weld Inspection: Welding inspection shall be continuous unless otherwise noted below. The welding inspector will check the materials, equipment and procedure as well as the welds. The Inspector will furnish reports that the welding is proper and has been done in conformity with the plans, specifications and codes. The Inspector will use ultra-sonic or any other aid to visual inspection which may be necessary to assure adequacy of welds. Up to 1/4 inch single pass fillet welds and welding of studs to beams may have periodic inspection. Ultrasonic inspection, for discontinuities, of plates thicker than 1" is required when subjected to through thickness weld shrinkage strains.
- E. All re-inspections necessitated by non-conforming work shall be at the Contractor's expense.
- F. Welding Qualifications: Welding procedures, welders, welding operators, and tackers, shall be qualified in accordance with AWS D1.1, CBC State Section 2712(e) and UBC Standard 27-6.
1. Welders who have not performed welding for a period of three months or more shall be re-qualified.
  2. Welders whose work fails to pass inspection shall be re-qualified before performing further welding.
  3. The contractor shall pay costs of certifying qualifications.
- G. Allowable Tolerances
1. Straightness of Structural Members: Meet requirement AISC Section M2.7
  2. Erection Tolerances: Individual pieces shall be erected so that deviation from plumb level and alignment shall not exceed 1 to 500.
- 1.09 DELIVERY, STORAGE, AND HANDLING
- A. Protect metal work at all times. Damaged work will be rejected.
  - B. Deliver materials to the job site properly marked to identify the location for which they are intended.

## **PART 2 PRODUCTS**

### 2.01 CORTEN STEEL (WEATHERING STEEL) ARBOR

- A. Components:
1. Metal members, posts and connection: Refer to Construction Details

### 2.02 STRUCTURAL CONCRETE AND REINFORCING

- A. Refer to Construction Details for concrete mix and reinforcing requirements.

### 2.03 FABRICATION

- A. Fit and shop assemble items in largest practical sections, for transportation and delivery to site.
- B. Fabricate items with joints tightly fitted and secured.
- C. Grind exposed joints flush and smooth with adjacent finish surface. Make exposed joints butt tight, flush, and hairline. Ease exposed edges to small uniform radius.

- D. Supply components required for anchorage of fabrications. Fabricate anchors and related components of same material and finish as fabrication, except where specifically noted otherwise.

2.04 FINISHES - STEEL

- A. Coordinate finishes for different items with plans.
- B. Clean surfaces of rust, scale, grease, and foreign matter prior to finishing.
- C. Galvanizing of Structural Steel Members: Galvanize after fabrication to ASTM A 123/A 123M requirements.
- D. Galvanizing of Non-structural Items: Galvanize after fabrication to ASTM A 123/A 123M requirements.

2.05 FABRICATION TOLERANCES

- A. Squareness: 1/8 inch maximum difference in diagonal measurements.
- B. Maximum Offset Between Faces: 1/16 inch.
- C. Maximum Misalignment of Adjacent Members: 1/16 inch.
- D. Maximum Bow: 1/8 inch in 48 inches.
- E. Maximum Deviation from Plane: 1/16 inch in 48 inches.

2.06 FINISH

- A. Aluminum panels shall be finished per manufacturer's recommendations.
- B. Preparation of Surfaces:
  - 1. All steel shall be zinc coated or galvanized prior to priming and painting.
  - 2. Thoroughly clean mill scale, rust, dirt, grease, and other foreign matter from ferrous metal prior to galvanizing, hot phosphate treatment, or painting.
  - 3. Completely eliminate burrs, rough spots, and pitting from normally exposed ferrous metal items.

**PART 3 EXECUTION**

3.01 EXAMINATION

- A. Verify that field conditions are acceptable and are ready to receive work.
- B. Field verify all dimensions prior to fabrication. Immediately notify Engineer of discrepancies.

3.02 INSPECTIONS

- C. Examine areas and conditions under which work of this Section will be performed. Do not proceed with work until unsatisfactory conditions are corrected. Commencement of work indicates acceptance of substrate conditions by Contractor.

3.03 WORKMANSHIP

- A. Workmanship and details of structural steel work, unless otherwise specified, shall conform to the Uniform Building Code, and the AISC Specification for Design, Fabrication and Erection of Structural Steel for Buildings. The quality of materials and the fabrication of all welded connections shall conform to the American Welding Society, Structural Welding Code.

### 3.04 FABRICATION

- A. All materials, both before and after fabrication, shall be protected from rust and corrosion and shall be kept free from dirt grease and other foreign matter. Each framing member shall be free from twists and bends. Holes and all cut and sheared edges shall be neatly made without kinks, burrs, and warped edges. All steel left exposed shall be straight, smooth and free of nicks, scars and dents.
- B. Gas Cutting: Gas cutting of holes in a member shall not be permitted.
- C. Splicing of members: Any members requiring splicing due to length requirements may be spliced using full penetration butt welds when such welds and procedures are inspected and certified by the City's Testing Laboratory, in conformance with AWS and AISC standards. The location of splices must also be approved by the Architect/Engineer.
- D. Welding: Welding of structural steel connections shall be by qualified welders in accordance with AWS Standards. The Contractor shall organize the work and employ a crew of sufficient size to hold inspections by the City's Testing Laboratory to a minimum. All weld sizes to match those shown on the drawings. Non-conformance to AWS standard shall be cause for rejection.
1. Field welds are not permitted.
  2. Preparation: All surfaces shall be clean, free of rust, paint and foreign matter of any kind. Paint or scale shall be removed by wire brush, chipping or hammering as required. Burned or flame cut edges to be welded shall be chipped clean, and wire brushed before welding. Clamp members as required, space and alternate welds, all as may be necessary to prevent warping or misalignment.
  3. Sequence Welding: When welds enclose, or partially enclose, the perimeter or portion of the surface of a member, the weld bead shall be made in sequence or staggered, so as to minimize internal stresses.
  4. Faulty and Defective Welding: Any welding showing cracks, slag inclusion, lack of fusion, bad undercut or other defects, ascertained by visual or other means of inspection shall be chipped out and properly replaced at Contractor's expense.
  5. Minimum Weld Strengths: Details of fabrication not specifically shown shall follow in type similar details which may be specifically shown and in all cases, shall at least match the minimum weld sizes recommended by AISC. All bevel and groove welds shall be full penetration unless size is noted otherwise.
- E. All beams shall be cambered as indicated on the drawings. Beams without camber shall be fabricated for installation with any "natural" crown up. Cantilever beams to be fabricated with "crown" down.
- F. Grinding: The following structural steel and connections shall be ground smooth.
1. Exposed cut ends and edges of structural and fabricated shapes.
  2. All welds exposed to view.
  3. Mitered and fit-up corners and intersections.
- G. Back Up Bars: Back up bars required for full penetration welds. Back up bars shall be removed and weld surface smoothed when welds will be exposed to view.
- E. Bolt Holes
1. Bolt holes to be 1/16" oversize round or 1/16" by 1/4" oversize slotted when so noted on the drawings.

2. Holes in base plates for anchor bolts may be 1/8" oversize.
3. Edge, end distances and spacing shall conform to those shown on the drawings.

### 3.05 ARBOR INSTALLATION

- A. Install items plumb and level, accurately fitted, free from distortion or defects.
- B. Provide for erection loads, and for sufficient temporary bracing to maintain true alignment until completion of erection and installation of permanent attachments.
- C. Field Connections: Workmanship of field bolted and welded connections shall conform in all respects to methods and tolerances specified for fabrication.
- D. Templates: Bolt setting templates shall be furnished for all anchor bolts. The Contractor shall furnish instructions for the setting of anchors and bearing plates and shall ascertain that the items are properly set during the progress of the work.
- E. Column base plates shall be set level to correct elevations and supported on leveling nuts as shown until the supported members have been plumbed and grouted. The entire bearing area under plates shall be grouted.
- F. Installation of Bolts:
  1. General: Install bolts in matching holes, drifting done during assembly shall not distort the metal or enlarge the holes.
  2. Mismatching of holes greater than 3/32" requires reaming for the next size larger bolt. Mismatching of holes greater than 1/8" is cause for rejection. No flame cutting or enlarging of holes by flame or air/arc ("plasma") cutting.
  3. Do not install bolts with damaged threads. Threads shall commence outside of the shear plane. Inspect mating surfaces to insure that bolt head and nut will bear fully and that metal plies will mate between bolts. Provide flat washer(s) at all holes. Provide Bolts, Nuts and Washers as necessary for Testing by the City's Testing Laboratory at no additional cost.
- G. Framing and Bracing:
  1. All structural steel shall be erected true and plumb. Temporary shoring and bracing shall be used wherever necessary and shall be adequate for all loads to which it may be subjected. Leave temporary bracing and shoring in place as long as may be required for safety, and until final framing construction is completed.
  2. Wherever piles of materials, erection equipment or other loads are carried by the steel during its erection and until it is braced by final construction, proper provision by the Contractor shall be made to take care of the stresses resulting from such construction on or attached to the steel work until it has been completely erected and with all final connections completed.
  3. No final connections shall be made until the structure has been properly aligned.
  4. All temporary flooring, planking and scaffolding necessary in connection with the erection of the structural steel, or the support of erection machinery shall be provided as part of the erection work. The temporary floors and scaffolding shall conform to the requirements of all laws governing safety regulations.
  5. Drifting done during assembly shall not distort the metal or enlarge the holes.

### 3.06 TOLERANCES

- A. Maximum Variation From Plumb: 1/4 inch per story, non-cumulative.

B. Maximum Offset From True Alignment: 1/4 inch.

C. Maximum Out-of-Position: 1/4 inch.

3.07 DEFECTIVE WORK AND MATERIALS

A. Work found to be defective, missing, or damaged shall be immediately replaced with proper work. Such replaced work and the inspection for same shall be at the expense of the Contractor. All proposals for the repair or replacement of damaged, defective, or missing work to be reviewed by the Architect/Engineer.

B. Straightening of any materials, if necessary, shall be done by a process and in a manner than will not injure the materials.

C. If defects or damaged work cannot be corrected in the field, the material shall be returned to the shop or new parts furnished. The contractor shall replace all work at his own expense.

3.08 COMPLETION

A. Restore finishes, including primer and paint, damaged during fabrication or installation to original condition. Re-fabricate and reinstall items which cannot be repaired.

B. Clean and polish items.

C. At Final Acceptance, items shall be clean and in perfect condition, ready for use.

3.09 CLEAN UP

A. After erection, all surfaces shall be cleaned and left free of all grime and dirt. Remove unused materials, tools, equipment and debris from the premises and leave broom clean.

3.10 MEASUREMENT AND PAYMENT

A. The contract unit price paid for "Steel Arbor" shall include full compensation for furnishing all shop drawings, labor, materials, connections, tools, equipment, welding and inspections and incidentals, to install the weathering steel arbor, footing and rebar, complete and in place, as shown on the plans and these Special Provisions, and as directed by the City Engineer.

**END OF SECTION**

CITY COUNCIL  
REFERENCE ONLY

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## DIVISION 22 – PLUMBING

### SECTION 22 14 00 DRAINAGE

#### PART 1 GENERAL

##### 1.01 SUMMARY

- A. Furnish all labor, materials, equipment, facilities, transportation and services to complete all storm drainage system improvements and related work as shown on the Drawings and/or specified herein.

##### 1.02 RELATED DOCUMENTS

- A. These special provisions are part of the plans and shall include all labor, materials, equipment, reasonable incidentals, and services necessary to the execution of the work.
- B. Refer to all other sections, determine the extent and character of related work, and coordinate all work to produce a complete, properly constructed product.
- C. Related Sections
  1. Section 01 30 00 "Submittals"
  2. Section 02 41 13 "Site Demolition"
  3. Section 03 30 0 "Cast in Place Concrete"
  4. Section 31 00 00 "Earthwork"
  5. Section 32 11 23 "Aggregate Base Course"
  6. Section 32 14 43 "Permeable Pavers"
  7. Section 32 90 00 "Planting,"
  8. Section 32 91 13 "Soil Conditioning and Amendment"
  9. Section 11A and 11B, City of Fremont Standard Trench Backfill Specification, Standard Specifications, dated January, 1995 (amended).

##### 1.03 DESCRIPTION OF WORK

- A. Scope of work shall include, but shall not necessarily be limited to, the following for a complete and functional drainage system:
  1. Excavate and backfill as required in Section 31 00 00 "Earthwork"
  2. Re-use excavated materials onsite as fill, and off-haul excess material and dispose off-site.
  3. Set grades, construct grades, and compact soils for drainage.
  4. Stake proposed elevations in the field for review and approval by the Engineer prior to construction.
  5. Modify and raise the rim of existing area drain.
  6. Install curb inlet
  7. Install area drain
  8. Install trench drain
  9. Install PVC drain lines

10. Televising existing and completed PVC storm drain through out the park and all other drainage lines 6 inches or greater. Televising storm drain system will be paid for as included in the various drainage line items of work.
11. Record as-built elevations and location information on plans to be turned over to the City prior to final Acceptance.

1.04 REGULATORY REQUIREMENTS AND REFERENCES

- A. State of California Department of Transportation Standard Specifications, 2018 Edition.
- B. California Building Code, 2019.

1.05 SUBMITTALS

- A. Submit cut-sheets or samples of all products to be used in conformance with Section 01 30 00 "Submittals" and/or applicable Division One and Division Two specifications, General Conditions and Special Provisions.
- B. Product Data: Manufacturer's catalog cuts indicating material compliance and specified options.
- C. Record Drawings: Accurately record location of new piping, drain structures, and connections to existing systems using horizontal dimensions, elevations, inverts and slope gradients as applicable.
- D. Provide two (2), one (1) quart samples of each of the following products:
  1. Trench backfill material
  2. Flexible sealing compound
  3. Class 2 Permeable Rock

1.06 TESTING REFERENCES

**American Association of State highway and Transportation Officials (AASHTO):**

- |            |  |
|------------|--|
| M 252      | Standard Specification for Corrugated Polyethylene Pipe, 75mm to 250 mm Diameter   |
| M 294      | Standard Specification for Corrugated Polyethylene Pipe, 300mm to 1200 mm Diameter |
| Section 30 | Construction Standard, Thermoplastic Pipe  |

**American Society for Testing and Materials (ASTM):**

- |          |   |
|----------|---|
| C 76     | Standard Specification for Reinforced Concrete Culvert, Storm Drain, and Sewer Pipe                                 |
| C 655-09 | Standard Specification for Reinforced Concrete D-Load Culvert, Storm Drain, and Sewer Pipe                          |
| C 443    | Standard Specification for Joints for Concrete Pipe and Manholes, using Rubber Gaskets                              |
| D 1784   | Specification for Rigid Poly (Vinyl Chloride (PVC) Compounds and Chlorinated Poly (Vinyl Chloride (PCPVC) Compounds |
| D 1785   | Specifications for Poly (Vinyl Chloride) (PVC) Plastic Pipe, Schedules 40, 80, and 120                              |
| D 2122   | Test Method for Determining Dimensions of Thermoplastic Pipe and Fittings   |
| D 2321   | Standard Practice for Underground Installation of Thermoplastic Pipe for Sewers and Other Gravity Flow Applications |

- D 2564 Specifications for Solvent Cements for Poly (Vinyl Chloride) (PVC) Plastic Piping Systems
- D 2665 Specification for Poly (Vinyl Chloride) (PVC) Plastic Drain, Waste, and Vent Pipe and Fittings
- D 2855 Practice for Making Solvent- Cemented Joints wit Poly (Vinyl Chloride) (PVC) Pipe and fittings
- D 3212 Standard Application for Joints for Drain and Sewer Plastic Pipe Using Flexible Elastomeric Joints
- F 412 Terminology Relating to Plastic Piping Systems
- F 477 Elastomeric Seals (Gaskets) for Joining Plastic Pipe
- F 656 Specification for Primers for Use in Solvent Cement Joints for Poly (Vinyl Chloride) (PVC) Pipe and Fittings
- F 667 Standard Specification for Large Diameter Corrugated Polyethylene Pipe and Fittings
- F 891 Specification for Coextruded Poly (Vinyl Chloride) (PVC) Plastic Pipe With a Cellular Core
- F 1417 Standard Test Method for Installation Acceptance of Plastic Gravity Sewer Lines Using Low Pressure Air
- F2898-11 Permeability of Synthetic Turf Sports Field Base Stone and Surface system by Non-confined Area Flood Test Method
- CAN/CSA B182.8 Storm Sewer and Drainage Pipe and Fittings Polyethylene
- 1.07 PROTECTION OF PROJECT SITE
- A. Make provisions for, and take the necessary precautions to protect existing and new work from damage during entire life of project.
- 1.08 DELIVERY, STORAGE, AND HANDLING
- A. Store pipe neatly and orderly, stacked and blocked to prevent damage. Cracked, checked, spalled or otherwise damaged pipe shall be removed from site.
- E. Use of chain slings shall not be permitted.
- F. All piping, fittings and related materials shall be carefully handled at all times.
- G. All pipelines, fittings and drainage structures shall be kept clean and closed during construction.
- 1.09 PROJECT/SITE CONDITIONS
- A. Work of this section shall not be executed when site conditions are detrimental to quality of work as determined by the City Engineer.
- 1.10 SEQUENCING AND SCHEDULING
- A. Coordinate work of this section with all other work contained in the Contract Documents.

**PART 2 PRODUCTS**

2.01 TRENCH BACKFILL

- A. Trench backfill complying with the City Standard Specifications dated January 1995 (amended) and City Standard Details will be used to back fill all storm drain trenches containing solid reinforced concrete pipe (RCP) or solid PVC pipe, and sewer lines, unless otherwise specified herein or shown on the plans.

- B. All solid pipe trenches in landscaping shall be backfilled trench backfill to within 12 inches from finished grade. Native soil previously excavated from the trench will be used to backfill the top 12 inches.
  - C. Gradation requirements for trench backfill, refer to Section 11A and 11B, City Of Fremont Standard Specifications, dated January 1995 (amended).
  - D. Compact to 90% minimum relative compaction.
  - E. Sand equivalent: 20 min, per CTM 217
- 2.02 CLASS 2 PERMEABLE ROCK
- A. Refer to Section 32 11 23 "Aggregate Base Course".
- 2.03 CURB INLET
- A. Shall be as shown or noted in the Drawings.
  - B. Inlets shall be cast-in-place.
  - C. Grate shall be type 24-13 as designated by Cal Trans standard detail.
- 2.04 AREA DRAIN
- A. Shall be pre-cast concrete with a 24" inside measurement on the frame side bar and frame angle.
  - B. Concrete shall be 2500 psi after 8 days.
  - C. Box design load shall be H-20 traffic rated.
  - D. Walls and floors are reinforced with 4x4x10-10 welded wire mesh. Walls are 4 inches thick; Floor is 6 inches thick.
  - E. Area drains require a cast in place floor to seat or place the pre-cast area drain box structures upon. Those footings shall be minor concrete, as described in Section 03 30 00.
  - F. Overall minimum weight of drop inlet shall be 470 lbs.
  - G. Extensions, where required, shall be 12" tall, reinforced concrete.
  - H. Heavy grate frame shall be used measuring 2"x1-12"x1/4" angles and 2"x3/8" side bars and be cast into riser or area drain.
  - I. Cast iron grate shall be H-20 traffic rated, "ADA" wheelchair proof and a minimum of 13 lbs. banding bars shall be at both ends, with 3/16" cross bars at 4" on center, typ. Bearing bars shall be 3/16" at 19/32" on center with 13/32" clear, with cross bars at 4 inches on center.
  - J. Grate to be locked in place with two (2) 3/8" diameter stainless steel vandal-proof bolts as recommended by the manufacturer. Frame and grate shall be hot dipped galvanized after fabrication per ASTM A-123-59
  - K. At the contractor's option, the base can be poured-in-place (neat) and the precast boxes set into the concrete. The upper boxes must be set 1/4 inch into the 28"x28"x 6" thick concrete floor base if poured neat..
  - L. Core or knock outs, as required to accept drain pipes and seal all connections with a flexible sealant or dry pack grout material.
  - M. Flow line of pipe shall be flush with the poured in place concrete base, if poured-in-place base is used.

- N. Extensions: Provide box extensions, junction boxes and grade rings compatible with structures as necessary to finish at the proper elevation and to facilitate future elevation adjustments as noted below.

## 2.05 TRENCH DRAIN FRAME AND GRATE

- A. Trench grates shall be in compliance with ADA/Title 24 requirements and shall have a maximum ¼ inch clear opening between bearing bars to provide additional safety for high-heeled traffic. Ensure that installation does not create tripping hazards.
- B. Trench Drain Frames: Shall be a heavy duty, black coated steel frame, to accept 1-1/2" thick grates, or Heavy Duty T304 stainless steel frame. Load Class E or F.
1. Traffic edge thickness (in.): 0.188"
  2. Bearing area thickness (in.): 0.188"
  3. Bearing Area (sq in/ft): 31.5
  4. Concrete anchors: 3/8" x 3" @ 18" o.c.
- C. Trench Drain Channel Grates: All grates shall be 14" wide x 24" long x 1.5" thick, ADA compliant & heel guard/heel-proof, longitudinally slotted grate, ¼" slots, Recessed area for bolt and toggle locking device.
1. Material: Ductile iron 65-45-12
  2. Finish Coating: Durable black E-coating
  3. Load Rating: DIN Class C/AASHTO H-20
- D. Approved Manufacturer:
1. Ericsons Dura Trench, 574 Industrial Way N, Dallas, GA 30132. Phone: 770-505-6575, or approved equal. Northern CA Rep: Dave Land 916-883-9183
    - a. Model: **DTPF12-HDBP15ZSA 14C24DI (black)**
- E. All trench drains shall be poured to self-clean at 2% minimum. If conflicts arise, the slope can be reduced to a minimum 0.5% in order to achieve proper inlet and outlet height to promote overall function of the drainage system, at the direction of the project inspector and project engineer
- F. Cast Ductile Iron Trench Grates and Metal Frames Finishes:
1. Cast ductile iron trench grates shall be factory coated with black E-coat. Finish shall be slip resistant.
  2. Metal grate frames shall be hot-dip galvanized with powder coated color "black". If stainless steel frame is utilized, no finish is required.
  3. Factory prime/rust-proof and powder coat shall be to the manufacturer's specifications. Thoroughly clean all surfaces to etch surface and remove oils, grease, and metal particles prior to priming. Remove rust and loose mill scale by sandblasting in conformance with SSPC-SPG (Commercial Blast). Apply prime coat immediately to prevent corrosion. Spot prime abraded, bare, or insufficiently primed areas. Select only those primers/rust-proofing materials that are manufacturer recommended and compatible with powder coat material.
  4. Electrostatically spray primer/rust-proofing and powder coating in a clean room environment. Oven bake fully assembled pieces at the manufacturer's recommended curing temperatures. Apply one coat of primer/rust-proofing, minimum 2 mils, and one powder coat minimum 4 mils. Finished paint surface

shall be smooth, uniform without drips, runs, uneven coloration, pin holes, dust particles, bubbles, and match approved sample color and finish. Provide 1-pint cans of compatible and matching primer/rust-proofing paint and powder coat color matching paint to the District Representative for touch-up applications.

2.06 ROCK COBBLES

- A. Cobbles shall be 4 to 6 inches rounded "Fresno" River Cobble or approved locally sourced equal. Cobbles shall be placed as indicated on plans.

2.07 CONCRETE

- A. Refer to Section 03 30 00 "Cast in Place Concrete" for concrete collar around trench drain.

2.08 STORM DRAIN LINE (SOLID PLASTIC PIPE)

A. SDR Solid Pipe

1. All pipe and fittings shall be clearly and permanently marked to identify manufacturer, type, class, or schedule and NSF approval as applicable.
2. Solid pipe shall be made from a compound conforming to a cell classification of 12454 or 12364 as defined by ASTM D1784 and in accordance with ASTM D3034 for sizes four inch through fifteen inch.
3. The wall thickness, when tested according to ASTM D3412, shall correspond to a dimension ratio of SDR26 with a pipe stiffness of 115 for heavy wall pipe. Integral bells shall incorporate locked in gaskets meeting the requirements of ASTM D3212 and F477. The pipe shall be provided in lengths of 14 feet or 20 feet as required.
4. Pipe shall be 6 inch minimum size. Refer to plans. Pipe shall have a minimum O.D. of 6.625, I.D. of 6.115, and a wall thickness of .255, and may withstand pressurization.
5. Pipe shall be marked as meeting ASTM D 2665 Specification for PVC Plastic Drain, Waste, and Vent Pipe and Fittings and/or ASTM D 1785 Specification for PVC Plastic Pipe, Schedules 40, 80 and 120.
6. Pipe shall be certified to meeting the above listed specifications by NSF or an approved equal.

B. Fittings

1. Shall be marked as meeting ASTM F 1866 Standard Specification for PVC Plastic Schedule 40 Drainage and DWV Fabricated Fittings.
2. Shall be certified to meeting the above listed specifications by NSF or an approved equal.
3. As much as possible, pipe and fittings should be from one manufacturer to assure the consistency and compatibility of products.

C. Primers

1. Shall be marked as meeting ASTM F 656 Specification for Primers for Use in Solvent Cement Joints of PVC Plastic Pipe and Fittings.
2. Shall be certified to meeting the above listed specifications by NSF or an approved equal.

D. Solvent Cements

1. Shall be marked as meeting ASTM D 2564 Specification for Solvent Cements for PVC Plastic Piping Systems.
  2. Shall be recommended by the manufacturer for size of piping being assembled.
  3. Shall be certified to meeting the above listed specifications by NSF or an approved equal.
- E. Pipe Connection to Drainage Structures
1. All drainage pipe shall connect to existing and new drainage structures with a dry pack grout, or mechanical device, at the contractors option, and as approved by the Project Engineer, or Landscape Architect.
  2. Dry Pack Grout: Pac-it, by WR Meadows, or approved equal. A non-ferrous, non-gaseous, non-shrink grout specifically formulated for grouting applications, without the need for form work. Pre-mixed, low-slump, grout offering high density and strength, excellent workability and high one-day strengths in addition to the non-shrink property.
  3. Mechanical device: Link-Seal Modular Seals, Model "O", or approved equal. Color: green; nitrile rubber is resistant to oil, composite pressure plates, steel bolts and nuts with 2 part zinc dichromate and proprietary corrosion inhibiting coating.

### **PART 3 EXECUTION**

#### **3.01 PREPARATION**

- A. Coordinate the sequence of work.
- B. Review proposed staked elevations and proposed limits of excavation in the field with the Project Landscape Architect for approval prior to setting pipe and drain inlets.
- C. Adjust proposed elevations as necessary to ensure proper drainage, and to conform to existing rim elevations, with no areas of standing water.
- D. Schedule and perform drainage system installation prior to prolonged wet weather periods.

#### **3.02 EXCAVATED MATERIALS**

- A. All excavated soils may be stockpiled in the project limits, and will be re-used as landscape fill material within the project limits, in areas requiring landscape fill.
- B. For all utility trenches that pass through landscaped areas, at minimum, the top 12 inches of backfill will be native materials previously excavated on site from trenching activities. Native backfill material shall be compacted per the requirements found in Section 31 00 00 "Earthwork".
- C. There will be no off-haul of excavated soil materials that can be used as landscape fill or backfill.
- D. If material is not suitable as landscape fill, it shall be off-hauled and disposed of at the Contractors expense, as described elsewhere in this section and these specifications.
- E. Refer to "Stockpiling, Off-haul, and Spreading of Native Material" found elsewhere herein.

### 3.03 EXCAVATION, BACKFILL AND INSTALLATION OF SOLID DRAIN LINES

- A. Construct field inlets and area drains at the proposed locations, tying into the existing storm system, and as a tie in for the new system within the park. Locations are as delineated on the plans.
- B. Connect new pipe into each new manhole, area drain, or field inlet, as shown on plans.
- C. Prior to excavation, lay out the location of all storm drains lines. Adjust the alignments to conform to the final locations of sleeves and risers.
- D. Work shall be performed when soils are reasonably dry and not saturated.
- E. Trench excavation shall not exceed the amount of drain that can be set and backfilled completely in one working day.
- F. Depth and width of trench shall be excavated to such depths as will permit the pipe to be laid at the elevations, slopes, or depths of cover indicated on the drawings, and at uniform slopes between indicated elevations.
- G. Cuts shall be neat and clean. Wherever possible vertical cuts shall be made to minimize the possible disturbance to adjacent landscaped areas.
- H. Provide horizontal field engineering at all times when drain lines are being installed to assure that the slope on all drain lines is positive toward its intended outfall and also remains at the correct depth as shown on the drawings.
- I. Pipes shall rest on the barrel portions of the pipe, and not on the bell portion, in order to achieve uniform slopes. Trench backfill, or bedding, shall be notched to accommodate the bell portions of the pipe, so to allow the pipe to rest on the barrel portion.
- J. All pipe shall connect to existing pipe or structures with a flexible sealing compound. This connection will be tested for leaks prior to backfilling. The pipe stubs shall be cut off so pipe protrudes into the inlet.
- K. Whenever cobbles larger than 3 inches in size are present in earthen bedding, the trench section shall be excavated to the lines required for rock. Every effort shall be made to keep the sides of the trenches firm and undisturbed until backfilling has been completed and consolidated. Trenches shall be excavated with approximately vertical sides between the elevation of the bottom of the pipe and an elevation one foot above the top of the pipe.
- L. Refer to Section 31 00 00 "Earthwork", for additional information on utility trench and storm drain excavations.
- M. In landscaped areas, the top 12 inches of backfill will be excavated soil. See "Excavated Material" herein for use of excess trench spoils not to be used in backfilling trenches.

### 3.04 CURB INLET

- A. Install per City Standard Detail indicated on the Plans.

### 3.05 AREA DRAINS

- A. Subgrade shall be excavated per the details to allow for installation of base rock. Subgrade spoils shall be used as fill elsewhere on the site.
- B. Base shall be poured in place, neat, and sloped to drain. Surface shall be a smooth trowel finish

- C. Pre cast area drains shall be set on a poured-in-place concrete slab. Mortar and properly seal unit to slab, making a water tight connection, or place prefabricated unit on top of the wet base to allow it to embed by ¼ inch minimum.
- D. Install pipe inlets and outlets to specified elevations. Grout and/or seal all joints to a watertight condition with material per manufacturer's recommendation.
- E. After the drainage structures have been installed, any voids left shall be backfilled in accordance with the provisions in the Section entitled "Trench Backfill" found elsewhere in these Special Provisions.
- F. The top 12 inches surrounding the area drain shall be backfilled using previously excavated native soils.

3.06 INSTALLATION OF TRENCH DRAIN

- A. In accordance with manufacturer's instructions and shop drawings.
- B. Utilize manufacturer's approved installation device to assure proper frame joints, drawn tightly together by device.
- C. Trench drain and the encapsulating concrete, should be isolated from the expansion and contraction stress of the adjacent slabs and deep concrete bands using expansion felt.
- D. Finish of the encapsulating concrete shall match the broom finish.

3.07 TIE INTO EXISTING STORM DRAIN SYSTEMS

- A. At intersection of existing field inlet, or curb inlet, make PVC pipe or reinforced concrete pipe storm drain connections as per Caltrans standards.
- B. All reinforced concrete pipes shall connect to existing pipe or structures with a flexible sealing compound, dry pack grout, or mechanical device, as proposed by the contractor and approved by the City Engineer or Landscape Architect.
- C. This connection will be tested for leaks prior to backfilling.
- D. If knockouts exist in the existing field inlet, the contractor shall try to utilize these for inserting pipe.
- E. All invert opening shall be cut into existing field inlet by core drilling or jack hammering open to accept pipe.
- F. Pipe shall be run long into the inlet, and the pipe shall be mortared in place.
- G. After the sealing compound has cured the pipe shall be cut off so no more than 1- inch of pipe protrudes into the inlet.

3.08 TELEVISIONING STORM DRAIN SYSTEM

- A. After placement of the rock, the storm drain system, including the main line, laterals and interiors of storm structures in all storm drain lines 12" diameter or larger, shall be visually inspected by means of closed-circuit television.
- B. Defects must be repaired and the system must be televised to confirm satisfactory repair work prior to paving. The storm drain system must also be televised after placement and rough grading of all stockpiled and imported materials.
- C. Immediately after punch-list is completed, and prior to acceptance, the contractor shall televise the storm drain system again. Any necessary clean out and repairs must be completed prior to acceptance.

- D. Video inspection will be done one section (structure to structure) at a time. The camera will pan the interiors of all structures and when in the pipe, will stop at each joint to rotate 360° to pan the entire joint.
- E. The television camera used for the inspection shall be a color camera with a pan and tilt rotating camera head capable of panning 360° specifically designed and constructed for such inspection. Lighting for the camera shall be suitable to allow a clear color picture of the entire periphery of the pipe. The camera shall be operative in 100% humidity conditions without causing the camera lens to fog. The camera, television monitor, and other components of the video system shall be capable of producing picture quality to the satisfaction of the Engineer; and if unsatisfactory, equipment shall be removed and no payment will be made for an unsatisfactory inspection.
- F. The Engineer shall be notified 5 working days in advance of the inspection. The inspector shall be notified 48 hours prior to televising and must be onsite to confirm flow rate prior to televising. The camera shall be moved through the line in a downstream direction at a moderate rate, stopping when necessary to permit proper documentation of the storm drain condition. In no case will the television camera be pulled at a speed greater than 30 feet per minute. Manual winches, power winches, TV cable, and powered rewinds or other devices that do not obstruct the camera view or interfere with proper documentation of the storm drain conditions shall be used to move the camera through the line.
- G. The importance of accurate distance measurements is emphasized. Measurement for location of defects shall be above ground by means of a meter device. Marking on the cable, or the line, which would require interpolation for depth of insertion pit, will not be allowed. Accuracy of the distance meter shall be checked by use of a walking meter, roll-a-tape, or other suitable device and the accuracy shall be satisfactory to the Engineer.
- H. Documentation of the television results shall be as follows:
1. The purpose of recording shall be to supply a visual and audio record of problem areas of the lines that may be replayed. Video recording playback shall be at the same speed that it was recorded. The video format shall be DVD. The accompanying audio shall provide a description of what is encountered such as joints, problem areas, and broken pipe. The video shall have displayed the number of feet from the starting structure for each segment.
  2. Sections of pipe from structure to structure shall be audibly and visually identified in the video using the same nomenclature as on the improvement plans, e.g. "SDMH#2 to SDMH #3" or "Sta 10+35 to Sta 12+55". Each videocassette must be labeled with the following information: Date, project #, the locations, and types of structures shown on the tape.
  3. Title to the video shall be with the Engineer. The Contractor shall submit a copy of the DVD for review by the Engineer during the project. The contractor shall also provide a written summary of the DVD with dimensions and information, specifically identifying problem areas and broken pipe.

### 3.09 MEASUREMENT AND PAYMENT

- A. The contract unit price paid for **"24" Area Drain**", **"Curb Inlet"**, **"Raise (E) Manhole"** and **"Raise (E) Area Drain"** shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals and for doing all the work covered in this section, complete in place as shown on the plans, including

excavation and backfill, stenciling, reinforcing, and televising storm drain system, as required by these Special Provisions, and as directed by the City Engineer.

- B. The lump sum price paid for "**Trench Drain at Walkway**" shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals and for doing all the work covered in this section, complete in place as shown on the plans, including concrete collar, reinforcement, trench drain frame and grate, and concrete bed, as required by these Special Provisions, and as directed by the City Engineer.
- C. The per ton price paid for "**Cobbles**" shall include full compensation for furnishing all labor, materials, tools, equipment, delivery and incidentals and for doing all the work covered in this section, including excavation and rough grading, delivery, installation and complete in place as shown on the plans, as required by these Special Provisions, and as directed by the City Landscape Architect.
- D. The linear foot contract unit price for "**8" Storm Drain Line**" as contained in the Unit Price Schedule, and shall include full compensation for furnishing all labor, materials, tools, equipment and incidentals for doing all the work covered in this section, including, excavation and backfill, tie into existing area drain and curb inlet, and televising storm drain system, complete in place as shown on the plans, as required by the special provisions, and as required by the City Engineer.
- E. Payment for televising storm drain system shall be included in the contract unit price paid for all drainage pipe, area drain and curb inlet installed, as contained in the Unit Price Schedule, and no separate payment will be made therefor.

**END OF SECTION**

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## DIVISION 26 – ELECTRICAL

### SECTION 26 05 10 GENERAL ELECTRICAL REQUIREMENTS

#### PART 1 GENERAL

##### 1.01 DESCRIPTION OF WORK

- A. The work of this Section consists of providing all required labor, supervision, materials and equipment to satisfactorily complete all electrical installations that are shown on the Drawings, included in these specifications, or otherwise needed for a complete and fully operating facility.
- B. Furnish and install all required in-place equipment, conduits, conductors, cables and any miscellaneous materials for the satisfactory interconnection and operation of all associated electrical systems.

##### 1.02 RELATED WORK

- A. This Section provides the basic Electrical Requirements which supplement the General Requirements of Division 1 and apply to all Sections of Division 26.

##### 1.03 SUBMITTALS

- A. As specified in Division 1. Submit to the Architect shop drawings, manufacturer's data and certificates for equipment, materials and finish, and pertinent details for each system specified. Information to be submitted includes manufacturer's descriptive literature of cataloged products, equipment, drawings, diagrams, performance and characteristic curves as applicable, test data and catalog cuts. Obtain written approval before procurement, fabrication, or delivery of the items to the job site. Partial submittals are not acceptable and will be returned without review. Furnish manufacturer's name, trade name, catalog model or number, nameplate data, size, layout dimensions, capacity, project specification and paragraph reference, applicable Federal, Industry and Technical Society Publication References, and years of satisfactory service of each item required to establish contact compliance. Photographs of existing installations and data submitted in lieu of catalog data are not acceptable and will be returned without approval.
- B. Organize submittals for equipment and items related to each specification section together as a package.
- C. Proposed substitutions of products will not be reviewed or approved prior to awarding of the Contract.
- D. Substitutions shall be proven to the Architect or Engineer to be equal or superior to the specified product. Architect's decision is final. The Contractor shall pay all costs incurred by the Architect and Engineer in reviewing and processing any proposed substitutions whether or not a proposed substitution is accepted.
- E. If a proposed substitution is rejected, the contractor shall furnish the specified product at no increase in contract price.

- F. If a proposed substitution is accepted, the contractor shall be completely responsible for all dimensional changes, electrical changes, or changes to other work which is a result of the substitution. The accepted substitution shall be made at no additional cost to the owner or design consultants.

#### 1.04 QUALITY ASSURANCE

- A. Codes: All electrical equipment and materials, including installation and testing, shall conform to the latest editions following applicable codes:
1. California Electrical Code (CEC).
  2. Occupational Safety and Health Act (OSHA) standards.
  3. All applicable local codes, rules and regulations.
  4. Electrical Contractor shall possess a C-10 license and all other licenses as may be required. Licenses shall be in effect at start of this contract and be maintained throughout the duration of this contract.
- B. Variances: In instances where two or more codes are at variance, the most restrictive requirement shall apply.
- C. Standards: Equipment shall conform to applicable standards of American National Standards Institute (ANSI), Electronics Industries Association (EIA), Institute of Electrical and Electronics Engineers (IEEE), and National Electrical Manufacturers Association (NEMA).
- D. Underwriter Laboratories (UL) listing is required for all equipment and materials where such listing is offered by the Underwriters Laboratories. Provide service entrance labels for all equipment required by the NEC to have such labels.
- E. The electrical contractor shall guarantee all work and materials installed under this contract for a period of one (1) year from date of acceptance by owner.
- F. All work and materials covered by this specification shall be subject to inspection at any and all times by representatives of the owner. Work shall not be closed in or covered before inspection and approval by the owner or his representative. Any material found not conforming with these specifications shall, within 3 days after being notified by the owner, be removed from premises; if said material has been installed, entire expense of removing and replacing same, including any cutting and patching that may be necessary, shall be borne by the contractor.

#### 1.05 DRAWINGS

- A. Drawings: The electrical Drawings shall govern the general layout of the completed construction.
1. Locations of equipment, panels, pullboxes, conduits, stub-ups, ground connections are approximate unless dimensioned; verify locations with the Architect prior to installation.

2. Review the Drawings and Specification Divisions of other trades and perform the electrical work that will be required for those installations.
3. Should there be a need to deviate from the Electrical Drawings and Specifications, submit written details and reasons for all changes to the Architect for approval.
4. The general arrangement and location of existing conduits, piping, apparatus, etc., is approximate. The drawings and specifications are for the assistance and guidance of the contractor, exact locations, distances and elevations are governed by actual field conditions. Accuracy of data given herein and on the drawings is not guaranteed. Minor changes may be necessary to accommodate work. The contractor is responsible for verifying existing conditions. Should it be necessary to deviate from the design due to interference with existing conditions or work in progress, claims for additional compensation shall be limited to those for work required by unforeseen conditions as determined by the Architect.
5. All drawings and divisions of these specifications shall be considered as whole. This contractor shall report any apparent discrepancies to the Architect prior to submitting bids.
6. The contractor shall be held responsible to have examined the site and compared it with the specifications and plans and to have satisfied himself as to the conditions under which the work is to be performed. He shall be held responsible for knowledge of all existing conditions whether or not accurately described. No subsequent allowance shall be made for any extra expense due to failure to make such examination.

1.06 CLOSEOUT SUBMITTALS

- A. Manuals: Furnish manuals for equipment where manuals are specified in the equipment specifications or are specified in Division 1.

1.07 COORDINATION

- A. Coordinate the electrical work with the other trades, code authorities, utilities and the Architect.
- B. Provide and install all trenching, backfilling, conduit, pull boxes, splice boxes, etc. for all Utility Company services to the locations indicated on the Drawings. All materials and construction shall be in accordance with the requirements for all the Utility Companies. Prior to performing any work, the Electrical Contractor shall coordinate with the various Utility Companies to verify that all such work and materials shown on the Drawings are of sufficient sizes and correctly located to provide services on the site. The Electrical Contractor shall verify with all the Utility Companies that additional contractor furnished and installed work is not required. If additional work, materials, or changes are required by any of the Utility Companies, the Electrical Contractor shall advise the Architect of such changes and no further work shall then be performed until instructed to do so by the Architect.
- C. Utility Company charges shall be paid by the Owner.

- D. Contractor shall pay all inspection and other applicable fees and procure all permits necessary for the completion of this work.
- E. Where connections must be made to existing installations, properly schedule all the required work, including the power shutdown periods.
- F. When two trades join together in an area, make certain that no electrical work is omitted.

#### 1.08 JOB CONDITIONS

- A. Operations: Perform all work in compliance with Division 1
  - 1. Keep the number and duration of power shutdown periods to a minimum.
  - 2. Show all proposed shutdowns and their expected duration on the construction schedule. Schedule and carry out shutdowns so as to cause the least disruption to operation of the Owner's facilities.
  - 3. Carry out shutdown only after the schedule has been approved, in writing, by the owner. Submit power interruption schedule 15 days prior to date of interruption.
- B. Construction Power: Unless otherwise noted in Division 1 of these specifications, contractor shall make all arrangements and provide all necessary facilities for temporary construction power from the owner's on site source. Energy costs shall be paid for by the Owner
- C. Storage: Provide adequate storage for all equipment and materials which will become part of the completed facility so that it is protected from weather, dust, water, or construction operations.

#### 1.09 DAMAGED PRODUCTS

- A. Notify the Architect in writing in the event that any equipment or material is damaged. Obtain approval from the Architect before making repairs to damaged products.

#### 1.10 LOCATIONS

- A. General: Use equipment, materials and wiring methods suitable for the types of locations in which they are located.
- B. Dry Locations: All those indoor areas which do not fall within the definition below for Wet Locations and which are not otherwise designated on the Drawings.
- C. Wet Locations: All locations exposed to the weather, whether under a roof or not, unless otherwise designated on the Drawings.

#### 1.11 SAFETY AND INDEMNITY

- A. The Contractor is solely and completely responsible for conditions of the job site including safety of all persons and property during performance of the work. This

requirement will apply continually and not be limited to normal working hours. The contractor shall provide and maintain throughout the work site proper safeguards including, but not limited to, enclosures, barriers, warning signs, lights, etc. to prevent accidental injury to people or damage to property.

- B. No act, service, drawing review or construction review by the Owner, the Engineer or their Consultants is intended to include reviews of the adequacy of the Contractors safety measures in or near the construction site.
- C. The Contractor performing work under this Division of the Specifications shall hold harmless, indemnify, and defend the Owner, the Engineer, their consultants, and each of their officers, agents and employees from any and all liability claims, losses, or damage arising out of or alleged to arise from bodily injury, sickness, or death of a person or persons and for all damages arising out of injury to or destruction of property arising directly or indirectly out of or in connection with the performance of the work under this Division of the Specifications, and from the Contractor's negligence in the performance of the work described in the construction contract documents, but not including liability that may be due to the sole negligence of the Owner, the Engineer, their Consultants or their officers, agents and employees.
- D. The project work area does not contain asbestos materials. However, if a work area is encountered that does contain asbestos materials, the contractor is advised to coordinate with the owner and it's asbestos abatement consultant all measures necessary to provide installation of conduit, and hangers. All asbestos containing materials related work shall conform to the directions given by the owner. Nothing herein shall be construed to create a liability for American Consulting Engineers regarding asbestos abatement measures.

#### 1.12 ACCESS PANELS AND DOORS

- A. The Contractor shall install access panels as required where floors, walls or ceilings must be penetrated for access to electrical, control, fire alarm or other specified electrical devices. The minimum size panel shall be 14" x 14" in usable opening. Where access by a service person is required, minimum usable opening shall be 18" x 24".
- B. All access doors installed lower than 7'-0" above finished floor and exposed to public access shall have keyed locks.
- C. Where specific information or details relating to access panels differ from these specifications, shown on drawings and or details or on other Divisions of work, these requirements shall supersede these specifications.
- D. Approved Manufacturers: Subject to compliance with requirements under Architectural Specifications, Milcor, Karp, Nystrom or Cesco.
  - 1. Milcor Style K (plaster)
  - 2. Milcor Style DW (gypsum board)
  - 3. Milcor Style M (masonry)

4. Milcor Style "Fire Rated" where required.

## **PART 2 PRODUCTS**

### **2.01 STANDARD OF QUALITY**

- A. Products that are specified by manufacturer, trade name or catalog number establish a standard of quality and do not prohibit the use of equal products of other manufacturers provided they are approved by the Architect prior to installation.
- B. Material and Equipment: Provide materials and equipment that are new and are current products of manufacturers regularly engaged in the production of such products. The standard products shall have been in satisfactory commercial or industrial use for two years prior to bid opening. The two-year period includes use of equipment and materials of similar size under similar circumstances. For uniformity, only one manufacturer will be accepted for each type of product.
- C. Service Support: Submit a certified list of qualified permanent service organizations including their addresses and qualification for support of the equipment. These service organizations shall be convenient to the equipment installation and able to render service to the equipment on a regular and emergency basis during the warranty period of the contract.
- D. Manufacturer's Recommendations: Where installation procedures are required to be in accordance with manufacturer's recommendations, furnish printed copies of the recommendations prior to installation. Installation of the item shall not proceed until recommendations are received. Failure to furnish recommendation shall be cause for rejection of the equipment or material.

### **2.02 NAMEPLATES**

- A. For each piece of electrical equipment, provide a manufacturer's nameplate showing his name, location, the pertinent ratings, the model designation, and shop order number.
- B. Identify each piece of equipment and related controls with a rigid laminated engraved plastic nameplate. Unless otherwise noted, nameplates shall be melamine plastic 0.125 inch thick, white with black center core. Surface shall be matte finish. Corners shall be square. Accurately align lettering and engrave into the core. Minimum size of nameplates shall be 0.5 by 2.5 inches unless otherwise noted. Where not otherwise specified, lettering shall be a minimum of 0.25 inch high normal block style. Engrave nameplates with the inscriptions indicated on the Drawings and, if not so indicated, with the equipment name. Securely fasten nameplates in place using two stainless steel or brass screws.
- C. Contractor to provide rigid laminated engraved plastic nameplate for all signal terminal cabinets, fire alarm terminal cans, electrical disconnect switches (fused or non-fused) and data/voice cabinets. Provide and secure as noted above.

### **2.03 FASTENERS**

- A. Fasteners for securing equipment to walls, floors and the like shall be either hot-dip galvanized after fabrication or stainless steel.

#### 2.04 FINISH REQUIREMENTS

- A. Equipment: Refer to each electrical equipment section of these Specifications for painting requirements of equipment enclosures. Repair any final paint finish which has been damaged or is otherwise unsatisfactory, to the satisfaction of the Architect.
- B. Wiring System: In finished areas, paint all exposed conduits, boxes and fittings to match the color of the surface to which they are affixed.

### **PART 3 EXECUTION**

#### 3.01 WORKMANSHIP

- A. Ensure that all equipment and materials fit properly in their installation.
- B. Perform any required work to correct improperly fit installation at no additional expense to the owner.
- C. All electrical equipment and materials shall be installed in a neat and workmanship manner in accordance with the NECA Standard of Installation Manual and Workmanship of the entire job shall be first class in every respect.

#### 3.02 EQUIPMENT INSTALLATIONS

- A. Provide the required inserts, bolts and anchors, and securely attach all equipment and materials to their supports.
- B. Do all the cutting and patching necessary for the proper installation of work and repair any damage done.
- C. Earthquake restraints: all electrical equipment, including conduits over 2 inches in diameter, shall be braced or anchored to resist a horizontal force acting in any direction as per Title 24, part 2, table 16a-o, part 3.
- D. Structural work: All core drilling, bolt anchor insertion, or cutting of existing structural concrete shall be approved by a California registered structural consulting engineer prior to the execution of any construction. At all floor slabs and structural concrete walls to be drilled, cut or bolt anchors inserted, the contractor shall find and mark all reinforcing in both faces located by means of x-ray, pach-ometer, or prof-ometer. Submit sketch showing location of rebar and proposed cuts, cores, or bolt anchor locations for approval.

#### 3.03 FIELD TESTS

- A. Test shall be in accordance with Acceptance testing specifications issued by the National Electrical Testing Association (NETA).
- B. Perform equipment field tests and adjustments. Properly calibrate, adjust and operationally check all circuits and components, and demonstrate as ready for

service. Make additional calibration and adjustments if it is determined later that the initial adjustments are not satisfactory for proper performance. Perform equipment field test for equipment where equipment field tests are specified in the equipment Specifications. Give sufficient notice to the Architect prior to any test so that the tests may witness.

- C. Provide instruments, other equipment and material required for the tests. These shall be of the type designed for the type of tests to be performed. Test instrument shall be calibrated by a recognized testing laboratory within three months prior to performing tests.
- D. Operational Tests: Operationally test all circuits to demonstrate that the circuits and equipment have been properly installed and adjusted and are ready for full-time service. Demonstrate the proper functioning of circuits in all modes of operation, including alarm conditions.
- E. Re-testing will be required for all unsatisfactory tests after the equipment or system has been repaired. Re-test all related equipment and systems if required by the Architect. Repair and re-test equipment and systems which have been satisfactorily tested but later fail, until satisfactory performance is obtained.
- F. Maintain records of each test and submit five copies to the Architect when testing is complete. All tests shall be witnessed by the Architect. These records shall include:
  - 1. Name of equipment tested.
  - 2. Date of report.
  - 3. Date of test.
  - 4. Description of test setup.
  - 5. Identification and rating of test equipment.
  - 6. Test results and data.
  - 7. Name of person performing test.
  - 8. Owner or Architect's initials.
- G. Items requiring testing shall be as noted in the additional electrical sections of these specifications.

#### 3.04 CLEANING EQUIPMENT

- A. Thoroughly clean all soiled surfaces of installed equipment and materials.

#### 3.05 PAINTING OF EQUIPMENT

- A. Factory Applied: Electrical equipment shall have factory applied painting system which shall, as a minimum, meet the requirements of NEMA ICS 6 corrosion-resistance test and the additional requirements specified in the technical section.

- B. Field Applied: Paint electrical equipment as required to match finish of adjacent surfaces.

### 3.06 RECORDS

- A. Maintain one copy of the contract Drawing Sheets on the site of the work for recording the "as built" condition. After completion of the work, the Contractor shall carefully mark the work as actually constructed, revising, deleting and adding to the Drawing Sheets as required. The following requirements shall be complied with:

1. Cable Size and Type: Provide the size and type of each cable installed on project.
2. Substructure: Where the location of all underground conduits, pull boxes, stub ups and etc. where are found to different than shown, carefully mark the correct location on the Drawings. Work shall be dimensioned from existing improvements.
3. Size of all conduit runs.
4. Routes of concealed conduit runs and conduit runs below grade.
5. Homerun points of all branch circuit.
6. Location of all switchgear, panels, MCC, lighting control panels, pullcans, etc.
7. Changes made as a result of all approved change orders, addendums, or field authorized revisions.
8. As Built: At the completion of the Work the Contractor shall review, certify, correct and turn over the marked up Drawings to the Architect for his use in preparing "as built" plans.
9. As Built drawings for fire alarm, data, telephone, CATV/Video, intercom and clock shall also be recorded. Upon completion "As-built" documentation showing actual devices locations and devices identification as installed and labeled, including fire alarm, data, telephone, CATV/Video and int/clock wiring layout. "As-built" shall include; for example , fire alarm equipment location showing all monitor modules and end of line resistor locations. The contractor shall provide one set drawings documents and the other set in electronic CAD file representing actual as-builts. CAD files shall be AutoCAD 14 format. Obtaining CAD files from the Architect/District shall be charged with \$150/sheet.
10. As built Drawings shall be delivered to the Architect within ten (10) days of completion of construction.

### 3.07 CLEAN UP

- A. Upon completion of electrical work, remove all surplus materials, rubbish, and debris that accumulated during the construction work. Leave the entire area neat, clean, and acceptable to the Architect.

3.08 MECHANICAL AND PLUMBING ELECTRICAL WORK

- A. The requirements for electrical power and/or devices for all mechanical and plumbing equipment supplied and/or installed under this Contract shall be coordinated and verified with the following:
  - 1. Mechanical and Plumbing Drawings.
  - 2. Mechanical and Plumbing sections of these Specifications.
  - 3. Manufacturers of the Mechanical and Plumbing equipment supplied.
- B. The coordination and verification shall include the voltage, ampacity, phase, location and type of disconnect, control, and connection required. Any changes that are required as a result of this coordination and verification shall be a part of this Contract.
- C. The Electrical Contractor shall furnish and install the following for all mechanical and plumbing equipment:
  - 1. Line voltage conduit and wiring.
  - 2. Disconnect switches.
  - 3. Manual line voltage controls.
- D. Automatic line voltage controls and magnetic starters unless otherwise noted, shall be furnished by the Mechanical and/or Plumbing Contractor and installed and connected by the Electrical Contractor. All line voltage control wiring installed by the Electrical Contractor shall be done per directions from the Mechanical and/or Plumbing Contractor.
- E. All low voltage control wiring for Mechanical and Plumbing equipment shall be installed in conduit. Furnishing, installation and connection of all low voltage conduits, boxes, wiring and controls shall be by the Mechanical and/or Plumbing Contractor.
- F. Manual motor starters, where required, shall have toggle type operators with pilot light and melting alloy type overload relays, SQUARE D COMPANY, Class 2510, Type FG-1P (surface) or Type FS-1P (flush) or ITE, WESTINGHOUSE or GENERAL ELECTRIC equal.

3.09 ACCESS DOORS

- A. The Electrical Contractor shall furnish and install access doors wherever required whether shown or not for easy maintenance of electrical systems: As an example, fire alarm devices, controls, junction boxes, etc. Access doors shall provide for complete access to equipment for both removal and replacement of equipment.

3.10 MEASUREMENT AND PAYMENT

- A. Full compensation for conforming to the provisions of this section shall be considered as included in prices paid for various contract items of work involved and no additional compensation will be allowed therefore, unless specified otherwise.

**END OF SECTION**

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**SECTION 26 05 19 LOW VOLTAGE WIRE AND CABLE**

**PART 1 GENERAL**

**1.01 DESCRIPTION OF WORK**

- A. The work of this Section consists of providing all wire and cable rated 600 volts or less, including splices and terminations, as shown on the Drawings and as described herein.

**1.02 RELATED WORK**

- A. See the following Specification Section for work related to the work in this Section:
  - 1. Section 26 05 33 - Conduits, Raceways and Fittings.
  - 2. Section 26 05 34 - Junction and Pull Boxes.

**1.03 SUBMITTALS**

- A. In accordance with Division 1.
- B. Submit complete material list with the manufacturer's specifications and published descriptive literature for all materials proposed for use.

**1.04 QUALITY ASSURANCE**

- A. Field tests shall be performed as specified in paragraph 3.04 of this Section.

**PART 2 PRODUCTS**

**2.01 CONDUCTORS**

- A. Conductors shall be copper, type THHN/THWN/MTW oil and gasoline resistant, 600 volt rated insulation. Minimum power and control wire size shall be No. 12 AWG unless otherwise noted.
- B. Conductors shall be stranded except that sizes #10 and smaller for receptacle circuits shall be solid and of the sizes indicated.
- C. Minimum power and control wire size shall be No. 12 AWG unless otherwise noted.
- D. All conductors used on this Project shall be of the same type and conductor material

**2.02 CABLES**

- A. All individual conductors shall be copper with type THHN/THWN, 600 volt rated insulation.
- B. Insulation Marking - All insulated conductors shall be identified with printing colored to contrast with the insulation color.
- C. Color Coding - As specified in paragraph 3.03.

- D. Special Wiring - Where special wiring is proposed by an equipment manufacturer, submit the special wiring requirements to the Owner's Representative and, if approved, provide same. Special wire shall be the type required by the equipment manufacturer.
- E. Other Wiring - Wire or cable not specifically shown on the Drawings or specified, but required, shall be of the type and size required for the application and as approved by the Owner's Representative.
- F. Manufacturer - Acceptable manufacturers including Cablec, Southwire, or equal.

### 2.03 TERMINATIONS

- A. Manufacturer - Terminals as manufactured by T&B, Burndy or equal.
- B. Cable Termination for Copper - Crimp style two hole NEMA spade terminals designed and rated for copper cable.
- C. Wire Terminations - Crimp on ring-tongue terminals, insulated sleeve, of proper size for the wire used.
- D. End Seals - Heat shrink plastic caps of proper size for the wire on which used.

### 2.04 TAPE

- A. Tape used for terminations and cable marking shall be compatible with the insulation and jacket of the cable and shall be of plastic material.

## **PART 3 EXECUTION**

### 3.01 CABLE INSTALLATION

- A. Clean Raceways - Clean all raceways prior to installation of cables as specified in Section 26 05 33 - Conduits Raceway and Fittings.
- B. Cable Pulling - Exercise care in pulling wires and cables into conduit or wireways so as to avoid kinking, putting undue stress on the cables or otherwise abrading them. No grease will be permitted in pulling cables. Only soapstone, talc, or UL listed pulling compound will be permitted. The raceway construction shall be complete and protected from the weather before cable is pulled into it. Swab conduits before installing cables and exercise care in pulling, to avoid damage to conductors.
- C. Bending Radius - Cable bending radius shall be per applicable code. Install feeder cables in one continuous length.
- D. Equipment Grounding Conductors - Provide an equipment grounding conductor, whether or not it is shown on the Drawings, in all conduits or all raceways.
- E. Panelboard Wiring - In panels, bundle incoming wire and cables which are No. 6 AWG and smaller, lace at intervals not greater than 6 inches, neatly spread into trees and connect to their respective terminals. Allow sufficient slack in cables for alterations in terminal connections. Perform lacing with plastic cable ties or linen lacing twine. Where

plastic panel wiring duct is provided for cable runs, lacing is not necessary when the cable is properly installed in the duct.

F. Provide #10awg conductors for all 20 amp 120v branch circuits over 100 feet.

### 3.02 CABLE TERMINATIONS AND SPLICES

A. Splices - UL Listed wirenuts.

B. Terminations - Shall comply with the following

1. Make up and form cable and orient terminals to minimize cable strain and stress on device being terminated on.
2. Burnish oxide from conductor prior to inserting in oxide breaking compound filled terminal.

### 3.03 CIRCUIT AND CONDUCTOR IDENTIFICATION

A. Color Coding - Provide color coding for all circuit conductors. Insulation color shall be white for neutrals and green for grounding conductors. Ungrounded conductor colors shall be as follows:

<u>VOLTAGE</u>	<u>208/120V</u>	<u>480/277V</u>
Phase A	Black	Brown
Phase B	Red	Orange
Phase C	Blue	Yellow
Neutral	White	Grey
Ground	Green	Green

B. Color coding shall be in the conductor insulation for all conductors #10 AWG and smaller; for larger conductors, color shall be either in the insulation or in colored plastic tape applied at every location where the conductor is readily accessible.

C. Circuit Identification - All underground distribution and service circuits shall be provided with plastic identification tags in each secondary box and at each termination. Tags shall identify the source transformer of the circuit and the building number(s) serviced by the circuit.

### 3.04 FIELD TESTS

A. All systems shall test free from short circuits and grounds, shall be free from mechanical and electrical defects, and shall show an insulation resistance between phase conductors and ground of not less than the requirements of the CEC. All circuits shall be tested for proper neutral connections.

### 3.05 MEASUREMENT AND PAYMENT

A. The final pay quantity for “**Electrical Cable and Connection (F)**” of the unit price shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals and for doing all the work covered by this section to achieve a fully functional system and as required by these Special Provisions, and as directed by the City Engineer or his designee. The quantities shall not be measured. The quantity shown on the Engineer’s Estimate for each of these electrical wire items shall be the

final pay quantity for which payment is made as specified in Section 8.2 and 8.8, "Final Payment" of the General Conditions and no additional payment shall be made therefor.

**END OF SECTION**

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## SECTION 26 05 26 GROUNDING

### PART 1 GENERAL

#### 1.01 DESCRIPTION OF WORK

- A. The work of this section consists of furnishing, installing, connection and testing of all grounding systems as specified herein and as shown on the Drawings.

#### 1.02 RELATED WORK

- A. See the following specification sections for work related to work in this section.

1. Section 26 05 10 - Electrical General Requirements.
2. Section 26 05 19 - Low Voltage Wire and Cable

#### 1.03 SUBMITTALS: In accordance with Section 26 05 10 Submittals.

- A. Submit manufacturer's literature for review.

#### 1.04 STANDARDS AND CODES

- A. American Society for Testing and Materials (ASTM) Publication:
1. B8-1986, Standard Specification for Concentric-Lay-Stranded Copper Conductors, Hard, Medium-Hard, or Soft.
  2. B228-1988, Copper Clad Steel Conductors Specification.
- B. The latest editions following applicable codes:
1. California Electrical Code (CEC).
  2. Occupational Safety and Health Act (OSHA) standards.
  3. All applicable local codes, rules and regulations.

#### 1.05 QUALITY ASSURANCE

- A. Each and every concealed connection must be inspected by the Owner's Representative before it is covered up by the Contractor.

### PART 2 PRODUCTS

#### 2.01 GENERAL

- A. The grounding system shall consist of the grounding conductors, ground bus, ground fittings and clamps, and bonding conductors as shown on the Drawings and as required by codes and local authorities.

#### 2.02 System Components

- A. Ground Rods: Ground rods shall be cone pointed copper clad Grade 40 HS steel rods conforming to ASTM B228. The welded copper encased steel rod shall have a conductivity of not less than 27% of pure copper. Rods shall be not less than 3/4-inch in diameter and ten feet long, unless otherwise indicated. Rods longer than ten feet shall be make up of ten foot units joined together with threaded couplings. The manufacturer's trademark shall be stamped near the top.
- B. Ground Conductors: Buried conductors shall be medium-hard drawn bare copper; other conductors shall be soft drawn copper. Sizes over No. 6 AWG shall be stranded conforming to ASTM B8. In all conduit runs, a green insulated copper ground wire, sized to comply with codes, shall be installed.
- C. Ground Connections: Exposed ground connections shall be high copper alloy bolted pressure types or exothermically welded type as notes. Buried connections shall be either exothermically welded type or approved compression types for connection of copper to copper or copper to steel, as required. Lug for attachment of cables to steel enclosures shall be of the binding post type with a 1/2-13NC stud. Each post shall accommodate cables from #4 AWG to #2/0 AWG.
- D. Ground Rod Boxes: Boxes shall be nine-inch diameter precast concrete units with cast iron traffic covers. Units shall be 12 inches deep. Covers shall be embossed with the wording "Ground Rod".
- E. Ground Bus: 2" x 1/4" x (length as specified on drawings) copper busbar. Provide isolation standoff bushings. Provide drilled and tapped 3/8" diameter holes on 2 foot centers. Provide "ALCU" lugs and bronze bolts. Connect busbar to main grounding system and bond to metallic domestic cold water pipe with #8 ground conductor.

### **PART 3 EXECUTION**

#### **3.01 INSTALLATION**

- A. Ground all equipment, including, but not limited to, panel boards, terminal cabinets and outlet boxes, for which a ground connection is required per the NEC, even though not specifically shown on the Drawings.
- B. The ground pole of receptacles shall be connected to their outlet boxes by means of a copper ground wire connecting to a screw in the back of the box.
- C. Provide a ground rod box for each ground rod so as to permit ready access for the connection and/or removal of any pressure connectors to facilitate testing.
- D. Where ground rods must be driven to depths over ten feet, increase rod diameter used, sufficiently to prevent the rod from bending or being damaged.
- E. Make embedded or buried ground connections, taps and splices with exothermically welded connections or approved compression type connectors.
- F. Make connections of grounding conductors to equipment ground buses and enclosures using binding post type connectors.

- G. Effectively bond structural steel for buildings to the grounding system, "UFER" ground.
- H. Install a ground rod in each primary handhole. Connect the ground conductor installed for each primary duct bank to the ground rod in each handhole. Bond metal conduits to handhole ground rod.

3.02 TESTING

- A. Conduct ground resistance tests using a ground resistance tester with a scale reading of 25 ohms maximum.
- B. Test methods shall conform to IEEE Standard 81 using the three electrode method. Conduct test only after a period of not less than 48 hours of dry weather.
- C. Take resistance readings for each ground rod individually and for each system as a whole without benefit of chemical treatment or other artificial means. Ground resistance readings shall not exceed 25 ohms. If readings are not to the Contracting Officer's approval, provide lengthened or additional ground rods (maximum of two additional rods).
- D. Furnish to the Owner's Representative a test report with recorded data of each ground rod location and each system.

3.03 MEASUREMENT AND PAYMENT

- A. Full compensation for conforming to the provisions of this section shall be considered as included in prices paid for various contract items of work involved and no additional compensation will be allowed therefore, unless specified otherwise.

**END OF SECTION**

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## SECTION 26 05 33 CONDUITS, RACEWAYS AND FITTINGS

### PART 1 GENERAL

#### 1.01 DESCRIPTION OF WORK

- A. The work of this section consists of furnishing and installing conduits, raceways and fittings as shown on the Drawings and as described herein.

#### 1.02 RELATED WORK

- A. See the following specification sections for work related to the work in this section:
1. Section 26 05 35 - Underground Ducts.
  2. Section 26 05 19 - Low Voltage Wire and Cable.
  3. Section 26 05 34 - Junction and Pull Boxes.

#### 1.03 SUBMITTALS

- A. As specified in Division 1.
1. Catalog Data: Provide manufacturer's descriptive literature.
  2. Single Submittal: A single complete submittal is required for all products covered by this Section.

### PART 2 PRODUCTS

#### 2.01 CONDUITS, RACEWAYS

- A. Electrical Metallic Tubing (EMT) shall be hot-dip galvanized after fabrication. Couplings shall be compression or setscrew type.
- B. Flexible Conduit: Flexible metal conduit shall be galvanized steel.
- C. Galvanized Rigid Steel Conduit (GRS) shall be hot-dip galvanized after fabrication. Couplings shall be threaded type.
- D. Rigid Non-metallic Conduit: Rigid non-metallic conduit shall be PVC Schedule 40 (PVC-40 or NEMA Type EPC-40) conduit approved for underground use and for use with 90°C wires.
- E. The use of "MC Cable shall not be permitted without written approval.

#### 2.02 CONDUIT SUPPORTS

- A. Supports for individual conduits shall be galvanized malleable iron one-hole type with conduit back spacer.
- B. Supports for multiple conduits shall be hot-dipped galvanized Unistrut or Superstrut channels, or approved equal. All associated hardware shall be hot-dip galvanized.
- C. Supports for EMT conduits shall be galvanized pressed steel single hole straps.
- D. Clamp fasteners shall be by wedge anchors. Shot in anchors shall not be allowed.

## 2.03 FITTINGS

- A. Provide threaded-type couplings and connectors for rigid steel conduits. Provide compression (watertight) steel type (die-cast zinc or malleable iron type fittings not allowed), or setscrew type for EMT. Provide threaded couplings and Meyers hubs for rigid steel conduit exposed to weather.
- B. Fittings for flexible conduit shall be Appleton, Chicago, IL, Type ST, O-Z Gedney Series 4Q by General Signal Corp., Terryville, CT, T & B 5300 series, or approved equal.
- C. Fittings for use with rigid steel shall be galvanized steel or galvanized cast ferrous metal; access fittings shall have gasketed cast covers and be Crouse Hinds Condulets, Syracuse, NY, Appleton Unilets, Chicago, IL, or approved equal. Provide threaded-type couplings and connectors; setscrew type and compression-type are not acceptable.
- D. Fittings for use with rigid non-metallic conduit shall be PVC and have solvent-weld-type conduit connections.
- E. Union couplings for conduits shall be the Erickson type and shall be Appleton, Chicago, IL, Type EC, O-Z Gedney 3-piece Series 4 by General Signal Corp., Terryville, CT, or approved equal. Threadless coupling shall not be used.
- F. Bushings
  1. Bushings shall be the insulated type.
  2. Bushings for rigid steel shall be insulated grounding type, O-Z Gedney Type HBLG, Appleton Type GIB, or approved equal.
- G. Conduit Sealants
  1. Fire Retardant Types: Fire stop material shall be reusable, non-toxic, asbestos-free, expanding, putty type material with a 3-hour rating in accordance with UL Classification 35L4 or as specified on the Drawings.

## **PART 3 EXECUTION**

### 3.01 CONDUIT, RACEWAY AND FITTING INSTALLATION

- A. For exposed, exterior conduit runs provide rigid metal (GRS).
- B. For conduit run underground, in concrete or masonry block walls and under concrete slabs, install minimum ¾" size nonmetallic (PVC) with PVC elbows. Where conduits transition from underground or under slab to above grade install wrapped rigid metal (GRS) elbows and risers.
- C. For conduit runs concealed in steel or wood framed walls or in ceiling spaces or exposed in interior spaces above six feet over the finished floor, install EMT.
- D. Flexible metal conduit shall be used only for the connection of recessed lighting fixtures and motor connections unless otherwise noted on the Drawings. Liquid-tight steel flexible conduit shall be used for motor connections.
- E. The minimum size raceway shall be 3/4-inch unless indicated otherwise on the Drawings.
- F. Installation shall comply with the CEC.

- G. From pull point to pull point, the sum of the angles of all of the bends and offset shall not exceed 270 degrees.
- H. Conduit Supports: Properly support all conduits as required by the NEC. Run all conduits concealed except where otherwise shown on the drawings.
1. Exposed Conduits: Support exposed conduits within three feet of any equipment or device and at intervals not exceeding NEC requirements; wherever possible, group conduits together and support on common supports. Support exposed conduits fastened to the surface of the concrete structure by one-hole clamps, or with channels. Use conduit spacers with one-hole clamps.
    - a. Conduits attached to walls or columns shall be as unobtrusive as possible and shall avoid windows. Run all exposed conduits parallel or at right angles to building lines.
    - b. Group exposed conduits together. Arrange such conduits uniformly and neatly.
  2. Support all conduits within three feet of any junction box, coupling, bind or fixture.
  3. Support conduit risers in shafts with Unistrut Superstrut, or approved equal, channels and straps.
- H. Moisture Seals: Provide in accordance with NEC paragraphs 230-8 and 300-5(g).
- I. Where PVC conduit transitions from underground to above grade, provide rigid steel 90's with risers. Rigid steel shall be half-lap wrapped with 20-mil tape and extend minimum 12" above grade.
- J. Provide a nylon pull cord in each empty raceway.
- K. Provide galvanized rigid steel factory fittings for galvanized rigid steel conduit.
- L. Slope all underground raceways to provide drainage; for example, slope conduit from equipment located inside a building to the pull box or manhole located outside the building.
- M. Conduits shall be blown out and swabbed prior to pulling wires.

### 3.02 MEASUREMENT AND PAYMENT

- A. The final pay quantity for "**Conduit (F)**," of the unit price schedule for both the base bid is measured from electrical box to box, including both horizontal and vertical distance due to sweeps, fittings, and conduit slope, and shall include full compensation for furnishing all labor, trenching, backfill, materials, tools, equipment, fittings, conduit supports and incidentals, and for doing all work covered in this section, including trenching and backfill, and replace surfacing above trenches, complete and in place, for a fully operational system as shown on plans, as required by these Special Provisions, and as directed by the City Engineer. The quantities shall not be measured. The quantity shown on the Engineer's Estimate shall be the final pay quantity for which payment is made as specified in Section 8.2 and 8.8, "Final Payment" of the General Conditions and no additional payment shall be made therefor.

**END OF SECTION**

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## SECTION 26 05 34 JUNCTION AND PULL BOXES

### PART 1 GENERAL

#### 1.01 DESCRIPTION OF WORK

- A. The work of this Section consists of providing all required labor, supervision, materials and equipment to satisfactorily complete all electrical installations shown on the drawings, included in these Specification, or otherwise needed for a complete and fully operating facility. The work shall include but not be limited to the following:
- B. Furnish and install all required material, supports and miscellaneous material for the satisfactory interconnection of all associated electrical systems.

#### 1.02 RELATED WORK

- A. See the following specification sections for work related to the work of this section.
  - 1. Section 26 05 10 - General Electrical Requirements.
  - 2. Section 26 05 33 - Conduits, Raceway and Fittings.
  - 3. Section 26 05 19 - Low Voltage Wire and Cable.

#### 1.03 STANDARDS AND CODES

- A. Submit in accordance with the requirements of Section 26 05 10: General Electrical Requirements, the following items:
  - 1. Pull boxes as delineated on the plans.

### PART 2 PRODUCTS

#### 2.01 OUTLET BOXES, JUNCTION AND PULL BOXES

- A. Standard Outlet Boxes: Galvanized, one-piece die formed or drawn steel, knock-out type of size and configuration best suited to the application indicated on the Drawings. Minimum box size shall be 4 inches square by 1-1/2 inches deep with mud rings as required.
- B. Switch boxes: Minimum box size shall be 4 inches square by 1-1/2 inches deep with mud rings as required. Install multiple switches in standard gang boxes with raised device covers suitable for the application indicated.
- C. Conduit bodies: Cadmium plated, cast iron alloy. Conduit bodies with threaded conduit hubs and neoprene gasketed, cast iron covers. Bodies shall be used to facilitate pulling of controls or to make changes in conduit direction only. Splices are not permitted in conduit bodies. Crouse-Hinds Form 8 Condulets, Appleton Form 35 Unilets or equal.
- D. Sheet Metal Boxes: Use standard outlet or concrete ring boxes wherever possible; otherwise use a minimum 16 gauge galvanized sheet metal, NEMA I box sized to Code requirements with covers secured by cadmium plated machine screws located six inches on centers. Circle AW Products, Hoffman Engineering Company or equal.

- E. Flush Mounted Pull boxes and Junction boxes: Provide overlapping covers with flush head cover retaining screws, prime coated.

## **PART 3 EXECUTION**

### **3.01 OUTLET BOXES**

#### **A. General**

1. All outlet boxes shall finish flush with building walls, ceilings and floors except in mechanical and electrical rooms above accessible ceiling or where exposed work is called for on the Drawings.
2. Install raised device covers (plaster rings) on all switch and receptacle outlet boxes installed in masonry or stud walls or in furred, suspended or exposed concrete ceilings. Covers shall be of a depth to suit the wall or ceiling finish.
3. Leave no unused openings in any box. Install close-up plugs as required to seal openings.

#### **B. Box Layout**

1. Outlet boxes shall be installed at the locations and elevations shown on the drawings or specified herein. Make adjustments to locations as required by structural conditions and to suit coordination requirements of other trades.
2. Locate switch outlet boxes on the latch side of doorways.
3. Outlet boxes shall not be installed back to back nor shall through-wall boxes be permitted.
4. For outlets mounted above counters, benches or backsplashes, coordinate location and mounting heights with built-in units. Adjust mounting height to agree with required location for equipment served.

#### **C. Supports**

1. Outlet Boxes installed in metal stud walls shall be equipped with brackets designed for attaching directly to the studs or shall be mounted on specified box supports.
2. Fixture outlet boxes installed in suspended ceiling of gypsum board or lath and plaster construction shall be mounted to 16 gauge metal channel bars attached to main ceiling runners.
3. Fixture outlet boxes installed in suspended ceilings supporting acoustical tiles or panels shall be supported directly from the structure above where pendant mounted lighting fixture are to be installed on the box.
4. Fixture Boxes above tile ceilings having exposed suspension systems shall be supported directly from the structure above.

5. Outlet and / or junction boxes shall not be supported by grid or fixture hanger wires at any locations.

### 3.02 JUNCTION AND PULL BOXES

#### A. General

1. Install junction or pull boxes where required to limit bends in conduit runs to not more than 360 degrees or where pulling tension achieved would exceed the maximum allowable for the cable to be installed. Note that these boxes are not shown on the Drawings.
2. Locate pull boxes and junction boxes in concealed locations above removable ceilings or exposed in electrical rooms, utility rooms or storage areas.
3. Install raised covers (plaster rings) on boxes in stud walls or in furred, suspended or exposed concrete ceilings. Covers shall be of a depth to suit the wall or ceiling finish.
4. Leave no unused openings in any box. Install close-up plugs as required to seal openings.
5. Identify circuit numbers and panel on cover of junction box with black marker pen.

#### B. Box Layouts

1. Boxes above hung ceilings having concealed suspension systems shall be located adjacent to openings for removable recessed lighting fixtures.

#### C. Supports

1. Boxes installed in metal stud walls shall be equipped with brackets designed for attaching directly to the studs or shall be mounted on specified box supports.
2. Boxes installed in suspended ceilings of gypsum board or lath and plaster construction shall be mounted to 16 gauge metal channel bars attached to main ceiling runners.
3. Boxes installed in suspended ceilings supporting acoustical tiles or panels shall be supported directly from the structure above.
4. Boxes mounted above suspended acoustical tile ceilings having exposed suspension systems shall be supported directly from the structure above.

### 3.03 MEASUREMENT AND PAYMENT

- A. The contract unit price paid for “**Pull Box**” of the unit price schedule for the base bid shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, for doing all the work covered in this section, complete in place as shown on the plans, as required by these Special Provisions, and as directed by the City Engineer and no additional payment shall be made therefor.

**END OF SECTION**

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## SECTION 26 05 43 UNDERGROUND DUCTS

### PART 1 GENERAL

#### 1.01 DESCRIPTION OF WORK

- A. The work of this section consists of furnishing and installing raceways, raceway spacers and encasing material with necessary excavation for underground ducts.
- B. Encasement - Encasement shall be sand for all other raceways.
- C. Where required - All raceways, where run underground in an excavation shall be installed in compliance with the requirements of this Section. Conduits run underground without encasement shall be as indicated in the Drawings.

#### 1.02 RELATED WORK

- A. See the following specification sections for work related to the work of this section.
  - 1. 26 05 33 Conduit Raceway and Fittings

#### 1.03 STANDARDS AND CODES

- A. Work and material shall be in compliance with and according to the requirements of the latest revision of the following standards and codes.
- B. National Fire Protection Association (NFPA), National Electrical Code (NEC) - Latest Revision:
  - 1. Underground Installations NEC - Article 300
  - 2. Rigid Nonmetallic Conduit NEC - Article 347
- C. California Electrical Code (CEC).
- D. Construction of Underground Electric Supply and Communication Systems, State of California Public Utilities Commission, General Order No. 128.

#### 1.04 SUBMITTALS

- A. As specified in Division 1 and Section 26 05 10.
- B. Catalog Data: Provide manufacturer's descriptive literature.
- C. Single Submittal: A single complete submittal is required for all products covered by this Section.

### PART 2 PRODUCTS

#### 2.01 RACEWAYS

- A. As specified in Section 26 05 33 Conduits, Raceways and Fittings.

#### 2.02 SPACERS

- A. Molded plastic as furnished by the raceway manufacturer, to cradle and position the raceways in the excavation for placing the encasement.
- B. Shape to accurately fit the raceway, provide the correct raceway spacing, to interlock in place and stack.

**PART 3 EXECUTION**

**3.01 RACEWAY**

- A. Install raceways in spacers. Spacers installed at intervals of five feet and within one inch each side of all bends and joints.
- B. Solvent weld connections.

**3.02 MEASUREMENT AND PAYMENT**

- A. Full compensation for conforming to the provisions of this section shall be considered as included in prices paid for various contract items of work involved and no additional compensation will be allowed therefore, unless specified otherwise.

**END OF SECTION**

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## SECTION 26 09 26 LIGHTING CONTROL PANELS

### PART 1 GENERAL

#### 1.01 INTRODUCTION

- A. The work covered in this section is subject to the requirements in the General Conditions of the Specifications. Contractor shall coordinate the work in this section with the trades covered in other sections of the specification to provide a complete and operable system.

#### 1.02 SYSTEM DESCRIPTION

- A. Extent of lighting control system work is indicated by drawings and by the requirements of this section. It is the intent of this section to provide an integrated, energy saving lighting control system including Lighting Control Panels, Occupancy Sensors, and Daylighting Controls from a single supplier. Contractor is responsible for confirming that the panels and sensors interoperate as a single system.

#### 1.03 RELATED WORK

- A. See the following specification sections for work related to the work in this section:
1. 26 05 10 General Electrical Requirements
  2. 26 05 33 Conduits, Raceways and Fittings
  3. 26 05 19 Low Voltage Wire and Cable
  4. 26 05 34 Junction and Pullboxes
  5. 26 50 00 Lighting
- B. Contractor shall coordinate all of the work in this section with all of the trades covered in other sections of the specification to provide a complete and operable system.

#### 1.04 QUALITY ASSURANCE

- A. Manufacturers: Firms regularly engaged in the manufacture of lighting control equipment and ancillary equipment, of types and capacities required, whose products have been in satisfactory use in similar service for not less than 5 years.
- B. Comply with NEC, NEMA, and FCC Emission requirements for Class A applications.
- C. UL Approvals: Relay panels and accessory devices are to be UL listed under UL 916 Energy Management Equipment. Configured to order or custom relay panels shall be UL Listed under UL 508, Industrial Control Panels.

#### 1.05 SUBMITTALS

- A. In accordance with Section 16010.
1. Catalog Data: Provide manufacturer's descriptive literature.
- B. Single Submittal: A single complete submittal is required for all products covered by this Section.

#### 1.06 MANUFACTURERS

- A. This specification is based on products from Watt Stopper/Legrand, Santa Clara, CA. Any other system wishing to be considered must submit descriptive information 10 days prior to bid. Prior approval does not guarantee final approval by the electrical engineer. The contractor shall be completely responsible for

providing a system meeting this specification in its entirety. All deviations from this specification must be listed and individually signed off by the consultant.

## PART 2 PRODUCTS

### 2.01 RELAY PANELS

#### A. System Description

1. Lighting Control Panels shall be UL listed and consist of the following:
  - a. Enclosure/Tub: NEMA 1, NEMA 3R, or NEMA 4 as indicated on the drawings, sized to accept an interior with 1-8 relays, 1-24 relays and six (6) four pole contactors, or 1-48 relays with six (6) four pole contactors.
  - b. Cover: Surface or Flush as required, hinged, and lockable and with restricted access to line voltage section.
  - c. Interior: Barrier included for separation of high voltage (class 1) and low voltage (class 2) wiring. The interior shall include intelligence boards, power supply, mechanically latched control relays and multi-pole contactors. The interiors will include the following features:
    - i. Screwless, removable, plug-in connections for all low voltage terminations.
    - d. Each relay shall be capable of individual ON/OFF control by a low voltage switch and/or occupancy sensor input.
    - e. The system shall monitor true relay status; the relay status will be displayed at the onboard pilot LED and monitored by the system electronics.
    - f. Stagger the ON and OFF sequence of the relays.
    - g. Heavy Duty Relays – Mechanically latching contacts with single moving part design for improved reliability. Relays to have the following characteristics:
      - i. 30 amp NEMA 410 electronic ballast rated and 20 amp tungsten, rated for 50,000 ON/OFF cycles at full load, Support #12 - #14 AWG solid or stranded wire and rated for 120, and 277 volts; 20 amp NEMA 410 electronic ballast rated and 20 amp tungsten 347 volts.
      - ii. 30 VAC isolated contacts for status feedback and pilot light indication.
      - iii. 14,000 amp short circuit current rating.
    - h. Contactors shall be DIN rail mounted, four pole standard, normally open or normally closed, electrically held with 120 or 277 volt coil voltage to match panel control power voltage. Contactors shall be compatible with all lighting, ballast and HID loads and be rated for 277 volt 20 amp tungsten and 600 volt 30 amp ballast loads.
    - i. Power Supply: Multi-voltage transformer assembly with enough power to supply all electronics, occupancy sensors, dataline switches, pilot lights, and photocells as necessary to meet the project requirements. Power supply to have internal over-current

protection with automatic reset and metal oxide varistor protection.

## 2.02 GROUP, CHANNEL AND PATTERN CONTROL

- A. Provide an optional Group Switching card (GS) that allows simple group and pattern configuration at the panel without requiring handheld devices or special programming tools. The GS shall allow any group of relays within the panel to be associated (smartwired) to a channel button using the following procedure:
  1. Press and hold the group pushbutton for several seconds. The group LED and the LEDs for relays currently controlled by that input will begin to flash.
  2. Select the relays to be controlled. The LED for each relay smartwired to the channel selected will be flashing ON/OFF. Press the associated relay control button to add/delete that relay to/from the group.
  3. Press the group pushbutton again. The LEDs will stop flashing and the group pushbutton and associated switch inputs will now control the relays selected.
- B. Group Status: Each group pushbutton shall include an LED status indication. The LED will be ON whenever all of the relays within the group are ON; and shall go OFF when all of the relays within the group go OFF. The LED will be green when in a "mixed" state. Each channel shall also have an associated dry contact closure and pilot contact which tracks the LED operation described above.
- C. Hardware Features
  1. Each GS card will support up to eight groups (channels). The 8-relay and 24-relay panels shall support one GS card; the 48 relay panels will support two cards.
  2. Individual relays may be assigned to more than one channel, and the channel status will be annunciated appropriately.
  3. Each channel shall also have an input for connecting switch or dry contacts for controlling a channel. Inputs shall accept 2 or 3-wire, maintained or momentary inputs, or a 24 VDC signal from occupancy sensor or other voltage signaling device. Groups may be controlled by: an on-board group pushbutton switch, low voltage switch, dataline switch, occupancy sensor, photocell, or time of day.
  4. Screwless, removable, plug-in terminals will be provided for all low voltage wiring connections.

## 2.03 AUTOMATION PANEL NETWORKING AND DATALINE SWITCH SUPPORT

- A. An automation control card provides an Echelon® based network for communications between the intelligent field devices, panels and optional Echelon based Clock, BMS Module, Universal Switch Module and Photocontrol Module.
  1. The modules in multiple panels shall be linked over a single dataline that uses the open digital Echelon/LonTalk® protocol for communications.
  2. The dataline shall extend from the lighting control panel and provide a single communications bus to allow dataline switches and other intelligent field devices to communicate with the panels.
  3. Dataline communications wire shall be 18 AWG, 4 unshielded copper conductors (two independent twisted pairs) meeting Class 2P NEC code requirements. The dataline can be run in a loop, serial, or star configuration.

## 2.04 NETWORK CLOCK

- A. Provide an eight channel network clock that connects to the system using the four conductor data communications wire network described in Section 2.12.
- B. The clock will be used to schedule any of the eight global channel groups (Section 2.03) in the relay panel network. The clock will support all of the energy saving features required of ASHRAE 90.1 - 2001, IECC 2003, as well as all state and local energy codes.
- C. The clock will provide astronomic capabilities, time delays, blink warning, daylight savings, and holiday functions and will include a battery backup for the clock function and EEPROM for program retention. Clocks that require multiple events to meet local code lighting shut off requirements shall not be allowed.
- D. The clock shall allow unique scenario and time delays. Scenarios are:
  1. Scheduled ON / OFF
  2. Manual ON / Scheduled OFF
  3. Manual ON / Auto Sweep OFF (for AS-100 Switches)
  4. Astro ON / OFF (or Photo ON / OFF)
  5. Astro and Schedule ON / OFF (or Photo and Schedule ON / OFF)
- E. The clock shall include system diagnostic functions to identify devices anywhere on the network dataline, and will function as a dataline switch programming tool.
- F. Features:
  1. Clear 8-line, 22-character per line display and a simple user interface and online help.
  2. Retains memory and time for a minimum of 10 years.

#### 2.05 EIGHT CHANNEL PHOTO CONTROL MODULE

- A. Provide a single photocell for measuring exterior light levels. The photocell shall connect to a photocontrol module mounted on the DIN rail inside the panel low voltage section and connected to the dataline communications wire. (Section 2.10).
- B. The Photocontrol Module shall integrate seamlessly with either the Network Clock or the BMS Interface Module, replacing the astronomic control function on the clock. The control module shall measure the actual exterior light and display this level in footcandles (fc) on the unit LCD display.
- C. The controller shall have eight individual setpoint adjustments that are available to the lighting control network over the dataline communications wire.
- D. Features:
  1. Real time, 2 line LCD display of actual exterior light level up to 200 fc.
  2. Channel set points and parameters programmed via the Network Clock or BMS Interface Module.
  3. Choice of OPERATE or TEST modes, with simulated light level for testing.
  4. Automatic deadband and 5 minute time delay to avoid cycling.

#### 2.06 LOW VOLTAGE SWITCHES/PLATES

- A. Description: Low voltage switches shall provide a momentary signal to allow individual relay control or group control using the Group Switching card specified in Section 2.03 above. Switches shall be available in 1-button, 3-button, 5-button, or 9-button designs. The 1, 3, and 5 switch devices shall mount in a standard single gang box: the 9-switch version in a two-gang box.
- B. Features:

1. Switches shall be constructed of non-breakable Lexan on all exposed parts and shall include a matching screwless Lexan wall plate.
2. Individual buttons shall have a removable clear cover to allow standard 9 mm (3/8 inch) labeling tape to be used to identify the controlled loads
3. Each switch shall use an LED pilot light for the individual buttons to indicate status of the controlled relay or group of relays.

## 2.07 DATALINE SWITCHES

- A. Description: Intelligent digital switching shall be provided operating on the dual twisted pair communication wire. Switches shall be available in single, dual, quad, or octal (1-button, 2-button, 4-button, or 8-button) designs. The single, dual, and quad devices shall mount in a standard single-gang box, the octal version in a two-gang box.
- B. Each button in a switch can be individually programmed. Programming is done by smartwiring rather than with a handheld keypad or computer. Each button can control any one of the following options:
  1. Any individual relay in any single panel.
  2. Any group of relays in any single panel.
  3. Any group of relays in the system (via network clock or WinControl software package).
- C. For applications that require pattern switching, any button can perform its function using an ON/OFF/Not Controlled pattern of relays instead of the normal All ON/OFF.
- D. Features:
  1. Switches shall be constructed of non-breakable Lexan on all exposed parts and shall include a matching screwless Lexan wall plate.
  2. Individual buttons shall have a removable clear cover to allow standard 9 mm (3/8 inch) labeling tape to be used to identify the controlled loads.
  3. Each switch shall use a bi-color LED pilot light for the individual buttons to indicate status of the controlled relay or group of relays. LED indications are Red for All ON, Green for Mixed State (some relays in the group ON and others OFF), and No LED for All OFF.
  4. Switch LED pilot lights shall flash green to indicate impending off sweep during the five-minute grace period following blink warning of the lights. Once the button is pressed, the LED will change to Red to acknowledge the occupant's override command to keep lights ON.
  5. Multiple dataline switches smartwired to control the same relay or relay group shall indicate the same status automatically.
  6. Each switch shall also include a locator light illuminating the switch for easy location in the dark.
  7. The dual, quad, and octal switches shall all include a single master button that will override all relays controlled by the individual buttons OFF, or Restore them to their original state. Each switch's master button configuration can be altered to perform a Master ON/OFF, OFF Only, or Disabled function if desired.
  8. Switches can be configured to follow a "Cleaning" scenario. This specific scenario shall prevent the cleaners from overriding OFF any relays turned ON by the occupant.

9. Each switch is available in a Key lock Override version. Once a key is inserted, the individual buttons will function for five minutes.

## 2.08 DATALINE

- A. The Dataline wire will be supplied by the equipment manufacturer and will include the manufacturers name, catalog number and length of wire printed on the wire jacket. The contractor, at their own expense will, replace an improper dataline wire.

## **PART 3 EXECUTION**

### 3.01 SUPPORT SERVICES

- A. System Startup
  1. Manufacturer shall provide a factory authorized technician to confirm proper installation and operation of all system components. The startup requirement is intended to verify:
    - a. That all occupancy and daylighting sensors are located, installed, and adjusted as intended by the factory and the contract documents.
    - b. The occupancy sensors and daylighting sensors are operating within the manufacturers specifications.
    - c. The sensors and relay panels interact as a complete and operational system to meet the design intent.
  2. Manufacturer to provide a written statement verifying that the system meets the above requirements.
- B. Training
  1. Manufacturer shall provide factory authorized technician to train owner personnel in the operation, programming and maintenance of the lighting control system including all occupancy sensors and daylighting controls.
- C. Documentation
  1. Manufacturer shall provide system documentation including:
    - a. Reflected ceiling plans showing each occupancy and daylighting sensor location.
    - b. System one-line showing all panels, number and type of switches and sensors, dataline, telephone override modules, and central PC.
    - c. Drawings for each panel showing hardware configuration and numbering.
    - d. Panel wiring schedules.
    - e. Typical wiring diagrams for each component.
  2. The manufacturer will certify that the products will meet the product specifications and local energy codes. If any additional equipment is required to meet the coverage patterns or local energy codes, the manufacturer will provide the additional equipment at no cost to the owner.
- D. Programming
  1. Manufacturer shall provide system programming including:

- a. Wiring documentation.
  - b. Switch operation.
  - c. Telephone overrides.
  - d. Operating schedules.
2. These shall be provided on floppy disk compatible with the central PC's Lighting Control Program.

### 3.02 INSTALLATION

- A. The contractor shall install a complete and working system to control the lighting in the area noted on the drawings. The Contractor shall insure that at completion of work that the system is properly working and all sensitivities have been properly adjusted.
- B. In addition to the requirements in these specifications, the contractor comply fully with the manufacturer's installation instruction sheets included with each component.

### 3.03 MEASUREMENT AND PAYMENT

- A. Full compensation for conforming to the provisions in this section "Lighting Control Panel", not otherwise provided for, shall be considered as included in prices paid for the various contract items of work involved and no additional compensation will be allowed therefor, unless specified otherwise.

**END OF SECTION**

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## SECTION 26 27 26 DEVICES WIRING

### PART 1 GENERAL

#### 1.01 DESCRIPTION OF WORK

- A. The work of this section consists of:
1. Furnishing, installing, and connecting all duplex receptacles complete with wall plates and/or covers, as shown on the Drawings.
  2. Furnishing, installing and connecting all single pole and three-way switches complete with wall plates and or handle operators, as shown on the Drawings.

#### 1.02 RELATED WORK

- A. See the following specification sections for work related to the work of this section:
1. Section 26 05 33 - Conduits, Raceways and Fittings.
  2. Section 26 05 19 - Low Voltage Wire and Cable.
  3. Section 26 05 34 - Junction and Pull Boxes.

#### 1.03 SUBMITTALS: As specified in Division 1.

- A. Submit manufacturers published descriptive literature properly marked to identify the items to be supplied.
- B. A single complete submittal is required for all products covered by this Section.

### PART 2 PRODUCTS

#### 2.01 RECEPTACLES

- A. General - Receptacles shall be heavy duty, high abuse, grounding type.
- B. Duplex Receptacles
1. Receptacles shall be specification grade, rated 20 ampere, two-pole, 3-wire, 120 volt, NEMA 5-20 configuration, self-grounding with screw terminals. Color shall be ivory or as selected by the Architect.
  2. Devices shall have a nylon composition face, back and side wired.
  3. Manufacturer: Leviton #5362 Series, Hubbell #5362-I Series.
- C. GFCI Receptacles
1. Device shall be Smart Lock with lockout action, rated 20 ampere, 2-pole, 3-wire, 120 volt, conforming to NEMA 5-20 configuration. Face shall be nylon composition. Unit shall have an LED type green indicator light, test and reset push buttons. Color shall be ivory unless otherwise noted.
  2. GFCI component shall meet UL 2003 Class A standards with a tripping time of 1/40 second at 5 milliamperes current unbalance. Operating range shall extend from -31 °F to 158°F. Unit shall have transient voltage protection and shall have a diagnostic indication for miswiring.
  3. Manufacturer: Leviton #8898-I Series.
- D. GFCI Blank Face Devices

1. Device shall be Smart Lock with lockout action, rated 20 ampere, 2-pole, 3-wire, 120 volt, blank face, dead front. Face shall be nylon composition. Unit shall have a test and reset push buttons. Color shall be ivory unless otherwise noted.
2. GFCI component shall meet UL 2003 Class A standards with a tripping time of 1/40 second at 5 milliamperes current unbalance. Operating range shall extend from -31 °F to 158°F. Unit shall have transient voltage protection and shall have a diagnostic indication for miswiring.
3. Manufacturer: Leviton #8590-I Series.

E. Surge Suppression Receptacles

1. Device shall be rated 20 ampere, 2-pole, 3-wire, 120 volt. Face shall be nylon composition. Unit shall have an LED type "Power-on" indication light and damage-alert audible alarm. Color shall be ivory unless otherwise noted.
2. Surge suppression protection shall be listed to UL standard 1449 and shall instantly absorb a transient surge of 6,000 volts minimum. A minimum of four (4) Metal Oxide Varistors shall be utilized to absorb transients.
3. Manufacturer: Leviton #8380-I Series, Hubbell #HBL8362S Series.

2.02 SWITCHES

- A. Switches shall be rated 20 amperes to 120/277 volts ac. Units shall be flush mounted, self-grounding, quiet operating toggle devices. Handle color shall be ivory or as selected by the Architect.
  1. Manufacturer: Leviton #1221-2I Series, Hubbell #HBL1221 Series.
- B. Timed switches: Shall be as designed by Paragon Electric Company # ET2000f, Watt Stopper TS-100 or Leviton # 6215M rated for the voltage specified on drawings. Time out shall be adjustable from 5 minutes up to 12 hours. Unit shall be provided with warning alarm.
- C. Motion Sensor shall be dual technology as designed by Watt Stopper DT series. Use protective wire covers in restrooms, multi-use, cafeteria, etc.

2.03 PLATES

- A. General - Plates shall be of the style and color to match the wiring devices, and of the required number of gangs. Plates shall conform to NEMA WD 1, UL 514 and FS W-P-455A. Plates on finished walls shall be non-metallic or stainless steel. Plates on unfinished walls and on fittings shall be of zinc plated steel or case metal and shall have rounded corners and beveled edges.
- B. Non-Metallic: Plates shall be plain with beveled edges and shall be nylon or reinforced fiberglass.
- C. Stainless Steel: Plates shall be .040 inches thick with beveled edges and shall be manufactured from No. 430 alloy having a brushed or satin finish.
- D. Cast Metal: Plates shall be cast or malleable iron covers with gaskets so as to be moisture resistant or weatherproof.
- E. Blank Plates: Cover plates for future telephone outlets shall match adjacent device wall plates in appearance and construction.

## PART 3 EXECUTION

### 3.01 INSTALLATION OF WIRING DEVICES

- A. Interior Locations: In finished walls, install each device in a flush mounted box with washers as required to bring the device mounting strap level with the surface of the finished wall. On unfinished walls, surface mount boxes level and plumb.
- B. Mounting Heights: Measure locations of wall outlets from the finished floor to the center of the outlet box. Adjust boxes so that the front edge of the box shall not be farther back from the finished wall plane than 1/4-inch. Adjust boxes so that they do not project beyond the finished wall. Height above finished floor to center of device unless otherwise noted on Drawings shall be as follows:
  - 1. Receptacles 18 Inches above finished floor
  - 2. Toggle Switches 48 Inches above finished floor
- C. Receptacles
  - 1. Ground each receptacle using a grounding conductor, not a yoke or screw contact.
  - 2. Install receptacles with connections spliced to the branch circuit wiring in such a way that removal of the receptacle will not disrupt neutral continuity and branch circuit power will not be lost to other receptacles in the same circuit.

### 3.02 INSTALLATION OF WALL PLATES

- A. General - Plates shall match the style of the device and shall be plumb within 1/16-inch of the vertical or horizontal.
- B. Interior Locations, Finished Walls: Install non-metallic plates so that all four edges are in continuous contact with the finished wall surfaces. Plaster filling will not be permitted. Do not use oversized plates or sectional plates.
- C. Interior Locations, Unfinished Walls: Install stainless steel or cast metal cover plates.
- D. Exterior Locations: Install cast metal plates with gaskets on wiring devices in such a manner as to provide a rain tight weatherproof installation. Cover type shall match box type.
- E. Future Locations: Install blanking cover plates on all unused outlets.
- F. All receptacles shall be labeled with panel and circuit number. Contractor shall provide 3/8" clear label tape on each wall plate with 1/4" black machine lettering.

### 3.03 TESTS

- A. Receptacles
  - 1. After installation of receptacles, energize circuits and test each receptacle to detect lack of ground continuity, reversed polarity, and open neutral condition.

### 3.04 MEASUREMENT AND PAYMENT

- A. The contract unit price paid for "**Receptacle Pedestal**" shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals and for doing all work involved, complete in place, as shown on the plans, as required by these Special Provisions, and as directed by the City Engineer or his designee, and as required by PG&E, and no additional compensation will be allowed therefor.

END OF SECTION

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## SECTION 26 28 16 CIRCUIT BREAKERS

### PART 1 GENERAL

#### 1.01 DESCRIPTION OF WORK

- A. The work of this Section consists of providing circuit breakers as shown on the Drawings and as described herein.

#### 1.02 RELATED WORK: See the following Specification Sections for work related to the work in this Section.

- A. Section 26 05 10 - General Electrical Requirements

#### 1.03 SUBMITTALS

- A. Shop Drawings - Submittals shall be in accordance with Division 1. For each circuit breaker furnished under this Contract, submit manufacturer's name, catalog data, and the following information:

1. Terminal connection sizes.
2. Voltage rating.
3. Breaker manufacturer, types, trip ratings and interrupting ratings.

- B. Single Submittal - A single complete submittal is required for all products covered by this Section.

- C. Closeout Submittals: Submit in accordance with Division 1 and Section 26 05 10 operation and maintenance data for circuit breakers including nameplate data, parts lists, manufacturer's circuit breaker timer, current, coordination curves, factory and field test reports and recommended maintenance procedures.

#### 1.04 WARRANTY

- A. Manufacturer shall warrant specified equipment free from defects in materials and workmanship for the lesser of one (1) year from the date of installation of eighteen (18) months from the date of purchase.

### PART 2 PRODUCTS

#### 2.01 CIRCUIT BREAKER: Each circuit breaker shall consist of the following:

- A. A molded case breaker with an over center toggle-type mechanism, providing quick-make, quick-break action. Each circuit breaker shall have a permanent trip unit containing individual thermal and magnetic trip elements in each pole. Circuit breakers shall have variable magnetic trip elements which are set by a single adjustment to assure uniform tripping characteristics in each pole.

- B. Breaker shall be calibrated for operation in an ambient temperature of 40°C.

- C. Each circuit breaker shall have trip indication by handle position and shall be trip-free.
- D. Three pole breakers shall be common trip.
- E. The circuit breakers shall be constructed to accommodate the supply connection at either end of the circuit breaker. Circuit breaker shall be suitable for mounting and operation in any position.
- F. Breakers shall be rated as shown on Drawings.
- G. Series rating of circuit breakers shall not be allowed unless specifically noted on drawings.
- H. Breakers shall be UL listed. Circuit breakers shall have removable lugs.
- I. Lugs shall be UL listed for copper and aluminum conductors.
- J. Breakers shall be UL listed for installation of mechanical screw type lugs.
- K. Circuit breakers serving HACR rated loads shall be HACR type. Circuit breakers serving other motor loads shall be motor rated.
- L. Breakers indicated as "current limiting" (CL), shall be of the non-fused type; Square D I-Limiter, Cutler Hammer Limit-R, or ITE Sentron only.

### **PART 3 EXECUTION**

#### **3.01 MOUNTING**

- A. The highest breaker operating handle shall not be higher than 72 inches above the floor.

#### **3.02 MEASUREMENT AND PAYMENT**

- A. The contract unit price paid for "**20A Breaker**" shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals and for doing all work involved, complete in place, as shown on the plans, as required by these Special Provisions, and as directed by the City Engineer or his designee, and as required by PG&E, and no additional compensation will be allowed therefor.

**END OF SECTION**

## SECTION 26 50 00 LIGHTING

### PART 1 GENERAL

#### 1.01 DESCRIPTION OF WORK

- A. The work of this section consists of providing a lighting system complete, including fixtures, lamps, hangers, reflectors, glassware, lenses, auxiliary equipment, ballasts and sockets.

#### 1.02 RELATED WORK

- A. See the following specification sections for work related to the work of this section:
1. 26 05 10 General Electrical Requirements.
  2. 26 05 33 Conduit, Raceway and Fittings.
  3. 26 05 19 Low Voltage Wire and Cable.
  4. 26 05 34 Junction and Pull Boxes.

#### 1.03 SUBMITTALS: In accordance with Division 1.

- A. Submit descriptive data, photometric curves for each fixture configuration proposed.
- B. Submit shop drawings showing proposed methods for mounting lighting fixtures.
- C. Seismic Requirements: Submit:
1. Sketch or description of the anchorage system.
- D. Submit Operation and Maintenance Data per Division 1.

#### 1.04 WARRANTY: High Intensity Discharge lamps which fail within the first year after final acceptance shall be replaced by the Contractor with the warranty clause of the General Provisions.

### PART 2 PRODUCTS

#### 2.01 FIXTURES

- A. Fixtures shall be of the types, wattage's and voltages shown on the Drawings and be UL classified and labeled for the intended use.
- B. Substitutions will not be considered unless the photometric distribution curve indicates the proposed fixture is equal to or exceeds the specified luminaire.
- C. Luminaire wire, and the current carrying capacity thereof shall be in accordance with the CEC.
- D. Luminaires and lighting equipment shall be delivered to the project site complete, with suspension accessories, aircraft cable, stems, canopies, hickeys, castings, sockets, holders, ballasts, diffusers, frames, and related items, including support and braces.

#### 2.02 BALLASTS

- A. Ballasts shall be of the types shown on the drawings. Ballasts shall be CBM certified and bear the UL label. Magnetic ballasts shall be the high power factor type. Electronic ballasts shall be suitable for lamps specified by Advance, Magnatek/Universal, Triad or approved equal. Electronic ballast shall be CBM certified and have 15% total harmonic distortion or less..
- B. All ballasts for fixtures installed outdoors shall provide reliable starting of lamps at 0°F at 90% of the nominal line voltage.
- C. Ballasts producing excessive noise (above 36 dB) or vibration will be rejected and shall be replaced at no expense to the Owner.

#### 2.03 LAMPS

- A. Lamps shall be new at the time of acceptance and shall be General Electric, Osram /Sylvania, Phillips, or approved equal.
- B. Unless otherwise noted on the drawings, lamps shall be T8, 3500°K, and 85 CRI minimum.

### **PART 3 EXECUTION**

#### **3.01 INSTALLATION**

- A. General
  - 1. All fixtures and luminaires shall be clean and lamps shall be operable at the time of acceptance.
  - 2. Install luminaires in accordance with manufacturer's instructions, complete with lamps, ready for operation as indicated.
  - 3. Align, mount, and level the luminaires uniformly.
  - 4. Avoid interference with and provide clearance for equipment. Where an indicated position conflicts with equipment locations, change the location of the luminaire by the minimum distance necessary.
- B. Mounting and Supports
  - 1. Mounting heights shall be as shown on the Drawings. Unless otherwise shown, mounting height shall be measured to the centerline of the outlet box for wall mounted fixtures and to the bottom of the fixture for suspended fixtures and to the bottom of the fixture for all other types.
  - 2. Luminaire supports shall be anchored to structural members.
  - 3. Pendant luminaires shall be provided with ball aligners to assure a plumb installation and shall have a minimum 25 degree clean swing from horizontal in all directions. Sway bracing shall be installed as required to limit the movement of the fixture. Fixtures shall be allowed to sway a maximum of 45° without striking any object.
  - 4. Fixture supports shall be designed to resist earthquake forces of seismic zone 4.
  - 5. Refer to fixture mounting details on drawings for installation requirements.
- C. Pendant Fixture Mounting: Provide flexible fixture hangers unless otherwise noted on Drawings.

#### **3.02 MEASUREMENT AND PAYMENT**

- A. The contract unit price paid for light fixtures, "**Bollard Light**," "**In-Grade Fixture (Walkway)**" and "**In-Grade Fixture (Seatwall)**" of the unit price schedule for the base bid shall include full compensation for furnishing all concrete footings, ballasts, lamps, mounting and supports, labor, materials, tools, equipment, and incidentals, for doing all the work covered in this section, complete in place as shown on the plans, as required by these Special Provisions, and as directed by the City Engineer and no additional payment shall be made therefor.

**END OF SECTION**

## DIVISION 31 – EARTHWORK

### SECTION 31 00 00 EARTHWORK

#### PART I GENERAL

##### 1.01 RELATED DOCUMENTS

The general provisions of the Contract, including General and Supplementary Conditions and Division 1, General Requirements, apply to the work specified in this section.

##### 1.02 DESCRIPTION OF WORK

###### A. Work Included

1. All labor, material, power tools, transportation, services and equipment necessary for and properly incidental to the furnishing, installation and completion of all excavation, trench excavation, on-site import borrow topsoil, rough grading, mounding, filling, incorporation, backfilling, compaction, fine grade borrow site and cover impacted area with bark mulch, and for the items of work requiring earthwork and grading as shown or indicated on the drawings specified herein or reasonably to be inferred there from.

###### B. Related Sections

1. Section 02 41 00 "Site Demolition"
2. Section 03 11 00 "Concrete Formwork"
3. Section 03 30 00 "Cast in Place Concrete"
4. Section 32 11 23 "Aggregate Base Course"
5. Section 32 11 25 "Drainage"
6. Section 32 12 16 "Asphalt Paving and Surfacing"
7. Section 32 14 43 "Permeable Pavers"
8. Section 32 30 00 "Cast in Place Concrete"
9. Appendix C – Geotechnical Report

- C. Consult all other sections, determine the extent and character of related work and properly coordinate work specified herein with that specified elsewhere to produce a complete, finished and workmanlike installation.

##### 1.03 QUALITY ASSURANCE

###### A. Reference Standards

1. The following codes and standards are hereby made a part of this section, and all earthwork shall conform to the applicable requirements therein, except as otherwise specified herein or shown on the drawings.
  - a. Standard Specifications
  - b. Where referred to in these Specifications, "Standard Specifications" shall mean the California Caltrans Specifications, 2006 edition, or City of Fremont Standard Specifications, where noted.
  - c. Percent Compaction
    - 1) As referred to in these specifications and in accordance with City of Fremont Standard Specifications, percent compaction or relative compaction shall mean the in-place dry density of material expressed as

a percentage of the maximum dry density of the same material determined by City of Fremont dry density method. The optimum moisture content corresponding to the maximum dry density shall be determined by the same test.

B. Requirements of Regulatory Agencies

1. Work shall comply with the latest rules and regulations of local and State agencies having jurisdiction.
2. State and local code requirements shall control disposal of debris.

C. Allowable Tolerances (Subgrade Lines and Grades)

1. Grading under this section shall be to a tolerance as follows:
  - a) Final subgrade shall conform to the lines and grades shown on the drawings. The measured grades shall not deviate more than 0.08 feet from the planned grades and not vary more than 0.04 feet in 10 feet in any direction. Laser grading is recommended.
2. Horizontal layout shall not vary more than 0.1' from dimensions indicated on the drawings. Make minor field adjustments in the layout as necessary to make radii tangent and curves smooth and flowing as indicated on the drawings.
3. All subgrade slopes shown on the drawings shall be completed and verified by the contractor in a method acceptable by the City. The contractor shall submit the verified grades to the City for review and approval before commencing with subsequent work items.
4. If the methods of verification by the contractor are not acceptable by the City, and the City therefore finds it necessary to field verify the grades, the contractor will be charged accordingly.

D. Definitions

1. Rough grading and Excavation

Removal of all organics and various surface and subsurface materials, the manipulation, grading and export of the native soils, said materials, organics and surface materials to achieve new subgrade and positive drainage.

2. Onsite Clean Fill Material

That obtained from required onsite excavation and rough grading. This material shall contain no organic material. Such material can be obtained through trenching of proposed utilities, and rough grading and excavation of the site.

3. Import Clean Fill Material

That hauled in from approved offsite areas.

4. Subgrade

A combination of excavated and compacted native material, or imported clean fill material, graded per the plans, on which a pavement or finished surfacing section is placed, or upon which the foundation of a structure is built.

5. Finished Grade (FG)

Final grade of softscape surfaces, including lawn, mulch, and other planting areas, but prior to the placement of these elements.

6. Finished Surface (FS)

Relates to final grade of all hardscape (concrete, asphalt) surfaces and rubberized playground surfaces as it relates to the grades provided on the plans

7. Aggregate Base (AB)

A graded material, imported and placed on top of prepared subgrade in anticipation of future placement of final surfacing material which can include concrete or other material requiring base.

8. Drain Rock (DR)

A graded material, imported and placed on top of prepared subgrade in anticipation of future placement of final surfacing material which shall include rubberized playground surfacing.

9. Subgrade (SG)

Final grade of excavated or import soil in preparation for the placement of geotextile, aggregate base, or other surfacing.

10. Potholing

Refer to Section 01 56 00 "Protection of Existing Facilities", and Section 02 41 00 "Demolition".

1.04 REFERENCE STANDARDS

A. ASTM

1. ASTM C136 – Test Method for Sieve Analysis of Fine and Coarse Aggregates
2. ASTM D422 – 63(2007) Standard Test Method for Particle-Size Analysis of Soils
3. ASTM D653 – Terminology Related to Soil, Rods, and Contained Fluids
4. ASTM D1556 – Standard Test Method for Density and Unit Weight of Soil in Place by the Sand-Cone Method; 2007.
5. ASTM D 1557 – Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft<sup>3</sup> (2,700 kN m/m<sup>3</sup>)); 2007.
6. ASTM D 2216 – Test Method for Laboratory Determination of Water (Moisture) Content of Soil, Rock, and Soil-Aggregate Mixtures.
7. ASTM D2487 – Test Method for Classification of Soils for Engineering Purposes
8. ASTM D 2922 – Standard Test Methods for Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth); 2005.
9. ASTM D2974 – Test Method for Moisture, Ash, and Organic Matter of Peat and Other Organic Materials
10. ASTM D 3017 – Standard Test Method for Water Content of Soil and Rock in Place by Nuclear Methods (Shallow Depth); 2005.
11. ASTM D4253 – 00(2006) Standard Test Methods for Maximum Index Density and Unit Weight of Soils Using a Vibratory Table
12. ASTM D4254 – 00(2006)e1 Standard Test Methods for Minimum Index Density and Unit Weight of Soils and Calculation of Relative Density.
13. ASTM Laboratory Procedure D5080

1.05 SUBMITTALS

A. Submit the following items, and other items as may be required by the Engineer, and obtain written approval prior to delivery of materials to the site. Finished work shall match approved samples.

1. Soil Testing of Native Backfill Material and Report
2. Soil Testing of Imported Clean Fill Material and Report
3. Soil Sample, Material Curve and sieve analysis for native subgrade
4. Material Curve and sieve analysis for aggregate base
5. Material Curve and sieve analysis for drain rock

- B. Product Data: Manufacturer's specifications, catalog cuts, data sheets, samples, and installation instructions.

1.06 SPECIAL INSPECTION AND TESTING

- A. The City staff shall perform compaction testing.

**PART 2 MATERIALS**

2.01 NATIVE SUBGRADE

- A. Native subgrade under proposed surfacing, including, but not limited to concrete paving, pavers, concrete bands, curbs, and in locations not already specified, shall be compacted to 90 percent relative compaction, with a moisture content of +2%, or above.
- B. Native subgrade used as backfill should not consist of pea-gravel, and should be free of rocks or clumps in excess of 6 inches in diameter, trash and debris, roots, vegetation, or other deleterious materials.
- C. Target moisture content at compaction relative to the optimum as evaluated by ASTM D 1557.
- D. Refer to Table 4 of the Geotech report (Appendix B).
- E. On-site native material excavated during trenching, rough grading, or other activity may be used as backfill for all subgrade voids and irrigation trenches in landscape areas.

2.02 ON-SITE IMPORT BORROW TOPSOIL

- A. The soil material is stockpiled on site (CA Nursery Historical Park) and shall be imported from the location as identified on the Grading Plans.
- B. Prior to transporting the material to the project site, the Contractor shall protect the existing surfaces from damage with protective sheeting. Existing surfaces or features damaged by transportation operation shall be repaired or replaced at the Contractor's expense to the satisfaction of the City Inspector.
- C. This soil may be used as fill below concrete or other flat work, including decomposed granite, poured in place surfacing, pavers to achieve subgrade, and fill for planting areas to meet finish grades.
- D. Remove all plant materials, trash, debris, rock, gravel and contaminants prior to installation.
- E. The borrow site shall be fine graded to drain at 2% min to 5:1 max slope after the transportation of borrow material is completed.
- F. Cover impacted with 2" min depth mulch.

2.03 ON SITE CLEAN FILL MATERIAL/NATIVE BACKFILL MATERIAL

- A. On-site native material excavated during trenching, rough grading, or other activity, and stockpiled on site prior to disposal, may be used as backfill for all subgrade voids and irrigation trenches in landscape areas.
- B. Material shall be free of debris, organics and other deleterious material, perishable material, rubble, and building debris.
- C. Excavated on-site native soil material shall be used only to establish proposed rough subgrade, backfill voids and fill irrigation trenches

## 2.04 ROUGH GRADING

- A. In order to achieve new subgrade in proposed concrete paving areas, permeable paver areas, concrete band and curb locations, planting areas, and lawn areas, rough grading shall include the removal of existing surfaces to the approximate limits shown on the plans, to the required depth, to accept the new surfacing section and planting.
- B. Refer to Appendix B, Geotechnical Report for additional information.

## **PART 3 EXECUTION**

### 3.01 SUBGRADE OBSERVATIONS

- A. Prior to placement of fill, erection of forms, or placement of reinforcement for foundations, unsuitable materials, including dry, loose, soft, wet, expansive, organic, or compressible natural soil; and undocumented or otherwise deleterious fill materials shall be removed from trench bottoms and below bearing surfaces to a depth at which is suitable foundation subgrade, as evaluated in the field by the City Engineer's representative.

### 3.02 INSPECTION

- A. Check all points of horizontal and vertical control before any work is commenced; also check all lines and levels on the drawings. Should any discrepancies be found on the drawings or in the marks established at the site, immediately notify the Project Landscape Architect in writing so that proper adjustment may be made. The Project Landscape Architect reserves the right to make such minor adjustments in the field as necessary to accomplish the true intent of the drawings and Specifications.

### 3.03 LINES AND LEVELS

- A. Protect and maintain all existing bench marks and control monuments and stakes and any new bench marks and control monuments and stakes that may be established.
- B. Finish grades shown on drawings are given in feet and decimals of feet, and are to be the top of all graded or paved surfaces. Slope uniformly between given spot elevations unless otherwise indicated.
- C. Contractor to establish finish grades, finish grades, slopes, and grading, etc. based on industry standard and ASTM for PIP rubberized paving, and play equipment.
- D. Transition between slopes and relatively flat areas shall be rounded and gradual.

### 3.04 DUST PALLIATION AND SPILLAGE

- A. All necessary precautions, including watering, shall be taken to control air-borne dust to within reasonable limits in accordance with Section 01000 "General Requirements" of these Specifications.
- B. If serious problems and/or complaints arise due to airborne dust, and when directed by the Project Engineer, operations causing such problems shall be temporarily discontinued at no cost to the City.
- C. The contractor shall prevent spillage when hauling on or adjacent to any public street or highway. In the event that spillage occurs, the contractor shall immediately remove all spillage, sweep and clean such streets in accordance with City, County, and State, and other governing regulatory requirements.

### 3.05 SURFACE DRAINAGE

- A. All portions of the work shall be kept free of standing water at all times until all work specified herein is complete. Maintain uniform grades, construct ditches, or swales,

and/or provide and operate pumps as necessary to prevent erosion, softening of compacted surfaces and formation of mud in trenches and excavations. If ditches or swales are required, they shall be constructed, tamped and maintained in a neat, uniform shape.

- B. All areas designated for concrete paving shall be graded to surface drain from high points and existing paving away to landscape areas; follow the natural slope where possible.

### 3.06 SUBGRADE PREPARATION

- A. Subgrade in trenches and below slabs, footings, flatwork or fill should be prepared as per the recommendations in Table 5 of the Geotechnical Report (Appendix B). Check for unsuitable materials prior to preparing subgrade. Prepared subgrade should be maintained in a moist, but not saturated, condition by the periodic sprinkling of water prior to placement of additional overlying fill or construction of footings or slabs.
- B. Below Footings:
  - 1. Remove loose material. Scarify and moisture condition exposed subgrade as needed to achieve a moisture content approximately 2 points above the optimum as evaluated by ASTM D1557.
- C. Below slabs, flatwork and fill:
  - 1. Scarify 8 inches then moisture condition and compact as required in the Fill Placement and Compaction below.
- D. Utility trenches:
  - 1. Remove or compact loose/soft material.
- E. Subgrade that has been permitted to dry out and loosen, or develop desiccation cracking should be scarified, moisture conditioned and recompact as per the requirements noted herein. A thin layer (approximately 3 inches of lean concrete or CLSM may be poured over prepared subgrade for footings or slabs to maintain the appropriate moisture condition during erections of forms and placement of reinforcing steel.

### 3.07 FILL PLACEMENT AND COMPACTION

- A. Fill and backfill shall be compacted in horizontal lifts in conformance with information in Table 6 – Fill Placement and Compaction Recommendations of the Geotechnical Report (Appendix B). The allowable uncompacted thickness of each lift of fill depends on the type of compaction equipment utilized, but generally should not exceed 8 inches in loose thickness.
- B. Subgrade (Below slabs, flatwork, and footings and in locations not already specified): Compact to 90 percent relative density at +2 percent or above.
- C. Bedding and Pipe Zone Fill (Material below invert to 12 inches above pipe or conduit): Compact to 90 percent relative density near optimum.
- D. Trench Backfill (Top 18 inches below finish subgrade for areas subject to vehicular loading): Compact to 95 percent relative density at +2 percent or above.
- E. Trench Backfill (In locations not already specified): Compact to 90 percent relative density at +2 percent or above.
- F. General Fill (In locations not already specified): Trench Backfill (Top 18 inches below finish subgrade for areas subject to vehicular loading): Compact to 90 percent relative density at +2 percent or above.
- G. Asphalt Concrete (Pavement section): Compact to 91 to 97 percent relative density.
- H. Aggregate Base (Below slabs and hardscape): Compact to 95 percent relative density near optimum.
- I. Compacted fill shall be maintained in a moist (but not saturated) condition by the

periodic sprinkling of water prior to placement of additional overlying fill or construction of footings and slabs. Fill that has been permitted to dry out and loosen, or develop desiccation cracking should be scarified, moisture conditioned, and recompacted.

3.08 EXCAVATION STABILIZATION

- A. Refer to Geotechnical Report (Appendix B), section 9.1.7 Excavation Stabilization for requirements.

3.09 CONSTRUCTION DEWATERING

- A. Refer to Geotechnical Report (Appendix B), section 9.1.8 Construction Dewatering for requirements.

3.10 UTILITY TRENCHES

- A. Refer to Geotechnical Report (Appendix B), section 9.1.9 Utility Trenches for requirements.

3.11 RAINY WEATHER CONSIDERATIONS

- A. Refer to Geotechnical Report (Appendix B), section 9.1.10 Rainy Weather Considerations for requirements.

3.12 ROUGH GRADING AND EXCAVATION

- A. Excavated material shall remain onsite, at designated areas as indicated on plans or directed by City Engineer.
- B. Fill areas include, but are not limited to:
1. Fill required to attain proposed subgrade in order to accept placement of aggregate base, concrete paving, concrete bands, concrete curbs, and all other features requiring fill to attain proposed subgrade.
- C. The soil subgrade should be moisture conditioned and compacted at over optimum water content under concrete paving per the geotechnical report. Relative compaction values are based on the laboratory test procedure ASTM 01557-02.
- D. Excavate for footings to the indicated depth or deeper if required for solid bearing. Excavations shall have all loose earth, rubbish, etc., removed.
- E. All excavated soils may be used as fill material within the project limits.
- F. Unauthorized excavations for footings, etc., carried to greater depths than indicated shall be filled with concrete without additional expense to the City.
- G. Excavations for footings, field inlets or area drains, where possible, shall be made to allow concrete to be poured directly against the side of the excavation (Poured Neat) without use of side forms.
- H. Where forming is required, excavation shall be sufficient to permit placing and removal of forms. Unnecessary unauthorized excavation shall not be made.
- I. Excavations shall be kept free of water during excavation and until concrete work and backfilling are complete.
- J. The method of excavation used shall meet with the approval of the City Engineer.

3.13 MEASUREMENT AND PAYMENT

- A. The cubic yard final pay quantity for "**Rough Grading (F)**" of the unit price schedule shall include full compensation for furnishing all labor, materials, test, tools, equipment, and incidentals for doing all the work covered in this section, including the spread and recompaction of excavated soils and excavation to new subgrades for all site furnishing pads, concrete, permeable pavers, decomposed granite surfacing,

flatwork, footings, planting, sodding and irrigation, complete in place as shown on the plans, as required by these Special Provisions, and as directed by the City Engineer. Quantities shall not be measured. The quantity shown on the Engineer's Estimate for rough grading shall be the final pay quantity for which payment is made as specified in "Final Payment" of the General Conditions and no additional payment shall be made therefor.

- B. The cubic yard final pay quantity for "**On-Site Import Borrow Import (F)**" of the unit price schedule shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals for doing all the work covered in this section, including protection of existing surfaces, transportation and placement of material for new subgrades for all site furnishing pads, concrete, permeable pavers, decomposed granite surfacing, flatwork, footings, planting, sodding, irrigation and complete in place as shown on the plans, fine grade impacted area, and placement of mulch, as required by these Special Provisions, and as directed by the City Engineer. Quantities shall not be measured. The quantity shown on the Engineer's Estimate shall be the final pay quantity for which payment is made as specified in "Final Payment" of the General Conditions and no additional payment shall be made therefor.
- C. Excavation and backfill for drainage and utility lines and structures shall be considered as included in those various line items and no additional compensation will be allowed therefor.
- D. 3' Wide Drainage Swale shall be considered as included in Rough Grading and no additional compensation will be allowed therefor.

**END OF SECTION**

**SECTION 31 22 19 FINE GRADING**

**PART 1 GENERAL**

1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specifications Sections, apply to this Section.

1.02 SUMMARY

- A. Work Included: Execute finish grades complete in all sod areas prior to sod placement as shown, and as specified.

1.03 PROJECT/SITE CONDITIONS

- A. Existing Conditions: Verify that rough grading work is. Complete prior to commencement of finish grade scope.
- B. Dust Nuisance: Assume full responsibility for alleviation or prevention of dust as a result of grading work.

1.04 SEQUENCING AND SCHEDULING

- A. Complete all soil preparation – Section 32 91 13 prior to finish grading.
- B. Complete all finish grading prior to installation of sprinkler irrigation systems in each area graded.
- C. Regrade as required to finish grades established by Project Landscape Architect once the sprinkler system is installed.
- D. Preserve and protect existing irrigation as noted in plans.

**PART 2 - PRODUCTS – Not Applicable**

**PART 3 - EXECUTION**

3.01 EXAMINATION

- A. Verification of Conditions: Verify that the following items have been completed prior to commencement of finished grading.
  - 1. Installation of (stockpiled) topsoil and soil preparation including debris removal.
  - 2. Incorporation of soil amendments.

3.02 FINISH/FINE GRADING

- A. When soil preparation, soil conditioning, water settlement, and weeding, have been completed, and soil has been thoroughly rolled or water settled, all planting areas shall be smooth-graded, ready for placement of plant materials. Rocks larger than 2 inches in diameter shall be removed.
- B. Grading shall be done when soil is at optimum moisture content for working.
- C. Provide all grades for natural runoff of water without low spots or pockets. Finish grades shall ensure positive drainage of the site.
- D. Accurately set flow line grades at 2 percent minimum gradient unless otherwise noted in Drawings.

- E. Finish grades shall be smooth, consistent and free from undulations or depressions, even and on a uniform plane with no abrupt changes of surface. Slope uniformly between given spot elevations. Areas filled by floating loose soil into depressions shall be thoroughly water settled.
- F. Fine grading and excavation shall include, but not be limited to:
1. Planting Areas: Excavation to a minimum six (6) inch depth to remove sod and attain proposed subgrade in order to accept amendments, imported topsoil and new sod;
  2. Excavation to a minimum twelve (12) inch depth to remove sod and attain proposed subgrade in order to accept concrete mow band;
  3. Subgrade under planting areas shall be compacted to 85 to 88 percent relative compaction.
- G. Tops and toes of all slopes shall be rounded to produce a gradual and natural-appearing transition between relatively level areas and slopes.
- H. Contractor shall eliminate all erosion scars.
- I. Tolerances
1. All planting areas, including lawn areas, shall be true to grade within 1 in. when tested with a 10 ft. straightedge.
  2. Hold finished grades below top of adjacent pavement, headers, curbs, or walls as follows:
    - a. Lawn and Turf Areas: 1-1/2" below top of adjacent pavement, curbs, or headers.
- J. The Contractor shall request an inspection by the City Project Landscape Architect for approval of the final grades before sod planting operations begin.

3.03 MEASUREMENT AND PAYMENT

- A. The square foot final pay quantity for "**Fine Grading (F)**" of the unit price schedule shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals and for doing all the work covered in this section, complete in place as shown on the plans, as required by these Special Provisions, and as directed by the City Engineer. Quantities shall not be measured. The quantity shown on the Engineer's Estimate shall be the final pay quantity for which payment is made as specified in "Final Payment" of the General Conditions and no additional payment shall be made therefor.

**END OF SECTION**

**DIVISION 32 – EXTERIOR IMPROVEMENTS**

**SECTION 32 11 23     AGGREGATE BASE COURSE**

**PART 1            GENERAL**

1.01    SECTION INCLUDES

- A. Aggregate base course under concrete and asphalt, decomposed granite and other surfacing as noted on plans.

1.02    RELATED DOCUMENTS

- A. These special provisions are part of the plans and shall include all labor, materials, equipment, reasonable incidentals, and services necessary to the execution of the work.
- B. Refer to all other sections, determine the extent and character of related work, and coordinate all work to produce a complete, properly constructed product.
- C. Related Sections
  - 1. Section 03 30 00 "Cast in Place Concrete"
  - 2. Section 31 00 00 "Earthwork"
  - 3. Section 32 12 16 "Asphalt Paving and Surfacing"
  - 4. Caltrans Standard Specifications, May 2018 edition.
  - 5. Section 11A and 11B, City of Fremont Standard Trench Backfill Specifications, Standard Specifications, dated January 1995 (amended) and per gradation included herein.

1.03    DESCRIPTION OF WORK

- A. Scope of Work shall include, but shall not necessarily be limited to, the following for a complete and functional drainage system:
  - 1. Ensure subgrade is prepared and compacted properly before aggregate base placement.
  - 2. Place aggregate base under concrete, asphalt, decomposed granite and other surfacing as noted on plans.

1.04    REFERENCE STANDARDS

- A. AASHTO
  - 1. AASHTO M 147 - Standard Specification for Materials for Aggregate and Soil-Aggregate Subbase, Base and Surface Courses; American Association of State Highway and Transportation Officials; 1965 (2004).
  - 2. AASHTO T 180 - Standard Specification for Moisture-Density Relations of Soils Using a 4.54 kg (10-lb) Rammer and a 457 mm (18 in.) Drop; American Association of State Highway and Transportation Officials; 2001 (2004).
- B. ASTM
  - 1. ASTM C 136 - Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates; 2006.
  - 2. ASTM D 1556 - Standard Test Method for Density and Unit Weight of Soil in Place by the Sand-Cone Method; 2007.
  - 3. ASTM D 1557 - Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft<sup>3</sup> (2,700 kN m/m<sup>3</sup>)); 2007.

4. ASTM D2434: Standard Test Method for Permeability of Granular Soils (Constant Head); 2006.
5. ASTM D 2922 - Standard Test Methods for Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth); 2005.
6. ASTM D 3017 - Standard Test Method for Water Content of Soil and Rock in Place by Nuclear Methods (Shallow Depth); 2005.

1.05 SUBMITTALS

- A. Submit cut-sheets or samples of all products to be used in conformance with Section 01 32 19 "Submittals Procedures" and/or applicable Division One and Division Two specifications, General Conditions and Special Provisions.
- B. Product Data: Manufacturer's catalog cuts indicating material compliance and specified options.
- C. Record Drawings: Accurately record location of new piping, drain structures, and connections to existing systems using horizontal dimensions, elevations, inverts and slope gradients as applicable.
- D. Provide two (2), one (1) quart samples of each of the following products:
- E. Aggregate Base
- F. Submit samples at least fifteen (15) days prior to the use thereof.
- G. Materials Sources: Submit name of imported materials source.
- H. Compaction Density Test Reports.

1.06 DELIVERY, STORAGE, AND HANDLING

- A. When necessary, store materials on site in advance of need.
- B. Verify that survey bench marks and intended elevations for the Work are as indicated.

1.07 PROJECT/SITE CONDITIONS

- A. Work of this section shall not be executed when site conditions are detrimental to quality of work as determined by the Engineer.

1.08 SEQUENCING AND SCHEDULING

- A. Coordinate work of this section with all other work contained in the Contract Documents.

**PART 2 PRODUCTS**

2.01 AGGREGATE BASE (AB)

- A. Caltrans Class II 3/4 inch aggregate base, conforming to Section 26 of the State of California Department of Transportation Standard Specifications, dated 2015 and shall be placed as base under all concrete and asphalt surfaces, including mow bands, curbs, and other finished surface materials.
- B. Quality Control; Testing for all aggregate base for shall be per Caltrans Standards or per ASTM requirements. If tests indicate materials do not meet specified requirements, change material and retest. Provide materials of each type from same source throughout the Work
- C. Aggregate base shall be compacted to a minimum of 95 percent relative compaction.
- D. No separate payment shall be made for aggregate base placed beneath concrete, asphalt concrete, mow bands, deep bands, basketball court. The cost for furnishing aggregate base shall be included in the various line items listed herein.

2.02 CLASS 2 PERMEABLE ROCK

- A. Material to be used under permeable pavers and decomposed granite.
- B. Class 2 Permeable Rock shall conform and be certified to meet the requirements for 2018 Caltrans Specification Section 68-2.02F(3) "Class 2 Permeable Material".
- C. Suppliers include Graniterock, 350 Technology Drive, Watsonville, CA 95076. Ph: 831-768-2380. A.R. Wilson Quarry, or approved equal.
- D. Drainage/Permeability: minimum 10 inches per hour. Refer to Part 3, "Excavation and Backfill", for testing methodology.
- E. Relative compaction shall be achieved by uniform distribution and static rolling to assure uniform placement, grade and drainage and prevent breakdown of material. Testing shall be coordinated between the contractor and inspector to establish a baseline for testing uniformity.

2.03 SOURCE QUALITY CONTROL

- A. Testing for all aggregate base for flatwork shall be per Caltrans Standards
- B. Testing for all aggregate base for cast-in-place structures requiring special inspection shall be per ASTM requirements.
- C. See Section 01 45 00 "Quality Control", for general requirements for testing and analysis of aggregate base materials.
- D. If tests indicate that materials do not meet specified requirements, change material and retest.
- E. Provide materials of each type from same source throughout the Work.

**PART 3 EXECUTION**

3.01 EXAMINATION

- A. Verify subgrade has been prepared, inspected, gradients and elevations are correct, and is dry.

3.02 PREPARATION

- A. Coordinate the sequence of work.
- B. Review proposed staked elevations and proposed limits of excavation in the field with the Project Landscape Architect for approval prior to setting pipe and drain inlets.
- C. Adjust proposed elevations as necessary to ensure proper drainage, and to conform to existing rim elevations, with no areas of standing water.
- D. Schedule and perform drainage system installation prior to prolonged wet weather periods.
- E. Correct irregularities in subgrade gradient and elevation by scarifying, reshaping, and re-compacting.
- F. Do not place aggregate on soft, muddy, or frozen subgrade surfaces.
- G. Where required, geotextiles shall be in place prior to placement of aggregate base.

3.03 SUBGRADE PREPARATION

- A. Refer to Section 31 00 00 "Earthwork" for additional information regarding subgrade preparation prior to placement of imported materials

3.04 CLASS 2 AGGREGATE BASE

- A. Imported Class 2 aggregate base rock, under all concrete paving, should be compacted between a minimum 90% relative compaction to 95% relative compaction of maximum dry density, unless otherwise stated in the geotechnical report included in these Specifications.
- B. Compaction criteria will be based on the laboratory procedure ASTM D1557.
- C. Proof-roll subgrade immediately prior to commencement of spreading of aggregate base.
- D. Spread aggregate over prepared subgrade to a total compacted thickness as shown on the plans and described in the contract specifications.
- E. Aggregate base material shall be delivered to the subgrade as uniform mixtures.
- F. Each layer shall be spread in one operation.
- G. Material shall be spread upon the prepared subgrade by means of vehicles equipped with approved spreading devices at a uniform quantity per linear foot.
- H. Where the required thickness is 6 inches or less, the base material may be spread and compacted in one layer.
- I. Where the required thickness is more than 6 inches, the base material shall be spread and compacted in 2 or more layers of approximately equal thickness, and the maximum compacted thickness of any one layer shall not exceed 6 inches.
- J. Level and contour surfaces to elevations and gradients indicated.
- K. Add small quantities of fine aggregate to coarse aggregate as appropriate to assist compaction.
- L. Add water to assist compaction. If excess water is apparent, remove aggregate and aerate to reduce moisture content.
- M. Base shall be firm and unyielding when proof-rolled with heavy, rubber-tired grading equipment prior to continuing construction.
- N. Use mechanical tamping equipment in areas inaccessible to compaction equipment.
- O. Base material placed in areas inaccessible to the spreading equipment may be spread in one or more layers by any means that will make possible the specified compaction and surface.
- P. The base material, after spreading, shall be shaped by means of a blade grader to such thickness that after watering and compacting, the completed base will conform to the required grade and cross section within the tolerances specified.
- Q. Segregation of aggregate shall be avoided; the base shall be free from pockets of coarse or fine material.
- R. Finished base that does not conform to the foregoing requirements shall be reshaped or reworked, watered, and thoroughly re-compacted to conform thereto.
- S. The Contractor shall not allow any completed untreated rock base to be subject to public or construction traffic, except the latter necessary to the completion of the overlying surface courses.

3.05 CLASS 2 PERMEABLE ROCK

- A. The specified permeable rock base shall conform to the requirements defined herein this section, and the requirements for Caltrans Class 2 permeable material.
- B. The permeable rock base shall be placed and compacted over the subgrade and filter fabric, and in drainage and infiltration trenches to the grades specified and elevations shown on the

drawings. If the thickness of the planned permeable rock base exceeds 6-inches, the rock shall be placed in horizontal layers not exceeding 6-inches.

- C. 3-5 ton roller maximum
- D. Layers shall be compacted to between 90% minimum and 95% maximum, relative compaction, to finished base elevation with a smooth drum roller, and still maintain permeability, and provide a non-yielding, smooth, flat surface.
- E. Establish a roll pattern to achieve maximum compaction density and uniformity along a test strip and compact as follows:
  - 1. Make 3 passes with a static roller over the material as placed.
  - 2. Perform a dry density test.
  - 3. Add a small amount of moisture, as agreed upon in the field with the Project Inspector, and make 3 additional passes with a static roller if compaction is not achieved. Perform a second dry density test on the test strip.
  - 4. Add a lesser amount or greater amount of moisture, as agreed upon in the field with the Project Inspector, and make 3 additional passes with a static roller if compaction is not achieved. Perform a third dry density test on the test strip.
  - 5. Compaction readings after the third dry density test should establish the means and methods to achieve compaction for the remainder of the work.
  - 6. Compaction may be achieved before a third series of passes and readings is necessary
  - 7. This method shall be used to place and compact the leveling course described elsewhere herein.
- F. Should any segregation of the material occur during any stage of the stockpiling, spreading, or grading, the contractor shall immediately remove and dispose of segregated material and correct or change the handling methods and procedures to prevent any further segregation.
- G. Final permeable rock base grades shall conform to the lines and grades as shown on the drawings. Refer to Section 01 72 40 "Conformance Surveying" for conformance survey requirements and verification of slope and grade.
- H. The surface of the permeable rock base shall be sloped as shown on the drawings.
- I. Upon completion of the test strip perform a field percolation test to ensure a minimum rate of 10" per hours.
- J. Field percolation testing shall be conducted, by the Contractor, in the presence of the Project Inspector Engineer in accordance with the ASTM F2898-11.

### 3.06 TOLERANCES

- A. Flatness: Maximum variation of 1/4 inch measured with 10 foot straight edge.
- B. Scheduled Compacted Thickness: Within 1/4 inch.
- C. Variation From Design Elevation: Within 1/2 inch.

### 3.07 FIELD QUALITY CONTROL

- A. Refer to Section 01 45 00 "Quality Control", for general requirements for field inspection and testing.
- B. Compaction density testing will be performed on compacted aggregate base course in accordance with ASTM D1556 and Method C of ASTM D 1557.
- C. If tests indicate work does not meet specified requirements, remove work, replace and retest.

3.08 CLEANING

- A. Remove unused stockpiled materials, leave area in a clean and neat condition. Grade stockpile area to prevent standing surface water.

3.09 MEASUREMENT AND PAYMENT

- A. The price paid for “**Class 2 Aggregate Base**” shall be included in the contract unit price paid for the various line items requiring class 2 aggregate base and no separate payment will be made therefor.
- B. The price paid for “**Class 2 Permeable Base**” shall be included in the contract unit price paid for the various line items requiring class 2 permeable base and no separate payment will be made therefor.

END OF SECTION

CITY COUNCIL  
REFERENCE ONLY

## SECTION 32 14 43 PERMEABLE PAVERS

### PART 1 GENERAL

#### 1.01 SUMMARY

- A. The work in this section shall consist of excavation, furnishing and placing geotextile, placement of coarse aggregate, furnishing and placing choker base course, permeable pavers and joint filler.
- B. Coarse aggregate and choker base course shall conform, except as otherwise provided, to the provisions of Section 26, "Aggregate Bases," of the Standard Specifications and these Special Provisions.
- C. Repair at Planter Area
- D. Related Sections
  - 1. Section 02 41 00 "Site Demolition"
  - 2. Section 03 11 00 "Concrete Formwork"
  - 3. Section 03 20 00 "Concrete Reinforcement"
  - 4. Section 03 30 00 "Cast in Place Concrete"
  - 5. Section 22 14 00 "Drainage"
  - 6. Section 31 00 00 "Earthwork"
  - 7. Section 32 11 23 "Aggregate Base Course"

#### 1.02 REFERENCES

- A. American Society for Testing and Materials (ASTM)
  - 1. C33, Standard Specification for Concrete Aggregates
  - 2. C67, Standard Test Method for Sampling and testing Concrete Masonry Units and Related Units.
  - 3. C131, Standard Test Method for Resistance to Degradation of Small-Size Coarse Aggregate by Abrasion and Impact in the Los Angeles Machine.
  - 4. C136, Method for Sieve Analysis for Fine and Coarse Aggregate.
  - 5. C140, Standard Test Methods for Sampling and Testing Concrete Masonry Units and Related Units.
  - 6. D448, Standard Classification for Sizes of Aggregate for Road and Bridge Construction.
  - 7. C936, Standard Specification for Solid Interlocking Concrete Pavers.
  - 8. C979, Specification for Pigments for Integrally Colored Concrete.
  - 9. D698, Test Methods for Moisture Density Relations of Soil and Soil Aggregate Mixtures Using a 5.5-lb (2.49 kg) Rammer and 12 in. (305 mm) drop.
  - 10. D1557, Test Methods for Moisture Density Relations of Soil and Soil Aggregate Mixtures Using a 10-lb (4.54 kg) Rammer and 18 in. (457 mm) drop.
  - 11. D1883, Test Method for California Bearing Ratio of Laboratory-Compacted Soils.
  - 12. D6938-17a Standard Test Methods for Density of Soil and Soil-Aggregate In-Place by Nuclear Methods (Shallow Depth).

13. D4254, Standard Test Methods for Minimum Index Density and Unit Weight of Soils and Calculation of Relative Density.
  14. F2898-11, Standard Test method for Permeability of Synthetic Turf Sports Field Base Stone and Surface Systems by Non-Confined Area Flood Test
- B. Interlocking Concrete Pavement Institute (ICPI)
1. Permeable Interlocking Concrete Pavement manual.
  2. Permeable Design Pro software for hydrologic and structural design
- 1.03 SUBMITTALS
- A. Submit samples at least 15 days (15) prior to use
- B. In accordance with Conditions of the Contract and Section 01 30 00 "Submittal".
- C. Paver manufacturer's/installation subcontractor's drawings and details:
1. Subcontractor shall provide shop drawing layout of pavers for the following patterns
    - a. Running Bond
  2. Indicate layout, pattern and relationship of paving joints to fixtures, and project formed details.
- D. Minimum 3 lb (2 kg) samples of base and bedding aggregate materials.
- E. Sieve analysis of aggregates for base and bedding materials per ASTM C 136.
- F. Project specific or producer/manufacturer source test results for void ratio and bulk density of the aggregate base.
- G. Permeable concrete pavers:
1. Paver manufacturer's catalog sheets with product specifications.
  2. Four (4) representative full-size samples of each paver type, thickness, color, and finish. Submit samples indicating the range of color expected in the finished installation.
  3. Accepted samples become the standard of acceptance for the work of this Section.
  4. Laboratory test reports certifying compliance of the concrete pavers with ASTM C 936.
  5. Manufacturers' material safety data sheets for the safe handling of the specified paving materials and other products specified herein.
  6. Paver manufacturer's written quality control procedures including representative samples of production record keeping that ensure conformance of paving products to the product specifications.
- H. Paver Installation Subcontractor:
1. Demonstrate that job foremen on the project have a current certificate from the Interlocking Concrete Pavement Institute Concrete Paver Installer Certification program.
  2. Job references from projects of a similar size and complexity. Provide Owner/Client/General Contractor names, postal address, phone, fax, and email address.
  3. Written Method Statement and Quality Control Plan that describes material staging and flow, paving direction and installation procedures, including representative reporting forms that ensure conformance to the project specifications.

1.04 QUALITY ASSURANCE

A. Paver Installation Subcontractor Qualifications:

1. Utilize an installer having successfully completed concrete paver installation similar in design, material and extent indicated on this project.
2. Utilize an installer with job foremen holding a current certificate from the Interlocking Concrete Pavement Institute Concrete Paver Installer Certification program.

B. Review the manufacturers' quality control plan, paver installation subcontractor's Method Statement and Quality Control Plan with a pre-construction meeting of representatives from the manufacturer, paver installation subcontractor, general contractor, engineer and/or owner's representative.

C. Mock-Ups:

1. Install a 5 ft x 5 ft paver area.
2. Use this area to determine surcharge of the bedding layer, joint sizes, and lines, laying pattern, color and texture of the job.
3. This area will be used as the standard by which the work will be judged.
4. Subject to acceptance by owner, mock-up may be retained as part of finished work.
5. If mock-up is not retained, remove and properly dispose of mock-up at end of the construction project.

1.05 DELIVERY, STORAGE, AND HANDLING

A. General: Comply with Section 01 60 00 "Product Requirements"

B. Comply with manufacturer's ordering instructions and lead-time requirements to avoid construction delays.

C. Delivery: Deliver materials in manufacturer's original, unopened, undamaged container packaging with identification tags intact on each paver bundle.

1. Coordinate delivery and paving schedule to minimize interference with normal use of buildings adjacent to paving.
2. Deliver concrete pavers to the site in steel banded, plastic banded, or plastic wrapped cubes capable of transfer by forklift or clamp lift.
3. Unload pavers at job site in such a manner that no damage occurs to the product or existing construction

D. Storage and Protection: Store materials in protected area such that they are kept free from mud, dirt, and other foreign materials.

1.06 ENVIRONMENTAL REQUIREMENTS

A. Do not install in rain or snow.

1.07 WARRANTY

A. 15-year limited material warranty for paver restraint edging from manufacturing defects in workmanship or material.

1.08 CITY STOCK SUPPLY OF PERMEABLE PAVERS

A. In addition to Scope of Work supply of permeable pavers, the contractor shall also provide to the City, a City Stock Supply of each permeable paver type. They shall be from the same batch and make as those utilized for the Scope of Work. Amounts shall be as follows:

1. Permeable Paver: 100 SF of pavers

- B. City Stock Supply shall be delivered, at the same time as the Scope of Work pavers, on completely wrapped pallets labeled with manufacturer, paver type, name, color size and project name. Contractor is responsible for delivery of the wrapped pallets to the City Corp Yard and shall coordinate with City's Engineer or their designee delivery time and location and acceptance of City Stock Supply Pavers.
- C. Damaged City Stock Supply shall be rejected out right and will the responsibility of the Contractor to remove and dispose of.
- D. City Stock Supply of permeable pavers shall not be used for Scope of Work Installation in this construction project and is considered completely separate from the supply of permeable pavers needed for the Scope of Work.

**PART 2 PRODUCTS**

2.01 PERMEABLE PAVERS

- A. Permeable Pavers – Type A: shall be Calstone Permeable Quarry Stone (6"x9"x3-1/8"); Color: "Rustic Yellow Stone"; "Old Town II Pattern"; or approved equal.
- B. Permeable Pavers – Type B: Shall be Calstone Permeable Belgian Stone; Color: "Sierra Granite", or approved equal.
- C. Material shall comply with ASTM C396

2.02 CLASS 2 PERMEABLE BASE

- A. Refer to Section 32 11 23 "Aggregate Base Course" for Class 2 Permeable Base Rock and applicable measurement and payment clause.

2.03 PERMEABLE BEDDING (CHOKER COURSE)

- A. Permeable bedding (choker course) materials shall be crushed, angular rock, or stone, conforming to the following ASTM requirements: 90% fractured faces, LA Abrasion < 40 per ASTM C 131, minimum CBR of 80% per ASTM D 1883.
- B. Do not use rounded gravel
- C. All stone materials shall be washed with less than 1% passing the No. 200 sieve.
- D. Permeable bedding (choker course), conforming to ASTM D 448 gradation as shown below:

Permeable Bedding Grading Requirements  
ASTM stone size No. 8

Sieve Size	Percent Passing
1/2 in.	100
3/8 in.	90 to 100
No. 4	20 to 55
No. 8	5 to 30
No. 16	0 to 10
No. 50	0 to 5

- E. Aggregate Source: Hanson Aggregates, 7999 Athenour Way, Sunol, CA.,94586-9454. Phone: (925) 862-2257.

2.04 JOINT OPENING/FILLER MATERIAL

- A. Joint Opening/Filler materials shall be crushed, angular rock, or stone, conforming to the following ASTM requirements: 90% fractured faces, LA Abrasion < 40 per ASTM C 131, minimum CBR of 80% per ASTM D 1883 and used to fill the void between permeable pavers.

- B. The specified Joint Opening/Filler materials shall conform to the requirements defined herein, and the requirements for Caltrans Class 1B permeable material, as defined in Section 68-1.025 "Permeable Material".
- C. Do not use rounded river gravel
- D. All stone materials shall be washed with less than 1% passing the No. 200 sieve.
- E. Joint opening/filler material, conforming to ASTM D 448 gradation as shown below:

Joint Opening/Filler Grading Requirements  
ASTM stone size No. 9

Sieve Size	<b><u>No. 9</u></b>	Percent Passing
1/2 in.	100	
3/8 in.	100	
No. 4	85 to 100	
No. 8	10 to 40	
No. 16	0 to 10	
No. 50	0 to 5	

- F. Aggregate Source: Calstone, 1155 Aster Avenue, Sunnyvale, CA 94086. Phone: (408) 984-8800. (Fine #9 Permeable Joint Rock). Or approved equal.

2.05 SEALER

- A. Paver sealer shall be an acrylic in a solvent base with low-medium solids level for deep penetration and low gloss; stain resistance; efflorescence (white powder) suppression; sand joint stabilization; little to no gloss for retention of natural traction; strengthen any potential weak spots in the paver surface.
- B. Gloss can be customized from low to high.
- C. Clear in color, usually darkens and richens material colors a shade or two
- D. For surfaces over 3% absorption rating. Materials of under 3% absorption rating will allow less penetration and leave more solids on the surface than might be desirable. See the "Problem Solving" section on sealing if you don't know the absorption rating and can't find out from the store that sold you the material.
- E. Product: Aldon System, Penetrating Paver Sealer, or approved equal

2.06 TRUNCATED DOMES

- A. Tekway ADA Domes by StrongGo Industries or approved equal; Color: Terracotta to match existing.

**PART 3 EXECUTION**

3.01 EARTHWORK AND CONCRETE

- A. The site shall be cleared of existing surface material down to existing subgrade per the requirements of Section 02 41 00 "Site Demolition".
- B. Subgrade shall not be compacted or scarified.
- C. Verify existing subgrade surface drainage slope toward trench drain. Verify that the soil subgrade is free from standing water.
- D. Do not proceed with installation of geotextile, bedding and interlocking concrete pavers until subgrade soil conditions are corrected as directed by the City Engineer.

- E. Form to place the 12 Inch square block. Key into the subgrade, as needed and pour directly on subgrade. Hold top of block short the thickness of the permeable paver and the thickness of mortar, as shown per details.

### 3.02 INSTALLATION OF CLASS 2 PERMEABLE ROCK

- A. Refer to Section 32 11 23 "Aggregate Base Course" for Class 2 Permeable Base Rock.

### 3.03 INSTALLATION OF PERMEABLE BEDDING (CHOKER COURSE)

- A. The specified bedding course shall be placed and compacted over top of the finished and approved permeable rock base to the grades and thicknesses specified on the drawings. Rock shall meet the requirement found herein for ASTM No. 8 stone size.
- B. Layers shall be compacted to finished base elevation with a smooth drum roller, and still maintain permeability, and provide a non-yielding, smooth, flat surface.
- C. To establish baseline compaction density and uniformity, establish a roll pattern to achieve maximum compaction along a test strip and compact using the same methods as described in "Installation of Permeable Rock Base", Section 32 11 23.
- D. Should any segregation of the material occur during any stage of the stockpiling, spreading, or grading, the contractor shall immediately remove and dispose of segregated material and correct or change the handling methods and procedures to prevent any further segregation.
- E. Tolerance: Final permeable rock base grades shall conform to the lines and grades as shown on the drawings. The measured grades shall not deviate more than 0.08 feet ( $\pm 1$  inch) from the planned grades and not vary more than 0.04 feet ( $\pm 1/2$  inch) in 10 feet in any direction. Laser grading is recommended.
- F. Refer to Section 01 72 40 "Conformance Survey" for conformance and verification of slope and grade at end of the paver installation.
- G. Field percolation testing shall be conducted in the presence of the City Engineer in accordance with the ASTM testing specified in Section 32 11 23.

### 3.04 INSTALL PERMEABLE PAVERS

- A. Permeable interlocking concrete pavers and joint/opening fill material
  1. Lay the paving units in the pattern(s) and joint widths as required by the manufacturer to maintain infiltration, and as shown on the shop drawings provided by the subcontractor, as developed according to the contract drawings.
  2. Maintain straight pattern lines.
  3. Fill gaps at the edges of the paved area with cut units. Cut pavers subject to tire traffic shall be no smaller than 1/3 of a whole unit.
  4. Cut pavers and place along the edges with a masonry saw.
  5. Fill the openings and joints with ASTM No. 9 stone by sweeping. Stone shall be spread and swept to fill the openings and joints as the compactor is run. Continue sweeping and compacting until the joints are full. Once the joints are full, thoroughly sweep off excess stone from the entire paver area.
  6. Remove excess aggregate on the surface by sweeping pavers clean.
  7. Compact and seat the pavers into the bedding material using a low-amplitude, 75-90 Hz plate compactor capable of at least 5,000 lbf (22 kN) centrifugal compaction force. This will require at least two passes with the plate compactor.
  8. Do not compact within 6 ft (2 m) of the unrestrained edges of the paving units.

9. Apply additional aggregate to the openings and joints if needed, filling them completely. Remove excess aggregate by sweeping then compact the pavers. This will require at least two passes with the plate compactor.
10. All pavers within 6 ft (2 m) of the laying face must be left fully compacted at the completion of each day.
11. The final surface tolerance of compacted pavers shall not deviate more than  $\pm 3/8$  (10 mm) under a 10 ft (3 m) long straightedge.
12. The surface elevation of pavers shall be 1/8 to 1/4 in. (3 to 6 mm) above adjacent drainage inlets, concrete collars or channels.

### 3.05 SEALER APPLICATION

- A. Surface must be absolutely dry, between 50-80 °F, clean and free of all substances that may cause a reaction, or impair adhesion and penetration of sealer.
- B. Prior to sealing, test for easy absorption of water drops to confirm nothing exists or interfere with proper penetration.
- C. Follow manufacturer's application and safety instructions for application of sealer.
- D. For "sand" joints, spray using solvent resistant equipment and a "fan" tip.
- E. First application – slowly sweep an even pattern that obviously darkens the pavers at a comfortable pace.
- F. Second Application – use the same technique as the first application at 90 degrees to the first to ensure even coverage.
- G. Do not judge effectiveness of application by color. Test as follow: more sealer is needed if water drops absorb (darken) after a few minutes of sitting on the surface. If technique or absorption differences result in an uneven color enhancement with a first application, a second application will blend easily to create an even finish.
- H. If additional sealer applications are needed, wait a minimum of 3 hours between applications, to reduce the amount of sealer needed to be applied in the next application.

### 3.06 REPAIR AT PLANTER AREA

- A. Repair planter area as delineated on the Plans.

### 3.07 FIELD QUALITY CONTROL

- A. After sweeping the surface clean, check final elevations for conformance to the drawings.
- B. Lippage: No greater than 1/8 in. (3 mm) difference in height between adjacent pavers.
- C. The surface of the pavers may be 1/8 to 1/4 in. (3 to 6 mm) above the final elevations after compaction. This helps compensate for possible minor settling normal to pavers.
- D. The surface elevation of pavers shall be 1/8 to 1/4 in. (3 to 6 mm) above adjacent drainage inlets, concrete collars or channels.
- E. Bond lines for paver courses:  $\pm 1/2$  in. ( $\pm 15$  mm) over a 50 ft (15 m) string line.

### 3.08 PROTECTION

- A. After work in this section is complete, the General Contractor shall be responsible for protecting work from sediment deposition and damage due to subsequent construction activity on the site.

3.09 MEASUREMENT AND PAYMENT

- A. The square foot price paid for “**Permeable Paver – Type A**” and “**Permeable Paver – Type B**” shall include full compensation for furnishing labor, materials, tools, equipment and incidentals for doing all the work covered in this section, including excavation, class 2 permeable rock, permeable bedding/choker course, joint filler, sealer, and for doing all the work complete and in place as shown on the plans, as required by these Special Provisions and as directed by the City Engineer.
- B. The square foot price paid for “**Truncated Domes**” shall include full compensation for furnishing labor, materials, tools, equipment and incidentals for doing all the work covered in this section, and for doing all the work complete and in place as shown on the plans, as required by these Special Provisions and as directed by the City Engineer.
- C. The lump sum price paid for “**Repair at Planter Area**” shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals and for doing all the work covered in this section, including permeable pavers, tree stump removal, reposition of bollard lights, tree bubblers, concrete curb, saw cutting, reinforcement, and formwork, complete in place as shown on the plans, as required by the Special Provisions, and as required by the Engineer.

END OF SECTION

CITY COUNCIL ONLY  
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## SECTION 32 15 40 DECOMPOSED GRANITE PAVING

### PART 1 GENERAL

#### 1.01 RELATED DOCUMENTS

- A. These special provisions are part of the plans and shall include all labor, materials, equipment, reasonable incidentals, and services necessary to the execution of the work.
- B. Refer to all other sections, determine the extent and character of related work, and coordinate all work to produce a complete, properly constructed product.
- C. Related Sections
  - 1. Section 02 41 13 "Site Demolition"
  - 2. Section 31 00 00 "Earthwork"
  - 3. Section 31 22 19 "Finish/Fine Grading"
  - 4. Section 03 03 00 "Cast in Place Concrete"
  - 5. Section 32 11 23 "Aggregate Base Course"

#### 1.02 PERFORMANCE REQUIREMENTS

- A. Perform gradation of decomposed granite material of 3/8" crushed aggregate in accordance with:
  - 1. ASTM C 136 – Standard Test Method for Sieve Analysis of Fine and Course Aggregates.

#### 1.03 DESCRIPTION OF WORK

- A. Work Includes: All labor, materials and equipment necessary to complete the installation of decomposed granite paving with stabilizer binder additive as shown on the Drawings.
- B. Work Specified Under Other Sections: Consult all other Sections, determine the extent and character of related work and properly coordinate work specified herein with that specified elsewhere to produce a complete, finished and workmanlike installation.

#### 1.04 SUBMITTALS

- A. Submit the following material samples for the Project Landscape Architect's written approval prior to delivery of materials to site, or preparation of sample panel. Provide supplier's sieve analysis with each sample.
  - 1. Five (5) lb. sample and sieve analysis for each decomposed granite material with stabilizer pre-mixed.
  - 2. Cut sheets for stabilizer binder material
  - 3. Cut sheet for steel header
- B. Sample Panel
  - 1. Prepare a sample panel of each of the decomposed granite paving material with stabilizer binder additive at location using approved materials as directed by the Project Inspector.

2. The sample panel shall be 3' x 3' and installed as specified and detailed, at a finished gradient as shown on the plans.
3. If the panel does not meet the specifications contained herein, the panel shall be repaired or rebuilt at the Contractor's expense for approval by City Engineer before proceeding with work. Panel shall remain intact throughout construction. Protect sample panels from damage until completion and acceptance of the work represented by the sample panel.
4. Panel may be installed within the required areas for placement, and upon approval, used as part of the finished surface.

1.05 QUALITY ASSURANCE

- A. Installer Qualifications: Installer to provide evidence to indicate successful experience in providing and installing decomposed granite material of 3/8" or 1/4" minus crushed aggregate paving containing Stabilizer binder additive.
- B. Sample Panel/Mock-ups: Install a 3' wide x 3' wide long mock-up of decomposed granite paving with stabilizer additive at the areas of decomposed granite installation, as shown on the plans, and, as directed by the City Engineer. Sample Panel/Mock-ups may be used as part of the completed work, if acceptable.

1.06 PROJECT/SITE CONDITIONS

- A. Field Measurements: Each bidder is required to visit the site of the work to verify the existing conditions. No adjustments will be made to the contract line items for variations in the existing conditions.
  1. Where surfacing is indicated to fit and conform with other construction, verify dimensions of other construction by field measurements prior to proceeding with the work.
- B. Environmental Limitations: Do not install materials during rainy conditions or below 40 degrees Fahrenheit and falling.

1.07 WARRANTY

- A. General Warranty: the special warranty specified in this article shall not deprive the City of the rights the City may have under other provisions to the Contract Documents and shall be in addition to, and run concurrent with, other warranties made by the contractor under the requirements of the Contract Documents
- B. Special Warranty: Submit a written warranty executed by the installer agreeing to repair and replace components of the stabilized surface that fail in material and workmanship within the specified warranty period. Failures include, but are not limited to:
  1. Premature wear and tear, provided the material is maintained in accordance with the manufacturer's written maintenance instructions.
  2. Failure of system to meet performance requirements and quality assurances.
- C. Warranty Period: Contractor shall provide a warranty for the performance of the product. Contractor shall warranty installation of the product for the time of one (1) years from completion.

**PART 2 PRODUCTS**

2.01 CLASS II PERMEABLE BASE

A. Refer to Section 32 11 23 "Aggregate Base Course" for additional information.

2.02 DECOMPOSED GRANITE

A. Decomposed Granite or 3/8" crushed aggregate screenings

1. Crushed Stone Sieve Analysis Percentage of Weight Passing a Square Mesh Sieve AASHTO T11-82 and T27-82

<u>Sieve Size</u>	<u>Percent Passing</u>
3/8"	100%
#4	90-100
#8	75-80
#10	65-75
#16	55-65
#30	40-50
#50	25-35
#100	15-20
#200	10-15

- B. The portion of decomposed granite retained on the No. 4 sieve shall have a maximum percentage of wear of 50 at 500 revolutions as determined by AASHTO T96-77.
- C. The portion passing a No. 40 sieve shall have a maximum liquid limit of 25 and maximum plasticity index of 7 as determined by AASHTO T89-81 and AASHTO T90-81, respectively.
- D. Crushed aggregate screenings shall be free from clay lumps, vegetative matter and deleterious material, including noxious weed seeds such as nutgrass.
- E. Color: California Gold or, approved equal
- F. All decomposed granite shall have binder incorporated prior to delivery to the project site and shall be pre-mixed off site by the supplier. Also refer to Stabilizer Binder
- G. Supplier: Lyngso Garden Materials, Inc.  
19 Seaport Blvd., Redwood City, CA 94063  
Website: <http://www.lyngsogarden.com/>  
Phone: 650.364.1730  
Fax: 650.361.1933;  
Or approved equal.

2.03 STABILIZER BINDER

- A. Patented, natural, non-toxic, non-staining, colorless, odorless, environmentally safe, concentrated organic binder, in powder form, that binds decomposed granite to produce a firm surface. The powder binder shall be "Stabilizer" as manufactured and patented by Stabilizer Solutions, Inc.
- B. Manufacturer: Stabilizer Solutions, 33 South 28<sup>th</sup> Street, Phoenix, AZ 85034. Ph (602) 225-5900 or 800-336-2468; Fax: (602) 225-5902; website: [www.stabilizersolutions.com](http://www.stabilizersolutions.com); email: [info@stabilizersolutions.com](mailto:info@stabilizersolutions.com); or approved equal.

2.04 DECOMPOSED GRANITE PAVING – PERMEABLE SECTION

- A. Place decomposed granite on Class 2 Permeable Base, per Section 32 11 30.

2.05 EXCESS DECOMPOSED GRANITE MATERIALS

- A. Provide the owner or their representative with the following excess material for use in the future: 40 lbs to 50 lbs bags of decomposed aggregate blended with the proper amount of stabilizer.

**PART 3 EXECUTION**

3.01 RELATED SITE FURNISHINGS AND MATERIALS

Mow bands, concrete surfacing, site furnishings, planting material, aggregate base, drainage and other related materials and furnishings, shall be placed to the appropriate grades and locations prior to placement of decomposed granite surfacing.

3.02 INSPECTION

Examine the aggregate base on which the decomposed granite material is to be installed. Notify the Engineer, in writing, of conditions detrimental to the proper and timely completion of the work. Do not proceed with the work until unsatisfactory conditions have been corrected.

3.03 LINES AND LEVELS

- A. Finished grades (FG) and finished surfaces (FS) shown on Drawings are given in feet and decimals of feet and are to be the top of all graded or paved surfaces. Slope uniformly between given spot elevations unless otherwise indicated.
- B. Transition between changes in vertical gradient of walks and paving shall be smooth and gradual with no abrupt or sharp changes.
- C. Horizontal curves and radii shall be laid out tangent to adjacent straight lines or adjacent compound curves. Curves shall be smooth and flowing.
- D. Horizontal layout shall not vary more than 1 inch from dimensions indicated on the Drawings. Make minor field adjustments in the layout as necessary to make radii tangent and curves smooth and flowing as indicated on the Drawings.

3.04 EXCAVATION AND PREPARATION OF SUBGRADE

- A. Preparation of subgrade is specified under Section 31 00 00 "Earthwork" and Section 32 11 23 "Aggregate Base Course".
- B. Subgrade shall be excavated to the depth required to accommodate the new decomposed granite section inclusive of aggregate base and low expansion fill, and subgrade shall be compacted per geotechnical requirements prior to aggregate base placement.
- C. All excavated native materials will remain on site and be used as fill within the proposed planting areas

3.05 BLENDING STABILIZER

- A. Blending shall be done off site at the suppliers yard prior to delivery.
- B. Blend 16 lbs., minimum, of Stabilizer per 1-ton of decomposed granite or crushed 3/8" aggregate screenings. It is critical that stabilizer be thoroughly and uniformly mixed throughout the decomposed granite.

- C. Stabilizer shall be mechanically pre-mixed per manufacturer's recommendations using an approved mechanical blending unit that will adequately mix and blend Stabilizer with aggregate.
- D. Always blend the material DRY.
- E. On-site blending is not acceptable. Bucket blending is not acceptable. Blending with a rake and or shovel is not acceptable. Blend material dry off site by the supplier.
- F. Drop spreading of Stabilizer over pre-placed aggregate or mixing by rototilling is not acceptable for vehicular access.

3.06 PLACEMENT

- A. After pre-blending, place decomposed granite to the thickness identified on the plans. Level to the desired grade and cross sections.
- B. Depth shall be a minimum of 1 inch.

3.07 WATERING

- A. Water heavily to achieve full depth moisture penetration of the stabilized pathway profile. Water activates the stabilizer so it is important to saturate through total depth.
- B. To achieve saturation of stabilized pathway profile, 25 to 45 gallons of water per 1 ton of decomposed granite must be applied. During water application randomly test for depth using a probing device to final depth.
- C. Contractor shall wait a minimum of 6 – 48 hours or until such time that the paving material is able to accept compaction from a 1 to 5 ton roller without separation, plowing or any other physical compromise of the aggregate.
- D. If surface aggregate dries significantly quicker than subsurface material, lightly mist surface before compaction.
- E. Compact the material with a compactor as specified below making 3 to 4 passes (do not use a vibratory unit).

3.08 COMPACTION

- A. Place decomposed granite to the thickness identified on the plans. Upon thorough moisture penetration, compact decomposed granite screenings to 85% relative compaction by compaction equipment such as:
  1. double drum roller (2-4 ton)
  2. single drum roller (1000 lbs.)
- B. DO NOT use a vibratory plate compactor or vibration feature on roller, as vibration separates large aggregate particles.
- C. Take care in compacting decomposed granite when adjacent to planting and irrigation systems. Hand tamping with an 8" to 10" hand tamp adjacent to these areas is recommended.
- D. Installation of Stabilized aggregate more than 3 inches must be installed in lifts.
- E. If Stabilized aggregate is pre-moistened before installation entire lift, the entire lift may be installed.
- F. Water the surface area with a light spray following compaction. Contractor shall take care as to not disturb the aggregate surface with the spray action.

3.09 INSPECTION

- A. Finish surface of decomposed granite pavement shall be uniform in appearance as to texture and color, and shall have a firm stable consistency, resistant to erosion. 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 the path surface shall be repaired to the uniformity of the entire installation.

3.10 PROTECTING

- A. Contractor shall maintain construction fence around new paving to prevent public access to the area.
- B. Fencing shall be maintained in place for the remainder of the project working days, or as directed by the Owner' Representative.

3.11 MAINTENANCE

- A. Remove debris, such as paper, grass clippings, leaves or other organic material by mechanically blowing or hand raking the surface as needed. Any plowing program required during winter months shall involve the use of a rubber baffle on the plow blade or wheels on the plow that lifts the blade 1/4" off the paving surface.
- B. During the first year, a minor amount of loose aggregate will appear on the surface (1/16 to 1/4"). If this material exceeds a 1/4 of an inch, redistribute the material over the entire surface. Water material thoroughly to the depth of 1 inch, and compact with power roller of no less than 1000-lbs. This process should be repeated as needed.
- C. If cracking occurs, simply sweep fines into the cracks, water thoroughly and hand tamp with an 8" to 10" hand tamp plate.

3.12 REPAIRS

- A. Excavate damaged area to the depth of the Stabilized aggregate and square off sidewalls.
- B. If area is dry, moisten damaged portion lightly.
- C. Pre-bend the dry required amount of Stabilizer powder with the proper amount of aggregate in a concrete mixer.
- D. Add water to the pre-blended aggregate and Stabilizer. Thoroughly moisten mix with 25 to 45 gallons per ton of pre-blended material or to approximately 10% moisture content.
- E. Apply moistened pre-blended aggregate to excavated area to finish grade.
- F. Compact with an 8" to 10" hand tamp or use a larger 1000 lb. roller. Keep traffic off areas for 12 to 48 hours after repair has been completed.

3.13 MEASUREMENT AND PAYMENT

- A. The square foot unit price paid for "**Decomposed Granite Paving w/ Permeable Base**", of the Unit Price Schedule shall include full compensation for furnishing all labor, materials, tools, equipment, binder and incidentals and for doing all the work covered in this section, including excavation, and class II permeable base, complete in place as shown on the plans, as required by the Special Provisions, and as required by the Project Landscape Architect.

**END OF SECTION**

**SECTION 32 12 16 ASPHALT PAVING AND SURFACING**

**PART 1 GENERAL**

**1.01 WORK**

- A. Installation of asphalt paving over aggregate base at existing driveway.
- B. Applying prime coat and tack coat.
- C. Dust alleviation and control.
- D. Cleanup and disposal of debris.
- E. Supplying all labor, materials, equipment and apparatus not specifically mentioned herein or noted on the plans, but which are incidental and necessary to complete the work specified.

**1.02 Related Sections**

- A. Section 03 11 00 "Concrete Formwork"
- B. Section 03 20 00 "Concrete Reinforcement"
- C. Section 03 30 00 "Cast-in-Place Concrete"
- D. Section 32 11 23 "Aggregate Base Course"

**1.03 APPLICABLE PUBLICATION**

- A. The publications listed below form a part of this specification to the extent referenced. The publication is referred to in the text by the general designation only.
- B. State of California Department of Transportation (Caltrans) Standard Specification 2018
- C. California Department of Transportation Testing Manual: California Test Method (CMT) 304 Method of Preparation of Bituminous Mixtures for Testing
- D. California Department of Transportation Testing Manual: California Test Method (CMT) 375 Determining the In-Place Density and Relative Compaction of AC Pavement.

**1.04 QUALITY ASSURANCE**

- A. Codes and Standards
  - 1. Spreading and compacting of asphalt concrete shall conform to the applicable provisions of Section 39 of the State Standard Specifications.
  - 2. Traffic Control shall conform to Section 01 55 27 "Maintenance of Traffic and Access" of these Specifications.
- B. Allowable Tolerances
  - 1. Percentage of compaction specified shall be the minimum acceptable. The percentage represents the ratio of the dry density of the compacted material prepared in accordance with CTM 304 to the in-place density of the material as determined by the procedure set forth in CTM 375.
  - 2. Finish surface of asphalt concrete when measured with a twelve-foot straight edge shall not vary more than 0.01 feet in the longitudinal direction and 0.02 feet transversely below the lower edge of the straight-edge.
- C. Submittals

1. Asphalt mix:
  - a. "R" valve, per California Test Method 301;
  - b. Sieve Analysis, per California Test Method 202;
  - c. Sand equivalency, per California Test Method 217;
2. For aggregate bases, the durability index, per California Test Method 229
3. Provide the Engineer daily with one (1) copy of a material certificate signed by material producer certifying that each material item complies with or exceeds the specified requirements for each type of material delivered.
4. Provide the Engineer with one (1) copy of certified plant load out slips for each load of material delivered showing net weight of aggregate base, subbase or asphalt concrete delivered to the job site, to be attached to the appropriate material certificate.

1.05 JOB CONDITIONS & MINIMUM TEMPERATURES

- A. Asphalt concrete material shall not be placed until the aggregate base has been approved.
- B. Provide satisfactory dust alleviation and control measures continuously during the course of the work.
- C. Prime or tack coat materials shall not be applied unless the ambient temperature is above 50°F and has not been below 35°F during the twelve (12) hours immediately prior to application. Prime or tack coats shall not be applied when the surface to be coated is wet or contains an excess of moisture.
- D. Asphalt concrete shall not be applied unless the ambient temperature is above 50 degrees F and rising, the surface is dry, and upon specific approval by the Engineer.
- E. Temperature of asphalt concrete shall not be less than 250 degrees F during initial spreading.

**PART 2 PRODUCTS**

2.01 ASPHALT CONCRETE

- A. Asphalt concrete shall comply with the requirements for 1/2-inch Type A Hot Mix Asphalt, Standard Specifications 39-2.02B(2).
- B. Asphalt to be mixed with aggregate to form asphalt concrete shall be steam-refined paving asphalt, grade PG-64-10, conforming to the requirements of Section 92-1.02 and 1.03 of the State Standard Specifications.
- C. Aggregate for asphalt concrete shall be Type A conforming to the requirements of Section 39-2.02 of the State Standard Specifications with the following special provisions:
  1. Grading of combined aggregates for new asphalt concrete pavement, walkways, and overlays two (2) inches or more in thickness shall be three-quarter (3/4) inch maximum size, medium grading.
  2. Grading of combined aggregate for asphalt concrete pavement, walkways and overlays less than two (2) inches in thickness shall be one half (1/2) inch maximum size, medium grading.
- D. Liquid asphalt for prime coat shall be Grade SS-1 conforming to the requirements of Section 94 of the State Standard Specifications.

- E. Asphaltic emulsion for tack coat (paint binder) shall be emulsified asphalt, Type SS-1h conforming to the requirements of Section 94-1.01 through 1.05 of the State Standard Specifications.
- F. Suppliers certification showing conformance to these specifications shall be delivered with each shipment of materials to the job site.

### **PART 3 EXECUTION**

#### **3.01 EXAMINATION**

- A. Prior to work of this section, carefully inspect previously installed work. Verify all such work is complete to the point where this installation may properly commence; report defects.
- B. Verify that work of this section may be installed in strict accordance with the original design, all pertinent codes and regulations, and all pertinent portions of the referenced standards.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

#### **3.02 ENVIRONMENTAL REQUIREMENTS**

- A. Base Course: Do not lay during wet weather, on muddy sub-grade, or when atmospheric temperature is below 35 degrees F.
- B. Asphalt Surfacing: Do not apply during wet weather, on wet base course, or when atmospheric temperature is below 40 degrees F.

#### **3.03 AGGREGATE BASE**

- A. Refer to Section 32 11 23 Aggregate Base Course.

#### **3.04 PRIME, TACK COATS, AND SURFACE PREPARATION**

- A. Liquid asphalt prime coat shall then be applied to the aggregate base course in conformance with the requirements of Section 39-4.02 of the State Standard Specifications. Prime coat shall be applied at the rate of 0.25 gallons per square yard unless otherwise directed. After the liquid asphalt has penetrated the base course, any excess standing on the surface shall be absorbed to the satisfaction of the Engineer with a suitable coating of clean sand.
- B. Tack coat shall be applied to all vertical surfaces of existing pavement, curbs, gutters, catch basins, manhole frames, and construction joints in the surfacing to the horizontal surface of all existing pavements to be resurfaced and other surfaces designated. Asphaltic paint binder shall be provided in sufficient quantity to produce a thin, uniform black, glossy coat of asphalt. Pools in unevenly
- C. Distributed areas shall be redistributed by means of hand brooms. Tack coat shall be applied in conformance with the applicable requirements of Section 39 4.02 of the State Standard Specifications.
- D. Prior to placing asphalt over existing pavement, sweep the pavement clean of loose dirt to the satisfaction of the City Engineer.

#### **3.05 ASPHALT CONCRETE**

- A. Asphalt concrete shall be proportioned, mixed, placed, spread and compacted in conformance with the applicable requirements of Section 39 of the State Standard Specifications and the following requirements:

1. Asphalt concrete shall be placed only upon specific approval of the Engineer. When, in the opinion of the Engineer, the surface is too wet, no asphalt concrete shall be placed. The Engineer will make the final decision as to whether conditions are satisfactory for paving.
  2. No asphalt concrete surface course shall be placed when the ambient temperature is less than 50° F. All compaction shall be completed before the temperature of the mixture drops below 200°F.
  3. All longitudinal joints shall be "hot" joints; cold joints are only allowed transversely at discontinuance of the day's run.
  4. Asphalt concrete for roadways shall be placed in layers when the total depth called for on the plans and detail drawings.
  5. All asphalt courses shall be placed by means of an approved self-propelled asphalt paving machine. Contractor may place lower courses and compact all courses with equipment conforming to the requirements of Section 39 of the State Standard Specification.
  6. The windrow/pick-up machine method for spreading asphalt may be used with the following restrictions:
    - The machine is self-supporting and may not transmit loads to the paving machine. The use of a track type machine is recommended.
    - The maximum windrow length in front of the paving machine shall be 200-feet, and shall not block intersections.
    - The Contractor shall furnish a "Dump Man" for the control of windrow distribution.
    - At the sole discretion of the Engineer, depending on ambient temperature and the length of haul, the loaded trucks must be covered with a tarp.
    - Any damages to the reinforcing fabric caused by the pick-up machine shall be repaired before the work is allowed to continue.
    - At the sole discretion of the Engineer, depending on traffic control operations, the use of double-bottom dump trucks may be prohibited.
  7. Trucks, loaded or empty, shall not be allowed on the new surface until the asphalt concrete reaches ambient temperature.
- B. The final lift of asphalt paving shall not be placed until all other construction activity, including building construction and landscaping is completed.
- C. Asphalt concrete shall be rolled such that compaction after rolling shall be 95% of the density obtained with the California Test 304. Field density tests may be conducted by the Engineer to confirm density using the California Test 375.
- D. Failure to meet the specified density may require credits back to the City for non-conformance.

### 3.06 ASPHALT PLANING

- A. At conforms, existing pavement shall be planed a minimum of one and one half (1-1/2) inch. Feathering will not be permitted.
- B. For overlay, plane as necessary to allow a minimum overlay of two (2) inch to new elevations.

- C. The contractor will be held responsible for any and all damage to trees, plants, and shrubs caused by the grinding operation and shall satisfactorily replace with new material or correct any damage.
- D. Ground asphalt concrete shall be removed from the job site and disposed of immediately following the grinding operation.
- E. Ground areas shall be overlaid within one week of grinding.

3.07 DUST ALLEVIATION AND CONTROL

- A. Contractor shall provide satisfactory pollution and dust abatement and control measures continuously during the course of the work.
- B. The Contractor shall utilize reclaimed water, or dust palliatives, in compliance with the City's Water Conservation Ordinance.

3.08 CLEANUP

- A. Upon completion of asphalt paving and surfacing operations, the entire work site shall be cleaned of all waste, rubbish, and construction debris of any nature.

3.09 MEASUREMENT AND PAYMENT

- A. The square feet unit price paid for "**Asphalt Paving**" shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals and for doing all the work involved, including aggregate base placement, and asphalt placement, and coatings, complete in place as shown on the plans, as required by these Special Provisions, and as directed by the City Engineer.

**END OF SECTION**

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## SECTION 32 33 00 SITE FURNISHINGS

### PART 1 GENERAL

#### 1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1, General Requirements, apply to the work specified in this Section.
- B. Refer to all other sections, determine the extent and character of related work, and coordinate all work to produce a complete, properly constructed product.
- C. Examine contract documents for requirements that affect work of this section. Other specification sections that directly relate to the work of this section include, but are not limited to:
  - 1. Section 03 11 00 "Concrete Formwork"
  - 2. Section 03 20 00 "Concrete Reinforcement"
  - 3. Section 03 30 00 "Cast in Place Concrete"

#### 1.02 DESCRIPTION OF WORK:

- A. The work in this division includes the furnishing of all labor, materials, equipment and services necessary to complete the work described on the Drawings and as herein specified, but is not limited to:
  - 1. Trash/Recycle Receptacle
  - 2. Removeable Bollard
  - 3. 6' Bench
  - 4. Drinking Fountain

#### 1.03 REFERENCES AND STANDARDS

- B. Comply with applicable requirements of the following standards. Where these standards conflict with other specified requirements, the most restrictive requirements shall govern.
  - 1. Manufacturers Data and Recommended Installation Requirements
  - 2. Americans with Disabilities Act of 1990 (ADA).
  - 3. U.S. Consumer Product Safety Commission (CPSC) "Handbook for Public Playground Safety."
  - 4. American Society for Testing and Materials (ASTM) F1487 "Standard Consumer Safety Performance specification for Playground Equipment for Public Use."

#### 1.04 SUBMITTALS

- A. Manufacturers Product Data: Provide manufacturers product data prior to actual field installation work, for Architects or Owners representative's review.
- B. Shop Drawings: Provide drawings of the manufacturers recommended installation and foundation requirements prior to actual field installation work, for City Project Landscape Architect review.

#### 1.05 QUALITY ASSURANCE

- A. Manufacturers warranties shall pass to the Owner and certification made that the product materials meet all applicable grade trademarks or conform to industry standards and inspection requirements.

1.06 PRODUCT DELIVERY AND STORAGE

- C. Materials delivered to the site shall be examined for damage or defects in shipping. Any defects shall be noted and reported to the Owners representative. Replacements, if necessary, shall be immediately re-ordered, so as to minimize any conflict with the construction schedule. Sound materials shall be stored above ground under protective cover or indoors so as to provide proper protection.

**PART 2 PRODUCTS**

2.01 GENERAL

- A. Products named are indicative of the features, form, finish, and quality of the furnishings desired. Products of manufacturers other than those named may be acceptable upon proof of equality.
- B. All products shall be new, delivered to the site in manufacturer's original containers, and protected at all times from damage during shipping, storage, and handling prior to and during installation.

2.02 PRE-MANUFACTURED SITE FURNISHING

- A. Trash Receptacle: Shall be Dumor 124-311, "BT" lid for litter; Color: "Textured Rust" or approved equal.
- B. Recycle Receptacle: Shall be Dumor 124-311, "RC" lid for recycling; Color: "Recycling Blue" or approved equal.
- C. Removable Bollard: Reliance Foundry R-9811-fl-b Solar Light Bike Bollard; Color: "Statuary Bronze", 3000K Warm White, symmetrical lighting distribution off at 5 hours; or approved equal.
- D. Drinking Fountain: Most Dependable Fountains 2440 SMSS with Bottle Filler; Color: "Textured Gold Vein"; or approved equal.
- E. 6' Bench: Bench with Backrest: Dumor, Inc. 162, with end and center armrest; or approved equal. Install per details and manufacturer's recommendations.

**PART 3 EXECUTION**

3.01 INSTALLATION

- A. For all products, specifically described below, or not, installation of products shall be as shown on the drawings, or according to manufacturer's instructions. If discrepancies are found, or if information is lacking, consult with Project Landscape Architect immediately, prior to beginning the work.
- B. Coordinate in-ground installation of site furnishings with installation of concrete paving and other paving materials.
- C. All footings in concrete paving areas shall be held short with top of footing at base of concrete paving above.
- D. Equipment and work shall include all miscellaneous attachments, materials and field adjustments as necessary to provide complete installation and meet final finish grade requirements.
- E. Coordinate delivery and installation of site furnishings with other site work. Avoid early installation that results in undue exposure to damage.
- F. Install all items plumb, and true to line and grade.
- G. Install concrete footings as specified under Division 3 - Concrete or per manufacturer's

recommendations, whichever is more stringent.

- H. Replace damaged furnishings; no patching or repair will be allowed.
- I. All excess excavation spoils not needed in the backfill effort shall be disposed of in the undeveloped portion of the park, spread and disked to match the condition of the undeveloped surface.

3.02 PRODUCT INSTALLATION

- A. Shall be surface mounted to concrete unless noted otherwise on plans. Install per details and manufacturer's recommendations.
- B. Removable Bollard: Install per details.
- C. Drinking Fountain: Contractor is responsible for the installation on the drinking fountain including all connections. Install per details and manufacturer's recommendations.
- D. Metal Benches: Install per detail and manufacturer's recommendations.
- E. Bronze Plaque: Install per detail and manufacturer's recommendations.

3.03 PROTECTION OF INSTALLED EQUIPMENT

- A. Protect equipment from damage at all times, until final acceptance of the Work. If damage occurs to any equipment prior to final acceptance, Contractor shall, at his own expense, make replacement to satisfaction of the City Project Landscape Architect.

3.04 MEASUREMENT AND PAYMENT

- A. The contract each unit price paid for, "**Trash Receptacle**", "**Recycle Receptacle**", "**Removable Bollard**", "**6' Bench**", and "**Drinking Fountain**" of the unit price schedule shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals and for doing all the work covered in this section, including excavation, concrete footings, and attachments, complete and in place as shown on the plans, as required by the Special Provisions, and as required by the City Project Landscape Architect.

**END OF SECTION**

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## SECTION 32 84 00 IRRIGATION SYSTEM

### PART 1 GENERAL

#### 1.01 DESCRIPTION

- A. Irrigation drawings are diagrammatic and indicative of the work to be installed. Refer to the Irrigation drawings and Irrigation notes of the Contract Documents for further detail regarding diagrammatic drawings.
- B. Order and furnish all labor, materials, supplies, tools and transportation and perform all operations in connection with, and reasonably incidental to, a complete and operational installation of the automatic sprinkler irrigation systems as shown on the drawings and described herein. Items hereinafter are included as an aid to take off, and are not necessarily a complete list of work items.
- C. Furnishing materials and installation for complete system including connections to existing 2-wire mainline and conduit, new mainline, lateral piping, new valves and fittings, new sprinkler heads, bubblers, gate valves, quick couplers, automatic controls connections, and final adjustment of heads to insure complete and uniform coverage.
- D. Install sleeves for laterals, mainline and low voltage electrical conduits.
- E. Replacement of unsatisfactory materials.
- F. Clean-up, inspection and approval.
- G. All work of every description mentioned in the specification and/or addenda thereto, and all other labor, and materials reasonably incidental to the satisfactory completion of the work, including clean-up of the site, as directed by the City Engineer or Project Landscape Architect.
- H. Tests system to ensure coverage is adequate & the system is in proper working order, including running test on the Calsense controller in the presence of the Calsense representative and Senior Maintenance Representative.
- I. Record drawings.

#### 1.02 RELATED DOCUMENTS

- A. These special provisions are part of the plans and shall include all labor, materials, equipment, reasonable incidentals, and services necessary to the execution of the work.
- B. Refer to all other sections, determine the extent and character of related work, and coordinate all work to produce a complete, properly constructed product.

Section 31 00 00 "Earthwork"

Section 31 22 19 "Fine Grading"

Section 32 90 00 "Planting"

#### 1.03 GENERAL REQUIREMENTS

- A. OSHA Compliance:
- B. All articles and services covered by this specification shall meet or exceed the safety standards established under the Federal Occupational Safety and Health Act of 1970, together with all amendments in effect as of the date of this specification.
- C. Codes and Standards: Comply with all applicable codes and standards.
  - 1. All work and materials shall be in full accordance with the latest rules and regulations of the National Electric Code; the Uniform Plumbing Code, published by Western Plumbing

Officials Association; and other State or local laws or regulations. Nothing in these drawings or specifications is to be construed to permit work not conforming to these codes.

3. When the specifications call for materials or construction of a better quality or larger size than required by the above mentioned rules and regulations, the provision of the specifications shall take precedence over the requirements of the said rules and regulations.
4. The Contractor shall furnish, without any extra charge, any additional material and labor when required by the compliance with these rules and regulations, though the work be not mentioned in these particular specifications or shown on the drawings.
5. The Contractor shall erect and maintain barricades, guards, warning signs and lights as necessary or required by OSHA regulations for the protection of the public or workmen.
6. Any existing buildings, equipment, piping, pipe covering sewers, sidewalks, landscaping, etc., damaged by the Contractor during the course of this work shall be replaced or repaired by the Contractor in a manner satisfactory to Engineer and at Contractor's expense, and before final payment is made. The Contractor shall be responsible for damage caused by leaks in the piping systems being installed or having been installed by him. He shall repair, at his own expense, all damage so caused, in a manner satisfactory to Engineer.
7. The Contractor shall pay for all permits, licenses and fees required.

#### 1.04 SUBMITTALS

- A. Materials List: Within thirty-five (35 days) after award of contract, and before any irrigation system materials are delivered to the job site, submit to the City a complete list of all irrigation system materials proposed to be furnished and installed.
  1. Show manufacturer's name and catalog number for each item; furnish complete catalog cuts and technical data; and furnish the manufacturer's recommendations as to method of installation.
  2. The manufacturer's recommendations shall become the basis for acceptance or rejection of the work.
  3. Do not permit any irrigation system component to be brought into the job site until it has been approved in writing by the City.
- B. Record Documents
  1. During the course of installation, carefully show in red line on a print of the irrigation system drawings, all changes made to the irrigation system during installation.
  2. Upon completion of the irrigation system installation, transfer the as-built data accurately onto re-producibles to the City. Re-producibles shall be either a legible digital scan of the original redline drawing (150 dpi minimum) or shall be two (2) minimum color copies of the original 24x36 drawing. The contractor shall submit record documents to the City upon completion of the project. These as-builts will also be defined as reproducibles.
  3. Dimension from two permanent points of reference, such as building corners, sidewalks, road intersections or monuments, the following items:
    - a. Connection to water source (Tapping Sleeve and Valve).
    - b. Gate valves.
    - c. Mainlines and lateral lines.
    - d. Remote control valves.
    - e. Quick coupling valves.

- f. Other equipment as directed by City.
4. Delivery of Record Documents shall not relieve Contractor of the responsibility of furnishing required information that may be omitted from Record Documents.
- C. Special Tools: Two sets of special tools as required to operate, adjust, dismantle or repair equipment. Include tools not normally found in possession of maintenance personnel.
- D. Manuals: Within 10 calendar days of completion of work of this section and as a condition of its acceptance, deliver to the City four (4) individually bound manuals containing the following information:
  1. Contractor's name, address, and telephone number
  2. Duration of guarantee, periods as specified herein
  3. List of equipment with names and addresses of local manufacturer's representatives with duration of written warranties
  4. Complete operating and maintenance instructions on all equipment
  5. Spare parts lists and related manufacturer's information
- E. Controller Charts
  1. Record drawings shall be approved by the Inspector before controller charts are prepared.
  2. Provide one controller chart for each controller supplied.
  3. The chart shall show the area controlled by the automatic controller and shall be the maximum size which the controller door will allow.
  4. The chart is to be a reduced drawing of the actual as-built system of a size that will fit into controller door, that will be readable when reduced.
  5. The chart shall be a photocopy and a different color shall be used to indicate the area of coverage for each station. Contractor shall provide the City with a color mylar copy of reduced plans for the City files.
  6. When completed and approved, the chart shall be hermetically sealed between two pieces of 10 mil. plastic.
  7. These charts shall be completed and approved prior to the final inspection of the irrigation system, and placed in the controller door(s).

## 1.05 QUALITY ASSURANCE

### A. Reference Standards

1. ASTM: American Society for Testing and Materials
  - a. D 1785: Standard Specification for polyvinyl chloride (PVC) plastic pipe, Schedule 40
  - b. D 1785: Standard Specification for polyvinyl chloride (PVC) plastic pipe, Schedule 40, Class 200, Class 315.
  - c. D2446: Standard Specification for polyvinyl chloride (PVC) plastic pipe fittings, Schedule 40 and Schedule 80
  - d. D2665: Standard Specification for polyvinyl chloride (PVC) plastic pipe fittings, Schedule 40.
2. NSF: National Sanitation Foundation
3. AWWA: American Water Works Association

#### 4. ANSI: American National Standards Institute

- B. Qualifications of Installers: Provide at least one person who shall be present at all times during execution of this portion of the work and who shall be thoroughly familiar with the type of materials being installed and the material manufacturer's recommended methods of installation and who shall direct all work performed under this section.
- C. Supervision and Workmanship: The Contractor, personally or through an authorized and competent representative, shall supervise the work constantly, and shall as far as possible keep the same foreman and workmen on the job from commencement to completion. The workmanship of the entire job must in every way be first class, and only experienced and competent workmen will be allowed on the job.
- D. Codes and Standards: In addition to complying with all pertinent codes and regulations, comply with the latest rules of the National Electrical Code and the Electrical Safety Orders of the State of California, Division of Industrial Safety for all electrical work and materials.
- E. Standard of Installation: Material and workmanship shall be in accordance with local codes and ordinances of legally constituted authorities, except that where provisions of these specifications exceed such requirements, these Specifications shall govern.
- F. Permits and Licenses: The Contractor shall secure the required licenses and permits including payments of charges and fees, give required notices to public authorities, verify permits secured or arrangements made by others affecting the work of this section.
- G. Instruction: After the system has been installed and approved, the contractor shall instruct the owner's representative in complete operation and maintenance of the irrigation system.
- H. Final Acceptance: Within 10 days of the Contractor's notification that the installation is complete, the City and required agencies will inspect the installation and, if acceptance is not given, will prepare a "punch list" which, upon completion by the Contractor, another inspection will be made. Final acceptance will not be made until all punch list items have been completed.

#### 1.06 DELIVERY, STORAGE AND HANDLING:

- A. Protection: Use all means necessary to protect irrigation system materials before, during and after installation and the installed work and materials of all other trades.
- B. Replacement: In the event of damage, immediately make all repairs and replacements necessary to the satisfaction of the City and at no additional cost to the City.
  - 1. Exercise care in handling, loading, unloading and storing plastic pipe and fittings under cover until ready to install; transport plastic pipe only on a vehicle with a bed long enough to allow the pipe to lay flat to avoid undue bending and concentrated external load. Protect pipe from sunlight.
  - 2. Repair all dented and damaged pipe by cutting out the dented or damaged section and rejoining with a coupling.

#### 1.07 PROJECT/SITE CONDITIONS:

- A. Connections to Utilities:
  - 1. Source of water and power supply: The Contractor shall verify and be familiar with the location, size and detail of stub-outs provided at the source of water and PG&E connection point for electrical supply to the irrigation controller system, as it exists in the field.
  - 2. Existing utilities and conditions: Prior to trenching, the Contractor shall locate all utility easements, high pressure gas, underground high voltage, and water system lines; fiber optic lines; conduits; sewer lines and other utilities and shall take proper precautions not to

damage or disturb such improvements. If a conflict exists between such obstacles and the proposed work, the Contractor shall promptly notify the City. Do not proceed until all discrepancies have been resolved.

- B. Inspection: The Contractor shall at all times permit the City or his authorized agents to visit and inspect the work or any part thereof. He shall maintain proper facilities and provide safe access for such inspections to all parts of the work. Where the specifications require work to be tested by the Contractor, it shall not be covered up until tested or approved by the City and governing agencies. The Contractor shall be solely responsible for notifying the City and required agency (48 hours notice required), where and when such work is in readiness for testing. Should any such work be covered without such test or approval, it shall, if so ordered, be uncovered at the Contractor's expense.
- C. Completion: The work will be accepted in writing when the entire Scope of Work shall have been completed satisfactorily to the City. In judging the work, no allowance for deviation from the original plans and specifications will be made unless previously approved in writing by the Engineer.
  - 1. The City or authorized representative shall have final authority on all items of the project.
- D. Loose Equipment to Furnish: Loose sprinkling equipment, operating keys and spare parts shall be furnished to the City by the Contractor as shown on the plans.

1.08 GUARANTEE:

- A. The entire sprinkler system shall be unconditionally guaranteed by the Contractor as to material and workmanship (including settlement of backfill) for a period of one year following the date of final acceptance of work.
  - 1. If within one year from the date of completion, settlement occurs and adjustments in pipes, valves, sprinkler heads or hardscape is necessary to bring the system or hardscape to the proper level of the permanent grades, the Contractor, as part of the work under his contract, shall make all adjustments without extra cost to the City, including the complete restoration of all damaged planting, hardscape or other improvements of any kind.
- B. Should any operational difficulties in connection with the sprinkler system develop within the one year guarantee period which in the opinion of the City is due to inferior material or workmanship, said difficulties shall be immediately repaired at no additional cost to City, including any and all other damage caused by such defects.
- C. Service by the Contractor: The Contractor shall service the system at the City's request during the guarantee period and shall be paid for work performed which is not covered by the guarantee. If requested by the City, the Contractor will furnish the City with a schedule of service fees.
- D. The City reserves the right to make temporary repairs as required.

**PART 2 – MATERIALS**

2.01 DECODERS

- A. 2-wire POC decoder (CS-2W-POC) operates the master valve and flow sensor, and wire connection to 2-station decoder.
- B. 2-station decoder (CS-2W-2ST) with 2-station outputs and wire connection to POC decoder.
- C. Cable wires are 14-gauge solid copper, jacketed.
- D. All wires shall be direct buried.

- E. 3M Scotchcast #3570G-N epoxy packs shall be used for all wire splices and wire ends to ensure water proof of wires.
- F. Grounding rod shall be 5/8-inch x 8-foot copper rod. Grounding required at each decoder.

2.02 VALVE BOXES FOR VALVES, FLOW SENSOR AND WIRE SPLICES

- A. In Landscaped Areas: shall be Carson Model 1324 or 1419, Highline Products 13x18, or approved equal plastic valve box with plastic lid. Lid shall be left unmarked. Color shall be Green in ground cover areas, and lockable.
- B. In Landscaped Areas for valves that are 2 inch size and larger: shall be Carson Model 1730, Highline Products 20x26, or approved equal plastic valve box with plastic lid. Lid shall be left unmarked. Color shall be Green in ground cover areas, and lockable.
- C. In concrete: All site utility, irrigation, and electrical boxes placed in concrete surfacing, shall be high density reinforced concrete, with a steel checker plate, bolt-down lid, placed on a concrete footing, and marked "Electrical" or "Irrigation", dependent upon the utility housed within. Acceptable products shall be Christy N-9, Brooks, Quickset, or approved equal. Covers shall have cast brass hold-down lugs. For valves that are 2 inch size and larger: shall be Christy N-30 or approved equal.
- D. Junction boxes along a long conduit run shall be no more than 250 feet apart.
- E. Junction boxes shall be placed at all angle points in conduit runs.
- F. All boxes shall be set on 6 inches, minimum, of clean drain rock.

2.03 LOW VOLTAGE CONDUIT AND SLEEVING

- A. Plastic: Schedule 40 PVC, approved for use as non-metallic raceway for 90 degree Centigrade conductors. Carlton, CertainTeed, or Kraloy.
- B. Provide fittings and accessories approved for the purpose equal in all respects to the conduit or raceway.
- C. Color: GREY
- D. Solvent for all PVC pipe shall be #711 Gray, along with #P-70 primer, NSF approved as manufactured by Industrial Polychemical Service, Gardena, California, or approved equal.
- E. Burial depths for conduit below finished grade, and sleeving, are as follows:
- F. Per Drawings
- G. Sleeve below all hardscape elements with class 315 PVC twice the diameter of the pipe or wire bundle within, or as delineated on the plans.
- H. Under Hardscape Crossings: Sleeves shall extend a minimum of 24 inches beyond all sidewalks, or shall be extend 24" beyond the back edge of the curb, where noted on the plans.

2.04 LOW VOLTAGE ELECTRICAL WIRE (2 WIRE)

- A. All low voltage control wire and communication wire shall be housed in PVC conduit, as described in "Low Voltage Conduit and Sleeving". Include 1 extra control wire for future expansion.
- B. Irrigation Low Voltage Control Wire: All wiring to be used for connecting the automatic controller to the electric solenoid actuated remote control valve shall be Type UF-600V, 7 strand or solid copper, PVC insulation, single conductor, UL approved underground feeder cable, approved for direct burial. Common ground wire: Size #14-1 wire with a white insulating jacket.

- C. Common ground wire: Size #12-1 wire with a white insulating jacket.
- D. Control wire servicing remote control valves: Size #14-1 wire with insulating jacket of color other than white.
- E. Wire servicing Flow sensor: Size #14-1 THWN for use in electrical conduit.
- F. Wire servicing master valve: Size #12-1 THWN for use in electrical conduit.
- G. ET gage wire shall be Paige Model P7354D.
- H. Splices shall be weather-proofed by using
- I. 3M Scotchcast #3570G-N Epoxy packs, or approved equal
- J. Provide a separate ground wire for each controller.
- K. Pull rope with tracer wire to be included for all conduit.

2.05 120v ELECTRICAL SERVICE

- A. Wire and Cables: For power 600 Volts or less:
  - 1. Conductor: Shall be stranded copper. Minimum size shall be #12 AWG.
  - 2. Insulation Type: Shall be THWN for wet or underground locations, and THHN for dry locations. Grounding wire shall be Type TW or same type insulation as circuit conductors.
- B. For signal and communications circuits:
  - 1. Special cables shall be as specified on drawings.
  - 2. Conductors for general signal use shall be stranded copper conductor, #16 AWG minimum, with Type THWN insulation for underground or wet locations and Type THHN insulation for dry locations.
- C. Acceptable Products: General Electric, Anaconda, Okonite, Paronite, Pirelli-General or Triangle products conforming or exceeding applicable IPCEA Standards.
- D. Pull Boxes: If placed in landscaped areas, Carson Model 1419 plastic box with plastic lid. Lid shall be marked "Electrical". Color: Grey.
- E. All 120v service to a free standing controller cabinet shall be pulled to a high density reinforced concrete pull box, with a reinforced concrete, or steel checker plate, bolt-down lid, marked "Electrical". Steel checker plate lids will only be used if pull boxes is placed in concrete.
- F. Ground wires: #6 solid copper wire. Contractor shall connect to existing ground for pedestal and wall mount controllers, and shall install new grounding rod and wire per the plans and details.
- G. Ground rod: Minimum size – 5/8" dia x 8' long.

2.06 TRENCH BACKFILL (PVC PIPE) UNDERNEATH CONCRETE PAVING

- A. Trench backfill shall be used in irrigation pipe trenches underneath asphalt and concrete paving only.
- B. All other pipe trenches in landscaping shall be backfilled with native soil previously excavated from the trench.
- C. Gradation requirements for trench backfill, refer to Section 11A and 11B, City Of Fremont Standard Trench Backfill Specification, Standard Specifications, dated January 1995 (amended) or the sieve analysis provided below.
- D. Sand equivalent: 20 min, per CTM217

E. Sieve Analysis – CTM 202, gray sand

<u>Sieve Size</u>	<u>Sieve Size</u>	<u>Percent Passing</u>
25.0 mm	1”	100
19.0 mm	3/4”	100
12.5 mm	1/2”	100
9.5 mm	3/8”	100
4.75 mm	#4	80
2.36 mm	#8	56
1.18 mm	#16	41
600 um	#30	33
300 um	#50	27
150 um	#100	22
75 um	#200	17.3

2.07 PIPE AND FITTINGS

A. PVC Pressure Mainline (constant pressure) pipe and fittings

1. Pressure mainline piping:
2. Refer to irrigation legend.
3. Pipe shall be made from an NSF approved Type 1, Grade 1 PVC with a cell classification of 12454 per ASTM D1784.
4. Schedule 40 pipe shall be manufactured in strict compliance to ASTM D1785 and D2665 (where applicable), consistently meeting and/or exceeding the Quality Assurance test requirements of these standards with regard to material, workmanship, burst pressure, flattening, and extrusion quality.
5. All PVC pipe shall bear the following markings:
  - a. Manufacturer's name
  - b. Nominal pipe size
  - c. Class or Schedule
  - d. Pressure rating in PSI
  - e. NSF
  - f. Date of extrusion
6. Solvent weld main lines: At changes in direction or branch mains, use appropriate Schedule 80 PVC solvent weld fittings as approved by the Uniform Plumbing Code.
7. All fittings shall bear the manufacturer's name or trademark, material designation, size, applicable I.P.D. schedule and NSF Seal of approval.
8. Inside diameter of pipe shall be the same size as iron pipe.
9. PVC Type I shall not be threaded.
10. PVC fittings shall be PVC Type II, Schedule 40 NSF approved.
11. Caution shall be utilized in handling Type I pipe due to the possibility of cracking or splitting.

12. When connection is plastic to metal, male adapters shall be used unless otherwise noted or detailed. The Male adapter shall be hand tightened, plus one turn with a strap wrench. Joint compound shall be non-lead base (Teflon paste or equal). Teflon tape may be substituted.
  13. Threaded Nipples – ASTM D2464, Schedule 80 with molded threads.
  14. Use solvent weld pipe for mainline pipe with a nominal diameter less than 3-inches or where a pipe connection occurs in a sleeve. Use Schedule 80, Type 1, PVC solvent weld fittings conforming to ASTM Standards D2466 and D1 784. Use primer approved by the pipe manufacturer. Solvent cement to conform to ASTM Standard D2564.
  15. No plowing/pulling of mainline accepted.
  16. Refer to “trenching and backfilling” elsewhere in these specifications for minimum depths.
- B. PVC lateral line and fittings
1. Lateral lines (non-pressure): 3/4” and larger shall be 1120, Schedule 40 PVC plastic pipe.
  2. Manufactured from virgin polyvinyl chloride (PVC) compound in accordance with ASTM D2241 and ASTM D1784; cell classification 12245-B, Type 1, Grade 1.
  3. Fittings – All lateral lines shall be connected with Schedule 40, Type I, Grade I, PVC solvent weld fittings.
  4. Threads – Injection molded type (where required).
  5. Tees and ells – Side gated.
  6. Threaded Nipples – ASTM D2464, Schedule 80 with molded threads.
  7. Refer to “trenching and backfilling” elsewhere in these specifications for minimum depths.
- C. Solvent for all PVC pipe shall be #711 Gray, along with #P-70 primer, NSF approved as manufactured by Industrial Polychemical Service, Gardena, California, or approved equal.
- D. Pipe joint compound shall be non-hardening, non-toxic materials designed specifically for use on threaded connections in water carrying pipe. Performance shall be same as RectorSeal #5.

## 2.08 TWO WIRE CABLE AND CONDUIT

- A. Two wire cable shall be installed within 1 1/4” Schedule 40 grey PVC with Schedule 40 fittings and Schedule 40 electrical long sweeps elbows at all changes in direction. Pull boxes shall be located a maximum of 250 feet on center, adjacent to controller, and at each change of direction. Use rectangular boxes for all pull boxes. Use NDS Pro Series model 214BCB ELEC with bolt down lid or approved equal. Color shall be gray. Heat brand box “PB”. Text height of letters to be 2”.
- B. Irrigation control wires: solid copper with U.L. approval for direct burial in ground. Size #14awg wire with a jacketed 2-conductor. Preferred wire make and model is the Paige P7354D irrigation wire or approved equal.
- C. Wire servicing Flow sensor: Two wire cable with Calsense POC decoder
- D. Wire servicing master valve: Two wire cable with Calsense POC decoder
- E. ALL WIRE SPLICES shall be weather-proofed by using 3M SCOTCHCAST 3570G-N seal packs, per Calsense requirements.
- F. Pull rope with tracer wire to be included for all conduit.

## 2.09 PVC FLEXIBLE PIPE

- A. Extruded from flexible vinyl chloride compound:
  - 1. ½ inch pipe: 0.50 inch inside diameter, 0.090 inch wall thickness
  - 2. Material shall conform to ASTM designation D-2287.

## 2.10 QUICK COUPLING VALVES

- A. Quick coupling valves shall be 1-inch, two-piece winged, single slot valves. Wings shall stabilize the valve and prevent it from rotating in the ground. Each valve shall have a molded vinyl locking cover. Quick Coupling Valve HQ-44-LRC-AW, by Hunter, or approved equal.
- B. Upon completion of the Contract and prior to final acceptance, the Contractor shall supply the City with coupler keys and hose ells in the quantity called for on the plans. The coupler keys and hose ells shall be of the same manufacturer as the coupling valve.

## 2.11 REMOTE CONTROL VALVES

- A. Remote Control Valves: Valves shall be of the manufacturer shown on the Drawings, Griswold 2230 Series, or approved equal. PVC ball valve shall be in-line upstream, and sized per the line size. Remote control valves shall be size shown on plans and as follows:
  - 1. Cast iron bodied with replaceable, non-ferrous, metallic valve seats
  - 2. Normally closed globe (straight) valves
  - 3. Solenoid shall be designed for operation on a 24-volt, AC circuit.
  - 4. Remote Control Valves to be equipped with a union fitting on the discharge side of the valve.
  - 5. In-line ball valve shall be PVC. See description elsewhere herein.
- B. Ball valves (PVC): For use in-line with remote control valves. Shall be low torque for ease of operation, precision molded micro-finish, ball seats are self-adjusting HMW-HDPE to compensate for wear, "pre-loaded" stem seal for longer life, EPDM stem seal and O-rings, valve made of HI-IMPACT Type I PVC material, Schedule 80 material, meeting ASTM standards and NSF listed. WLT Series by KBI, or approved equal.
- C. Identification tags for all electric control valves shall be manufactured by Christy. Tag numbers shall match stationing in controller and as shown on as-built drawings. Provide one yellow station number tag for each electric control valve as follows: Potable water systems: Christy ID.STD.Y1

## 2.12 GATE VALVES/BALL VALVES

- A. Ball Valves (Brass): Shall be two-piece forged brass body (ASTM B283 Alloy C37700), full port, blowout-proof stem, TFE seats, steel plated handle and nut, brass pack gland (ASTM B16) Virgin PTFE packing stem, 430 stainless flat washer fluorocarbon O-ring, reinforced PTFE thrust washer brass stem, Virgin PTFE packing seat ring, Brass ball with chrome plate (ASTM B16 Alloy C36000), and forged brass end piece (ASTM B283 Alloy C37700). Nibco T-FP-600, or approved equal.
- B. Gate Valves
  - 1. 3" and smaller gate valves shall be Nibco T-113-K, threaded, with malleable iron handwheel (ASTM A47), bronze body (ASTM B62), non-rising stem, or approved equal. Conforms to MSS SP-80.

2.13 TREE AND SHRUB BUBBLER

- A. Bubbler shall be capable of being attached to the Pop-up sprinkler body, as described on the Irrigation Drawings
- B. Bubbler shall be a pressure compensation stream bubbler as described on the Irrigation Drawings
- C. All heads of a particular type of function in the system shall be of the same manufacturer and shall be marked with the manufacturer's name and identification in such a position that they can be identified without being removed from the system.

2.14 PULL BOXES

- A. In Landscaped Areas: shall be NDS Pro Series model 214BCB ELEC with bolt down lid or approved equal. Color shall be gray. Heat brand box "PB". Text height of letters to be 2".
- B. In concrete: All site utility, irrigation, and electrical boxes placed in concrete surfacing, shall be high density reinforced concrete, with a steel checker plate, bolt-down lid, placed on a concrete footing, and marked "Electrical" or "Irrigation", dependent upon the utility housed within. Acceptable products shall be Christy N-9, Brooks, Quickset, or approved equal. Covers shall have cast brass hold-down lugs.
- C. Pull boxes along a long conduit run shall be no more than 250 feet apart.
- D. Each pull box shall be set on 6 inches, minimum, of clean drain rock.
- E. Pull boxes shall be placed at all angle points in conduit runs.
- F. Individual, stand alone, pull boxes, as identified on the plans, shall be paid for separately under the line item "Pull Boxes", and no additional payment shall be made therefore.

2.15 RISERS

- A. All bubblers in planting area shall be on flexible risers as shown in the Detail Drawings.
- B. All tree bubblers in lawn area shall be on pop up risers as shown in the Detail Drawings, or indicated herein.

2.16 SLEEVES

- A. Sleeve below all hardscape elements with SCH 40 PVC twice the diameter of the pipe or wire bundle within, or as delineated on the plans.
- B. Under Hardscape Crossings: Sleeves shall extend a minimum of 24 inches beyond all sidewalks, or shall be extend 24" beyond the back edge of the curb, where noted on the plans.
- C. Refer to "Installation of Sleeving Under Asphalt or Concrete" elsewhere in this section for additional information regarding sleeving.

2.17 POP-UP SPRAY/SPRINKLER

- A. Sprinkler heads shall be of the types and sizes with the radius of throw, pressure, discharge and any other designations as specified in the plans and within these specifications. They shall be constructed of bronze, brass, stainless steel and/or high-impact plastic as noted by model number in legend of plans.
- B. Nozzles shall be compatible with the sprinkler body, and as described on the plans, or approved equal.
- C. All heads of a particular type of function in the system shall be of the same manufacturer and shall be marked with the manufacturer's name and identification in such a position that they can be identified without being removed from the system.

2.18 DUCTILE IRON FITTINGS

- A. Fittings shall be deep bell push-on joint fittings manufactured for ASTM A536, Grade 65-45-12 ductile iron with a tensile strength of 65,000 psi.
- B. Fittings shall be designed for use on IPS PVC pipe.

2.19 MISCELLANEOUS INSTALLATION MATERIALS

- A. Solvent cement and primer for solvent weld joints shall be of make and type approved by manufacturer(s) of pipe and fittings. Cement shall be maintained at proper consistency throughout use.
- B. Pipe joint compound shall be non-hardening, non-toxic materials designed specifically for use on threaded connections in water carrying pipe. Performance shall be same as RectorSeal #5.

2.20 OTHER MATERIALS

- A. All other materials not specifically described but required for a complete and proper irrigation system installation shall be new, first-quality of the respective kinds, and subject to the approval of the City.

**PART 3 - EXECUTION**

3.01 SURFACE CONDITIONS

A. Inspection

- 1. Prior to all work in this section, carefully inspect the installed work of all other trades and verify that all such work is complete to the point where this installation may properly commence.
- 2. Verify that irrigation system may be installed in strict accordance with all pertinent codes and regulations, the original design, the referenced standards and the manufacturer's recommendations.

B. Discrepancies

- 1. In the event of discrepancy, immediately notify the City or his authorized representative.
- 2. Do not proceed with installation in areas of discrepancy until all such discrepancies have been fully resolved.

C. Preservation and Cleaning: The Contractor shall clean up the work as it progresses. At frequent intervals, and at all times when directed by the City, the Contractor shall remove and dispose of accumulations of rubbish and debris of all kinds. At the time of completion, the entire site shall be cleared of tools, equipment, rubbish, etc., all of which shall be removed from the site; and the entire project, including surrounding premises, shall be left in proper, clean condition ready for acceptance.

D. Excavation around existing trees: Where it is necessary to excavate adjacent to existing trees, use caution to avoid injury to trees and tree roots. Excavate by hand in areas where two (2) inch and larger roots occur. Paint roots one (1) inch and larger in diameter with two coats of tree seal, or equal. Backfill trenches adjacent to tree within twenty-four (24) hours. Where this is not possible, shade the side of the trench adjacent to the tree with wet burlap or canvas.

### 3.02 FIELD MEASUREMENTS

- A. The irrigation plans are diagrammatic. Make all necessary measurements in the field to ensure precise fit of items in accordance with the dimensions required in the plans, details, these specifications.

### 3.03 TRENCHING AND BACKFILLING

- A. Work shall be performed when soils are reasonably dry and not saturated.

#### B. Trenching

1. Excavations shall be open vertical construction sufficiently wide to provide free working space around the work installed and to provide ample space for backfilling and compacting.
2. Depth of trenches shall be 24 inches cover, minimum, above top of low voltage conduit.
3. Trenches shall be excavated to such depths as will permit the pipe to be laid at the elevations, slopes, or depths of cover indicated on the drawings, and at uniform slopes between indicated elevations.
4. When two or more pipes are to be placed in the same trench, maintain a six-inch space between pipes as minimum. No pipe shall be installed directly over another.
5. Maintain 3" clearance from the edge of the trench to the outside edge of the pipe.
6. Whenever cobbles larger than 3 inches in size are present in earthen subgrade, the trench section shall be excavated to the lines required. Every effort shall be made to keep the sides of the trenches firm and undisturbed until backfilling has been completed and consolidated. Trenches shall be excavated with approximately vertical sides between the elevation of the bottom of the pipe and an elevation one foot above the top of the pipe.
7. Refer to Part entitled "Dedicated Low Voltage Conduit and Sleeving" for sleeve depths in various conditions

#### C. Backfilling:

1. Backfill materials shall be approved native soil in all landscaped areas, and City Standard trench backfill over sleeves under paved areas. Unsuitable material, including clods and rocks over 2-1/2 inches in size shall be removed from the premises by Contractor and disposed of legally at no cost to the City.
2. Backfill only after piping has been tested, inspected and approved.
3. Place backfill materials in 6" layers and compact by jetting or tamping to a minimum compaction of 90 percent of original soil density.
4. Dress off areas to finish grades and remove excess soil, rocks or debris remaining after backfill is completed.
5. All backfilling shall be properly compacted so as to avoid future settlement.
6. If settlement occurs along trenches, and adjustments in pipes, valves and sprinkler heads, soil, sod or paving are necessary to bring the system, soil, sod or paving to the proper level or the permanent grade, the Contractor, as part of the work under this contract, shall make all adjustments without extra cost to the Owner.
7. Surplus earth remaining after backfilling shall be disposed of on the premises as directed by the City.

### 3.04 INSTALLATION OF SLEEVING UNDER ASPHALT OR CONCRETE

- A. General: Layout of the piping system shall be per the drawings and to the depth specified above.
- B. Under Existing Pavement:
  - 1. Piping under existing pavement may be installed by jacking, boring or hydraulic driving, except that no hydraulic driving will be permitted under asphaltic concrete pavement.
  - 2. Where cutting of existing pavement is necessary, provide alternate routes for vehicular traffic. After placement of pipes, backfill trench and compact to 95%. Replace entire section of base rock and hardscape in accordance with City of Fremont Standard Detail SD-28. IS this really happening per this detail? Either include the detail, or describe what needs to happen so we do not reference SD-28
- C. Inspection of Pipe and Fittings: Carefully inspect all pipe fittings before installation, removing all dirt, scale and burrs; ream as required. Install all pipe with all markings up for visual inspection and verification.
- D. Installation of Sleeving:
  - 1. Refer to "Sleeving" elsewhere herein for appropriate depths.
  - 2. Sleeving shall extend 24 inches beyond the edge of finished concrete surface.
  - 3. Trenches containing sleeves shall be backfilled with City Standard Trench Backfill to the bottom of the concrete or hardscape section and compacted per City Standard requirements. Where the sleeve extends beyond the edge of the hardscape or concrete, the sleeve shall be backfilled with native soil or imported topsoil, which ever is specified. If nothing is specified, use previously excavated native soil.
  - 4. Prior to placement of concrete, the ends of the sleeves shall be marked with a stake that shall be exposed approximately 2"-3" above rough, or finished grade to identify sleeve locations. Upon completion of finished concrete surfacing, the location and shall be marked at the edge of concrete or hardscape with a chiseled line or "x", and the stake removed.

### 3.05 ASSEMBLING PIPING

- A. PVC pipe shall be installed in a manner which will provide for expansion and contraction as recommended by the pipe manufacturer. Pipe routing is diagrammatic and shall be installed in such a manner as to conform with the details.
- B. In joining, use only the specified solvent and make all joints in strict accordance with the manufacturer's recommended methods. Give solvent welds at least 16 minutes set-up time before moving or handling and 24 hours curing time before filling with water.
- C. All pipe shall be assembled free from dirt and pipe scale. Field cut ends shall be reamed only to full pipe diameter with rough edges and burrs removed.
- D. Install 3" wide detectable warning tape above all pressurized main lines as shown in the details. Use Christy model #TA-DT-3-BIRR
- E. Solvent Weld Joint:
  - 1. Prepare joint by first making sure the pipe end is square, then deburring the pipe end and cleaning pipe and fitting of dirt, dust and moisture.
  - 2. Dry-insert pipe into fitting to check for missizing. Pipe should enter fitting 1/3 to 2/3 depth of socket.

3. Coat the inside socket surface of the fitting and the male end of the pipe with P-70 primer (manufactured by Weld-On). Then without delay, apply Weld-On 711 cement liberally to the male end of the pipe and also apply 711 cement lightly to the inside of the socket. At this time, apply a second coat of cement to the pipe end.
  4. Insert pipe immediately into fitting and turn 1/4 turn to distribute cement and remove air bubbles. The pipe must seat to the bottom of the socket and fitting. Check alignment of the fitting. Pipe and fitting shall be aligned properly without strain to either.
  5. Hold joint still for approximately thirty (30) seconds and then wipe the excess cement from the pipe and fitting.
  6. Cure joint a minimum of thirty (30) minutes before handling and at least six (6) hours before allowing water in the pipe.
- F. Threaded Joint:
1. Field threading of plastic pipe or fittings is not permitted. Factory-formed threads only will be permitted.
  2. Factory made nipples shall be used wherever possible. Field cut threads in metallic pipe will be permitted only where absolutely necessary. When field threading, cut threads accurately on axis with sharp dies.
  3. All threaded joints shall be made up with joint compound. Apply compound to male threads only.
  4. Where assembling metallic pipe to metallic fitting or valve, not more than three (3) full threads shall show when joint is made up.
  5. Where assembling to threaded plastic fitting, take up joint no more than one full turn beyond hand tight.
  6. Where assembling soft metal (brass or copper) or plastic pipe, use strap type friction wrench only; do not use metal-jawed wrench.
  7. Cap or plug openings as pipeline is assembled to prevent entrance of dirt or obstructions. Remove caps or plugs only when necessary to continue assembly.
  8. Where pipes or control wires pass through sleeves, provide removable non-decaying plug at ends of sleeve to prevent entrance of earth.
  9. For plastic-to-steel connections, work the steel connections first; use a non-hardening non-lead base pipe dope on all threaded plastic-to-steel connections and use only light wrench pressure. All plastic-to-steel connections shall be made with plastic male adapters. Provide each assembly with its own outlet from the irrigation main (no multiple assemblies).

### 3.06 INSTALLATION OF EQUIPMENT

- A. Quick Coupling Valves: Quick coupling valves shall be set approximately 12 inches from walks, curbs, headerboards or paved areas where applicable per detail drawings.
- B. Remote Control Valves
  1. Install where shown on drawings and group together where practical. Limit one remote control valve per box. No exceptions!
  2. Locate valve boxes 12" from and perpendicular to walks, curbs, edges, headerboards, buildings and walls, or paved areas where applicable per detail drawings.
  3. Provide 12" between valve boxes where valves are grouped together.

4. Set boxes 2" above finished grade in groundcover area, or flush if located in hardscape surfacing.
  5. Thoroughly flush main line before installing valves.
  6. Install in shrub or groundcover areas where possible.
  7. Label control line wire at each valve with a 2 1/4" x 2 3/4" polyurethane i.d. tag, indicating identification number of valve (controller and station number). Attach label to control wire.
  8. Remote control valves shall be adjusted so that the most remote sprinkler heads operate at the pressure recommended by the head manufacturer. Remote control valves shall be adjusted so a uniform distribution of water is applied by the sprinkler heads to the planting areas for each individual valve system.
- C. Sprinkler heads and bubblers:
1. All sprinkler heads shall be set perpendicular to finish grade of the area to be irrigated unless otherwise designated on the plans.
  2. In lawn areas, all sprinkler heads shall be offset a minimum of 3 inches and a maximum of 6 inches from the edge of adjacent hardscape.
  3. Flush and adjust irrigation outlets, bubblers and nozzles for optimum performance and to prevent overspray onto field, walks, roadways, and/or buildings as much as possible. This shall include selecting the best degree of arc and radius to fit the existing site conditions and throttle the flow control at each valve to obtain the optimum operating pressure for each control zone.
- D. Bubblers: Flush and adjust irrigation outlets, bubblers, and nozzles for optimum performance and to prevent overspray onto field, walks, roadways, and/or buildings as much as possible. This shall include selecting the best throttle of the flow control at each valve to obtain the optimum operating pressure for each control zone.
- E. Wire Splices:
1. Follow the manufacturer's instructions regarding the use of wire splices and Scotchcast epoxy packs.

### 3.07 IRRIGATION CONTROL WIRES (TWO WIRE CABLE)

- A. Run lines along mains wherever practical.
- B. Loop a minimum of two (2) feet of extra wire in each valve box.
- C. Connections shall be made by crimping bare wires with brass connectors and sealing with watertight resin sealer packs per manufacturer specifications.
- D. Splicing will be permitted only at valve/decoder connections and at main line tee branches. Do not splice in wire pull boxes. Locate all splices within valve boxes or in a two wire splice box.

### 3.08 DECODERS

- A. Installed per detail shown on plans and per instructions from the manufacturer.
- B. 2-station decoder operates up to 2 solenoids using uniquely colored wires for each station.
- C. 2-wire decoder use a #14 AWG direct burial wire to connect to remote control valves, and the maximum wire run between the decoder and the valves is 100 feet.
- D. For this project, wires shall be run in conduit to the various valves and decoders
- E. Use 3M Scotchcast #3570G-N epoxy packs for al wire splices

- F. Grounding Rods shall be installed every 300 feet at a decoder, and at the last decoder along the wire path and shall be 5/8" x 8' copper grounding rod with a #12 AWG wire from the green wire on the decoder to a ground clamp on the grounding rod in the same box as the valve and the decoder.

3.09 FIELD QUALITY CONTROL

A. General

1. Furnish all necessary testing equipment and personnel.
2. Correct all leaks and retest until acceptance by the City.

- B. Closing uninspected work: Do not allow or cause any of the work of this section to be covered up or enclosed until it has been inspected, tested and approved by the City and other authorized agencies.

- C. Flushing: Before backfilling the main line, and with all control valves in place but before lateral pipes are connected, completely flush and test the main line and repair all leaks. Flush out each section of lateral pipe before sprinkler heads are attached.

D. Testing

1. Perform test as specified below. Remake any faulty joints with all new materials. Use of cement or caulking to seal leaks is absolutely prohibited.
2. The Contractor shall notify Project Inspector and Project Landscape Architect at least three (3) days in advance of testing.
3. The Contractor shall perform testing at his own expense.
4. Thoroughly bleed the line of air and debris.
5. Before testing, fill the line with water for a period of least 24 hours.
6. Center load piping with small amount of backfill to prevent arching or slipping under pressure. No fitting shall be covered by backfill during test.
7. Apply the following tests after welded plastic pipe joints have cured at least 24 hours.
  - a. Solvent Weld Mainline: Test live (constant pressure) and QCV lines hydrostatically at 125 PSI minimum. Lines will be approved if test pressure is maintained for four (4) hours. The lines shall be restored to the original test pressure and the amount of water required to do so shall be measured. Approved tables of allowable loss will be consulted, and the line will be approved or not approved as such results may indicate. The Contractor shall make tests and repairs as necessary until test conditions are met.
  - b. Test RCV controlled lateral lines with water at line pressure and visually inspect for leaks. Retest after correcting defects.

E. Final Inspection

1. Thoroughly clean, adjust and balance all systems.
2. Demonstrate the entire system to the City and/or, if required, authorized agent and other governing agencies providing that all remote control valves are properly balanced, that all heads are properly adjusted for radius and arc of coverage, and that the installed system is workable, clean and sufficient.
3. Work beyond this point (Irrigation) may not proceed until said final inspection is completed.

3.10 GUARANTEE

- A. It shall be the responsibility of the Contractor to fill and repair all depressions and replace all necessary lawn and planting due to the settlement of irrigation trenches for one year following completion and acceptance of the job.
- B. The Contractor shall also guarantee all materials, equipment and workmanship furnished by him to be free of all defects of workmanship and materials, and shall agree to replace at his expense, at any time within one year after installation is accepted, any and all defective parts that may be found.

3.11 CLEAN-UP

- A. When work of this section has been completed and at such other times as may be directed, remove all trash, debris, surplus materials and equipment from site.

3.12 MEASUREMENT AND PAYMENT

- A. The linear foot price paid for **"1-1/2" Mainline** and **"2" Mainline**, shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals and for doing all the work involved, including trenching and backfill, complete in place as shown on the plans, as required by these Special Provisions, and as directed by the City Engineer or his designee.
- B. The linear foot unit price final pay quantity of **"Lateral Line (F)"** shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals and for doing all the work involved, including "Trenching and Backfilling", complete in place as shown on the plans, as required by these Special Provisions, and as directed by the City Engineer or his designee. Quantities of grading will not be measured. The quantities shown on the Engineer's Estimate for "Lateral Pipe," shall be the final pay quantity for which payment is made as specified in Section 8.2 and 8.8, "Final Payment" of the General Conditions and no additional payment shall be made therefor.
- C. The contract unit price paid for **"Pop-Up Sprinklers"**, **"Pop-Up Rotors"**, **"Tree Bubblers"** and **"Shrub Bubblers"**, of the unit price schedule shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, for doing all the work covered in this section, including testing for a complete and functioning system, complete in place as shown on the plans, as required by these Special Provisions, and as directed by the Project Landscape Architect.
- D. The linear foot price paid for **"Sleeves"**, shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals and for doing all the work involved, including trenching and backfill, complete in place as shown on the plans, as required by these Special Provisions, and as directed by the City Engineer or his designee.
- E. The contract unit price paid for **"Gate Valve"**, **"Remote Control Valve"** and **"Quick Coupling Valve"** of the unit price schedule shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, for doing all the work covered in this section, including box and wire, testing for a complete and functioning system, complete in place as shown on the plans, as required by these Special Provisions, and as directed by the Project Landscape Architect.
- F. The linear foot price paid for **"#14-2 Wire Cable in 1-1/4" Conduit with Pull Box"**, shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals and for doing all the work involved, including trenching and backfill, conduit, wiring, pull box, connections, and testing for a complete and functioning system, complete in place as shown on the plans, as required by these Special Provisions, and as directed by the City Engineer or his designee. Conduit shall be measured from pull box to pull box.

- G. The contract unit price paid for **“Decoder”** of the unit price schedule shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, including all cable wire connections, excavation and backfill, grounding rod at all decoder locations, 3M Scotchcast epoxy, and testing, for a complete and functioning system, for doing all the work covered in this section, complete in place as shown on the plans, as required by these Special Provisions, and as directed by the Project Landscape Architect.
- H. Grounding Rods shall be considered as included in the price paid for decoders and the irrigation controller and no additional compensation will be allowed therefor.

**END OF SECTION**

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## SECTION 32 90 00 PLANTING

### PART 1 GENERAL

#### 1.01 DESCRIPTION OF WORK AND RELATED DOCUMENTS

- A. These special provisions are part of the plans and shall include all labor, materials, equipment necessary, reasonable incidental, and services necessary for completion of landscape planting as shown on the drawings and specified herein.
- B. Refer to all other sections, determine the extent and character of related work, and coordinate all work to produce a complete, properly constructed product.
- C. This section is complete in its entirety and is not supplemental to the standard specifications for Caltrans except where specifically noted.

#### 1.02 RELATED SECTIONS

- A. Section 01 56 00 "Protection of Existing Facilities"
- B. Section 01 56 39 "Tree Protection"
- C. Section 32 84 00 "Irrigation"
- D. Section 32 91 13 "Soil Preparation and Soil Amendment"
- E. Section 32 92 23 "Sod"

#### 1.03 ENVIRONMENTAL REQUIREMENTS AND SOILS

- A. No planting area, earthwork, planting, sodding, or seeding shall occur during weather conditions that will adversely affect materials or when soil is in a muddy condition. Contractor shall not plant at the end of the day, on Fridays, or before holidays unless a special crew has been assigned to care for plants on next Day and on weekends and holidays. Soil used within landscaped areas shall be in a friable condition at time of displacement including during transportation, placement, cultivation, and planting.
- B. Friable refers to the structure and moisture content of soil. Friable soil shall be understood to mean soil that crumbles easily in the hand, does not stick to the hand, and does not form a ball when squeezed. Friable soil is not wet or muddy but is moist and damp. Obtain the Project Inspector or Project Landscape Architect's determination of soil condition acceptability prior to installation and working of soils.
- C. Soils in landscape areas that are worked when not friable shall be removed at the Contractor's expense and replaced with friable imported topsoil complying with the specifications for topsoil herein.

#### 1.04 DEFINITIONS

- A. Backfill: The earth used to replace earth in an excavation.
- B. Balled and Burlapped Stock: ANSI Z60.1. Plants dug with firm, natural balls of earth in which they were grown, with ball size not less than // sizes indicated // diameter and depth recommended by ANSI Z60.1 for type and size of plant required //; wrapped with burlap, tied, rigidly supported, and drum laced with twine with the root flare visible at the surface of the ball.
- C. Balled and Potted Stock: ANSI Z60.1. Plants dug with firm, natural balls of earth in which they are grown and placed, unbroken, in a container. Ball size is not less than // sizes indicated // diameter and depth recommended by ANSI Z60.1 for type and size of plant required //.

- D. Bare-Root Stock: Plants with a well-branched, fibrous-root system developed by transplanting or root pruning, with soil or growing medium removed, and with not less than minimum root spread according to ANSI Z60.1 for type and size of plant required.
- E. Caliper: In the landscape or nursery trade, this is the diameter of a tree, measured at a point 6 inches above the ground line. If the resulting measurement is more than 4 inches, the measurement is made at a point 12 inches above the ground line. This in contrast to the method used to measure caliper in the timber industry, which is to make the measurement at a point 4½ feet above the ground line, or the "diameter breast height" (DBH).
- F. Central Leader: A continuation of the main trunk located more or less in the center of the crown, beginning at the lowest main branch (scaffold) and extending to the top of the tree. Also referred to as the dominant leader.
- G. Circling Roots: One or more roots whose diameter is greater than 10% of the trunk caliper circling more than one-third of the trunk.
- H. Clear trunk: The portion of the trunk below the crown lacking lateral branches; this includes the portion of the trunk with shortened temporary branches that are below the main crown.
- I. Co-dominant: Two or more vigorous, upright branches or stems of relatively equal size that originate from a common point, usually where the leader was lost or removed.
- J. Container-Grown Stock: Healthy, vigorous, well-rooted plants grown in a container, with a well-established root system reaching sides of container and maintaining a firm ball when removed from container. Container shall be rigid enough to hold ball shape and protect root mass during shipping and be sized according to ANSI Z60.1 for type and size of plant required.
- K. Container Size Specifications: All container-grown nursery stock specifications based on the American Standards for Nursery Stock (the "Standard" must include both plant size and container class
- L. Crown: the portion of a tree beginning at the lowest main (scaffold) branch extending to the top of the tree.
- M. Cultivar: A named plant selection from which identical or nearly identical plants can be produced, usually by vegetative propagation or cloning.
- N. Fabric Bag-Grown Stock: Healthy, vigorous, well-rooted plants established and grown in-ground in a porous fabric bag with well-established root system reaching sides of fabric bag. Fabric bag size is not less than diameter, depth, and volume required by ANSI Z60.1 for type and size of plant.
- O. Finish Grade: Elevation of finished surface of planting soil.
- P. Included bark: Bark embedded in the union between a branch and the trunk or between two or more stems that prevents the formation of a normal branch bark ridge.
- Q. Kinked Root: A main mother root that is sharply bent.
- R. Leader: The dominant stem that usually develops into the main trunk.
- S. Manufactured Topsoil: Soil produced off-site by homogeneously blending mineral soils or sand with stabilized organic soil amendments to produce topsoil or planting soil.
- T. Pesticide: A substance or mixture intended for preventing, destroying, repelling, or mitigating a pest. This includes insecticides, miticides, herbicides, fungicides, rodenticides, and molluscicides. It also includes substances or mixtures intended for use as a plant regulator, defoliant, or desiccant.
- U. Photosynthate: Sugar and other carbohydrates that are produced by the foliage and stems during photosynthesis.

- V. Planting Soil/Topsoil: Standardized topsoil; existing, native surface topsoil; existing, in-place surface soil; imported topsoil; or manufactured topsoil that is modified with soil amendments and conditioners, and, perhaps fertilizers to produce a soil mixture best for plant growth.
- W. Plant Material: These terms refer to vegetation in general, including trees, shrubs, vines, ground covers, turf and grasses, ornamental grasses, bulbs, corms, tubers, or herbaceous vegetation.
- X. Root Flare/Root Collar: Also called "trunk flare." The area at the base of the plant's stem or trunk where the stem or trunk broadens to form roots; the area of transition between the root system and the stem or trunk.
- Y. Scaffold branches: Large main branches that form the main structure of the crown.
- Z. Stem-girdling root: A circling, bent, or straight root that touches or rests on the trunk or root flare that can become a permanent root.
- AA. Subgrade: Surface or elevation of subsoil remaining after excavation is complete, or the top surface of a fill or backfill before planting soil is placed.
- BB. Subsoil: All soil beneath the topsoil layer of the soil profile, and typified by the lack of organic matter and soil organisms.
- CC. Temporary Branch: A small branch that is temporarily retained along the lower trunk of young trees.
- DD. Trunk: The main stem of a tree, beginning at the root collar and ending at the lowest main scaffold branch
- EE. Taper: the thickening of a trunk or branch toward its base.

#### 1.05 SUBMITTALS

- A. General:
  - 1. Refer to Section 01 30 00, "Submittals", for submittal requirements and procedures.
  - 2. Refer to Section 32 91 13 "Soil Preparation and Soil Amendment", including but not limited to fertilizers, compost and soil amendments.
- B. Materials data: Submit complete materials list of plants, and non-proprietary items to be provided under this Section, including source, size, and quantity.
- C. Product data: Submit manufacturer's specifications, installation instructions, data sheets, and catalog cuts for all materials different from those specified. Submit (3) three manufacturer's catalog cuts for all specified materials listed herein. Requests for substitutions shall comply with Section 01 30 00.
- D. Submit the following items, and other items as may be required by the City Project Landscape Architect, and obtain written approval prior to delivery of materials to the site. Finished work shall match approved samples.
  - 1. Materials for tree staking. Include one each of tree ties and a 12" length section of the tree staking material.
  - 2. Plant ordering certificates: Show quantities, sizes (caliper and head, and container), and source.
- E. Roses
  - 1. Within **20** days after the **Notice to Proceed**, provide source nursery and images of roses for review and approval by The City Urban Forester and Project Landscape Architect.
- F. Bark Mulch: Specification sheet and 1/2 pound sample of mulch.

- G. Pea gravel: ½ pound sample
- H. Provide source and location of all boulder material.
- I. Certification
1. Furnish the Project Landscape Architect with:
    - a. Duplicate, legible copies of certificates and/or invoices for all plants, and other materials, stating the grade, weight or quantity, source, and date of delivery.
    - b. Submit certification of grass species and location of sod source.
- J. Plant Sources: Submit name and address of proposed suppliers of plant materials to City within 28 days of Notice to Proceed. List plants to be obtained from each source. For any plant found to be unattainable, show suggested substitute species or size, with source. Obtain City's acceptance of sources and/or substitutions prior to purchase.
1. Ordering of Plants: Submit documentation, within 20 days following acceptance of nursery sources, that plant material has been ordered. Indicate size of plant, container size and quantity of each on order form. Instruct nursery to label each plant with botanical name.
  2. Plant Substitutions: Comply with the Contract Document planting plans and plant sizes and selections. Plant substitutions will not be permitted unless the Contractor furnishes the City Project Inspector or Project Landscape Architect with written evidence from no less than three nurseries that the plants specified are not obtainable. Such evidence shall be submitted within 28 Days after the effective date of the Notice to Proceed.
  3. A minimum of 1 month prior to the delivery of plants, e-mail The City Project Inspector or Project Landscape Architect for review photographs of trees and shrubs. Note exception of Specimen Tree, see below. Photos shall be labeled with the botanical name, including species and cultivar of the plants. Photos of trees shall be representative of trees to be delivered and clearly showing the overall branching structure. Include a person in the photos for scale. The City Project Inspector or Project Landscape Architect reserves the right to reject plant materials prior to delivery on the basis of the photos. Plants, which are rejected, shall be replaced with acceptable plants. Review of photos does not constitute pre-acceptance of plants delivered to the Jobsite.
- K. Pesticide and Herbicide Chemical Use Program and Toxicity Data: Submit a California-licensed Pest Control Advisor's (CAPCA) pesticide and herbicide use program which shall be an Integrated Pest Management Program (IPM) with Pesticide Hazard and Exposure Reduction Zones in the Landscape (PHAER) and include the following information:
1. Company name, address, phone number, emergency 24/7 phone number, licensed Pest Control Advisor's name and license number.
  2. Proposed chemicals and control measures for anticipated maintenance requirements.
    - a. Cultural controls
    - b. Physical controls (barriers, traps, removal, etc.)
    - c. Biological controls
    - d. Chemical controls
  3. Manufacturer's literature, toxicity levels and Material Safety Data Sheets (MSDS) for all proposed chemical controls and compatibility with plant materials.
  4. Proposed application methods of the controls, application time periods and chemical drift controls.
  5. Protective measures including warning signs, etc.

6. Proposed PHAER zoning for the entire Jobsite. Each of the PHAER zones shall include a list of proposed controls to be used including specific chemicals.
7. Monitoring and follow up procedures.
8. An IPM monitoring program which shall include the following:
  - a. Threshold Levels for Chemical Use
  - b. IPM Report Log
  - c. Management Action and Follow Up Log
  - d. Chemical Use Log
  - e. Chemical Treatment Area Notification

1.06 QUALITY CONTROL AND QUALITY ASSURANCE

- A. Perform all work to the highest standard of quality. All work is subject to the acceptance of the City Project Inspector or Project Landscape Architect. Work that is deemed unacceptable or defective by the City Project Inspector or Project Landscape Architect shall be removed by the Contractor immediately and replaced with work that is acceptable to the City Project Inspector or Project Landscape Architect.
- B. All plant materials shall meet American Association of Nurserymen standards, and shall be first grade quality, and in prime condition when installed and accepted. Plant materials will be inspected and approved for planting at the Jobsite by the City Project Landscape Architect (for all plants) through notification by the Contractor 72 hours prior to planting. Plants will also be re-inspected after planting prior to and after the pre-maintenance inspection for acceptance.
- C. Tree Roots
  1. Root ball should be moist throughout at the time of inspections and delivery. The roots should show no signs of excess moisture as indicated by poor root growth, root discoloration, distortion, death or foul odor. The crown should show no signs of moisture stress as indicated by wilted, shriveled, or dead leaves or branch die back.
- D. Root Flare Inspection: This may occur at the nursery, on site upon delivery, or both
  1. Soil will be excavated to expose the root flare and structural roots. Root flare shall be located no lower than the top 1 inch of soil. The exception that the root flare can be within the top 4 inches of soil in soil that is non-compacted and does not contain matted fibrous roots above the root flare.
  2. The root flare and the inside portion of the root ball should be free of defects, including circling, kinked, and stem girdling roots. Remove soils as needed near the root collar to inspect for root defects.
  3. Appropriate Trunk Caliper diameter will be measured at 6 inches above the root flare.
  4. 5 gal = 3/8" - 3/4 inch
  5. 15 gal = 5/8" - 1 inch
  6. Structural roots – Woody roots that are sized between 20-40% of the diameter of the trunk just above the root flare
    - a. Tree will have at least 3 structural roots radially distributed around the base of the trunk
    - b. The structural roots must grow more or less straight toward the edge of the container without circling or deflecting at the containers edge.

- E. Root Ball Inspection: This may occur at the nursery, on site upon delivery, or both. The tree will be removed from the container to have the roots inspected.
1. Root ball should have been inspected by the nursery at each shift to a larger container
  2. Fibrous Roots: When removing the container the root ball should remain mostly intact. Root distribution should be uniform throughout the container substrate.
  3. Sidewalk and Bottom: The root ball periphery should be free of woody circling descending, ascending, and matted roots. Bottom-mated roots may be removed prior to planting if that is the only defect found.
  4. Roots on the periphery and bottom of the root ball shall be less than ¼ inch in diameter (1/8 inch is preferred). The maximum acceptable root diameter on the periphery should be indicated.
- F. Unacceptable Root Ball Defects:
1. Broken, dead or decaying roots that cannot be easily corrected.
  2. Kinked roots: Woody roots that have a 180 degree bend.
  3. Stem girding roots: Woody roots that have circled and fused to the main stem or another woody root.
- G. Additional Requirements for 24 Inch Box Trees:
1. There will be no visible signs of circling root reflecting previous container sizes (15 gal or smaller).
  2. When the tree trunk is rocked back and forth, the soil media does not break at the 15 gallon container zone and or move independently.
  3. When the tree is pulled, it bends more or less equally along the length of the trunk. It does not hinge at the base.
  4. Tree should be well rooted in the soil media (substrate). Roots should be uniformly distributed throughout the container media. Structure and growth should be appropriate for the species/cultivar. When container is removed, the root ball should remain intact. When the trunk is lifted, both the trunk and root system should move as one.
- H. Deliver commercially processed or packaged materials to the Jobsite in the original unopened containers bearing the manufacturer's guaranteed analysis.
- I. Installer's Qualifications: Installer shall be a specialist in installing and planting landscape products, with a minimum of 10 years documented experience in successfully completing public works landscape projects of comparable size, scope, and quality. Submit references and project documents of a minimum of five large scale public works projects of similar size and scope for review and approval by the City Project Inspector or Project Landscape Architect. Contractor's documentation with references of prior work shall require approval by the Project Inspector or Project Landscape Architect.
- J. Installer's Field Supervision: Provide the services of at least one English-speaking, full time, qualified supervisor who shall be present at all times during execution of the work of these project plans and specifications. The supervisor shall direct the work, shall be thoroughly familiar with the types of materials being installed and the proper methods for their installation. This person shall be identified during the Pre-Construction Conference, with appropriate contact information provided, as necessary. The same supervisor shall be utilized throughout the Project, unless a substitution is submitted to and approved in writing by the City Project Inspector.
- K. Inspection Observation:

1. It is required that the work specified herein be observed by the Project Inspector. The Contractor shall request observance at least 24 hours in advance of the time such observance is required. Observance is required on the following portions of the work:
  - a. During rough grading and soil preparation
  - b. During installation of vegetated swale underdrains and placement of treatment topsoil for vegetated swales and tree well filters
  - c. When finish grading has been completed, and before installation of plants;
  - d. When plants and other materials are delivered and are inspected for conformance with Construction Specifications. Refer herein to "Inspections".
  - e. When shrub and tree locations are staked for planting and before planting holes are excavated;
  - f. During plant installation;
  - g. During delivery, handling, excavation for and installation of palm trees, and
  - h. When planting and other work has been completed.
- L. The Contractor shall require the supervisor of the landscape planting work to be on the site at the time of each such observance.
- M. Requests for plant substitutions due to availability problems shall be submitted in writing within 28 Days after effective Notice to Proceed date, along with written evidence from no less than three nurseries that the plants specified are not obtainable. Plant change requests submitted after that period will not be accepted.
- N. Testing laboratory: Recognized laboratory for soil and plant disease analysis for ornamental horticulture, approved by Architect.
- O. Acceptable laboratory: Waypoint Analytical, 1101 S. Winchester Blvd, G-173, San Jose, CA 95128 (408) 727-0330.
- P. Tree Compliance: All trees shall comply with federal and state laws and regulations requiring inspection for plant disease, pests, and weeds. Inspection certificates required by law shall accompany each shipment of plants. Clearance from the local county agricultural commissioner, if required, shall be obtained before planting trees originating outside the county in which they are to be planted. Even though trees may conform to county, state and federal laws, the buyer may impose additional requirements.
- Q. Tree Inspection: The City reserves the right to reject trees that do not meet specification as set forth in these specification, the Guideline Specifications for Nursery Tree Quality, or as adopted by the City. If a particular defect or substandard element can be corrected easily, appropriate remedies shall be applied. If destructive inspection of the root ball is to be done, the City and the nursery, or Contractor, shall have a prior agreement as to the time and place of inspection, number of trees to be inspected and the financial responsibility for the inspected trees.
- R. Tree Quality/Tree Health:
  1. Crown: The form and density of the crown shall be typical for a young specimen of the species or cultivar. Changes in form caused by wind, pruning practices, pests or other factors shall not substantially alter the form of the species or cultivar.
  2. Leaves: The size, color, and appearance of the leaves shall be typical for the time of year and stage of growth of species or cultivar. Trees shall not show signs of prolonged moisture stress as indicated by wilted, shriveled or dead leaves.

3. Branches: Shoot growth (length and diameter) throughout the crown should be appropriate for the age and size of the species or cultivar. Trees shall not have dead, diseased, broken, distorted or otherwise injured branches.
4. Trunk: The tree trunk shall be relatively straight, vertical, and free of wounds sunburned areas, conks, wood cracks, bleeding areas, signs of boring insects, cankers, or lesions. Properly made recent pruning cuts are acceptable. Trunk caliper and taper should be sufficient so the tree remains vertical without a stake.
5. Roots: The root system shall be substantially free of injury from biotic and abiotic agents. Root distribution shall be uniform throughout the container substrate, and growth shall be appropriate for the species or cultivar. At time of inspection and delivery, the root ball shall be moist throughout. Roots shall not show signs of excess moisture conditions as indicated by stunted, discolored, distorted or dead roots.

S. Tree Crown:

1. Trees shall have a single, relatively straight central leader. Trees shall be free of co-dominant stems and vigorous upright branches that compete with the central leader. If the original leader has been headed, a new leader at least one-half of the diameter of the original leader shall be present.
2. Main branches shall be well distributed along the central leader and not clustered together. They shall form a balanced crown appropriate for the species or cultivar.
3. The diameter of branches that grow from the central leader shall be no larger than two-thirds (one-half is preferred) the diameter of the trunk measured one inch above the branch.
4. The largest branches shall be free of included bark.
5. Temporary branches should be present along the lower trunk below the lowest main (scaffold) branch, particularly for trees less than one inch in caliper. These branches should be no larger than 3/8 inch in diameter. Clear trunk should be no more than 40% of the total height of the tree.

T. Tree trunk

1. The tree trunk shall be relatively straight, vertical, and free of wounds sunburned areas, conks, wood cracks, bleeding areas, signs of boring insects, cankers, or lesions. Properly made recent pruning cuts are acceptable. Trunk caliper and taper should be sufficient, so the tree remains vertical without a stake.
2. Trunk caliper and taper shall be sufficient so that the tree will remain vertical without a stake.
3. Caliper measurement of the trunk shall be taken six inches above the ground up to, and including four inch caliper size trees. If the caliper at 6 inches above the ground exceeds four inches, the caliper should be measured at 12 inches above the ground
4. Trunk caliper at 6 inches above the soil media (substrate) surface shall be within the caliper range shown for each container size below (Type 1 shade tree, ANSI Z60.1-2004):

Container size	Caliper range	Ave. Ht. (Typ)	Max Ht.
24 inch box	1.5" to 2.5"	12ft. to 14ft.	14ft. to 16ft.
72 inch box	Min. 4"	18ft. and up	22ft. to 26ft.

- U. Deliver commercially processed or packaged materials to the Jobsite in the original unopened containers bearing the manufacturer's guaranteed analysis.

V. Soils Analysis Checklist

1. Submit a soil analysis report from a California-licensed soil testing laboratory and written guarantee that imported topsoil delivered to the jobsite will be the same that was tested by the laboratory and approved by the City.
2. Obtain an "A05-1 and A06-2" soils report and germination (bioassay) test, noxious weed seed test and soil percolation test on all proposed imported topsoil and provide an "A09" test on organic leaf compost amendments from laboratory. Topsoil shall be amended in accordance with the results of the imported topsoil tests
3. A "Complete Landscape Suitability Test" report and germination (bio-assay) test, noxious weed seed test and soil percolation test on all proposed imported topsoils and tests on organic leaf compost amendments from FGL Environmental in Santa Paula, or equal. Topsoil shall be amended in accordance with the results of the imported topsoil tests
4. Send samples of the imported topsoil and organic leaf compost amendments to the approved soil laboratory
5. Identify the origin of the topsoil
6. Refer to "Submittals" elsewhere in this section.

1.07 REFERENCES, REQUIREMENTS AND APPLICABLE PUBLICATIONS

A. Publications: The publications listed below, form a part of this specification to the extent referenced. The publications are referenced in the text by basic designation only.

1. American National Standards Institute (ANSI): Z60.1-04 Nursery Stock
2. American Standard for Nursery Stock, Z60.1-2004, Approved May 12, 2004.
3. Association of Official Seed Analysts (AOSA): Rules for Testing Seed.
4. Guideline Specifications for Nursery Tree Quality, published by the Urban Tree Foundation, 2002. Latest revision, 2009. <http://www.urbantree.org/specs.asp>
5. Hortus Third: A Concise Dictionary of Plants Cultivated in the United States and Canada
6. TPI (SPEC) Guideline Specifications to Turfgrass Sodding: Turfgrass Producers International; 2006
7. United States Department of Agriculture (USDA): Handbook No. 60 Diagnosis and Improvement of Saline and Alkali Soils; Federal Seed Act Regulations.
8. Nomenclature: "Western Garden Book," 1988 edition or later; Sunset Publishing Co., Menlo Park, CA.
9. Plant material standards: "American Standard for Nursery Stock," 1990 edition; American Association of Nurserymen.
10. Staking and guying procedures: "Staking Landscape Trees," University of California Extension, Publication #2576.
11. Pruning procedures: "Tree Pruning Guidelines," 1995 edition; International Society of Arboriculture, Savoy, IL.
12. Tree Quality Cue Card, Urban Tree Foundation, 2010
13. Tree Training Cue Card, Urban Tree Foundation, 2010.
14. Root Management Cue Card, Urban Tree Foundation, 2010.

B. American Society For Testing And Materials (ASTM):

- B221-08 Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes
- C33/C33M-11 Concrete Aggregates
- C136-06 Sieve Analysis of Fine and Coarse Aggregates

C516-08	Vermiculite Loose Fill Thermal Insulation
C549-06	Perlite Loose Fill Insulation
C602-07	Agricultural Liming Materials
D977-05	Emulsified Asphalt (ASTHO M140)
D5268-07	Topsoil Used for Landscaping Purposes

1.08 PRESERVATION OF PROPERTY

- A. Existing Conditions: Exercise caution against injury to, or defacement of, existing conditions. At Contractor's expense, repair or replace items damaged from installation operations.
- B. Protect existing on- and off-site improvements, utilities, and plants from damage. No vehicles shall be allowed to pass over curbs, sidewalk, and planting areas unless proper protection is provided. Damage resulting from Contractor's operations shall be repaired or replaced at the Contractor's expense and to the Project Inspectors satisfaction.
- C. Refer to Section 02 41 13 "Site Demolition" for temporary tree protection for existing trees to remain.
- D. Upon written acceptance by the City Project Inspector or Project Landscape Architect, remove and adjust tree protection fencing as required in order to install Contract planting and irrigation, at no additional cost to the City. Do not rototill or mechanically trench or excavate within drip line of existing trees to remain within or adjacent to the Jobsite. Do not cut or damage tree roots. Do not disturb existing soils and grades around trees to remain. Do not backfill soil over tree roots within the trees' driplines. Use hand tools and extreme care for all work required within driplines of existing trees. In addition to protection, the Contractor is responsible for ensuring trees receive proper watering and maintenance in accordance with horticultural standards.
- E. Existing trees and shrubs to remain, which are damaged or killed as a result of the Contractor's work, shall have value assessed for replacement at the Contractor's expense and to the satisfaction of the City Project Inspector or Project Landscape Architect. The value of damaged trees and shrubs will be determined by the City Urban Forester or City Senior Landscape Architect and Contract Arborist based on the "Guide for Plant Appraisal", current edition, published by the International Society of Arboriculture.
- F. Sizes of replacement tree or plants will be determined by the City Urban Forester or City Senior Landscape Architect based on the plant appraisal. Replacement of ornamental plantings shall conform to the requirements of this section and Section 01 56 39 "Tree Protection".
- G. Submit a replacement plant list with proposed sizes and planting plan to the City Project Inspector or Project Landscape Architect for review. Replacement plants species and proposed locations shall be reviewed by a horticulturalist to insure suitability. Typically replacement plants shall match the existing plants being replaced. However, the City Project Inspector or Project Landscape Architect will make the final determination on plant species, sizes and locations. Replacement ornamental planting shall conform to the requirements herein. Replacement plants within City of Fremont property and private properties shall comply with City standards and requirements.
- H. During planting and irrigation work, and by written direction of the City Project Inspector or Project Landscape Architect, temporary tree protection fencing shall be removed and disposed of by the Contractor.

1.09 INSPECTIONS

- A. Refer to "Quality Control and Quality Assurance" found herein this section.
- B. Right of inspection for approval or rejection by the City Project Inspector or Project Landscape Architect, is reserved at the place of growth and/or on the Project site at any time

upon delivery or during the work. Plants shall be inspected for size, variety, condition, defects or injury.

- C. All plant materials requiring inspection by the City shall be assembled and available for inspection on the site.
- D. If the City Project Landscape Architect is required to make additional inspections at the place of growth due to failure of the Contractor to assemble the required plant materials or rejection of plant materials, the City Project Landscape Architect's time and expense shall be reimbursed by the Contractor.
- E. Contractor shall notify the City Project Inspector or Project Landscape Architect in writing a minimum of 5 Working Days in advance of inspections.

#### 1.10 PRODUCT DELIVERY, STORAGE AND HANDLING

- A. General: Refer to Contract Specifications Section 01 60 00 "Product Requirements" for requirements.
- B. Notify the City Project Inspector of the delivery schedule in advance of delivery of plants materials and submit a itemized list of the plants in each delivery, so the plant material may be inspected upon arrival at the job site. Remove unacceptable plant and landscape materials from the job site immediately.
- C. Deliver packaged materials in original, unopened containers showing weight, certified analysis, name and address of manufacturer, and indication of conformance with state and federal laws, as applicable. Keep seed and other packaged materials in dry storage away from contaminants.
- D. Deliver plant materials to the Jobsite no earlier than 3 Days prior to planting.
- E. Labels: Plants shall be labeled prior to delivery to site, with correct botanical names, using durable, legible labels. Plants not labeled by nursery of origin shall not be accepted. Keep plants of different species and varieties separated at site.
- F. Protection: Protect plant material during delivery to prevent damage to root ball or desiccation of leaves. Protect bark, branches, and root systems from sun scald, drying, wind burn, sweating, whipping, and other handling and tying damage. Plants shall be handled and stored so that they are protected from drying out, wind burn, or other injury. Any plant damaged by improper handling or neglect may be rejected whether in the ground or not. All plants shall be handled solely by their containers. The Contractor's on-site plant storage area shall be subject to approval by the City Project Inspector or Landscape Architect.
- G. Do not prune trees and shrubs before delivery. Do not bend or bind-tie trees or shrubs in such a manner as to destroy their natural shape. Do not drop plants during delivery and handling.
- H. Transport plants in enclosed trucks. If trees are too large for enclosed trucks and are transported in open trucks, trees shall be wrapped to prevent damage and windburn. Adequate protection shall be placed between trees so that trunks are not scarred in transport and branches are not broken. Tree trunks shall be wrapped with protective covering prior to handling and loading. Covering shall be removed at the time of plant materials inspection at the Jobsite.
- I. Quantities: Plant materials shall be delivered in quantities required to complete work as indicated on the Drawings and shall be of species, kinds, sizes, etc., specified.
- J. Inspection: Refer to "Inspection" found herein.
- K. Handling: Exercise care in handling, loading, unloading, and storing of plant materials. Handle planting stock by root ball. Take all necessary precautions to ensure that the plants will arrive at the Jobsite of work in proper condition for successful growth. Do not deliver

plants to the Jobsite earlier than 3 Working Days prior to installation. Damaged plant materials shall be discarded and replaced with undamaged materials. The City Project Inspector or Project Landscape Architect's decision regarding rejection of damaged plants shall be final.

- L. Storage: Protect plant materials from wind, excessive sun, and drying out. The Contractor shall provide the horticulturally correct amount of water to plants at all times prior to and after planting. Plants, which have been improperly watered or maintained, have become desiccated, or have rootballs that have dried out shall be rejected and replaced with new acceptable plant materials at the Contractor's expense and to the satisfaction of the City Project Inspector or Project Landscape Architect, no exceptions.
- M. Herbicides and pesticides shall not be stored with any other landscape material.
- N. Materials for Planting Operations: Manufactured materials shall be delivered in original containers with brand and maker's name marked thereon. Materials in broken containers or showing evidence of damage will be rejected and must be immediately removed from the site. Odorous materials shall not be brought to the site until they are to be used.
- O. The use of equipment such as "tree spades" is permitted provided the plant balls are sized in accordance with ANSI Z60.1 and tops are protected from damage.
- P. All pesticides and herbicides shall be properly labeled and registered with the U.S. Department of Agriculture. Deliver materials in original, unopened containers showing, certified analysis, name and address of manufacturer, product label, manufacturer's application instructions specific to the project and indication of conformance with state and federal laws, as applicable.

## **PART 2 PRODUCTS**

### **2.01 GENERAL**

All products shall be in conformance with the specifications listed below. Any changes to products to be used shall be approved, in writing, by the Project Landscape Architect prior to job site delivery.

### **2.02 PLANT MATERIALS**

- A. All trees shall be Type 1 shade trees as defined by ANSI Z60.1-2004, and shall meet the trunk caliper requirements as noted in Part 1.06 herein.
- B. Nomenclature: Plant names specified on the drawings shall conform with those in The Sunset Western Garden Book, latest edition, published by Lane Publishing Company.
- C. Plants shall conform with American Association of Nurserymen Standards, ANSI Z60, in all ways.
- D. Plant stock and materials are indicated in the Planting List or Schedule on the Contract Drawings. Provide trees and plants of the varieties, sizes, and quantities indicated. Provide nursery-grown stock only, which is free from plant disease and insect pests or their eggs.
- E. Plants shall comply with Federal and State laws requiring inspection for plant diseases and infestations. Inspection certificates required by law shall accompany each shipment of plants, and the certificates shall be delivered to the Project Inspector or Project Landscape Architect. Plants shall be true to species, varieties, and the sizes indicated, and shall be labeled in accordance with the recommended practice of the American Association of Nurserymen.
- F. Label trees and bundles, containers or flats of the same shrub, ground cover and vine with durable waterproof labels and weather resistant ink. Labels shall state the correct plant

name and size as specified in the Plant List on the Contract Drawings, and shall be legible for 60 Days after delivery to the planting site. Plant material that is not labeled will be rejected. Shipping invoices are not an acceptable substitute for individual plant labels.

- G. Plants shall be healthy, shapely, and well-rooted. Roots shall show no evidence of having been root bound, restricted, or deformed. Roots shall be evenly and completely spread throughout the container to bottom and sides. Young white roots shall be evident at edges of container, without overgrowing and forming a solid mat of roots at bottom or edges.
  - H. Container stock shall be grown for 9 months minimum in containers in which delivered. Plant material that has just been upgraded in container size will be rejected.
  - I. Container plants with cracked or broken balls of earth when taken from containers may be planted only with specific approval of the City Project Landscape Architect.
  - J. Root condition of plants in containers will be inspected by the City Project Inspector or Project Landscape Architect by removal of earth from the roots of not less than two plants of each species or variety from each source. Plant materials requiring inspection by the City Project Inspector or Project Landscape Architect shall be assembled and available for such inspections. If the sample plants inspected are found to be defective, the City Project Inspector or Project Landscape Architect reserves the right to reject the entire lot or lots of plants represented by the defective samples.
  - K. Plants shall not be pruned prior to delivery, except as authorized by the City Project Landscape Architect.
  - L. Trees shall have straight trunks with the leader intact, undamaged, and uncut. Old abrasions and cuts shall be completely calloused over. Trees shall be measured when their branches are in their normal position. The height of a tree shall be measured from root crown to top of plant. The width of a tree shall be measured at branching at the widest point. Sizes shown on the Contract Drawings are before pruning. Trees shall not be pruned prior to delivery except upon approval of the City Project Inspector or Project Landscape Architect.
  - M. Trees shall be well tapered in the trunk so that when the nursery stake is removed, the tree supports itself upright without further staking. Trees shall have a single distinct main leader, exception is for multi-stem trees. Trees which have not been properly maintained for proper development will be rejected. The main branches shall be spaced vertically and alternately along the trunk. Branching shall not be concentrated in one location and there shall be no severe crossing of branches. Branches shall be smaller in diameter than the trunk. Branch attachments shall be free of embedded bark. Branching along the lower two-thirds of the trunk shall have at least one half of the foliage of the tree.
  - N. All plants shall be inspected at the Jobsite prior to planting. Rejected plant materials shall be removed from the Jobsite and replaced with materials that conform to specified requirements at the Contractor's expense and to the satisfaction of the City Project Inspector or Project Landscape Architect.
  - O. Plant material shall be grown under similar climatic conditions to those found at the Jobsite.
- 2.03 ORGANIC COMPOST, SOIL AMENDMENT, SOIL CONDITIONERS, MULCHES AND FERTILIZERS
- A. Refer to Section 32 91 13 "Soil Preparation and Soil Amendment" for compost, amendment, conditioner and fertilizers to be used on the project.
- 2.04 BACKFILL MIX
- A. To be installed in all tree planting pits, as described in the tree planting detail in the plans (70% pulverized native soil, 30% compost), except for the Soil cells.

- B. Backfill mix immediately around the specimen tree root ball shall meet the requirements of the tree planting detail
- C. For organic compost and fertilizer packets, refer to Section 32 91 13 "Soil Preparation and Amendment", and the Soils and Plant lab report to be supplied by the Contractor.

2.05 BARK MULCH

- A. Fir or Cedar Walk-on bark – A combination of interlocking small bark and wood fibers, with organic matter content at 95% of weight.
- B. Particle sizes shall meet the following minimum requirements:

<u>Screen Size</u>	<u>% Weight Retained</u>
1" to 3"	7
½"	39
9.5 mm (3/8 inch)	24
6.4 mm (¼" inch)	11
4.75 mm	6
2.36 mm	6
1.00 mm	5

- C. Manufacturers (acceptable):

1. Lyngso Garden Materials Inc.; 345 Shoreway Rd. San Carlos CA 94070. Ph: 650.364.1730; Fax: 650.361.1933. info@lyngsogarden.com
2. American Soil and Stone, 2121 San Joaquin Street, Bldg A, Richmond, CA 94804. (510) 292-3000
3. Tri City Soils, 43157 Osgood Road, Fremont, CA 94539
4. Zanker Landscape Supply, 705 Los Esteros Road, San Jose, CA. 408-586-9292
5. One hundred percent fibrous mulch such as "Angel Hair" or "Gorilla Hair" is not acceptable.
6. All bark mulch shall be black in color.

2.06 PLANT SUPPORTS

- A. Tree sizes up to 24" Box size

1. Tree Stakes: Lodgepole pine, untreated; chamfered top, pointed bottom, 2" diameter, length as shown on detail.
2. Ties: Tree ties shall be manufactured by Wonder Tree-Tie, tel. (800) 910-2810, or approved equal, as indicated on the tree planting detail.
3. Guying Wires: 9 gauge wire with 2 strand twist.
4. Trunk protection at guy wires – 1" diameter rubber hose.

2.07 FERTILIZER PACKETS FOR PLANTING

- A. Controlled Released Fertilizer Packets: 20-10-5 (N-P-K) in a biodegradable packet with humus, humic acid and micronutrients, 7 grams, 12 month release:

- TOTAL NITROGEN 20.00%
- Humic Acid 2.5%

- B. Available from GroPower, 15065 Telephone Avenue, Chino, California 91710, 909-393-3744 or approved equal:

2.08 MISCELLANEOUS MATERIALS

- A. Deep Watering Drainage Tube

1. Perforated Drain Line: 4" diameter corrugated perforated plastic drain tubing and PVC grate and all necessary fittings; Advanced Drainage Systems, Inc., or approved equal.
2. Drain Rock: 3/4" rounded gravel; 98 percent passing 3/4" sieve, 2 percent passing 1/2" sieve.

2.09 STEEL HEADER

- A. Shall be Permaloc Geoedge Steel Head, Mill finish, 6.5" x 5.5" or approved equal.

2.10 BOULDERS

- A. Boulders shall conform roughly to the following sizes according to the plans:
  1. Type A: 36"x36"x30"
  2. Type B: 48"x36"x30"
  3. Type C: 54"x36"x30"
- B. Boulder types shall be: Sonoma Field Stone, Montana Gold River Cobble, Moss Rock or locally sourced as approved by city landscape architect
- C. All boulders shall be rounded in shape with angular edges, varying in sizes, ranging from 2ft to 4ft in width and length as noted above.
- D. All rock material shall be embedded 1/3 the boulder height in the surrounding grade or in concrete.

**PART 3 EXECUTION**

3.01 INSPECTIONS

- A. Prior to the work of this section, verify grades and inspect the work of other trades. Verify that all such work is complete to the point where the installation may properly commence.
- B. In the event of discrepancy, immediately notify the Engineer in writing. Do not proceed with this installation until all discrepancies have been resolved or take responsibility of condition of site at no additional expense to the City.
- C. Inspect trees, shrubs and ground cover plants upon delivery for injury, insect infestations, and proper pruning.

3.02 SUBGRADE PREPARATION PRIOR TO TOPSOIL PLACEMENT

- A. Refer to Section 02200 "Earthwork" for subgrade preparation.

3.03 FINE GRADING

- A. When weeding, soil preparation, and soil conditioning have been completed, and soil has been thoroughly rolled or water settled, all planting areas shall be smooth-graded, ready for placement of plant materials. Rocks larger than 2 inches in diameter shall be removed.
- B. Grading shall be done when soil is at optimum moisture content for working.
- C. Grades
  1. Finish grades shall ensure positive drainage of the site. Flow lines shall be not less than 2%.
  2. Finish grades in medians shall crown from the center of the median to the back of curb.
  3. Finish grading shall be consistent and free from undulations, irregularities or depressions. Areas filled by floating loose soil into depressions shall be thoroughly water settled.
  4. Lawn Areas: Finish grade shall be 1/2 inch below top of adjacent pavement, curbs, or headers.

5. Shrub Areas: Finish grades shall be 1-1/2 inches below top of adjacent pavement, headers, curbs, or walls, unless otherwise indicated on the drawings.
6. Tops and toes of all slopes shall be rounded to produce a gradual and natural-appearing transition between relatively level areas and slopes.
7. Contractor shall eliminate all erosion scars.
8. The Contractor shall request an inspection by the Project Landscape Architect at (510) 494-4700 for approval of the final grades before planting operations begin.

### 3.04 WATER SETTLEMENT

Refer to Section 32 91 13 "Soil Amendment and Conditioning" for additional information.

### 3.05 YOUNG TREE PRUNING

#### A. Root pruning

1. Prior to planting, upon inspection of the root ball when removed from the container, cut back roots growing along the periphery at the bend.
2. Removal after the bend is less effective because the bend remains and the circling defect will re-grow.

#### B. Tree pruning

1. Prune newly planted trees to one central leader by shortening competing stems. All branches and stems should be shorter than the central leader after pruning is completed.
2. Trees with branches spaced along the central leader, or trunk. Are stronger than trees with branches clustered together.
3. Shorten or remove branches that are larger than half the trunk diameter at planting and every few years thereafter. Remove these branches to create strong tree as it shifts growth to the central leader.
4. Central leader should be more visible in the crown after pruning.
5. Shorten branches that are nearly as large as the central leader to prevent competition with the central leader and may have weak attachment.
6. Reduce or shorten large or long stems and branches back to a live lateral branch to slow growth on the pruned branch, in order to shift growth to the central leader and create sound structure.
7. Remove large branches by making 3 cuts to prevent bark from peeling or splitting off the trunk below the cut. Make the final cut back to the branch collar (enlarged area around the union of branch and trunk).

#### C. Tree Pruning Checklist

1. Develop and maintain a central leader.
2. Identify the lowest branch in what will become the permanent crown
3. Prevent branches below the permanent crown from growing larger than half the trunk diameter.
4. Space main branches along the central leader.
5. Reduce vigorous uprights stems back to lateral branches.

### 3.06 TREE PLANTING AND SHRUB PLANTING

#### A. General

1. Do not install plant materials until all construction work has been completed and sprinkler systems have been installed and tested. Planting areas shall have been graded and prepared as herein specified and shall have been approved by the Project Landscape Architect or Park Superintendent.
  2. Do not plant during unfavorable weather, or with excessively wet or dry soil conditions.
  3. Stake location for trees and outline of shrub masses on ground and obtain the approval of City Project Landscape Architect before digging. Protect all utilities, vegetation, and structures during work. Bring any conflict to the attention of the City Project Landscape Architect immediately.
- B. Excavation
1. All plant pits shall be dug with vertical walls. If excavated with an auger, pit wall shall be thoroughly loosened by hand digging.
  2. Plant holes shall be to the width and depth shown on the details.
  3. Excavated soil may be spread evenly over groundcover and shrub beds, provided required finish grades are maintained, previously completed soil conditioning is not covered, and rocks larger than 2 inches in diameter and debris are removed and disposed of off-site.
- C. Soil Mix for Backfill Mix
1. Mix as described in "Backfill Mix" found herein this section.
  2. Materials shall be tumbled to achieve a homogeneous mix in the top 12 inches of tree plant pits and top 6 inches of shrub plant pits, as shown in the details:
- D. Fertilizer packets
1. See "Fertilizer Packets for Planting herein.
  2. Pack Distribution
 

1 gallon containers	2 Paks
5 gallon containers	5 Paks
15 gallon containers	15 Paks
24" boxes	25 Paks (5 in the bottom, 5 per side.)
  3. Paks shall be spread out evenly on the bottom.
  4. As backfill is placed, install the paks in various lifts of soil, spaced evenly
  5. Place 2 Paks in backfill to within 6-8 inches of the finished soil surface around the root ball, approximately 1 inch from the root ball.
- E. Drainage Holes for Tree Planting
1. Following excavation of tree holes and prior to placing backfill, fill planting hole with water and allow water to percolate into existing soil for 24 hours. Any planting holes not totally drained within 24 hours shall have drainage holes installed.
  2. Failure of drainage test: Report in writing to the City all areas not passing the above test, and all soil conditions that Contractor considers detrimental to growth of plant material. State condition and proposal for correcting the condition. Obtain City's instructions prior to proceeding with work affected. Repeat drainage testing and correction of conditions until tests are passed. Failure to perform drainage tests, or to notify City Construction Inspector in writing of conditions specified above, renders Contractor responsible for all plant failure that occurs as a result of inadequate drainage or detrimental soil conditions, as determined by the City.

3. If directed to install a drainage hole, the Contractor shall drill a 6 inch diameter hole 3 feet deeper than the bottom of the hole, remove excavated material and retest the hole for drainage. After certification of acceptable drainage by the City Project Landscape Architect, backfill with compacted sand or drain rock and resume planting operation.
4. Installation of required drainage holes are considered to be included in the unit price for tree planting.
5. Corrective drainage measures beyond what is described herein and on the tree planting details, may be considered as extra work.
6. Planting: Backfill plants using specified mix and thoroughly water settle each pit so that no backfill rests atop the rootball and the top of rootball is 1 inch above surrounding finished grade. Any plant that settles below that point prior to final acceptance shall be replanted in proper position.

### 3.07 MISCELLANEOUS ITEMS

#### A. Aeration Tube

1. Upon completion of tree planting in each tree well, install the perforated drainage tube per the planting details.
2. Drain rock shall be used to fill the drainage tube to a minimum of 3 inches below the top of pipe PVC grate to allow water infiltration.

### 3.08 PLANT SUPPORTS

#### A. Tree Staking

1. Double-stake 15 gallon and 24" box, single and multi trunk trees.
2. Installation
  - a. Double stakes shall be at right angles to the prevailing wind. For street trees, double stakes shall be parallel to face of curb.
  - b. Set stakes plumb.

### 3.09 BOULDERS

- A. Boulders shall be installed as described on detail sheet.
- B. Locate per plan requirements. Project Landscape Architect shall approve final layout prior to concrete placement.
- C. Boulders shall be placed on subgrade.
- D. Compact subgrade below boulders to 90% relative compaction or as indicated in drawings, and set boulders to natural line unless otherwise directed by Engineer. Boulders and stone shall be placed to allow for the bottom 1/3 of the material to be embedded and the upper 2/3 exposed.
- E. Boulders requiring deeper embedment shall have the subgrade below excavated to the required depth and aggregate placed in the required lifts to achieve 1/3 embedment.
- F. Boulders shall be stable upon placement on subgrade.

### 3.10 FIELD QUALITY CONTROL

- A. Supervision: Qualified foreman must be continuously on site during work operations.
- B. Plant materials: Subject to review upon delivery at project site. For distant material, submit color photographs, with indication of scale, for preliminary review.
- C. Observation of the Work: Give the City Project Landscape Architect at least 24 hours notice and arrange for inspection by contacting the City Construction Inspector. Request observation at the following stages:

1. After planting areas are delineated or plant locations spotted, but before growing containers are removed or holes dug.
2. During planting of trees.
3. Preliminary Inspection: When installation is completed, but before start of maintenance.
4. Final Inspection: Shall take place at the completion of plant maintenance period. Give written notice of request in advance.

### 3.11 CLEAN-UP

- A. Upon completion of planting, all cans, boxes, plant labels, nursery stakes and ties, and other debris that is a part of the planting operation shall be removed from the site.
- B. All pavement shall be washed off, and site shall be left in clean condition. All planting areas shall be cultivated and weed free before final inspection. Clean up operations shall take place throughout the course of work so that walks and drives are clean at all times.
- C. Perform cleanup during the installation of work and upon completion of the work. Maintain the site free of soil and sediment, free of trash and debris. Remove from site all excess soil materials, debris, and equipment. Repair any damage to adjacent materials and surfaces resulting from installation of this work.
- D. Overspray: Installing contractor is responsible for washing or otherwise cleaning excess material off all area not intended to receive treatment.

### 3.12 PLANT ESTABLISHMENT PERIOD

- A. Plant Establishment Period: The maintenance and plant establishment period for all landscaped areas shall be 90 days.
- B. Upon completion of all planting and clean-up operations, notify the City Project Inspector or Project Landscape Architect, in writing, a minimum of 3 Days in advance, to request a final inspection.
- C. A planting review and preliminary inspection and punch list for the plantings will be held by the City Project Inspector, Project Landscape Architect, and the Park Superintendent upon written request of the Contractor. The Plant Establishment Period may begin only after the City Project Inspector, Project Landscape Architect and Parks Superintendent have given written acceptance of the landscape and irrigation system installation.
- D. Start of Plant Establishment Period: Upon written approval of the work by the City Project Inspector or Senior Construction Coordinator, the maintenance period shall begin. The first day of that period shall be specified in the Engineer's report, but not before all planting and irrigation punch list items are complete.
- E. Days during which no work will be required, as determined by the City Project Inspector or Project Landscape Architect, will be credited as Plant Establishment Days, regardless of whether or not the plant establishment work has been performed.
- F. Days when the plant establishment work has not been adequately performed, including watering plants, replacing unsuitable plants, repairing erosion damage, and performing weed, rodent, and other pest control as determined necessary by the Project Inspector or Project Landscape Architect, will not be credited as Plant Establishment Days.
- G. Upon completion of the Plant Establishment Period, submit a written request for inspections by the City Project Inspector or Project Landscape Architect as specified herein.
- H. Plant Establishment Period Scope: The Contractor shall provide complete landscape maintenance of all planting areas. The work shall include, but not be limited to, watering, litter control, insect, disease and pest control, mowing, fertilizing, pruning, weed control, rolling, cultivating, repair of irrigation systems, and erosion control.

I. Watering

1. The moisture content in all planted areas shall be sufficient to insure healthy plants and vigorous growth. This shall be accomplished by means of visual observation of plant material and the surrounding surface soil conditions within any given area.
2. Observed deficiencies or excesses in watering program will be corrected immediately by the adjustment of controllers, as required. Controllers shall be programmed to water deeply without runoff by use of short repeat cycles.
3. Irrigation shall be controlled and individual heads adjusted to prevent overspray and runoff onto paved areas.
4. Trees planted within Tree Well Planters are not on an irrigation system and shall be watered by hand.

J. Insect, Disease and Pest Control: Pesticides and herbicides are not allowed unless approved by the City.

K. Maintenance of Sod: Refer to Section 32 92 23 "Sodding"

L. Mowing: Refer to Section 32 92 23 "Sodding" or Section 01 56 00 "Protection of Existing Facilities".

M. Fertilization: At the end of the maintenance period, furnish and apply fertilizers as follows:

	Analysis	Rate	Frequency
Groundcover/Shrub Areas	16-7-12 (NPK)	5 LBS/1,000sf	45 days
Turf Area	20-0-0 (NPK)	5 LBS/1,000sf	30 days

N. Pruning

1. Pruning shall be done only at the direction of the City Park Superintendent, the Urban Forester, or a Certified Arborist hired by the contractor to guide pruning activities, in accordance with NAA "Pruning Standards and Practices" to balance loss of root system. Thinning shall not exceed 30 percent of existing branching structure.
2. If the contractor hires a Certified Arborist, the arborist must be registered by the International Society of Arborists (ISA), and in conjunction with the City Urban Forester and Project Landscape Architect, ascertain the limbs and roots which are to be trimmed from new trees, and clearly mark them to designate the approved point of cutting.
3. Pruning shall be done by thinning and shaping to achieve a natural appearance. Excessive pruning or stubbing back will not be permitted.
4. Pruning cuts shall be allowed to heal naturally and not painted over with wound dressing or asphaltic emulsion.
5. All pruning cuts shall be made flush to the bark curl and shall be cleanly cut with no tearing of the bark.
6. All cuttings shall be removed from the site.
7. Do not remove lower branches from low-branching or multi-trunk trees, unless directed to do so by the City Park Superintendent, Project Landscape Architect, Urban Forester, or a Certified Arborist.

O. Weed Control

1. Weeds shall be kept under control by hand or by the application of herbicides designed for use on any type of weeds invading the planting areas, at not less than 10-day intervals.

2. All equipment used for applying herbicides shall be properly cleaned before it is used on this project. Herbicides shall be applied per manufacturer's printed instructions. Herbicides shall not be used during windy or gusty days. All possible precautions shall be taken to protect desirable vegetation from damage. Any repair, or replacement with new plants of existing trees to be preserved shall be at the Contractor's expense.
  3. The application of herbicides in lieu of hand weeding may only occur after submittal of an herbicide application schedule, the effect of proposed herbicide on surrounding vegetation, and approval of the schedule by the City Park Superintendent and Project Landscape Architect, in writing.
- P. Replacements: Immediately replace any plant materials that die or are damaged within 5 working days. Replacements shall be made to the specifications required for original plantings.
- Q. Condition of Plantings at the End of the Maintenance Period.
1. All plant materials shall be live, healthy, undamaged, and free from infestations.
  2. Planting areas shall be free of all broadleaf and grass weeds.
  3. Plantings that do not conform to these specifications shall be replaced and brought to a satisfactory condition before final acceptance of the work.
- R. Final Inspection and Acceptance

### 3.13 GUARANTEE

- A. All plants installed under the contract shall be guaranteed to live and grow for a period of one year from the date of final acceptance of contract work.
- B. Any material found to be dead, missing, or in poor condition during the guarantee period, shall be replaced by the Contractor within fifteen (15) days of written notification by the City. Replacement shall be made to the same specifications required for original plantings, and shall be at no cost to the City.
- C. Guarantee that trees, shrubs, groundcovers, and other plant materials will take root and grow vigorously within 1 year after final acceptance of plantings, when such plants have received normal care and maintenance.
- D. The guaranty shall include replacement of trees and other plant materials that die back and lose the form and size as originally specified, even though they may have taken root and are growing after the die-back.
- E. Corrective work shall include removal and replacement of all guaranteed plant materials which, for any reason, fail to meet the requirements of the guaranty. Replacements shall meet the same requirements as specified for the original materials. Replacements shall carry the same guaranty period that shall start from the time the replacements are planted and accepted.

### 3.14 MEASUREMENT AND PAYMENT

- A. The contract unit price paid for "**1 Gallon Shrub**", "**5 Gallon Shrub**", "**5 Gallon Rose**", and "**24" Box Tree**," of the unit price schedule shall include full compensation for furnishing all labor, materials, tools, equipment, delivery and incidentals and for doing all the work covered in this section, including staking, complete in place as shown on the plans, as required by these Special Provisions, and as directed by the City Landscape Architect.
- B. The linear foot unit price paid for "**Steel Header**" of the unit price schedule shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals and for doing all the work covered in this section, complete in place as shown on the plans, as required by these Special Provisions, and as directed by the City Engineer or his designee.

- C. The per ton price paid for **"Boulders"** shall include full compensation for furnishing all labor, materials, tools, equipment, delivery and incidentals and for doing all the work covered in this section, including excavation and rough grading, delivery, installation and sanding down sharp edges and corners, complete in place as shown on the plans, as required by these Special Provisions, and as directed by the City Landscape Architect.
- D. The cubic yard final pay quantity for **"Bark Mulch (F)"** of the unit price schedule shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals and for doing all the work covered in this section, complete in place as shown on the plans, as required by these Special Provisions, and as directed by the City Landscape Architect. Quantities of bark mulch will not be measured. The quantity shown on the Engineer's Estimate for bark mulch shall be the final pay quantity for which payment is made as specified in Section 9-1.015, "Final Pay Quantities" of the Standard Specification.
- E. The lump sum contract price paid for **"90 Days Plant Establishment Period"** of the unit price schedule shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals and for doing all the work covered in this section, complete in place as shown on the plans, as required by these Special Provisions, and as directed by the City Landscape Architect.
- F. Full compensation for conforming to the provisions in this section "Fine Grading", not otherwise provided for, shall be considered as included in prices paid for the various contract items of work involved and no additional compensation will be allowed therefor, unless specified otherwise.

**END OF SECTION**

CITY COUNCIL ONLY  
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## SECTION 32 91 13 SOIL PREPARATION AND SOIL AMENDMENT

### PART 1 GENERAL

#### 1.01 SCOPE OF WORK

- A. Provide incorporation of soil amendments, including but not limited to fertilizers, compost, and soil conditioners in planting areas.
- B. Water settlement prior to placement of sod.

#### 1.02 RELATED DOCUMENTS

- A. These special provisions are part of the plans and shall include all labor, materials, equipment, reasonable incidental, and services necessary to the execution of the work.
- B. Refer to all other sections, determine the extent and character of related work, and coordinate all work to produce a complete, properly constructed product.
- C. Related Documents
  1. Section 01 30 00 "Submittal Procedures"
  2. Section 02 41 00 "Site Demolition"
  3. Section 32 84 00 "Irrigation"
  4. Section 32 92 23 "Sod"

#### 1.03 DEFINITIONS

- A. Existing Soil: Native soil where rough grading is to be performed through ripping, cutting and import. Surface cultivation and soil amending are included in this Section. See Drawings and geotechnical recommendations
- B. Subgrade: Soil level resulting from the rough grading work and import fill under another Section. Cultivation of all subgrade areas prior to placement of topsoil is included in another Section.

#### 1.04 SCHEDULING

- A. Prior to starting work, coordinate work with other trades to insure proper sequencing of construction.

#### 1.05 ENVIRONMENTAL REQUIREMENTS AND SOILS

- A. No planting area earthwork or planting shall occur during weather conditions that will adversely affect materials or when soil is in a muddy condition. Soil used within landscaped areas shall be in a friable condition at time of displacement including during transportation, placement, cultivation, and planting.
- B. Friable refers to the structure and moisture content of soil. Friable soil shall be understood to mean soil that crumbles easily in the hand, does not stick to the hand, and does not form a ball when squeezed. Friable soil is not wet or muddy but is moist and damp. Obtain City Representative's determination of soil condition acceptability prior to installation and working of soils.
- C. Soils in landscape areas that are worked when not friable shall be removed at the Contractor's expense and replaced with friable imported topsoil complying with the specifications for topsoil herein.

1.06 PRESERVATION OF PROPERTY

- A. Protect existing on- and off-site improvements, utilities, and plants from damage. Damage resulting from Contractor's operations shall be repaired or replaced at the Contractor's expense to the City Representative's satisfaction.
- B. Refer to Section 02 41 00 "Site Demolition"

1.07 QUALITY ASSURANCE

- A. Soil Amendment Testing Laboratory:
  - 1. Laboratory shall be a recognized laboratory for soil and plant disease analysis for ornamental horticulture and approved by the City's Landscape Architect.
  - 2. Acceptable laboratory:
    - a. Wallace Laboratory, El Segundo, Ca, [www.wlabs.com](http://www.wlabs.com), ph. 310-615-0116
    - b. Waypoint Analytical, Anaheim, Ca, [www.waypointanalytical.com](http://www.waypointanalytical.com), ph. 714-282-8777.
- B. Perform all work to the highest standard of quality. All work is subject to the acceptance of the City Project Landscape Architect. Work that is deemed unacceptable or defective by the City Representative shall be removed by the Contractor immediately and replaced with work that is acceptable to the City Project Landscape Architect.
- C. Installer Qualifications: Products shall be installed by a qualified installer whose work has resulted in successful installation of planting soils.
  - 1. The installer shall have a minimum of five (5) years successful experience with soil amendment and planting of similar scope.
  - 2. Installer's Field Supervision: Installer is required to maintain an experienced full-time supervisor/foreman on Project site when work is in progress.
  - 3. Deliver commercially processed or packaged materials to the Jobsite in the original unopened containers bearing the manufacturer's guaranteed analysis.

1.08 PROJECT CONDITIONS

- A. Inspect job for conditions which would prevent the execution of this work as specified. Do not proceed until such conditions are corrected.
- B. Exercise caution against injury to, or defacement of, existing conditions. Contractor is responsible for any repair or replacement of items damaged from installation due to construction operations. Repairs and replacement shall be made to the satisfaction of the City and at no expense to the City.

1.09 PRESERVATION OF PROPERTY

- A. Protect existing on- and off-site improvements, utilities, and plants from damage. No vehicles shall be allowed to pass over curbs, sidewalk, and planting areas unless proper protection is provided. Damage resulting from Contractor's operations shall be repaired or replaced at the Contractor's expense and to the City Project Inspector or Project Landscape Architect's satisfaction.

1.10 SUBMITTALS

- A. Refer to Section 01 33 00 "Submittals" for submittals, substitutions and requests for substitutions procedures.
- B. Materials and Product Data: Submit complete product and cut sheets for soil amendments, fertilizers and non-proprietary items under this Section, including source, size and quantity.

1. Information shall include manufacturer's specifications, installation instructions, data sheets, and catalog cuts for all materials different from those specified. Submit (3) three manufacturer's catalog cuts for all specified materials listed herein.
2. Samples:
  - a. One-half pound (½) each of material samples, including compost.
  - b. V Controlled release fertilizer paks.
- C. Test Reports for subgrade soils and compost:
  1. Provide material samples directly to testing laboratory.
  2. Native Topsoil and Existing Subgrade:
    - a. Provide Test AO5 for agricultural suitability, parasitic nematodes and herbicide contamination. Report to include amendment recommendations.
    - b. Certify that soil is free of herbicides or other harmful substances. Perform monocot and dicot growth trials, Test GR04. Number and amount of samples as recommended by Testing Laboratory, minimum 4 trials.
    - c. Number of samples to be as recommended by Testing Laboratory, minimum 1 sample. Samples to be collected as directed by the Testing Laboratory. As a minimum requirement, samples are to be taken from soils 12" below finish grade and delivered in separate sealed containers, uniquely labeled, identifying their location on the site. Samples must be collected in clean containers and must not be mixed.
  3. Organic Compost: Test for physical and chemical properties.
- D. Recommended Testing Lab: Waypoint Analytical, 1101 S. Winchester Blvd, G-173, San Jose, CA 95128 (408) 727-0330.
- E. Test results, including analysis and comment with any soil amendment recommendations to be specified using organic compost amendments, are to be sent directly to the City Project Landscape Architect and General Contractor by the testing agency. Test to be performed:
  1. Provide recommendations soil amendments and fertilizer to Testing Laboratory. Include manufacturer's analysis of proposed amendment, dated within 6 months before delivery, or sample of organic amendment for Testing Laboratory's analysis if manufacturer's analysis is not available.
  2. Testing Laboratory shall propose changes in amendment program specified, if required, and shall certify that amendments proposed are suitable for use with site soil and import topsoil.
  3. Number of samples to be as recommended by Testing Laboratory, minimum 1 sample. Samples to be collected as directed by the Testing Laboratory. As a minimum requirement samples are to be taken from soils 12" below finish grade and delivered in separate sealed containers uniquely labeled identifying their location on the site. Samples must be collected in clean containers and must not be mixed.
    - a. Certify that soil is free of herbicides or other harmful substances. Perform monocot and dicot growth trials, Test M05. Number of samples as recommended by Testing Laboratory, minimum 4 trials
- F. Per laboratory report, submit recommended material and product data. Obtain written approval prior to delivery of materials to the site. Finished work shall match approved samples.
- G. Proof of Quantities/Certification
  1. Furnish the City Project Inspector and Project Landscape Architect with:

- a. Duplicate legible copies of certificates and/or invoices for all fertilizer, soil conditioners, compost, and other materials utilized for project. Certificates/invoices shall state the grade, weight, quantity, source, and date of delivery.
2. Certificates: Certify strict compliance with accepted soil mixes and amendments, including rate of application.
3. Current Reports: All reports on the above items shall have been performed no more than 6 months prior to the date of submittal. Reports older than 6 months shall be considered unacceptable, and will be rejected. Price of testing shall be done at no additional cost to the City.

#### 1.11 PRODUCT DELIVERY, STORAGE AND HANDLING

- A. Refer to Section 01 60 00 "Product Requirements", for additional information.
- B. Weather: Do not mix, deliver, or place soils and amendments in frozen, wet or muddy conditions.
- C. Delivery and Storage
  1. Deliver fertilizer and soil conditioner to the Jobsite in original unopened containers bearing manufacturer's guaranteed chemical analysis, weight, manufacturer's name, trademark, and conformance with state law.
  2. Store products to protect them from damage and contamination and comply with manufacturer's storage instructions.
  3. Store fertilizers and soil amendments in a dry place and protect from intrusion of moisture
  4. Fertilizer and lime shall not be stored with any other landscape material.
  5. Herbicides and pesticides shall not be stored with any other landscape material.

#### 1.12 INSPECTIONS

- A. The right of inspection is reserved by the City Representative at any time on the Jobsite, including acceptance and/or rejection of any soil amendment upon delivery or during the installation of work.
- B. Contractor shall notify City Representative in writing a minimum of 5 Working Days in advance of Contractor initiated inspections.

### **PART 2 PRODUCTS**

#### 2.01 GENERAL

- A. All products, including, but not limited to, compost, soil conditioners, fertilizers shall be in conformance with the specifications listed below. Any changes to products specified shall be first approved, in writing, by the City's Landscape Architect prior to job site delivery. Refer to Section 01 30 00 "Submittal Procedures" for additional information.
- B. The following soil additives may be required in various quantities by the soils testing laboratory and the City Project Landscape Architect to bring soil to an acceptable condition to promote vigorous and healthy plant growth. The addition of these and other industry standards amendments shall be at the expense of the Contractor.

#### 2.02 ORGANIC COMPOST

- A. Compost must comply with the following requirements:
  1. The compost provider must be a compost producer and a participant in the United States Composting Council (USCC) Seal of Testing and Assurance (STA) program.

2. The compost manufacturer must be fully permitted as a compost producer in accordance with requirements of the California Integrated Waste Management Board (CIWMB), Local Enforcement Agency (LEA) and any other State and Local Agencies that regulate solid waste facilities. If exempt from State permitting requirements, the composting facility must certify that they follow all guidelines and procedures for production of composting meeting the environmental health standards of Title 14, California Code of regulations, Division 7, Chapter 3.1, Article 7.
3. Compost may be derived from any single or mixture of any of the following feedstock materials: green material consisting of chipped, shredded, or ground vegetation; clean processed recycled wood products, or food waste. Compost feedstock shall not include bio-solids and/or manure.
4. Compost the feedstock materials such that weed seeds, pathogens and deleterious materials are reduced as specified under Title 14, California Code of Regulations, Division 7, Chapter 3.1, Article 7, Section 17868.3.
5. Metal concentrations in the compost must not exceed the maximum metal concentrations listed in California Code of regulations, Division 7, Chapter 3.1, Article 7, Section 17868.2.
6. Compost shall be a well decomposed, stable, weed free organic matter source. The product shall be certified through the US Composting Council's (USCC) Seal of Testing Assurance Program (STA) Program (a compost testing and information disclosure program). It shall be derived from agricultural or food waste or yard trimmings. The product shall contain no substances toxic to plants, will possess no objectionable odors and shall not resemble the feedstock (the original materials from which it was derived).
7. Before delivery of the compost, the supplier will submit proof of STA certification and a copy of lab analysis performed by a laboratory that is enrolled in the US Composting Council's CAP and using the approved Test Methods for the Evaluation of Composting and Compost (TMECC). The lab report shall verify:
  - a. Feedstock Materials as reported from manufacturer.
  - b. Organic Matter Content: 50% - 60% by dry wt. preferred, 35-70% acceptable. Minimum 250 lbs organic matter per cubic yards of compost.
  - c. Carbon and Nitrogen Ratio: C:N < 25:1 plus at least one measure of stability and at least one measure of toxicity.
  - d. Maturity/Stability: shall have a dark brown color and a soil-like odor. Compost exhibiting a sour or putrid smell, containing recognizable grass or leaves, or is hot (120F) upon delivery or rewetting is not acceptable. In addition, any one of the following is required to indicate stability.
 

I. Oxygen Test	< 1.3 O <sub>2</sub> / unit TS / hr
II. Specific oxy. Test	< 1.5 O <sub>2</sub> / unit BVS / hr
III. Respiration test	< 8 C / unit VS / day
IV. Dewar test	< 20 Temp. rise (oC)
V. Solvita®	> 5 Index value
  - e. Toxicity: any one of the following measures is sufficient to indicate non-toxicity.
 

I. NH <sub>4</sub> - : NO <sub>3</sub> -N	< 3
II. Ammonium	< 500 ppm, dry basis
III. Seed Germination	> 80 % of control
IV. Plant Trials	> 80% of control

- V. Solvita® > 5 Index value
- f. Nutrient Content: provide analysis detailing nutrient content including N-P-K, Ca, Na, Mg, S, and B.
- I. Total Nitrogen content 0.9% or above preferred.
  - II. Boron: Total shall be <80 ppm; Soluble shall be <2.5 ppm.
- g. Salinity: Must be reported; may vary but < 4.0 mmhos/cm preferred. Soil should also be tested. <2.5 mmhos/cm is preferred for soil/compost blend but may vary with plant species.
- h. pH: pH shall be between 6.5 and 7.5. May vary with plant species.
- i. Salt: salt content shall be less than 10 millimho/cm @ 25 degrees C on a saturated paste extract.
- j. Boron: Silicon content of the saturated extract shall be less than 1.0 parts per million.
- k. Silicon: Silicon content (acid-insoluble ash) shall be less than 50%.
- l. Calcium Carbonate: Calcium carbonate shall not be present if to be applied on alkaline soils.
- m. Particle Size: Maximum particle size shall be 0.5 inch, 80% or more shall pass a No. 4 screen for soil amending. Maximum particle size shall be 0.25 inch for hydroseeding, if hydroseeding is required.
- n. Bulk density: shall be between 500 and 1100 dry lbs/cubic yard
- o. Moisture Content shall be between 35% - 55% of dry solids
- p. Inerts: compost shall be relatively free of inert ingredients, including glass, plastic and paper, < 0.1 % by weight or volume.
- q. Weed seed/pathogen destruction: provide proof of process to further reduce pathogens (PFRP). For example, turned windrows must reach min. 55C for 15 days with at least 5 turnings during that period.
- r. Select Pathogens: Salmonella <3 MPN/4grams of TS, or Coliform Bacteria <10000 MPN/gram.
- s. Trace Contaminants Metals (Lead, Mercury, Etc.) Product must meet US EPA, 40 CFR 503 regulations.
8. When compost is being used as a soil amendment, and before delivery of the compost the Contractor will submit a copy, to the City, of a lab analysis performed in the last 6 months by a certified US Composting Council Compost Analysis Program (CAP) laboratory, using the approved Test Methods for the Evaluation of Composting and Compost (TMECC). Verifying current participation in CAP can be achieved by visiting [www.compostingcouncil.org](http://www.compostingcouncil.org). Submittals shall be delivered to City for review prior to delivery to site. Manufacturer's information shall include the source feedstock used for the compost.
9. Compost certification and definitions
- a. STA - The US Composting Council's Seal of Testing Assurance Program; it assures that compost producers regularly sample & test compost using STA program-approved labs, for chemical, physical, and biological properties, using the same standardized testing methodologies. ([www.compostingcouncil.org](http://www.compostingcouncil.org))

- b. OMRI - Organic Materials Review Institute; it assures product compliance with the regulations of the National Organic Program, and offers a third party review of compost "for use in organic production." ([www.omri.org](http://www.omri.org)).
  - c. CCQC - California Compost Quality Council; recently merged with the US Composting Council; CCQC previously operated a voluntary registration program through which compost producers could assure consumers that quality claims had been verified, and that producers were in compliance with state composting regulations & met state standards in terms of pathogen reduction & trace element concentrations. ([www.crra.com/ccqc](http://www.crra.com/ccqc)).
10. Acceptable Products: Types of acceptable products are composts, manures, mushroom composts, straw, alfalfa, peat mosses, etc. low in salts and heavy metals, free from weed seeds, pathogens and other deleterious materials.
  11. Composted Wood Products: Composted wood products based on Redwood or Cedar are not acceptable.
  12. Sludge-based materials are not acceptable.
  13. Soil organic amendment shall be aerobic without malodorous presence of decomposition products.
  14. Pollutant Concentrations: Maximum total permissible pollutant concentrations in amendment in parts per million on a dry weight basis:

Pollutant Concentrations	Parts Per Million (PPM)
Arsenic	20
Cadmium	15
Chromium	300
Cobalt	50
Copper	150
Lead	200
Mercury	10
Molybdenum	60
Nickel	100
Selenium	50
Silver	10
Vanadium	500
Zinc	300

## 2.03 COMMERCIAL FERTILIZERS AND CHEMICAL COMPONENTS

- A. Contractor shall endeavor to utilize organic fertilizers from natural sources that are approved for use by the Organics Materials Research (OMRI) and are approved for use in the landscape ([www.omri.org](http://www.omri.org)).
- B. The following additives may or may not be used depending on the outcome of the soils report. Final application shall be per the Agricultural Suitability Report. Contractor shall not submit synthetic amendments without proof that organic (non-synthetic) amendments are not available.
1. Commercial fertilizer shall be 6-20-20 N-P-K (0.75% Zn). Manufacturer: Gro-Well Brands, Inc – 1 (602) 792-0275.
  2. Complete fertilizers shall be 5-3-1 with 15% Humic Acid. Manufacturer: GroPower, 15065 Telephone Avenue, Chino, California 91710, 909-393-3744.
  3. Ground Limestone: Agricultural limestone containing not less than 85% of total carbonates, ground to such fineness that 50% will pass #100 sieve and 90% will pass #20 sieve.
  4. Dolomite Lime: Agricultural grade mineral soil conditioner containing 35% minimum magnesium carbonate and 49% minimum calcium carbonate, 100% passing #65 sieve.
  5. Agricultural Gypsum (Calcium sulfate): Agricultural grade product containing 80% minimum calcium sulphate.
  6. Increase water infiltration, improved seeding emergence, improves soil structure and reduce soil surface crusting.
  7. Agricultural gypsum shall meet OMRI certification. Contractor, in addition to cut sheets, Contractor shall supply OMRI document.
  8. Ferrous Iron Sulfate (Ferric or Ferrous) or Chelated Iron Sulfate: Supplied by a commercial fertilizer supplier, containing 20% to 30% iron and 35% to 40% sulphur.
    - a. Ferrous Iron sulfate or Chelated iron sulfate – helps with greening of leaves
    - b. Ferrous iron sulfate shall meet OMRI certification. Contractor, in addition to cutsheets, Contractor shall supply OMRI documents.
  9. Sulphate of Potash: Agricultural grade containing 50% to 53% of water-soluble potash.
  10. Potassium sulfate shall be 0-0-50.
  11. Single Superphosphate: Commercial product containing 20% to 25% available phosphoric acid.
  12. Ammonium Sulphate: Commercial product containing approximately 21% ammonia. (21-0-0).
  13. Ammonium Nitrate: Commercial product containing approximately 34% ammonia.
  14. Calcium Nitrate: Agricultural grade containing 15-1/2% nitrogen.
  15. Urea Formaldehyde: Granular commercial product containing 38% nitrogen (32-0-0).
  16. I.B.D.U. (Iso Butyldiene Diurea): Commercial product containing 31% nitrogen.
  17. Soil Sulfur: Agricultural grade sulfur containing a minimum of 96% sulfur.

## PART 3 EXECUTION

### 3.01 INSPECTION OF SITE CONDITIONS

- A. Prior to the work of this section, verify grades and inspect the work of other trades. Verify that all such work is complete to the point where the installation may properly commence. Verify that demolition, clearing and grubbing work and Earthwork are acceptable to the engineer prior to commencing work of this section.
- B. In the event of discrepancy, immediately notify the Engineer in writing. Do not proceed with this installation until all discrepancies have been resolved or take responsibility of condition of site at no additional expense to the City.
- C. Inspect soil amendments upon delivery for damage, contamination, and insect infestations prior to acceptance of material.
- D. Begin work required under this section only after conditions are satisfactory.

### 3.02 SOIL MOISTURE CONTENT

- A. General: Do not work soil when moisture content is so great that excessive compaction will occur, nor when it is so dry that dust will form in air or that clods will not break readily. Apply water, if necessary, to bring soil to an optimum moisture content for tilling and planting.

### 3.03 SOIL TESTING

- A. General: Prior to planting, provide a soil test and recommendations as stated elsewhere in these specifications.
- B. See Part 1 here in "Submittals" and "Quality Assurance" for testing experience.
- C. Soil Analysis at a minimum should be done for soil chemistry including pH, fertility, agricultural suitability, particle size analysis, infiltration rate, and presence of calcareous conditions, unless otherwise noted in these specifications.
- D. Soil test results shall be presented in a report form, and should include recommendations for organic soil amendment, fertilization, drainage mitigation, and other necessary measures, for both planting and during the initial 90-day maintenance period.

### 3.04 INSTALLATION COMPOST SOIL AMENDMENT

- A. General Soil Preparation
  1. Subgrade shall be excavated to the required subgrade depths as described on the plans and in Section 31 00 00 "Earthwork". Maintain all required angles of repose of the adjacent materials. Do not over excavate compacted subgrades of adjacent materials, pavements or structures. Remove all construction debris and materials.
    - a. Confirm that the sub grade is at the proper elevation and compacted as required. Subgrade elevations shall slope parallel to the finished grade and/or toward the lines and grades as shown on the drawings.
    - b. Upon achieving subgrade, subgrade shall be ripped to 6 inch depth in both directions prior to amending subgrade and placement of top soil.
    - c. Subgrade areas shall be water tested to ensure some degree of percolation prior to integrating the first lift of topsoil.
    - d. Add lifts of native soil.
    - e. Provide compost amendments, chemicals, and fertilizers described herein, and as recommended in the soil report for subgrade and on-site topsoils. These are minimum requirements. Provide such additional amendments and chemicals as required by the Soil Reports.

- f. Fertilizers quantities shall be adjusted in accordance with the soil test and organic compost amendment test reports: For the purposes of bidding, Contractor shall assume 20 pounds per 1,000 square feet of 6-20-20 or 6-24-24, (N-P-K).
- g. Other Chemicals Recommended by Soil Test: gypsum, sulfur, lime, etc.
- h. After approval of amendment and fertilizer applications by the City Project Inspector or Project Landscape Architect, incorporate soil amendments and fertilizers into the top 12 inches of subgrade soil by repeated rotary-hoe cultivation.
- i. Do not mechanically compact with heavy machinery or compactors during placement. Do not saturate soils with water. Soil in plantings areas shall be a minimum 85 percent relative compaction, sufficient to prevent soil settlement with changing friable soil conditions. Provide additional topsoil as needed to achieve the required finished grades and to silt settled areas.

B. For Turf Establishment

- 1. Distribute and incorporate the soil amendments evenly by hand, or by mechanical methods to a depth of 8 inches within soil.
- 2. Following incorporation, rake and compact the areas as directed by the City's Inspector or as described within these specifications. The bedding area and soil surface shall be reasonable free of large clods, roots, stones greater than 2 inches, and other material which will interfere with planting and subsequent site maintenance.
- 3. Thoroughly water to settle amended soil for a period of 30 days prior to planting. Refer to "Water Settlement" found herein. for more information regarding 30 day water settlement requirement.
- 4. Re-Rake soil surface smooth prior to sodding.

3.05 WATER SETTLEMENT

- A. Water settlement intent is 2 fold – to settle material and areas that have been imported, soil conditioned and amended; and, to germinate any weeds, and eradicate those weed prior to shrub placement.
- B. At completion of soil conditioning and amendment, smooth the soil surface, and water the soil in all areas, including areas requiring sodding, for a full 30 days. Soil shall be moist without being saturated to a minimum depth of 24 inches and shall not be allowed to dry out at any time within the 30 day watering period. Finished grade of soil shall be checked after 15 days. Imported topsoil soil shall be added in the areas that settle below finished grades as required by the plans and specifications. Irrigation system shall be complete prior to the 30-day watering period and shall be used to water soils.
- C. After water settling, finish grade to a smooth, even surface conforming to established grades after settlement. Rake immediately prior to planting.
- D. Controls as weed as needed per Plant Establishment Period.
- E. The placement of sod shall not begin until the water settlement period is complete and accepted by the City.

3.06 FIELD QUALITY CONTROL

A. Samples and Tests

The work performed under this section will be subject to approval by testing laboratory per section 01 45 23 "Testing and Inspections". The City reserves the right to take and analyze samples of materials for conformity to specifications at any time. Furnish samples upon request by engineer. Immediately remove rejected materials from the site, at contractor's

expense. Cost of testing materials not meeting specification will be paid by contractor at no increase in contracted price.

B. Verification of Quantities

Contractor to provide bills of lading or invoices of specified materials from original suppliers and manufacturers of soil amendments. Quantities shall be verified by the engineer. Any product deficiencies shall be promptly rectified by the contractor.

3.07 DISPOSAL OF WASTE MATERIALS

- A. All materials to be removed shall be disposed of in accordance with the provisions in Section 01 74 19 "Construction and Demolition Debris Management and Section 02 41 13 "Site Demolition".
- B. All waste materials generated from soil preparation activities, including excavated materials, rocks and other debris shall be removed and disposed of at the contractors expense.
- C. Upon completion of soil preparation operations, clean areas within contract limits, remove tools and equipment. Provide site clear, clean, free of debris and suitable for irrigation and planting operations.

3.08 MEASUREMENT AND PAYMENT

- A. The contract square foot unit price paid for "**Soil Preparation and Amendment**", shall include full compensation for furnishing all labor, materials, tools, equipment, delivery and incidentals and for doing all the work covered in this section, including water settlement and weed eradication, complete in place as shown on the plans, as required by these Special Provisions, and as directed by the City Landscape Architect.

**END OF SECTION**

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## SECTION 32 90 10

## PALM TREE PLANTING

### PART 1 GENERAL

#### 1.01 SCOPE OF WORK

- A. These special provisions are specifically for planting of Canary Island Date Palm (*Phoenix canariensis*).

#### 1.02 RELATED DOCUMENTS

1. Section 01 30 00 "Submittals"
2. Section 32 80 00 "Irrigation"
3. Section 32 90 00 "Planting"

#### 1.03 SUBMITTALS

- A. Procedures: In accordance with Section D, "General Construction Details - Submittals"
- B. Product data: Submit complete materials list of items to be provided under this Section, including source, size, and quantity. Include manufacturer's literature.
1. Include plant material list as specified herein.
- C. Test reports: Submit results of the following tests.
1. Existing site soil: Test for agricultural suitability, fertility, particle size analysis; including recommendations for soil amendment and backfilling, and fertilization during Maintenance Period. Number of samples to be as directed by Engineer, minimum 9 samples.
  2. Import topsoil: Submit test reports of representative sample prior to delivery and for every 100 yards delivered to the site. Test for agricultural suitability, fertility, particle size analysis; including recommendations for soil amendments, and fertilization during Maintenance Period.
  3. All other fertilizers, soil products and amendments: For standard products, submit manufacturer's analysis. For all other products, submit analysis by Testing laboratory.
  4. Completed landscape: 90 days before end of Maintenance Period, test soil to demonstrate compliance with Specifications. Test for agricultural suitability, fertility, particle size analysis; including recommendations for soil amendment and backfilling, and fertilization during Maintenance Period. Minimum 4 samples to be taken by Testing Laboratory.
  5. Certification that drainage tests have been performed successfully.
- D. Pesticides and herbicides: Submit Pest Management Program developed by State of California licensed Pest Control Advisor per Section D - "General Construction Details", Paragraph 20.
- E. Record drawings: Prepare record drawings indicating plant type, quantity, size and location. Submit to Engineer before Acceptance of Work.

#### 1.04 PROTECTION

- A. Contractor shall provide barrier protection for excavations and reasonably prevent someone from falling into planting pits.
- B. Palms should be planted immediately or stored for no more than 48 hours in a shaded area where the tree shall be misted frequently.
- C. Do not store palms on an asphalt surface.
- D. Covering materials must allow air movement so that heat does not build up under the covering.
- E. Do not stack palms, but lay them in a single layer on a flat surface.
- F. If the trees are stored for more than a day, the rootballs must be covered with a burlap tarp and kept moist.
- G. Planting delays may result in rejection of the palms.

#### 1.05 LOADING AND UNLOADING

- A. A lattice type crane, or telescoping type crane or a specially designed tree crane is acceptable for lifting and off-loading palm trees.
- B. For transporting, the trailer used shall be long enough to avoid damage to the heart of the palm.
- C. Loading and unloading of palms must be accomplished with the aid of nylon or fabric sling/straps with a minimum width of 4 inches.
- D. Palms should be carefully lifted off the truck setting the choker to the outside so to turn the palm to the inside as it is lifted.
- E. Extreme caution must be used to ensure that the heads are not caught, pulled on banded into or shaken.
- F. Excessive scarring or trunk damage will not be permitted and will be cause for rejection of the palms at the project site.

#### 1.06 QUALITY ASSURANCE

- A. Testing laboratory: Recognized laboratory for soil and plant disease analysis for ornamental horticulture, approved by Engineer.
- B. Reference standards: Special Provisions shall govern over reference standards in case of conflict. Comply with applicable provisions of the following:
  - 1. California Landscape Contractor's Association: "California Landscape Standards."
  - 2. Nomenclature: "Western Garden Book," 1988 edition or later; Sunset Publishing Co., Menlo Park, CA.
  - 3. Plant material standards: "American Standard for Nursery Stock," 1990 edition; American Association of Nurserymen.
  - 4. Pruning procedures: "Tree Pruning Guidelines," 1995 edition; International Society of Arboriculture, Savoy, IL.

## 1.07 DELIVERY, STORAGE AND HANDLING

- A. Fertilizers, amendments and other materials: Store protected from damage. Protect site surfaces.
- B. Plants: Maintain plant material in healthy growing condition at all times. Protect plants from sun and drying winds. Plants that cannot be planted immediately upon delivery shall be kept in the shade, watered and protected. Engineer reserves the right to reject plants which decline in quality after delivery to site.

## 1.08 WARRANTY

- A. Provide 1 year guarantee for Work of this Section in accordance with provisions of General Requirements.
- B. Provide supplemental guarantee, on Contractor's letterhead:
  - 1. Plant material: Warrant that all plant material under this Contract will be vigorous, healthy, free of dead or dying branches and branch tips, bearing foliage of normal density and color, and will otherwise comply with these Specifications for a period of 1 year from date of Acceptance of Project.
  - 2. Replacements: Without cost to City, in a timely manner and as directed by the Engineer, replace all plants not meeting the requirements above during and at the end of the 1 year Guarantee Period. Replace plants which are identified, within 3 years, as not being true to name as specified, with the specified plant. Replacements shall closely match adjacent specimens of the same species in size at the time of replacement, and shall comply with all requirements of this Specification.

## **PART 2 PRODUCTS**

### 2.01 PALMS

- A. General: Plants shall be nursery grown in accordance with good horticultural practices under climatic conditions similar to those of project for at least one year unless otherwise accepted by the City Landscape Architect.
- B. Quality: Plants shall be compact and symmetrical; sound, healthy and vigorous, well branched and densely foliated when in leaf; free of disease, insect pests, eggs or larvae, and free from physical damage or adverse conditions that would prevent thriving growth.
- C. Plants shall be labeled at the supplying nursery with genus, species and variety.
- D. Canary Island Date Palms (*Phoenix canariensis*) shall have a clear trunk height of 12 feet minimum. Palms are known to be available from Moon Valley Nurseries, 520 Rucker Ave., Gilroy CA; 408-358-5618.
- E. Plants shall have been grown in accordance with good horticultural practices under climatic conditions similar to those for the project for at least two (2) years prior to shipment to the site.
- F. Plants shall be specimen quality, well-grown, symmetrical, without curvature or leaning trunk from the perpendicular and so trained or favored in appearance as to be superior in form, compactness and symmetry of crown.

- G. Plants shall be healthy and vigorous, well foliate and showing no sign of fungus Fusarium oxysporum, root disease and vascular infections.

2.02 PALM SPECIALIST

- A. The City's Palm Specialist, for this project, will be acting within the authority conferred by the City Council, and is responsible for administration of this aspect of the project inspection on behalf of the City, including authority to provide direction to the design professionals, the General Contractor, and their subcontractors, in the form of verbal direction, written direction, Field Orders, or other direction, to ensure proper and timely completion of the project.
- B. Contact information for Palm Specialist: HortScience, Inc.

2.03 SAND

- A. For planting palms: Washed plasterer's sand.
- B. Sieve analysis, percent passing by weight

No. 4	100
No. 10	85-100
No.18	50-100
No. 35	0-100
No. 60	0-50
No. 1400-20	
No. 2700-5	

- C. Chemistry:

- 1. Salinity (mmhos/centimeter of saturation extract at 25 degrees C): Nil - 3.0.  
Boron (saturation extract concentration): Nil - 1.0 ppm.  
Sodium (SAR): Nil - 4.0.

2.04 TOOL STERILIZATION

- A. Chlorine bleach 50% dilution – 5 minutes.
- B. Rubbing alcohol (isopropyl 70%) 50% dilution – 10 minutes.
- C. Denatured ethanol (>95%) 50% dilution – 10 minutes.
- D. Pine Sol 25% dilution – 10 minutes.

2.05 FUNGICIDES

- A. The fungicide shall be Cleary's 3336 F
- B. Subdue Maxx

**PART 3 EXECUTION**

3.01 PRE-INSTALLATION PRELIMINARY INSPECTIONS, NOTICES AND PERMITS

- A. All inspections and permits which may be required by the State of California and/or Alameda County for moving and transplanting plant materials on this project shall be the sole responsibility of the landscape contractor.
- B. A written notice shall be submitted to the project palm specialist indicating the date and time of transplanting a minimum of 30 days prior to its commencement.
- C. All palms shall be inspected by the project palm prior to excavation to confirm that they are vigorous and free of visible signs or symptoms of disease, pests or structural defects. Only those palms approved by the City of Fremont shall be transplanted.
- D. Additional inspections shall be made after excavation but prior to installation. Refer to Inspections, Pruning And Fungicide Treatments, herein.

3.02 EXCAVATION REQUIREMENTS FOR FIELD REMOVAL

- A. Prior to any excavation or other work on the site, it shall be confirmed by the grower that there are no cables, conduits, utility lines, structures, features or conditions below or above ground that will be adversely affected or damaged in any way as a result of the transplanting operations.
- B. Abandoned utilities, incorporated into the root ball due to root growth shall either be removed with no significant loss of root ball material. Excessive abandoned utilities in the root ball, which cannot be removed without compromising the root ball integrity, shall result in rejection of the tree.
- C. Palms may be excavated either by hand or machinery provided the root ball remains intact and conforms to the minimum specified diameter and depth.
- D. Shape of root balls shall be square (as viewed from the top).
- E. Size of root balls
  - 1. Width of root balls (as measured by length of each side of the square) shall be 4 ft square minimum, to 6 ft square maximum, unless otherwise recommended, and approved by the City's Palm Specialist.
  - 2. Root ball widths are to provide additional stability and more rapid establishment in the landscape.
  - 3. Depth of root balls:  
Depth of root balls shall be determined by the depth at which the root zone breaks away from the underlying soil. Anticipated depth is 3 ½ to 5 ft.
- F. A 6 in. wide nylon sling suspended from the boom of a crane shall be tightened around the trunk prior to excavation to prevent it from toppling. If a crane is not immediately available for this purpose, no more than 2 sides of the root ball shall be excavated without the assistance of a crane.

3.03 REMOVAL, MOVING AND HANDLING

- A. Palms shall be removed immediately after excavation. If it is necessary to leave partially excavated palms in place overnight, all excavated areas (no more than 2 sides of the rootball) shall be filled with backfill sand to prevent loss of root ball moisture.
- B. Root balls shall not be allowed to dry out at any time.
- C. Transporting vehicles:

1. Palms shall be secured to the bed of the vehicle in such a way that the palms, including the pineapple, leaves and bud, are not injured or marked in any way.
  2. Nylon slings shall be used for securing palms, not cables or chains.
  3. When palms are laid in a horizontal position on the vehicle, the upper trunk shall be supported by blocks to prevent damage to the pineapple, leaves or bud. The blocks shall have a minimum width of 10 in. and shall be placed to support the trunk in such a way that the trunk is not damaged or marked in any way. No pressure shall be placed on the pineapple, leaves or bud.
  4. For tall palms that overhang the end of the vehicle, measures shall be taken to prevent any portion of the palm from touching the ground while the vehicle is moving.
  5. All specifications for handling, listed below, shall be followed for all transporting vehicle operations.
- D. Cranes shall be used for handling of palms. No other method is acceptable. Tractors, front end loaders or fork lifts shall not be used for this purpose.
- E. Minimal crane size shall be 40 tons. Heavier cranes may be required for larger palms depending on set-up locations.
- F. All rigging and support shall come from broad nylon slings (6 in. minimum width) of a type which will not abrade, bruise, cut, mark or otherwise damage or leave an imprint on the trunk surface.
- G. If there is a possibility that the support slings might damage or leave an imprint on the trunk surface, 1 or 2 in. thick lumber slats shall be placed between the rigging and the trunk in such a way that damage or marking will not occur.
- H. All removal, and handling operations shall be performed in such a way that neither the rigging, the boom of the crane nor any other object will damage or mark the trunk, root ball, leaves or bud in any way.
- I. Moving of palms from one location to another shall always be done by lifting them. Palms shall never be dragged from one place to another.
- J. Palms shall not be dropped, jarred or submitted to abrupt movements of any kind during handling. The trunks of palms shall not be allowed to bend or flex excessively during handling.
- K. For safety reasons, palms shall never be lifted or leaned over the crane, vehicles (other than transporting vehicles), structures, crew or bystanders.

#### 3.04 INSPECTIONS, PRUNING AND FUNGICIDE TREATMENTS PRIOR TO TRANSPORTATION

- A. After removal of the palms from the ground, and prior to loading on to the truck for transportation, palms shall be laid horizontally to be inspected, pruned and treated with a foliar fungicide, at the direction of the City's Palm Specialist.
- B. When palms are laid in a horizontal position, the upper trunk shall be supported by blocks to prevent damage to the leaves and bud. The blocks shall have a minimum width of 10 in. and shall be placed to support the trunk in such a way that the trunk is not damaged or marked in any way. No pressure shall be placed on the pineapple, leaves or bud.

- C. Inspections: The project palm specialist shall conduct 2 separate inspections after the palms have been laid in a horizontal position: (a) Prior to pruning and (b) after pruning but prior to the foliar fungicide application. Only those palms which pass the inspection shall be pruned and treated with a fungicide.
- D. Pruning: All living leaves which emerge from the trunk at an angle below 60 degrees above horizontal shall be removed. All dead leaves and all flower and fruit stalks (living and dead) shall also be removed regardless of the angle at which they emerge from the trunk. Remaining leaves shall not be shortened, tipped or cut back in any way.
1. Care shall be taken not to cut, nick or otherwise damage any leaves which are not being removed.
  2. The spear leaf in the center of the crown shall not be pruned or disturbed in any way; serious decline or death of the tree can result.
  3. A new saw, or chain saw, will be used for each tree that requires pruning. New equipment shall be dedicated for each tree to prevent the spread of fusiclium wilt bacteria and other infectious diseases that may lead to serious decline or death of the tree.
- E. "Skinning" of the trunk and shaping of the pineapple:
1. Skinning refers to the removal of dead leaf bases and fibers to give the trunks a smooth appearance and shall be done with a finely sharpened flat nosed shovel or similar tool. Leaf bases shall be removed without injuring underlying trunk tissues. The diamond pattern of leaf bases which are characteristic of the trunks of this species shall be plainly visible. The trunks shall be made smooth and rounded (with no flattened facets) from the top of the root initiation zone to the bottom of the pineapple. The pineapple shall be 2 ½ to 4 ft. in height and shall be smooth, rounded, unscarred and symmetrically formed.
  2. A new shovel will be used for each tree to perform skinning operations. New equipment shall be dedicated for each tree to prevent the spread of fusiclium wilt bacteria and other infectious diseases that may lead to serious decline or death of the tree.
  3. Skinning will only occur at the direction of the City's Palm Specialist
- F. Tool sterilization:
1. Before pruning, skinning or shaping the pineapple of any individual palm, all tools used for this purpose shall be disinfected by soaking them in one of the following water based solutions for the designated period of time:
    - a) Chlorine bleach 50% dilution – 5 minutes.
    - b) Rubbing alcohol (isopropyl 70%) 50% dilution – 10 minutes.
    - c) Denatured ethanol (>95%) 50% dilution – 10 minutes.
    - d) *Pine Sol* 25% dilution – 10 minutes.
  2. All portions of cutting blades shall be completely submerged. Non-mechanized pruning and skinning tools are recommended. Chain saws cannot be adequately disinfected and shall not be used.
- G. Fungicide application: The foliage, bud and all pruning cuts shall be treated as follows with a spray application of a preventative fungicide to inhibit the establishment

and spread of fungus diseases, including Gliocladium blight. (Gliocladium vermoeseni):

1. Fungicide shall not be mixed with fertilizers or any other applications.
  2. Additional pest control recommendations shall be submitted by a Pest Control Advisor (PCA) registered with Alameda County and the State of California.
  3. Fungicide applications shall be made by a registered Pesticide Applicator.
  4. All safety and precautionary measures specified on the fungicide label shall be followed.
- H. Tying of leaf bundles: After completion of pruning and fungicide application, all palm leaves shall be securely tied into a bundle in an upright position parallel with the trunk. Untreated 3 ply twine shall be used for tying. The leaves shall be secured tightly enough to protect the bud and to remain in place during handling and installation but not so tight as to break or crack leaf stems. Leaves shall not be untied for the following periods of time:
1. If palms are transplanted between May 1st and October 1st: Leaves shall be untied 6 weeks after transplanting.
  2. If palms are transplanted any time other than between May 1st and October 1st: Leaves shall be untied immediately after transplanting.

### 3.05 INSTALLATION

- A. Palms may be installed at any time of the year to accommodate project schedule. However, if possible, palms should be installed between May 1st and July 1st to maximize the likelihood of survival and minimize the possibility of wind throw
- B. Prior to excavation of planting pits or any other work on the site, it shall be confirmed that there are no cables, conduits, utility lines, structures, features or conditions below or above ground that will be adversely affected or damaged in any way as a result of the installation. Contractor shall be responsible for contacting USA, performing any investigative excavations, and potholing to ensure the proposed tree pits are clear of utilities.
- C. During installation, refer to Part C herein, "Removal, Moving and Handling" for guidance on moving and handling all plant material.
- D. The project palm specialist shall be present to monitor the installation at all times.
  1. The City's palm specialist shall inspect and accept all trees upon delivery.
  2. Removal, lifting and placement will be done with the coordination, and at the direction of the City's Palm Specialist.
- E. Size of planting pit:
  1. Width: The planting pit shall be square and shall have a width 2 ft. greater than the width of the root ball. Root ball widths shall vary with trunk height. Refer to "Excavation Requirements for Field Removal", found elsewhere herein
  2. To ensure stability of the palms, it is crucial that planting pits not be excavated with a width which varies significantly from these measurements.
  3. Depth: Depth shall allow for a minimal 12 in. layer of backfill sand and a layer of drain rock underlying the root ball. The planting pit depth shall be determined in

part by the depth at which the root ball will be planted. Palms of different heights will be planted at different depths as specified below under Depth of Planting.

- F. Depth of Planting: At minimum, top of root ball should be held 3" below the surrounding grade to allow for a perimeter sand berm to hold water within the planting pit, prevent runoff, and provide greater stability. This shall vary if the following conditions occur:
1. For palms less than 20 ft. tall: top of root ball 3 inches below grade.
  2. For palms 20 – 40 ft. tall: top of root balls 6 inches below grade.
  3. For palms over 40 ft. tall: top of root balls 12 inches below grade.
- G. Sides of the planting pit shall be scarified before installation to eliminate glazing and facilitate rooting into the surrounding soil.
- H. The bottom surface of the planting pit shall have a 2 % slope toward the drainage chimney.
- I. Subsurface Drainage Piping:
1. A 6 in. diameter perforated PVC drain pipe shall be installed a minimum of 15 inches below the root ball of each palm
  2. The drain pipe shall be installed with the perforations facing downward and shall be connected to a storm drain at a minimal 1.5 % slope.
  3. The drain pipe shall be surrounded on all sides with a minimal 3 in. layer of ¾ in. drain rock. The drain rock which surrounds the pipe shall be covered on all sides with filter fabric.
- J. Drainage aeration/inspection tubes:
1. To monitor drainage, a rigid 6 inch diameter perforated PVC pipe shall be installed vertically to the bottom of the planting pit of each palm. The sides of the pipe, but not the bottom, shall be wrapped in a filter fabric sock. Soil shall not be allowed into the interior of the pipe. The opening of the pipe shall rise to 3 in. above grade and shall be equipped with an easily removable, threaded, solid cover with a 1 ¼ in. diameter hole drilled into the center.
  2. Aeration/inspection tubes shall be connected to the horizontal drainage pipe.
  3. Do not install irrigation bubblers within the aeration/inspection tubes
- K. Irrigation System: A time controlled irrigation system shall be installed for each palm as follows:
1. The system shall be provided with 2 control valves dedicated exclusively to the irrigation of the palms. The palms shall be divided equally between the 2 valves. The system shall provide a volume capability of 100 gallons per day per palm. The system shall include pressure equalization components to ensure an accurate distribution of water to all palms regardless of their location within the overall design.
  2. Four 360° flood bubblers (0.5 gpm) shall be spaced evenly around the base of each palm with the emitters located directly against the trunk at grade. Root balls shall not be damaged during bubbler installation.

3. A berm of backfill sand shall be maintained as close to the base of the palm as possible while leaving the bubbler emitters uncovered. The minimal height and width of the berm shall be 3 inches high and 12 inches wide.
  4. The berm will prevent runoff and ensure that a portion of the irrigation water infiltrates into the top of the root ball rather than all drain through the backfill sand.
- L. Backfill sand:
1. Root balls shall be backfilled with washed, sharp concrete sand which has a minimum 0.5 mm particle size and minimum 200 in. per hr. infiltration rate.
  2. Supplier specifications, an independent laboratory analysis and a 2 lb. sample of the backfill sand shall be provided to the project palm specialist by the installation contractor a minimum of 14 days prior to delivery of the sand on site.
  3. Backfill sand shall be backfilled in layers and thoroughly settled with water to eliminate air pockets. Water shall be applied by means of a water-jet outlet at the end of an extension pipe equipped with an on-off valve and long enough to reach a minimum depth of 12 in. greater than the depth of the planting pit.
  4. Only washed concrete sand shall be placed over root balls.
- M. No fertilizers or amendments shall be applied at the time of installation.
- N. Palms shall be installed with their root balls centered in the planting pits.
- O. Palms shall be installed plum.
- P. Sufficient water shall be applied to supply each palm thoroughly with its irrigation needs at the time of planting. If the specified irrigation system is not in place at the time of installation, immediate provisions shall be made for the palms to be hand watered. The irrigation schedule shall be in accordance with details given in Section 02960, Palm Tree Maintenance: Pre-Establishment Specifications, Section 2: Water Management.
- Q. After the root balls have been backfilled, a 30 gal. fungicidal soil drench shall be applied to each palm. The drench shall be applied uniformly to the surface of the root ball. A berm shall be constructed at the edge of the root ball to prevent runoff. The drench shall contain a mixture of the following 2 fungicides:
1. Cleary's 3336 F:
    - a) Dilution rate: 16 oz. per 100 gals.
    - b) Rate per tree: 4.8 oz. per tree (in 30 gal. solution).
  2. Subdue Maxx:
    - a) Dilution rate: 2 oz. per 100 gals.
    - b) Rate per tree: 0.6 oz. per tree (in 30 gal. solution).
  3. Fungicides shall not be mixed with fertilizers or any other applications.
  4. Prior to application, supplementary recommendations shall be submitted by a Pest Control Advisor (PCA) registered with Alameda County and the State of California.
  5. Fungicide applications shall be made with a registered Pesticide Applicator.

6. All safety and precautionary measures specified on the fungicide label shall be followed.
- R. Finished grade shall drain a minimum of 2% away from trunk.
- S. The installation of rigid braces or guys can aid in supporting the palms and preventing them from leaning or toppling. The need for braces or guy shall be determined at the discretion of the landscape contractor. If braces or guys are installed, no nails, screws or any other hardware which requires wounding of the palms shall be employed for this purpose.
- T. It remains the sole responsibility of the landscape contractor to handle palms in a responsible and safe manner which is consistent with these specifications. Damage during excavation, moving, handling or installation of palms remains the sole responsibility of the contractor and may be grounds for rejection if specifications are not followed.
- U. After installation has been completed, all tools, equipment, trash and debris used or accumulated during the operation shall be removed from the project site. All scars, ruts or other marks in the area caused by the installation shall be repaired at the landscape contractor's expense and the site shall be left in a neat and orderly condition.
- V. Any adjustments necessary to straighten palms due to settling or shifting shall be made by the installation contractor at no charge to the City of Fremont for the duration of the warranty period.

### 3.06 WARRANTY

- A. Palms shall be warranted by the landscape contractor and General Contractor for a minimum of 12 months after installation, upon expiration of the project warranty, and full acceptance by the City.
- B. Contractor liability shall cover palm purchase price, transportation, installation, and handling costs, including the cost of labor, equipment and materials to replace trees of the same species, quality and size (or smaller sizes if approved by the City of Fremont).
- C. At the discretion of the City of Fremont monetary compensation may be required as determined by the Replacement Cost Method specified in the Guide for Plant Appraisal, Ninth Edition, (2000) by the Council of Tree and Landscape Appraisers published by the International Society of Arboriculture, Savoy, IL., U.S.A.
- D. If disease, physiological stress, leaning of the trunk or decline of any type occurs during the warranty period, the contractor shall be responsible for treatment costs. The terms of the warranty shall remain in place and be extended until vigorous growth returns to the satisfaction of the project palm specialist.
- E. One month or less prior to expiration of the warranty, the palms shall be inspected by the project palm specialist to determine whether problems exist which are covered by the warranty.

### 3.07 MEASUREMENT AND PAYMENT

- A. The contract unit price for "**Canary Island Palm**" shall include full compensation for furnishing all labor, materials, tools, equipment and incidentals and for doing all the work covered in this Section, complete in place as shown on the plans, as required

by the Special Provisions, and as required by the Engineer or Palm Specialist, and no separate payment will be made therefore.

END OF SECTION

CITY COUNCIL  
REFERENCE ONLY

**SECTION 32 92 23 SOD**

**PART 1 GENERAL**

1.01 SECTION INCLUDES

- A. Preparation of subsoil.
- B. Placing topsoil.
- C. Fertilizing.
- D. Sod installation.
- E. Maintenance

1.02 RELATED REQUIREMENTS

- A. Section 01 30 00 "Submittal Procedures"
- B. Section 32 80 00 "Irrigation"
- C. Section 32 91 13 "Soil Preparation and Soil Amendment"

1.03 DEFINITIONS

- A. Weeds: Includes Dandelion, Jimsonweed, Quackgrass, Horsetail, Morning Glory, Rush Grass, Mustard, Lambsquarter, Chickweed, Cress, Crabgrass, Canadian Thistle, Nutgrass, Poison Oak, Blackberry, Tansy Ragwort, Bermuda Grass, Johnson Grass, Poison Ivy, Nut Sedge, Nimble Will, Bindweed, Bent Grass, Wild Garlic, Perennial Sorrel, and Brome Grass.

1.04 SUBMITTALS

- A. See Section 01 30 00 "Submittal Procedures".
- B. Product Data: Submit list of all products including sod product brochure, including names of producers or Suppliers.
- C. Certificates/Invoices: Submit duplicate, legible copies of certificates or invoices for all grass species and location of sod source, chemicals, fertilizers, and other materials stating the grade, weight, or quantity, source, and date of delivery.
- D. Maintenance Data: Include maintenance instructions, cutting method and maximum grass height; types, application frequency, and recommended coverage of fertilizer.

1.05 QUALITY ASSURANCE

- A. Sod Producer: Company specializing in sod production and harvesting with a minimum of five years of experience and certified by the State of California.

1.06 DELIVERY, STORAGE, AND HANDLING

- A. Harvest, deliver, store, and handle sod according to requirements in TPI's "Guideline Specifications to Turfgrass Sodding". Deliver sod on pallets. Protect exposed roots from dehydration.
- B. Deliver sod in time for planting within 24 hours of harvesting. Protect sod from breakage, seed contamination and drying.
- C. Do not deliver more sod than can be laid within 24 hours.

1.07 STORAGE OF MATERIALS

- A. Fertilizer and lime shall not be stored with other landscape materials.
- B. Soil sterilant shall not be stored with other landscape materials.
- C. Storage of materials shall only be areas designated or as approved by the Project Inspector.

**PART 2 PRODUCTS**

2.01 MATERIALS

- A. Sod shall be grown in accordance with California agricultural codes.
  - 1. Sod shall be healthy field grown sod containing not more than 1/2-inch thick thatch.
  - 2. Soil upon which the sod has been grown shall be peat, sand or sandy-loam with a minimum 5 inch per hour percolation rate.
  - 3. The age of the sod shall be not less than 8 months or more than 16 months.
  - 4. Sod shall be machine cut at a uniform soil thickness of 1/2 inch to 5/8 inch, plus or minus 1/4 inch, not including top growth and thatch. Ship sod in rolls and covered to prevent drying out en-route. Keep sod moist at all times to prevent drying out.
  - 5. Sod shall be thick, well-grown, medium texture, deep root system, good wear tolerance and quick recovery form wear, tolerant of saline soils and saline irrigation, adaptable to USDA zones 3 to 9, requires sun most of the day with moderate shade tolerance, mowable to 1" to 3".
  - 6. Regular roll sizes can vary from 24" x 54" to 48" x 125", area per pallet should cover approximately 504 square feet. Weight per pallet should be approximately 2500 pounds, depending upon commercial grower and shipping requirements.
  - 7. Sod shall be free of netting.
  - 8. Sod shall be free of the following: weeds, disease, excessive thatch, burned or bare spots, stones, insects, and non-desirable types of grasses and clovers and shall show no signs of mechanical injury.
  - 9. Contractor shall provide a submittal identifying supplier, type of sod, and other characteristic of the material, unless sod type is identified on the plans. Care should be taken to prevent drying during shipping and handling.
  - 10. Sod shall be delivered to the site in vigorous condition, free of stones, burned or bare spots, weed and disease-free.
  - 11. Grass from sod shall be used in other refined turf areas which are damaged by this construction work. Replacement sod mix shall match the existing sod and be approved by the Project Inspector or Project Landscape Architect prior to installation. Remove existing damaged sod areas prior to installing new replacement sod, prepare soil and comply with the requirements of these Construction Specifications.
  - 12. Fertilizer: As Approved; recommended for grass, with fifty percent of the elements derived from organic sources; of proportion necessary to eliminate any deficiencies of topsoil, as indicated by analysis.

## 2.02 SOD LAWN

- A. Sod shall be a non-netted or biodegradable netted fescue/bluegrass blend (90%/10%) or bluegrass/rye blend (80%/20% or 50/50), with a determinate-stolons for faster spreading roots and quick repairs to damaged turf.
- B. Lawn Area: Sod shall be one of the following approved products:
  - 1. "Blueridge 80/20 with RPR" from Greenfields Turf, Inc, 1-800-673-3058. 80% Kentucky Bluegrass and 20% Regenerating Perennial Ryegrass (RPR) with a determinate-stolons for faster spreading roots and quick repairs to damaged turf.
  - 2. "Non-Netted Blueridge Sports Turf 50/50 with RPR" from Greenfields Turf, Inc, 1-800-673-3058. 50% Kentucky Bluegrass and 50% Regenerating Perennial Ryegrass (RPR) with a determinate-stolons for faster spreading roots and quick repairs to damaged turf.
  - 3. "Premium RTF Water Saver Non-Netted Blend" from Park Avenue Turf, Inc. 1-800-734-8859. Rhizomatous tall fescue.
- C. Other turf portions listed below will only be accepted if the above materials are not available:
  - 1. "West Coaster" from West Coast Turf; 1-888-893-8873.
  - 2. "90/10 Tall Fescue" from Delta Blue Grass; 1-800-637-8873
  - 3. "Medallion Plus" (90% fescue/10% Bluegrass) from Pacific Sod; 1-800-942-5296.
  - 4. Or Approved Equal

## **PART 3 EXECUTION**

### 3.01 GENERAL

- A. Deliver sod to Jobsite, unload and store sod on pallets. Deliver to Jobsite within 24 hours of being lifted from growing ground and lay sod the same day as delivery.
- B. Sod installation shall not begin until all other improvements have been installed in each area that is to receive grass from sod.
- C. Sod shall be installed the same day as delivered.
- D. No sod installation shall occur during weather conditions that will adversely affect materials or installation or when soil is in a muddy condition. During wet weather, allow sod to dry sufficiently to prevent tearing during lifting and handling.

### 3.02 INSTALLATION

- A. Prior to any sod installation, soil amendment, 30-Day watering and weeding eradication, and finish grading shall be complete and accepted by the Project Inspector and Landscape Architect, and the irrigation system shall be fully functioning and accepted by the Project Inspector and Landscape Architect.
- B. Prior to placing sod and after 30-Day watering and weeding period has been completed, recheck finish grades and add or remove topsoil as required.
- C. Refer to Section 32 91 13 "Soil Preparation and Soil Amendment" for additional information regarding water settling.
- D. After cultivation, soil preparation, installation of irrigation systems, and excavation and backfilling of plant holes are completed, areas to be planted with sod shall be

fine graded and rolled. Areas to be planted with sod shall be graded for positive drainage to drain at the minimum slopes described on the plans, without low spots or birdbaths in all areas and shall be smooth and uniform prior to placing sod.

- E. Areas to be planted with sod adjacent to sidewalks, concrete headers, and other paved borders and surfaced areas, such as irrigation trenches, shall be 1-1/2 inches, plus or minus 1/4 inch, below the finish grade of the adjacent hardscape features, after fine grading, rolling, and settlement of the soil. Do not mechanically compact planting areas. Soil in planting areas shall remain friable and not to exceed 85 percent relative compaction.
- F. Just prior to laying of sod, broadcast ammonium phosphate (16-20-0) at the rate of 20 lbs./1000 sq. ft. unless otherwise noted in the drawings, or as recommended in the soil test and report.
- G. Unroll the sod; fit each strip tightly to the preceding strip. Do not stretch. Install each strip together as tightly as possible and without gaps or overlap. Sod shall be placed so that the ends of adjacent strips of sod are staggered a minimum of 2 feet. Edges and ends of sod shall be placed firmly against adjacent sod and against sidewalks, concrete headers, header boards, and other paved borders and surfaced areas.
- H. After placement of the sod, the entire sodded area shall be lightly rolled to eliminate air pockets and to ensure close contact with the soil. After rolling, the sodded areas shall be watered so that the soil is moistened to a minimum depth of 4 inches. The second rolling shall be at a cross angle from the first rolling. Upon completion of the rolling, apply sufficient water to wet the sod and soil to a depth of 6 inches. Sod shall be kept moist for the next 10 Days. Care shall be taken to prevent footprints in the sod. Sod shall not be allowed to dry out.
- I. If irregular or uneven areas appear before or during the plant maintenance period, these areas shall be restored to a smooth and even appearance. Rocks, clods, and debris, which appear on the surface, shall be removed. Heaved, settled, or eroded areas, including but not limited to soil settlement, damage from burrowing and browsing animals, vandalism, and car traffic shall be restored by excavating, filling, finish grading, rolling, and re-sodding as required.
- J. Temporary Construction Fencing shall be placed around sod areas beginning at finish grading operation through to final inspection to prevent through traffic. Barriers shall not create a hazard for pedestrian or vehicular traffic.
- K. Apply second application of fertilizer after 45-60 Days. Apply ammonium phosphate (16-20-0) at the rate of 10 lbs per 1,000 square feet. Apply additional fertilizer applications as required and in accordance with accepted horticultural practices for sod maintenance. Mow, trim, cut down seed heads and keep sod in a neat orderly appearance at all times and as directed by the City's Representative. Bag grass cuttings while mowing and sweep up all trimmings and plant debris and dispose of Jobsite. Sod that has become uneven, weedy, damaged, diseased, vandalized or dies prior to final acceptance shall be removed and replaced with same type of sod. Replanting shall follow same planting procedures as outlined above. All grass from sod areas shall be healthy, strongly rooted, free of the following, weeds, disease, thatch, pests, damage, bare spots or stones, and shall show no signs of mechanical injury at final inspection.

### 3.03 PRELIMINARY INSPECTION

- A. At the completion of work, request a preliminary inspection to determine the condition of the grass from sod.

B. Inspection shall be requested 48 hours in advance.

3.04 INSPECTION

A. Grass from sod considered ready for inspection shall conform to the following:

1. Grass from sod areas shall be established and show a uniform, undamaged, healthy, and full stand of grass with a smooth and uninterrupted grass surface.
2. Sodded areas shall be uniform in slope in accordance with these Construction Specifications and shall conform to the finish grades as shown on the Contract Drawings.

3.05 APPROVAL

- A. If the installation is found satisfactory, the work will be accepted by the City's Representative in writing.
- B. If the installation is found unsatisfactory, the City Project Inspector or Project Landscape Architect will provide a punch list to the Contractor. The Contractor is responsible for requesting additional inspections after the conditions of the punch list have been corrected.

3.06 REPLACEMENT

- A. Replace grass from sod in any area where growth is not vigorous, damaged, diseased, spotty, missing, or dead.
- B. The replacement grass from sod shall be of the same type and quality as the original.

3.07 MAINTENANCE OF SOD

- A. Maintenance of sod shall be addressed herein below.
  1. Maintenance shall include, but is not limited to all watering, weeding, fertilizing, cultivation, grass mowing and trimming, rodent control, other wildlife and animal control, spraying, re-sodding and replacement of damaged, dead and dying grass areas, and mowing and trimming as directed by the City Project Inspector or Project Landscape Architect and as necessary to keep the sod in a healthy growing condition and to keep the planted areas neat and attractive in appearance throughout the maintenance period. Sod shall be kept at optimum moisture condition for thriving growth without over watering. During the maintenance period, should the appearance of any sod areas indicate weakness and the probability of dying, in the opinion of the City Project Inspector or Project Landscape Architect, the area showing such weakness shall be removed and re-sodded immediately by the Contractor. Replacement of grass from sod shall be made in the same manner as specified for the original grass from sod. At the end of the maintenance period, all grass from sod areas shall be in a healthy growing condition and free of physical injury of any kind.
  2. Mowing
    - a. Winter: Mow grass to 2-1/2 inches when it reaches a height of 3-1/2 inches.
    - b. Other Seasons: Mow grass to 3 inches when it reaches a height of 4 inches.
    - c. Bruising or rough cutting of grass will not be permitted. Mowers will also be adjusted and operated so that the grass is cut at a uniform height. Scalping of high places or crowns of mounds will not be permitted. Remove papers and debris prior to mowing.

- d. The Contractor shall be responsible for mowing installed sod and all adjacent sod within the temporary construction fence and outside said fence for the entirety of the Plant Establishment Period. At no time shall the contractor allow sod outside the temporary construction fence reach a height greater than 6 inches.
  - e. At no point shall City crews enter the project limits of work to perform mowing. If City enters the site, at the request of the Contractor, or at the direction of the City due to negligence of the Contractor to perform mowing, the Contractor shall be charged on a time and materials basis, by the City, and the cost for performing said work shall be retained from their contract, and deducted.
- B. Work under this Construction Specifications Section shall include complete responsibility for maintaining adequate protection for all areas. Damaged areas shall be repaired at no additional expense to the City.
  - C. Weed all areas at intervals of not more than 10 Days.
  - D. Rocks, clods, and debris, which appear on the surface, shall be removed. Heaved, settled, or eroded areas shall be restored by excavating, filling, finish grading, rolling, and re-sodding as required.
  - E. All other aspects of the scope of the Plant Establishment Period as needed to maintain sod, shall apply to this section.

### 3.08 PLANT ESTABLISHMENT PERIOD

- A. A planting review and preliminary inspection and punch list for the plantings will be held by the City Project Inspector, Project Landscape Architect, and the Park Superintendent upon written request of the Contractor. The Plant Establishment Period may begin only after the City Project Inspector, Project Landscape Architect and Parks Superintendent have given written acceptance of the landscape and irrigation system installation.
- B. The start of the maintenance of sod shall coincide with the plant maintenance period. A longer period may be required if necessary to establish acceptable stands of thriving grass.
- C. Plant Establishment Period: The maintenance and plant establishment period for all landscaped areas shall be thirty (30) days.
- D. Upon completion of all planting and clean-up operations, notify the City Project Inspector or Project Landscape Architect, in writing, a minimum of 3 Days in advance, to request a final inspection.
- E. Start of Plant Establishment Period: Upon written approval of the work by the City Project Inspector or Senior Construction Coordinator, the maintenance period shall begin. The first day of that period shall be specified in the Engineer's report, but not before all planting and irrigation punch list items are complete.
- F. Days during which no work will be required, as determined by the City Project Inspector or Project Landscape Architect, will be credited as Plant Establishment Days, regardless of whether or not the plant establishment work has been performed.
- G. Days when the plant establishment work has not been adequately performed, including watering plants, replacing unsuitable plants, repairing erosion damage, and performing weed, rodent, and other pest control as determined necessary by the Project Inspector or Project Landscape Architect, will not be credited as Plant Establishment Days.

- H. Upon completion of the Plant Establishment Period, submit a written request for inspections by the City Project Inspector or Project Landscape Architect as specified herein.
- I. Plant Establishment Period Scope: The Contractor shall provide complete landscape maintenance of all planting areas. The work shall include, but not be limited to, watering, litter control, insect, disease and pest control, mowing, fertilizing, pruning, weed control, rolling, cultivating, repair of irrigation systems, and erosion control.
- J. Watering
1. The moisture content in all planted areas shall be sufficient to insure healthy plants and vigorous growth. This shall be accomplished by means of visual observation of plant material and the surrounding surface soil conditions within any given area.
  2. Observed deficiencies or excesses in watering program will be corrected immediately by the adjustment of controllers, as required. Controllers shall be programmed to water deeply without runoff by use of short repeat cycles.
  3. Irrigation shall be controlled and individual heads adjusted to prevent overspray and runoff onto paved areas.
  4. Trees planted within Tree Well Planters are not on an irrigation system and shall be watered by hand.
- K. Insect, Disease and Pest Control: Pesticides and herbicides are not allowed unless approved by the City.
- L. Weed Control
1. Weeds shall be kept under control by hand or by the application of herbicides designed for use on any type of weeds invading the planting areas, at not less than 10-day intervals.
  2. All equipment used for applying herbicides shall be properly cleaned before it is used on this project. Herbicides shall be applied per manufacturer's printed instructions. Herbicides shall not be used during windy or gusty days. All possible precautions shall be taken to protect desirable vegetation from damage. Any repair, or replacement with new plants of existing trees to be preserved shall be at the Contractor's expense.
  3. The application of herbicides in lieu of hand weeding may only occur after submittal of an herbicide application schedule, the effect of proposed herbicide on surrounding vegetation, and approval of the schedule by the City Park Superintendent and Project Landscape Architect, in writing.
- M. Replacements: Immediately replace any plant materials that die or are damaged within 5 working days. Replacements shall be made to the specifications required for original plantings.
- N. Condition of Plantings at the End of the Maintenance Period.
1. All plant materials shall be live, healthy, undamaged, and free from infestations.
  2. Planting areas shall be free of all broadleaf and grass weeds.
  3. Plantings that do not conform to these specifications shall be replaced and brought to a satisfactory condition before final acceptance of the work.
- O. Final Inspection and Acceptance.

3.09 GUARANTEE

- A. All plants installed under the contract shall be guaranteed to live and grow for a period of one year from the date of final acceptance of contract work.
- B. Any material found to be dead, missing, or in poor condition during the guarantee period, shall be replaced by the Contractor within fifteen (15) days of written notification by the City. Replacement shall be made to the same specifications required for original plantings, and shall be at no cost to the City.
- C. Guarantee that sod will take root and grow vigorously within 1 year after final acceptance of plantings, when such plants have received normal care and maintenance.
- D. Corrective work shall include removal and replacement of all guaranteed plant materials which, for any reason, fail to meet the requirements of the guaranty. Replacements shall meet the same requirements as specified for the original materials. Replacements shall carry the same guaranty period that shall start from the time the replacements are planted and accepted.

3.10 FINAL INSPECTION AND ACCEPTANCE

- A. Final inspection will be conducted at the end of the Maintenance Period. Notice requesting final inspection shall be submitted by the Contractor to the Project Inspector or Project Landscape Architect at least 7 Days prior to the anticipated date.
- B. Acceptance of the work by the Project Inspector or Project Landscape Architect will be contingent upon proper maintenance and the establishment of a vigorous, uniform stand of grass over all areas with grass from sod. Any portion thereof, which does not show a vigorous, uniform stand of grass, shall make all grass from sod areas subject to continued maintenance at the Contractor's expense.
- C. The irrigation system shall also be tested at this time. See Section 32 84 00 "Irrigation", for additional information.
- D. Just prior to final inspection, 16-6-8 granular form commercial fertilizer shall be applied as follows:

<i>Plant Size</i>	<i>Qty. Fertilizer</i>
Grass from sod	6 lbs./1,000 sq. ft.

- E. At the final inspection, the Project Inspector or Project Landscape Architect will determine the condition of improvements, and grass from sod. Grass from sod, which is missing, spotty, vandalized, dead, or unhealthy, shall be replaced by the Contractor with the same species and methods originally specified. The Contractor shall make replacements within 2 weeks after final inspection and maintain grass from sod areas for an additional 30 Days.
- F. If Contract improvements, corrective work, and maintenance have not been performed as specified, maintenance shall continue at the Contractor's expense until such time as the work has been successfully completed. Should work have been performed as specified, the City will assume maintenance responsibilities following the final inspection. City Representative will send written Notice of Acceptance of the work to the Contractor.

3.11 MEASUREMENT AND PAYMENT

- A. The square foot contract price paid for "Sod" of the unit price schedule shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals and for doing all the work covered in this section, including water settlement, weed

eradication, soil preparation and amendment, complete in place as shown on the plans, as required by these Special Provisions, and as directed by the City Engineer.

**END OF SECTION**

CITY COUNCIL  
REFERENCE ONLY

CITY COUNCIL  
REFERENCE ONLY

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## DIVISION 33 – UTILITIES

### SECTION 33 00 00 POTABLE WATER

#### PART 1 GENERAL

##### 1.01 DESCRIPTION/SCOPE OF WORK

- A. Furnishing and installation of 1" potable water line and gate valves to drinking fountain
- B. Trenching and backfill
- C. Pipe bedding
- D. Connections to gate valve and drinking fountain
- E. Sterilization and testing
- F. Dust alleviation and control
- G. Cleanup and restoration of surface in improved areas.
- H. The work shall include the provision of all materials, equipment and apparatus not specifically mentioned herein or noted on the plans, but which are necessary to complete the work specified.

##### 1.02 RELATED SECTIONS

- A. Section 01 00 00 "Supplemental to the General Requirements"
- B. Section 31 00 00 "Earthwork"
- C. Section 32 33 00 "Site Furnishings"

##### 1.03 QUALITY ASSURANCE

- A. General
  - 1. Submit manufacturer's data on the pipe, materials, fittings, valves and service materials.
- B. The maximum allowable deflection (out of roundness) of PVC pipe under superimposed loads shall be 5% or the manufacturer's recommended maximum, whichever is smaller.
- C. The City Engineer may require manufacturer's certificates showing conformance with this specifications for any pipe materials, fittings, valves and appurtenances delivered to the job site.
- D. All work shall be done in accordance with the following specifications, standards, etc. included or cited herein.
- E. Trenching and backfill shall be done in accordance with Section 31 00 00 "Earthwork".
- F. Manufacturer's certificates showing conformance with this specification shall be delivered to the Project Manager with each shipment of materials delivered to the job site.
- G. Qualifications of Workmen/Materials/Work:

1. Employ only experienced, competent, and properly equipped workmen on job.
  - H. Use only new materials in perfect condition. Inspect all materials and immediately remove defective items from site.
  - I. Provide first-class workmanship in all respects, replacing work falling below these standards as directed by the City's Engineer.
  - J. Requirements of Regulatory Agencies:
    1. Conform to the applicable Plumbing and Mechanical codes, latest editions, and any Public Works Standard Specifications, latest edition. If conflicts in codes arise, City Engineer will make final decision.
  - K. Comply with applicable sections of "Standard Specifications for Public Works Construction", (P.W.C.) latest edition, Building News Inc., "Standard Specifications for Installation of Water Facilities" of the California American Water Co., and requirements and standards of Alameda County Water District (ACWD).
  - L. The requirements of the Drawings and Specifications are the minimum that will be allowed under this Section. In the event of a conflict between Specifications and applicable regulations, the more stringent will govern.
  - M. Pressure and Leakage Test
    1. Water mains, services and appurtenances shall be subject to hydrostatic and leakage tests in accordance with AWWA Manual M23 titled PVC Pipe, Design & Installation, by the American Water Works Association.
  - N. Sterilization
    1. Water mains, services and appurtenances shall be sterilized prior to connection to existing systems for domestic use in accordance with AWWA C651 titled AWWA Standard for Disinfecting Water Mains, by the American Water Works Association.
- 1.04 JOB CONDITIONS
- A. Contractor shall conduct operations and schedule cleanup in a manner to cause the least possible obstruction and inconvenience to traffic, pedestrians, and any adjacent property owners.
  - B. Damage:
    1. Protect all unfinished work to prevent damage and furnish protection of all surrounding areas where necessary.
  - C. Leak Damage:
    1. The Contractor shall be responsible during the installation and testing periods for any damage to the work of others, to buildings or their contents caused by leaks in any equipment, by unplugged or disconnected pipes or fittings, or by overflow, and shall pay for the necessary replacements or repairs to work of others damaged by such leakage.
- 1.05 SUBMITTALS
- A. Provide submittals in accordance with Article 2, subsection 2.5 "Submittals" and Article 15, Section 01 30 00 "Submittals".
  - B. As-Built Drawings:

1. Submit, within thirty (30) days after date of acceptance, one (1) complete set of CAD reproducible drawings to City Engineer, marked to show the As-Built Piping Condition.
- C. Show actual field dimensions from the nearest building or other permanent reference point, locating stub outs and concealed items, and show all deviations from the Drawings. Indicate invert elevations at all floor cleanouts, cleanouts to grade, and piping stub outs.

1.06 REFERENCES

- A. ASSE 1013 - Performance Requirements for reduced pressure principle backflow preventers.
- B. ASSE 1015 – Performance requirement for Double check backflow prevention assembly.
- C. AWWA C500-71-Standard for Gate Valves – 3 in. Through 4 in. – For Water and Other Liquids
- D. AWWA C600 – Standard for Installation of Gray and Ductile Cast Iron Water Mains and Appurtenances.
- E. AWWA C651 – Disinfecting Water Mains.
- F. AWWA C901 – Standard for Polyvinyl Chloride (PVC) pressure pipe and tubing ½” through 3” for water service.
- G. AWWA M23 – Manual for PVC Pipe-Design and installation.
- H. CDA – Copper Development Association, Copper Tube Handbook.
- I. ASTM A74 – Standard Specification for Cast Iron Soil Pipe and Fittings
- J. ASTM B88 – Standard Specification for Seamless Copper Water Tube
- K. ASTM C12 – Standard Practice for Installing Vitrified Clay Pipe Lines
- L. ASTM C425 – Standard Specification for Compression Joints for Vitrified Clay Pipe and Fittings.
- M. ASTM C564 – Standard Specification for Rubber Gaskets for Cast Iron Soil Pipe and Fittings.
- N. ASTM D2855 – Standard Practice for the Two-Step (Primer and Solvent Cement) Method of Joining Poly (Vinyl Chloride) (PVC) or Chlorinated Poly (Vinyl Chloride) (CPVC) Pipe and Piping Components with Tapered Sockets
- O. CISPI – Cast Iron Soil Pipe Institute.

**PART 2 PRODUCTS**

2.01 WATER LINE

- A. Domestic Water must conform to the City's Standard Specifications or Alameda County Water Department (ACWD) as noted below whichever is more stringent. Provide piping materials and factory-fabricated piping products of sizes, types, pressure ratings and capacities as indicated. Provide pipes of the following materials of weight/class indicated. Provide pipe fittings and accessories of same material and weight class as pipes, with joining method as indicated.
- B. Domestic Water - Valves and Accessories

1. Valves and Fittings: Conform to AWWA specifications. All valves and fittings shall be designed for an operating pressure larger than the design pressure of lines on which they are installed.
- C. Gate Valves: Double disk parallel seat type, iron body, bronze mounted inside screw, non-rising stem, flanged or screw fitting standard hub nut.
- D. Thrust Blocking: Provide on water lines at bends and tees for main line. Use 2,500 psi concrete and locate and place in accordance with standard practice.
- E. Access boxes: Brooks No. 1-SP with traffic cast iron galvanized cover marked "water" or equivalent.
- F. Domestic Water Service:
  1. 1" line to service drinking fountain
- G. Pipe shall be annealed (soft) Type "K" copper. No hard copper tubing is permitted. Size as noted on plans.

## 2.02 COUPLINGS

- A. Bolted, sleeve type couplings, reducer or transition couplings and flanged coupling adapters used to join plain end pipe shall be ductile iron conforming to AWWA C219 titled Bolted Sleeve Type Couplings for Plain End Pipe. Acceptable manufacturers are Smith Blair (Texarkana, Arkansas), Dresser (Bradford, Pennsylvania), or equal.
- B. All couplings and flanged coupling adapters for buried installation shall have stainless steel bolts and nuts or shall have nuts and bolts painted with coal tar.
- C. All couplings shall be fusion bonded epoxy coated to a minimum thickness of 13 mils.

## 2.03 GATE VALVE

- A. Gate valve shall be resilient seat gate valve and conform to the requirements of AWWA Standard C509 with iron body, non-rising stem, with O-ring seals, designed for a minimum working pressure of 200 psi as set forth in AWWA Standard C509. Stems shall be fitted with a square wrench nut and shall open counter-clockwise. Stem extensions shall be installed to bring the operating nut to within two (2) feet of finish grade. Gate valves shall be used for all valves four inches and larger and for blow-off valves.
- B. Valve shall have been hydrostatically tested by the manufacturer under a pressure at least twice the water working pressure for which they were designed and shall not have shown leakage or distortion in excess of that allowed under AWWA standards. Valve shall be accompanied with an affidavit of test certifying the required results, which certificate shall be delivered to the City Engineer at the time of installation. All interior and exterior ferrous surfaces shall be lined and coated with factory applied epoxy in accordance with AWWA C550. Minimum thickness shall be 8 mils.
- C. Two-inch square wrench nut shall be bronze and all other nuts and all bolts throughout shall be stainless steel.
- D. Valve shall be provided with boxes and covers set in a concrete base as shown and dimensioned on the detail in the plans.
- E. Manufacturer's certificates showing conformance with this specification shall be delivered to the Project Manager with each shipment of materials delivered to the job site.

2.04 LOCATING WIRE

- A. Locating wire shall be used on PVC piping installations, and shall be stranded copper, eight (8) gauge type TW or THHN electrical wire with solid blue jacket

2.05 PIPE BEDDING AND BACKFILL MATERIAL

- A. Bedding: Coarse sands and gravels with a maximum particle size of 1/2" inches, or bedding will meet the requirements for City Standard Trench Backfill for PVC piping. See Section 22 14 00 "Drainage" for sieve and further information.
- B. Remaining trench backfill material for the top 12 inches of the trench, in planting areas, or adjacent to concrete pathways, shall be native, onsite materials, previously excavated from the potable water line trench.

**PART 3 EXECUTION**

3.01 SURFACE CONDITIONS

- A. Inspection:
  - 1. Prior to all work of this Section, carefully inspect the installed work of other trades and verify that all such work is complete to the point where this installation may properly commence.
- B. Verify that all items of this Section may be installed in accordance with the original design and all referenced standards.
- C. Discrepancies:
  - 1. In the event of discrepancy, immediately notify the City's Engineer or their designee.
- D. Do not proceed with installation in areas of discrepancy until all such discrepancies have been fully resolved.
- E. Failure to notify the City's Engineer and give written notice of discrepancies shall constitute acceptance by the Contractor of existing conditions as fit and proper to receive his work.

3.02 EXISTING SITE UTILITIES

- A. Storm/Sanitary Sewer:
  - 1. Before trenching, verify the horizontal location and the invert elevations of all storm/sanitary sewer connection points.
- B. Carefully clean out existing manhole/area drain (as indicated on the Drawings) and flush existing drain lines to clean of dirt and silt. Disposition of material cleaned from drains to be verified with City.
- C. Domestic Water:
  - 1. Before trenching, verify location and elevation of domestic water point of connection as indicated on the Drawings.
- D. Make connections using approved backflow preventer and as per the referenced codes and standards.
- E. Maintain separation of water main from sewer piping in accordance with code.

1. Installing and relocating water meters and backflow preventers shall be done in accordance with applicable City of Fremont Standards and Alameda County Water District Standards.

### 3.03 GENERAL PIPING REQUIREMENTS

- A. Size any section of pipe for which size is not indicated or any intermediate section erroneously shown undersized the same size as the largest pipe connecting to it. Sizes listed are nominal.
- B. Cut pipe accurately to job measurements and install without springing or forcing, true to line and grade, generally square with building and/or structures and adequately supported to prevent sagging or undue stress on pipe, fittings and accessories. Install pipe to indicated elevation to within 5/8 inch.
- C. Make changes of size and direction with manufactured fittings. Street ells, bushings, reducing flanges, close nipples or bending of pipe is not allowed.
- D. Use great care to install piping in accordance with best practice. Plastic pipe shall be "snaked" in trenches. All procedures, methods and techniques used to make up solvent weld joints shall be in strict accordance with manufacturer's recommendations. Install pipe to allow for expansion and contraction without stressing pipe joints.
- E. Pipe identification: use plastic warning tapes when metallic piping is used, polyethylene plastic tape, 6 inches wide by 4 mills thick, solid blue in color with continuously printed caption in black letters "caution water line buried below". For nonmetallic piping is used place a label on the main electrical meter panel: not less than 1 inch by 3 inches, stating: "caution – this structure has a nonmetallic water service".
- F. Form and place concrete for thrust restraints at each elbow or change in direction of pipe.
- G. Install VCP in accordance with ASTM C12 with rubber sealing elements.

### 3.04 TRENCH EXCAVATION AND BACKFILL

- A. For additional information refer to Sections 31 00 00 "Earthwork" of these Specifications.
  1. Excavations of 5 feet or more in depth shall be shored or supported in conformance with rules, orders and regulations of City, State and Federal Governments, including the Division of Industrial Safety of the California Department of Industrial Relations. Shoring shall be constructed, maintained and removed in a manner to prevent caving of the excavation walls or other load on the pipe.
- B. Unless otherwise indicated on the Drawings, all pipes shall have a minimum of 18" of cover.

### 3.05 PIPE INSTALLATION

- A. Refer to Section 32 84 00 "Irrigation" for excavation, bedding, backfill, and marking tape for water facilities.
- B. Handling: Pipe, valves, and fittings shall be carefully handled during hauling, unloading, and placing operations, so as to avoid breakage or damage. Strap-type slings shall be used for lifting and placing; no chains or hooks will be permitted. Broken or damaged pipe or appurtenances will be rejected and shall be replaced by the Contractor at no additional cost to the Contract.

- C. Alignment: All pipes shall be accurately laid in conformity with the prescribed lines and grades as shown on the Plans. Each length shall be jointed to the preceding section as specified, and after said jointing has been completed, there shall be no movement of the pipe in subsequent operations.
- D. Pipe Deflections: The laying of pipe on curved alignment will not be permitted unless specifically shown or called for on the plans.
- E. Cleaning: Before each new length of pipe is placed, the interior of the preceding pipe shall be carefully cleaned of all dirt and debris. When pipe laying is not in progress, all open pipe ends shall be closed with watertight plugs.
- F. Bearing: Pipe in the trench shall have continuous uniform bearing along its bottom, except at bell holes. Blocking used to support the pipe during laying shall be placed at the end of the section and shall be removed before laying the next section. Holes for bells shall be dug prior to the placing of the pipe. Before lowering pipe into the trench, the Contractor shall remove all stakes, debris, loose rock and other hard material from the bottom of the trench.
- G. Positioning: After the final positioning, the pipe shall be held in place in the trench with cover material placed equally on both sides of the pipe at as many locations as are required to hold the pipe section in place. After joints are completed, the cover material shall be redistributed and compacted as herein required.
- H. Closure: At the end of each day and when work is not in progress, the open ends of pipe installed in the line shall be closed with watertight plugs, and openings for valves and other appurtenances shall be suitably covered.

### 3.06 CONNECTIONS

- A. Contractor shall make all required connections to existing facilities and improvements, in strict conformance with the DSRSD requirements and the requirements herein.

### 3.07 TESTING AND STERILIZATION

- A. The Contractor shall provide all necessary material and equipment, and shall perform all work required in connection with the testing and sterilization of the water distribution system in accordance with AWWA Standard C600, C651 and AWWA Manual No. M23 and as specified herein. Hydrostatic and leakage tests shall be made only after the trenches have been backfilled sufficiently to hold the pipe firmly in position. The Contractor shall provide all water necessary for filling, flushing, sterilization, and any required tests.

- 1. Repairs and Retests: Any flaws disclosed by any of the above tests shall be repaired and retested.
- B. Hydrostatic Test: All water pipe shall be subjected to a hydrostatic test of not less than 150 psi. Each section being tested shall be slowly filled with water, care being taken to expel all air from the pipe by such means as are necessary. The pipes shall be flushed before testing to remove any foreign material. Water shall be allowed to stand in the pipe for 24 hours before test pressure is applied.
- C. The required pressure, as measured at the highest elevation, in the test section shall be applied for not less than two hours. Any leakage discovered in consequence of the pressure test shall be corrected and the test shall be repeated until satisfactory. Any defective pipe, fittings, valves, or joints shall be repaired or replaced at no additional expense to the Contract.

- D. Leakage Tests: After the hydrostatic pressure test has been satisfactorily completed, each section of the line shall be subject to a leakage test, which is defined as the quantity of water to be supplied into the line necessary to maintain the specified test pressure after the pipe has been filled with water and the air expelled.
- E. The duration of each leakage test shall be not less than 4 hours, and during the test the pipe shall be subject to a hydrostatic pressure of not less than 150 psi, as measured at the highest elevation in the test section.
- F. The specified test pressure shall be applied by means of a pump connected to the pipe. The test pressure shall be maintained for the specified time during which all exposed pipe, couplings, fittings, valves and hydrants shall be examined carefully. No leakage shall be permitted at any exposed joint or section of pipe.
- G. No polyvinyl chloride or ductile iron pipe installation will be accepted if the leakage for the section of line that is tested is more than that allowed by AWWA. Manual No. M23 or AWWA Standard C600-87 respectively.
- H. The formula for calculating the allowable leakage in PVC pipe as given in AWWA Manual No. M23 is duplicated below:

$$L = \frac{ND(P)}{7400}$$

Where: L = allowable leakage, in gallons per hour  
 N = number of joints in the length of pipeline tested  
 D = nominal diameter of the pipe, in inches  
 P = average test pressure during the leakage test, in pounds per square inch (gauge)

The formula for calculating the allowable leakage in DIP as given in AWWA Standard C600-87 is duplicated below:

$$L = \frac{SD(P)}{133,200}$$

Where: L = allowable leakage, in gallons per hour  
 S = length of pipe tested, in feet  
 D = nominal diameter of the pipe, in inches  
 P = average test pressure during the leakage test, in pounds per square inch (gauge)

1. If the test indicated leakage beyond that allowed, then a survey of the line shall be made by means of a sound level meter (leak locator) and any leaks found shall be repaired, after which the 2 hour leakage test shall be repeated.
2. Sterilization: Before being placed in service, all new water lines shall be chlorinated in accordance with the requirements of AWWA Standard C651. The Contractor shall have the option of applying chlorine to the entire water content of the line, including services, fire hydrants and stubs, in sufficient quantity to produce a residual of at least 10 ppm after 24 hours retention; or of applying the chlorine to a portion of the water at a higher concentration which is passed through the line as a "slug", at a velocity which will result in exposure of all interior surfaces to a concentration of approximately 100 ppm for a least 3 hours; all as stipulated in the above mentioned AWWA Specifications. The tablet method shall not be allowed.

- a. After chlorination has been satisfactorily completed the lines shall be thoroughly flushed until the chlorine content in all parts of the system has been proven by test to be comparable to the chlorine content of the existing water system.
- b. It shall be the responsibility of the Contractor to dispose of the flushing water in a safe and legal manner.
- c. After flushing the chlorine from the water system, the Contractor shall engage the services of an approved Commercial Water Laboratory, designated by the State of California Department of Public Health, to gather an approved number of representative water samples, the location and number of which shall be approved by the DSRSD. As a minimum a sample shall be taken for each one thousand feet of pipe installed.
- d. No section of water systems shall be accepted when any sample does not meet AWWA Standard C651-92.
- e. The laboratory shall direct its written Report of Bacteriological Examination of water to the DSRSD.
- f. If the laboratory samples are not acceptable, the Contractor shall re-chlorinate and test the water again as hereinbefore specified, and submit new laboratory tests and results, as also hereinbefore specified. This process shall be repeated until a satisfactory water quality has been accomplished.

3.08 CLOSING-IN OF UN-INSPECTED WORK

- A. Do not cover or enclose work before testing and inspection. Re-open work prematurely closed and restore all work damaged.

3.09 FLUSHING OF DOMESTIC WATER LINES

- A. Flush or blow out pipes free from foreign substances before installing valves, stops or making final connections. Clean piping systems of all dirt and dust prior to initial start-up. Cap lines as required to prevent their being filled with deleterious debris during the construction process.
- B. Disinfect piping per AWWA C651 with 50 PPM chlorine and let stand for 24 hours. Drain and refill system with solution of 200 PPM chlorine then flush system so chlorine system no longer remains in system.

3.10 DUST ALLEVIATION AND CONTROL

- A. Contractor shall be responsible for and shall provide pollution and dust abatement and control measures satisfactory to the City continuously during the course of the work.
- B. Refer to Section 01 00 00 "Supplemental to the General Requirements"

3.11 RESTORATION OF EXISTING IMPROVEMENTS

- A. Existing paving, utilities or other improvements removed or damaged due to the installation of water mains, services and appurtenances shall be replaced in kind with new materials to the satisfaction of the City.
- B. Existing landscaping or planting removed, damaged or disturbed due to the installation of water mains, services or appurtenances shall be replaced in kind with new materials to the satisfaction of the City.

3.12 CLEANUP

- A. After all work has been flushed, tested and approved, the Contractor shall thoroughly clean all parts of the equipment installations. Exposed parts shall be cleaned of cement, plaster and other materials and all grease and oil spots removed with solvent.
- B. The Contractor shall remove all debris from the job site. Cartons, boxes, packing crates and excess materials not used, occasioned by his work shall be disposed of to the satisfaction of the City.
- C. If the above requirements of clean-up are not performed to the satisfaction of the City, the City reserves the right to order the work done, the cost of which shall be borne by the Contractor.
- D. Other surplus materials and construction debris remaining upon completion of the work shall become the property of the Contractor unless otherwise specified herein or noted on the plans, and shall be removed from the work site by the Contractor and disposed of off-site in a lawful manner to the satisfaction of the City.

3.13 MEASUREMENT AND PAYMENT

- A. The linear foot price paid for “1” **Potable Water Line for Drinking Fountain**” of the unit price schedule shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals for all work covered in this section, including potholing, trenching and backfill, testing, flushing and disinfecting water line, tie-in to drinking fountain, connections for a functioning system, complete and in place, for a fully operational system as shown on plans, as required by these Special Provisions, and as directed by City Engineer.
- B. The contract unit price paid for “**Potable Water Gate Valve**” shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals and for doing all the work covered in this section, including excavation and backfill and all connections for a functional system, complete in place as shown on the plans, as required by these Special Provisions, and as directed by the City Engineer.

END OF SECTION

**SECTION 33 31 00**

**SANITARY SEWER**

**PART 1 GENERAL**

1.01 DESCRIPTION/SCOPE OF WORK

- A. Furnishing and installation of sanitary sewer line and clean out to drinking fountain.
- C. Trenching and backfill
- D. Dust alleviation and control
- E. Cleanup and restoration of surface in improved areas.
- F. The work shall include the provision of all materials, equipment and apparatus not specifically mentioned herein or noted on the plans, but which are necessary to complete the work specified.

1.02 RELATED SECTIONS

- A. Section 01 00 00 "General Requirements"
- B. Section 32 33 00 "Site Furnishings"
- C. Section 33 00 00 "Potable Water"

1.03 REGULATORY REQUIREMENTS AND REFERENCES

- A. California Plumbing Code, current edition.
- B. State of California Department of Transportation Standard Specifications, current edition.
- C. Union Sanitary District Standard Specification
- D. ASTM A746 – Standard Specification for Ductile Iron Gravity Sewer Pipe.
- E. ASTM C700 – Standard Specification for Vitrified Clay Pipe, Extra Strength, and Perforated. ARE WE USING THIS? CONNECTION TO?
- F. ASTM D2680 - Standard Specification for Acrylonitrile-Butadiene-Styrene (ABS) and Poly(Vinyl Chloride) (PVC) Composite Sewer Piping
- G. ASTM D3034 - Standard Specification for Type PSM Poly(Vinyl Chloride) (PVC) Sewer Pipe and Fittings
- H. AWWA C151 - Ductile-Iron Pipe, Centrifugally Cast
- I. AWWA C110 - Ductile-Iron and Grey-Iron Fittings
- J. AWWA C111 - Rubber-Gasket Joints for Ductile-Iron Pressure Pipe and Fittings
- K. AWWA C900 – Standard for Polyvinyl Chloride (PVC) Pressure pipe, 4 inch through 12 inches for water.

1.04 QUALITY ASSURANCE

- A. All work in this section shall conform to the Standard Specifications of the Union Sanitary District (USD).

1.05 PROTECTION OF PROJECT SITE

- A. Make provisions to take the necessary precautions to protect existing work from damage during execution of this work.

1.06 DELIVERY, STORAGE, AND HANDLING

- A. Store pipe neat and orderly stacked and blocked to prevent damage. Cracked, checked, spalled or otherwise damaged pipe shall be removed from site.
- B. Use of chain slings shall not be permitted.
- C. Pipe, fittings, precast sections, cast iron fittings, covers and all other materials shall be carefully handled at all times.
- D. All pipelines and fittings shall be kept clean and closed during construction.

1.07 PROJECT/SITE CONDITIONS

- A. Work of this Section shall not be executed when site conditions are detrimental to quality of work as determined by the Owner's Representative.
- B. PVC pipe shall not be solvent welded during wet conditions.

1.08 SEQUENCING AND SCHEDULING

- A. Refer to all other Contract Documents, determine the extent and character of related work, and properly coordinate work specified herein with that described elsewhere to produce a complete, operational installation.
- B. Contractor shall be solely responsible for coordinating, sequencing, and scheduling all work with all applicable trades and/or sub-contractors so as to insure proper and timely performance.

1.09 SUBMITTALS

- A. Provide submittals in accordance with Article 2, subsection 2.5 "Submittals" and Article 15, Section 01 30 00 "Submittals".
- B. As-Built Drawings:
  - 1. Submit, within thirty (30) days after date of acceptance, one (1) complete set of CAD reproducible drawings City's Engineer, marked to show the As-Built Piping Condition.
  - 2. Show actual field dimensions from the nearest building or other permanent reference point, locating stub outs and concealed items, and show all deviations from the Drawings. Indicate invert elevations at all floor cleanouts, cleanouts to grade, and piping stub outs.

**PART 2 PRODUCTS**

2.01 GENERAL

- A. Sanitary Sewer must conform to the City's Standard Specifications or Union Sanitary District (USD) as noted below whichever is more stringent – or the standards of the local public sewer purveyor standards and specifications.
  - 1. Vitrified Clay Pipe: Shall comply with current revisions of ASTM C-700.
  - 2. Cast Iron Pipe: Shall conform to ASTM A74 for extra heavy pipe and ASTM C564 for rubber gasket joint devices for cast iron pipe.
  - 3. ABS Truss Pipe: Shall conform to ASTM D2680 & per code.
  - 4. Polyvinyl Chloride (PVC) Non-Pressure Pipe: Shall meet or exceed requirements of ASTM Specification D3034.
  - 5. Polyvinyl Chloride (PVC) Pressure Rated Pipe: Shall conform to requirements of AWWA C900, minimum Class 150.
  - 6. PVC Large Diameter Ribbed Pipe: Shall meet or exceed all requirements of ASTM F794.
  - 7. PVC pressure pipe shall be furnished in Ductile Iron Pipe equivalent outside diameters with rubber gaskets, separate couplings, or approved equal.
  - 8. Provide fittings of same material as pipe in required configurations, T's, elbows, cleanouts, reducers, traps and other configurations required.
  - 9. Cleanouts to be cast-iron ferrule and countersunk brass cleanout plug, secured, scoriated cast-iron galvanized cover.
- B. All materials incidental to PVC pipe installations such as gaskets, joint lubricants, cements, etc. shall be supplied by the pipe manufacturer. All PVC pipe requirements in odd lengths shall be cut using a proper cutting tool and guide that insures thru line cut on planes perpendicular to the pipe axis. No bevel cuts for pipeline alignment adjustments will be permitted.

2.02 PIPE AND FITTINGS

- A. All pipe and fittings shall be clearly and permanently marked to identify manufacturer, type, class, or schedule and NSF approval as applicable.
- B. Polyvinyl Chloride Pipe (PVC.) and fittings: Polyvinyl chloride pipe shall be SDR 26 Bell and Spigot, Type I P.V.C 1120, NSF approved. Comply with ASTM D-3034.

2.03 CLEAN OUTS

- A. Shall be as detailed on Drawings. Christy "F8" clean out boxes are acceptable in non-vehicular travel areas. For vehicular travel areas, Christy "G5" clean out boxes shall be used.

2.04 MISCELLANEOUS MATERIALS

- A. Mortar: Conform to all applicable sections of the Standard Specifications. Mixture shall be a 1:2 Portland Cement to sand mixture with a minimum of water.
- B. P.V.C. Solvent Cement: Conform to pipe manufacturer's recommendations.
- C. P.V.C. Primer: Conform to pipe and solvent cement manufacturer's recommendations.
- D. Reinforcing Bars: Refer to Section 03 20 00 "Concrete Reinforcement"
- E. Minor concrete shall conform with Section 03 30 00 "Cast in Place Concrete" and all applicable sections of the Standard Specifications.

**PART 3 EXECUTION**

3.01 EXISTING SITE UTILITIES

- A. Sanitary Sewer:
  - 1. Before trenching, verify the horizontal location and the invert elevations of all storm/sanitary sewer connection points.

3.02 EXCAVATION AND BACKFILL

- A. Refer to Section 31 00 00 "Earthwork" of these Specifications.

A.03 SURFACE CONDITIONS

- A. Inspection:
  - 1. Prior to all work of this Section, carefully inspect the installed work of other trades and verify that all such work is complete to the point where this installation may properly commence.
  - 2. Verify that all items of this Section may be installed in accordance with the original design and all referenced standards.
- B. Discrepancies:
  - 1. In the event of discrepancy, immediately notify the City's Engineer or their designee.
  - 2. Do not proceed with installation in areas of discrepancy until all such discrepancies have been fully resolved.
  - 3. Failure to notify the City's Engineer and give written notice of discrepancies shall constitute acceptance by the Contractor of existing conditions as fit and proper to receive his work.

3.04 PIPE LAYING

- A. General:
  - 1. Drawing plans, schematics, and diagrams indicate general location and arrangement of piping systems. Indicated locations and arrangements were used to size pipe and calculate friction loss, expansion, pump sizing, and other design considerations. Install piping as indicated unless deviations to layout are approved on coordination drawings.

2. The City's Engineer or their designee shall review and accept all pipe prior to installation. All sanitary sewer installations shall be reviewed and accepted by the City's Engineer prior to backfilling.
3. Size any section of pipe for which size is not indicated or any intermediate section erroneously shown undersized the same size as the largest pipe connecting to it. Sizes listed are nominal.
4. Cut pipe accurately to job measurements and install without springing or forcing, true to line and grade, generally square with building and/or structures and adequately supported to prevent sagging or undue stress on pipe, fittings and accessories. Install pipe to indicated elevation to within 5/8 inch.
5. Make changes of size and direction with manufactured fittings. Street ells, bushings, reducing flanges, close nipples or bending of pipe is not allowed.
6. Use great care to install piping in accordance with best practice. Plastic pipe shall be "snaked" in trenches. All procedures, methods and techniques used to make up solvent weld joints shall be in strict accordance with manufacturer's recommendations. Install pipe to allow for expansion and contraction without stressing pipe joints. Lay buried building drainage piping beginning at low point of each system. Install true to grades and alignment indicated, with unbroken continuity of invert. Place hub ends of piping upstream. Install required gaskets according to manufacturer's written instructions for use of lubricants, cements, and other installation requirements. Maintain swab in piping and pull past each joint as completed.
7. Pipe identification: Use plastic warning tapes when metallic piping is used, polyethylene plastic tape, 6 inches wide by 4 mills thick, solid blue in color with continuously printed caption in black letters "Caution Sanitary Sewer Line buried below". For nonmetallic piping used, place a label on the main electrical meter panel: not less than 1 inch by 3 inches, stating: "Caution – this structure has a nonmetallic sanitary sewer service".
8. Form and place concrete for thrust restraints at each elbow or change in direction of pipe.
9. Extend sewer system to connect to building sewer system. Join and install cast-iron and soil pipe and fittings with compression gaskets in accordance with CISPI Handbook, Volume I, Use service class gaskets.
10. Install VCP in accordance with ASTM C12 with rubber sealing elements.
11. Install PVC pipe and fittings in accordance with ASTM D2855 and piping in accordance with ASTM D2321 for sanitary sewer piping.

B. Pipe:

1. Pipe shall be laid in trench or per bore to specified lines and grades fully and evenly supported layer of bedding material as specified and identified on the Drawings. Excavate bedding as required so bell fittings are clear from soil six inches (6") on each side of joint and to a depth sufficient to avoid contamination of joint. Refer to Drawings for additional information.
2. Pipe shall be laid beginning at the outlet and proceeding with each bell end opening facing upgrade.
3. Cut pipe square and ream to remove burrs prior to use.
4. Connections:
  - a. Thoroughly clean and dry all components to be joined.
  - b. Apply primer and sufficient cement to coat joint surfaces of both components and fill gaps but not in excess.

- c. Join pipe, wipe off excess cement, and fully support pipe until joint has cured.
- C. Provide sleeving where shown or needed and wherever pipes run through walls using schedule 40 PVC pipe (min. one quarter [1/4] inch diameter larger than pipe) or other acceptable method.

### 3.05 CLEAN OUT INSTALLATION

- A. Install cleanouts 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.

### 3.06 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.

### 3.07 SANITARY SEWER CONNECTIONS

- A. Sanitary sewer connections to existing sewer mains shall be made water tight, straight and true to line, grade and "crown to crown" unless noted otherwise.

### 3.08 CUTTING AND DRILLING

Cutting or drilling necessary for installation of work of this Section shall be done only with City's approval.

### 3.09 CLOSING-IN OF UN-INSPECTED WORK

- A. Do not cover or enclose work before testing and inspection. Re-open work prematurely closed and restore all work damaged.

### 3.10 FIELD QUALITY CONTROL

- A. The Owner's Representative shall review and accept work at the following stages:
  - 1. Excavated trench with bedding in place prior to any pipe being laid.
  - 2. Pipe laid prior to backfilling. Any pipe covered prior to acceptance shall be uncovered for review and re-backfilled at contractor's expense.
- B. The Contractor shall furnish the necessary labor, equipment and materials necessary to perform air tests of the completed sewerage project before the system is placed in operation or connected to other lines.
- C. In no case shall the Contractor place the newly constructed sewer in operation without acceptance by the Owner's Representative.

### 3.11 PIPELINE TESTING & FLUSHING

- A. New sections of sanitary sewer main shall be air tested using the following procedures:
  - 1. Test is conducted between two (2) consecutive manholes, or as directed by the Owner's Representative.
  - 2. The test section of the sewer line is plugged at each end. One of the plugs used at the manhole must be tapped and equipped for the air inlet connection for filling the line from the air compressor.

3. Service laterals, stubs and fittings into the sewer test section should be properly capped or plugged and carefully braced against the internal pressure to prevent air leakage by slippage and blowouts.
4. Connect air hose to tapped plug selected for the air inlet. Then connect the other end of the air hose to the portable air control equipment which consists of valves and pressure gauges used to control the air entry rate to the sewer test section, and to monitor the air pressure in the pipe line. More specifically, the air control equipment includes a shut-off valve, pressure regulating valve, pressure reduction valve and a monitoring pressure gage having a pressure range from 0-5 psi. The gage shall have minimum divisions of .10 psi and an accuracy of .40 psi.
5. Connect another air hose between the air compressor (or other source of compressed air) and the air control equipment. This completes the test equipment set-up. Test operations may commence.
6. Supply air to the test section slowly, filling the pipe line until a constant pressure of 3.5 psi is maintained. The air pressure must be regulated to prevent the pressure inside the pipe from exceeding 5.0 psi.
7. When constant pressure of 3.5 psi is reached, throttle the air supply to maintain the internal pressure above 3.0 psi for at least 5 minutes. This time permits the temperature of the entering air to equalize with the temperature of the pipe wall. During this stabilization period it is advisable to check all capped and plugged fittings with a soap solution to detect any leakage at these connections. If leakage is detected at any cap or plug, release the pressure in the line and tighten all leaky caps and plugs. Then start the test operation again by supplying air. When it is necessary to bleed off the air to tighten or repair a faulty plug, a new five-minute interval must be allowed after the pipe line has been refilled.
8. After the stabilization period, adjust the air pressure to 3.5 psi and shut-off or disconnect the air supply. Observe the gage until the air pressure reaches 3.0 psi. At 3.0 psi commence timing with a stop watch which is allowed to run until the line pressure drops to 2.5 psi at which time the stop watch is stopped. The time required, as shown on the stop watch, for a pressure loss of 0.5 psi is used to compute the air loss.
9. If the time, in minutes and seconds, for the air pressure drop from 3.0 to 2.5 psi is greater than that shown in the following table for the designated pipe size, the section undergoing test shall have passed and shall be presumed to be free of defects. The test may be discontinued at that time.
10. If the time, in minutes and seconds, for the 0.5 psi drop is less than that shown in the following table for the designated pipe size, the section of the pipe shall not have passed the test; therefore, adequate repairs must be made and the line retested.

Requirements for Air Testing:

Pipe size (In inches)	Time	
	Min.	Sec.
4	2	32
6	3	50
8	5	06
10	6	22
12	7	39
14	8	56
15	9	35

16	10	12
18	11	34
20	12	45
21	13	30

(For larger diameter pipe use the following: Minimum time in seconds = 462 x pipe diameter in feet).

11. For eight (8) inch and smaller pipe, only: If, during the five minute saturation period pressure drops less than 0.5 psi after the initial pressurization and air is not added, the pipe section undergoing test shall have passed.
12. Multi-pipe sizes: When the sewer line undergoing test is 8" or large diameter pipe and includes 4" or 6" laterals, the figures in the table for uniform sewer main sizes will not give reliable or accurate criteria for the test. Where multi-pipe sizes are to undergo the air test, compute the average size in inches which is then multiplied by 38.2 seconds. The results will give the minimum time in seconds acceptable for a pressure drop of 0.5 psi for the averaged diameter pipe.
13. Adjustment Required for Groundwater:
  - a. An air pressure correction is required when the ground water table is above the sewer line being tested. Under this condition, the air test pressure must be increased .433 psi for each foot the ground water level is above the invert of the pipe.
  - b. Where ground water is encountered or is anticipated to be above the sewer pipe before the air testing will be conducted, the following procedure shall be implemented at the time the sewer main and manholes are constructed.
    - 1) Install a pipe nipple (threaded one or both ends, approximately 10" long) through the manhole wall directly on top of one of the sewer pipes entering the manhole with threaded end of nipple extending inside the manhole.
    - 2) Seal pipe nipple with a threaded cap.
    - 3) Immediately before air testing, determine the ground water level by removing the threaded cap from the nipple, blowing air through the pipe nipple to remove any obstructions, and then connecting a clear plastic tube to the pipe nipple.
    - 4) Hold plastic tube vertically permitting water to rise in it to the groundwater level.
    - 5) After water level has stabilized in plastic tube, measure vertical height of water, in feet, above invert of sewer pipe.
    - 6) Determine air pressure correction, which must be added to the 3.0 psi normal starting pressure of test, by dividing the vertical height in feet by 2.31. The result gives the air pressure correction in pounds per square inch to be added.  
Example: If the vertical height of water from the sewer invert to the top of the water column measures 11.55 feet, the additional air pressure required would be:  
 $(11.55) / (2.31) = 5.0$  psi
    - 7) Therefore, the starting pressure of the test would be 3.0 plus 5 or 8.0 psi, and the 0.5 lb. drop becomes 7.5 psi. There is no change in the allowable drop (0.5 psi) or in the time requirements established for the basic air test.
- B. After the line has passed the air test, it shall be balled and flushed with water to clean. A metal screen shall be used downstream at the point of connection to the existing system to collect and remove any rock or other debris that is flushed out during cleaning.

3.12 PROTECTION AND CLEAN-UP

- A. Protect drains during remainder of construction period to avoid clogging with dirt and debris and to prevent damage from traffic and construction work.
- B. Place plugs in ends of uncompleted piping at end of day and when work stops.
- C. After all work has been flushed, tested and approved, the Contractor shall thoroughly clean all parts of the equipment installations. Exposed parts shall be cleaned of cement, plaster and other materials and all grease and oil spots removed with solvent.
- D. The Contractor shall remove all debris from the job site. Cartons, boxes, packing crates and excess materials not used, occasioned by his work shall be disposed of to the satisfaction of the City.
- E. If the above requirements of clean-up are not performed to the satisfaction of the City, the City reserves the right to order the work done, the cost of which shall be borne by the Contractor.

3.13 MEASUREMENT AND PAYMENT

- A. The linear foot price paid for **"4" Sanitary Sewer Line for Drinking Fountain**" of the unit price schedule shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals for all work covered in this section, including trenching, excavation, connection to drinking fountain, testing, backfill, clean out, complete and in place, for a fully operational system as shown on plans, as required by these Special Provisions, and as directed by City Engineer.
- B. The contract unit price paid for **"Sanitary Sewer Cleanout"** shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals and for doing all the work covered in this section, including excavation and backfill, stenciling, reinforcing, televising the sewer system, and connections for a functional system, complete in place as shown on the plans, as required by these Special Provisions, and as directed by the City Engineer.

**END OF SECTION**

## DIVISION 5 – METALS

### SECTION 05 70 00 DECORATIVE METAL

#### PART 1 – GENERAL

##### 1.01 SUMMARY

- A. This Section includes the installation of City-Furnished Laser Cut Aluminum Panels as shown on plan drawings and bid schedule, in conjunction with the Installation of City-Furnished Upright Exhibit Base For Double-Sided Interpretive Panels and Laser Cut Panels.
- B. The general provisions of the Contract, including General and Supplementary Conditions and Division 1, General Requirements, apply to the work specified in this Section.
- C. Refer to all other sections, determine the extent and character of related work, and coordinate all work to produce a complete, properly constructed product.
- D. Examine contract documents for requirements that affect work of this section. Other specification sections that directly relate to the work of this section include, but are not limited to:
  - 1. Section 10 14 00 "Park Signs"

##### 1.02 DESCRIPTION OF WORK

- A. The work in this division includes the furnishing of all labor, delivery, materials, equipment, installation and services necessary to complete the work described on the Drawings and as herein specified, but is not limited to:
  - 1. Installation of aluminum laser cut panels in conjunction with the upright exhibit base for double-sided 60"W x 48"H interpretive panels. Refer to Section 10 14 00 "Park Signs."

##### 1.03 SUBMITTALS

- A. The following submittals shall be required if products are damaged during delivery, assembly or installation and require replacement:
  - 1. Shop drawings indicating pattern, quantities, dimensions of panels, thickness of panels, finishes, locations of pre-drilled holes on all panels for hardware attachment, design sequence arrangements, attachment details.
  - 2. Product literature and samples for each color, patterns, and finish as indicated.

##### 1.04 QUALITY ASSURANCE

- A. Manufacturer shall have a minimum of 5 years of experience in manufacturing decorative metals for commercial use.

##### 1.05 DELIVERY, STORAGE, AND HANDLING

- A. Contractor shall notify and coordinate with City for the delivery of materials to the project site in manufacturer's original packaging, properly labeled for identification and installation purposes.
- B. When products are brought to site to be installed, products shall be stored in location to avoid damage from job-site traffic, direct sunlight, moisture, stacking or other job-site contaminants. Store in a completely supported flat position. Edge storage is not recommended.
- C. Handle components to avoid denting or scratching of finished surfaces.
- D. Do not use markers on protective PVC film. Some types of ink will permeate the film and mark the material surface.

1.06 PROJECT CONDITIONS

- A. Maintain a constant temperature range of 65°F to 85°F (18°C to 24°C), with stable relative humidity, for at least 48 hours prior to, throughout the installation period and maintained consistently thereafter.
- B. Installation locations must be enclosed, weatherproofed and climate controlled prior to commencing installation.
- C. Do not install if relative humidity is greater than 80%.

**PART 2 – PRODUCTS**

2.01 GENERAL

- A. Products named are indicative of the features, form, finish, and quality of the furnishings desired. Products of manufacturers other than those named may be acceptable upon proof of equality.
- B. All products shall be new, delivered to the site in manufacturer's original containers, and protected at all times from damage during shipping, storage, and handling prior to and during installation.

2.02 CITY-FURNISHED LASER CUT ALUMINUM PANELS

- A. Laser Cut Aluminum Panels, Grove Pattern, by Front Signs shall be furnished to the Contractor by the City.
  - 1. 1/4" thick Aluminum: Type 5052 alloy complying with ASTM B209
  - 2. Sizes: 4'x6.5' custom size, refer to plan drawings.
  - 3. Pattern: Grove; sequence of patterns shall be as follows:
    - a. Twelve (12) panels total to be City-furnished. Contractor shall supply equipment for the assembly and installation according to the design sequence as follows:
      - i. "Front Side" to be installed behind four (4) "Timeline of California Nursery Company and California Nursery Historical Park panels. Design sequence of panels shall be (left to right, 6 panels): "C", "B", "A", "B", "C", "B"
      - ii. "Back Side" to be installed behind four (4) "Catalog Covers Through the Decades" panels. Design sequence of panels shall be (left to right, 6 panels) : "B", "C", "B", "A", "B", "C"
      - iii. The pattern and sequence of panels shall create a seamless transition to avoid repetition of designs.
    - 4. Refer to Appendix B for Grove Pattern designs.
    - 5. Color and Finish: Rust Powder Coat
    - 6. Custom Options
      - a. Double Side Finish: Yes
      - b. Exterior use
      - c. Screws provided by manufacturer shall match color and finish of aluminum panels.
      - d. Panels shall be pre-drilled by manufacturer prior to shipment and delivery for attachment to aluminum members. Aluminum members shall be provided by interpretive panel supplier. Refer to Section 10 14 00 "Park Signs" for interpretive panels and aluminum members information.

B. Acceptable Manufacturer:

- 1. Front Signs

3520 Valhalla Drive, Burbank, CA 91505

Contact: Zack Munson, email: zack@frontsigns.com ph: (844) 833-1188

2. Or approved equal

### **PART 3 - EXECUTION**

#### **3.01 EXAMINATION**

- A. Examine product, substrates and installation conditions.
- B. Notify the City Project Inspector Project Landscape Architect in writing of any conditions detrimental to the proper and timely completion of the installation.
- C. Do not proceed with work until conditions have been corrected.

#### **3.02 SURFACE PREPARATION**

- A. Prior to installation, clean surface to remove dirt, debris and loose particles. Perform additional preparation procedures as required per the manufacturer's instructions.
- B. Protection: Take all necessary precautions to prevent damage to materials during installation.

#### **3.03 INSTALLATION**

- A. Install the work of this section in strict accordance with manufacture's written Technical Information and workability guidelines.
- B. Refer to plan drawings for layout and installation details. Laser cut aluminum panels shall be installed in conjunction with City-Furnished Upright Exhibit Base For Double-Sided Interpretive Panels and Laser Cut Panels.
- C. Refer to Section 10 14 00 "Park Signs" for interpretive panels and aluminum members information and City-Furnished Upright Exhibit Base For Double-Sided Interpretive Panels and Laser Cut Panels.
- D. Contractor shall be responsible for drilling into the upright aluminum exhibit bases to attach and install aluminum laser cut panels in accordance with manufacturer's recommendations and installation instructions.
- E. Contractor may drill through laser cut aluminum panels to attach and install interpretive panels, if necessary.
- F. All laser cut panels shall be installed flush to edge of aluminum members as shown in construction detail.

#### **3.04 CLEANING**

- A. Remove protective coverings and clean decorative metal to remove adhesives and tape residue. Test all solvents on non-exposed surfaces prior to use.
  1. For painted surfaces, use a mild detergent solution on a soft cloth.
  2. For stainless steel, use a glass cleaner and a soft cloth.
  3. For other surfaces, contact manufacturer for proper cleaning procedures.
  4. For heavy cleaning and removal of grease, use oil based mineral spirits or naphtha. Low concentration ammonia based cleaning agents such as glass cleaners may also be used.
  5. Minor scuffs can be polished out by hand with a #6 to #9 type finishing polish or wax.
  6. DO NOT treat with rubbing compounds or lacquer thinner as this may dissolve or etch the coating.
- B. Visually inspect all exposed surfaces for scratches or blemishes.

#### **3.05 PROTECTION OF INSTALLED WORK**

- A. All work installed, completed and accepted per the direction herein to phase construction, shall be protected from damage by other phases of construction work.
- B. Contractor shall control activity in immediate work area to prevent damage.
- C. Provide temporary and removable protection for installed Products, as needed.
- D. Protect installed sign panels and other surfaces from traffic, dirt, wear, damage, or movement of heavy objects, by protecting with durable snow fencing, reflective traffic cones, and caution tape.
- E. All installed products and materials shall be adequately protected until such time as the Owner accepts the Project.
- F. Protect site furnishings from damage at all times, until final acceptance of the Work. If damage occurs to any equipment prior to final acceptance, Contractor shall, at his own expense, provide replacement to satisfaction of the City Landscape Architect.

3.06 MEASUREMENT AND PAYMENT

Full compensation for conforming to the provisions of “**City-Furnished Laser Cut Aluminum Panels**” in this section, not otherwise provided for, shall be considered as included in the contract unit price paid for “Installation of City-Furnished Upright Exhibit Base with Double-Sided 60”W X 48”H Interpretive Panels and Laser Cut Aluminum Panels” and no additional compensation will be allowed therefore.

**END OF SECTION**

CITY COUNCIL ONLY  
REFERENCE

## DIVISION 10 - SPECIALTIES

### SECTION 10 14 00 PARK SIGNS

#### PART 1 – GENERAL

##### 1.01 RELATED DOCUMENTS

- A. The general provisions of the Contract, including General and Supplementary Conditions and Division 1, General Requirements, apply to the work specified in the Section.
- B. Refer to all other sections, determine the extent and character of related work, and coordinate all work to produce a complete, properly constructed product.
  - 1. Section 03 30 00 "Cast-in-Place Concrete"
  - 2. Section 05 70 00 "Decorative Metal"
  - 3. Appendix B for graphic reference for graphic panels.

##### 1.02 DESCRIPTION OF WORK

- A. The work in this division includes the furnishing of all labor, delivery, materials, equipment, installation and services necessary to complete the work described on the Drawings and as herein specified, but is not limited to:
  - 1. The products in this Section herein are City-furnished items. Contractor shall notify and coordinate with City for the delivery of materials to the project site in manufacturer's original packaging, properly labeled for identification and installation purposes.
  - 2. Installation of cantilevered exhibit bases and interpretive panels with concrete footings.
  - 3. Installation of upright exhibit base with aluminum laser cut panels and interpretive panels with concrete footings.

##### 1.03 QUALITY ASSURANCE

- A. Comply with applicable requirements of the following standards. Where these standards conflict with other specified requirements, the most restrictive requirements shall govern.
  - 1. Manufacturers Data and Recommended Installation Requirements

##### 1.04 REFERENCES AND STANDARDS

- A. The following references and standards are hereby made a part of this Section and miscellaneous metal material and installation shall conform to the applicable requirements therein except as otherwise specified herein or shown on the Drawings.
  - 1. Shop detailing and fabrication practices: Conform to the standards of the National Association of Architectural Metal (NAAMM) in the Architectural Metal Handbook, latest edition.
  - 2. Welding: Conform with requirements of the American Welding Society (AWS).

##### 1.05 SUBMITTALS

- A. The following submittals shall be required if products are damaged during delivery, assembly or installation and require replacement:
  - 1. Manufacturers Product Data: Provide manufacturers product data prior to actual field installation work, for Architects or Owners representatives review.
  - 2. Product Data: Include physical characteristics such as shape, dimensions, and finish for exhibit bases and interpretive panels, and installation instructions.
  - 3. Contractor shall coordinate with exhibit base suppliers for complete product installation instructions including, but not limited to, welding (if required), hardware, and hardware attachments. Contractor shall provide submittals that indicate weld locations and types of welds, if required, for installation.

4. Provide proofs from sign fabricators for review and approval by the City before sign fabrication.
5. Welding (if required):
  - a. Certification of welder's qualifications
  - b. Welding procedures: Descriptive data to illustrate welding procedures to be performed
  - c. Field Welding Equipment: Descriptive data for field welding equipment including type, voltage and amperage.

1.06 PRODUCT DELIVERY

- A. Materials delivered to the site shall be examined for damage or defects in shipping. Any defects shall be noted and reported to the Owners representative. Replacements, if necessary, shall be immediately re-ordered, so as to minimize any conflict with the construction schedule. Sound materials shall be stored above ground under protective cover or indoors so as to provide proper protection.
- B. Store park signage stands in original undamaged packages and containers until ready for installation.
- C. Handle powder coated park signage stands with sufficient care to prevent any scratches or damage to the finish.

1.07 PROTECTION

- A. Protect and prevent damage to adjacent properties and improvements that may be caused by the Contractors operations.
- B. Protect and prevent damage or danger to on-site improvements.
- C. Existing or new paving which has been damaged due to the Contractors operations, and which cannot be repaired to the satisfaction of the Engineer, shall be removed and replaced at the Contractors own expense before final payment is made.

**PART 2 – PRODUCTS**

2.01 GENERAL

- A. Products named are indicative of the features, form, finish, and quality of the furnishings desired. Products of manufacturers other than those named may be acceptable upon proof of equality.
- B. All products shall be new, delivered to the site in manufacturer's original containers, and protected at all times from damage during shipping, storage, and handling prior to and during installation.
- C. All exhibit bases shall have the same color and finish throughout.

2.02 INTERPRETIVE PANEL TITLES

- A. The following interpretive panels will be City-furnished to be assembled and installed by the Contractor as part of the base bid:
  1. One set of the "Timeline of California Nursery Company and California Nursery Historical Park" – four (4) panels. Refer to 2.03B.
  2. "Catalog Covers Through the Decades" – four (4) panels
  3. "Bulb Shows"
  4. "Retail Store"
  5. "Lath Houses"
  6. "Sales Yard and Sales Depot"

B. See Appendix B for graphic reference.

2.03 EXHIBIT BASES AND INTERPRETIVE PANELS

A. City-Furnished Upright Exhibit Base for Double-Sided Interpretive Panels and Laser Cut Panels

1. Exhibit Base Type: Upright, in-ground installation
  - a. Quantity: 1
  - b. Refer to construction detail for product dimensions and aluminum member sizing.
  - c. Color and Finish:
    - i. Cardinal Rust powder coat finish by Front Signs
2. Interpretive Panel:
  - a. 60"W x 48"H x ½" thick:
  - b. CHPL panels by iZone Imaging
  - c. Single-faced
  - d. Matte finish
  - e. 1/8" radius corners
  - f. No holes shall be punched through interpretive graphic panel
  - g. Quantity: Eight (8)
  - h. Graphic Panel Title Reference:
    - i. "Front Side": Four (4) panels: "Timeline of California Nursery Company and California Nursery Historical Park"
    - ii. "Back Side": Four (4) panels: "Catalog Covers Through the Decades"
3. Aluminum Laser Cut Panels:
  - a. Refer to Section 05 70 00 for product information.
4. Hardware shall be provided by the manufacturer for City-furnished items. Any hardware replacement shall match the color and finish of the exhibit base.

B. City-Furnished Cantilevered Sign Exhibit Base for Interpretive Panel

1. Exhibit Base Type: Cantilevered with frame, in-ground installation
  - a. Quantity: 4
  - b. Refer to construction detail on Sheet L2.0 for product dimensions.
  - c. Exhibit base shall be the following:
    - i. Aluminum Exhibit Base with Frame, 45-degree for 42"W x 24" Interpretive Sign by Front Signs
  - d. Color and Finish:
    - i. Cardinal Rust powder coat finish by Front Signs
2. Interpretive Panel:
  - a. 42"W x 24"H x 1/8" thick:
  - b. CHPL panels by iZone Imaging, or approved equal
  - c. Single-faced
  - d. Matte finish
  - e. Square Cut
  - f. No holes shall be punched through interpretive graphic panel.
  - g. Quantity: 4
  - h. Graphic Panel Title Reference:
    - i. "Bulb Shows"
    - ii. "Retail Store"
    - iii. "Lath Houses"
    - iv. "Sales Yard and Sales Depot"

3. Hardware shall be provided by the manufacturer for City-furnished items. Any hardware replacement shall match the color and finish of the exhibit base.
- C. All equipment required for the complete installation of all exhibit bases and interpretive panels shall be considered as included in prices paid for the various contract items of work involved and no additional compensation will be allowed therefor.
- D. Acceptable Manufacturer:
  1. Front Signs  
3520 Valhalla Drive, Burbank, CA 91505  
Contact: Zack Munson, email: zack@frontsigns.com ph: (844) 833-1188
  2. Or approved equal

#### 2.04 CONCRETE FOOTING

Refer to Section 03 30 00 "Cast-in-Place Concrete" for further details regarding concrete mix.

### **PART 3 – EXECUTION**

#### 3.01 CONCRETE MIXING, PLACING AND CONVEYING

Refer to Section 03 30 00 "Cast-in-Place Concrete"

#### 3.02 CONCRETE FOOTING EXCAVATIONS

Materials and methods conform to the requirements in Section 31 00 00 "Earthwork" regarding the excavation for the exhibit base footings and disposal of excavated materials.

#### 3.03 INSTALLATION

- A. Refer to construction plans for layout and manufacturer's installation instructions.
- B. Final installation locations for all signs will be approved by Project Landscape Architect. Contractor and Project Landscape Architect will conduct final staking once Notice to Proceed has been awarded.
- C. For all products, specifically described below, or not, installation of products shall be as shown on the drawings, or according to manufacturer's instructions. If discrepancies are found, or if information is lacking, consult with Project City Inspector immediately, prior to beginning the work.
- D. Signage Installation:
  1. Exhibit Bases, Interpretive Graphic Panels, and Aluminum Laser Cut Panels will be installed per manufacturer's recommendations and construction details.
  2. Contractor shall be responsible for coordinating the installation of laser cut aluminum panels onto the aluminum upright exhibit bases prior to installing interpretive panels.
- E. Coordinate in-ground installation of signage exhibit bases to avoid and protect existing irrigation systems and utilities. If interference with utilities or irrigation systems occurs, immediately notify Project City Inspector.
- F. Equipment and work shall include all miscellaneous attachments, hardware, materials and field adjustments as necessary to provide complete installation and meet final finish grade requirements.
- G. Coordinate delivery and installation of signage exhibit bases with other site work. Avoid early installation that results in undue exposure to damage.
- H. Install all vertical aluminum members plumb and true to line and grade, and all horizontal aluminum members level and square to vertical members and true to line and grade.
- I. Install concrete footings as specified under Division 3- Concrete or per manufacturer's recommendations, whichever is more stringent.

- J. Any damage to existing site furnishings shall be replaced at the Contractor's expense; no patching or repair will be allowed.
- K. All excess excavation spoils not needed in the backfill effort shall be disposed of in accordance to the requirements of Section 01 50 50 "Construction and Demolition Waste Management".

3.04 PROTECTION OF INSTALLED WORK

- A. All work installed, completed and accepted per the direction herein to phase construction, shall be protected from damage by other phases of construction work.
- B. Contractor shall control activity in immediate work area to prevent damage.
- C. Provide temporary and removable protection for installed Products, as needed.
- D. All installed products and materials shall be adequately protected until such time as the Owner accepts the Project.
- E. Protect site furnishings from damage at all times, until final acceptance of the Work. If damage occurs to any equipment prior to final acceptance, Contractor shall, at his own expense, provide replacement to satisfaction of the City Landscape Architect.

3.05 MEASUREMENT AND PAYMENT

- A. The contract unit price paid for "**Installation of City-Furnished Upright Exhibit Base for Double-Sided Interpretive Panels and Laser Cut Panels**" of the unit price schedule shall include full compensation for furnishing all labor, materials, tools, equipment and incidentals and for doing all the work covered in this section, including coordination of delivery with the City, excavation for concrete footings, complete assembly and installation of exhibit base, interpretive panels and aluminum laser cut panels, disposal, complete and in place as shown on the plans, as required by the Special Provisions, and as required by the Project Landscape Architect.
- B. The contract unit price paid for "**Installation of City-Furnished Cantilevered Exhibit Base for Interpretive Panel**", of the unit price schedule shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals and for doing all the work covered in this section, including coordination of delivery with the City, complete assembly and installation of exhibit bases, panel frames and interpretive panels, excavation for concrete footings concrete footings, concrete placement, disposal, complete and in place as shown on the plans, as required by the Special Provisions, and as required by the Project Landscape Architect.

**END OF PARK SIGNS**

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APPENDIX A

TRUCK ROUTES

Truck Routes

**Truck Routes.** Pursuant to City ordinances, use only authorized truck routes. More Info <http://www.fremont.gov/Permits/EngineeringPermits/TransportationPermit.htm>



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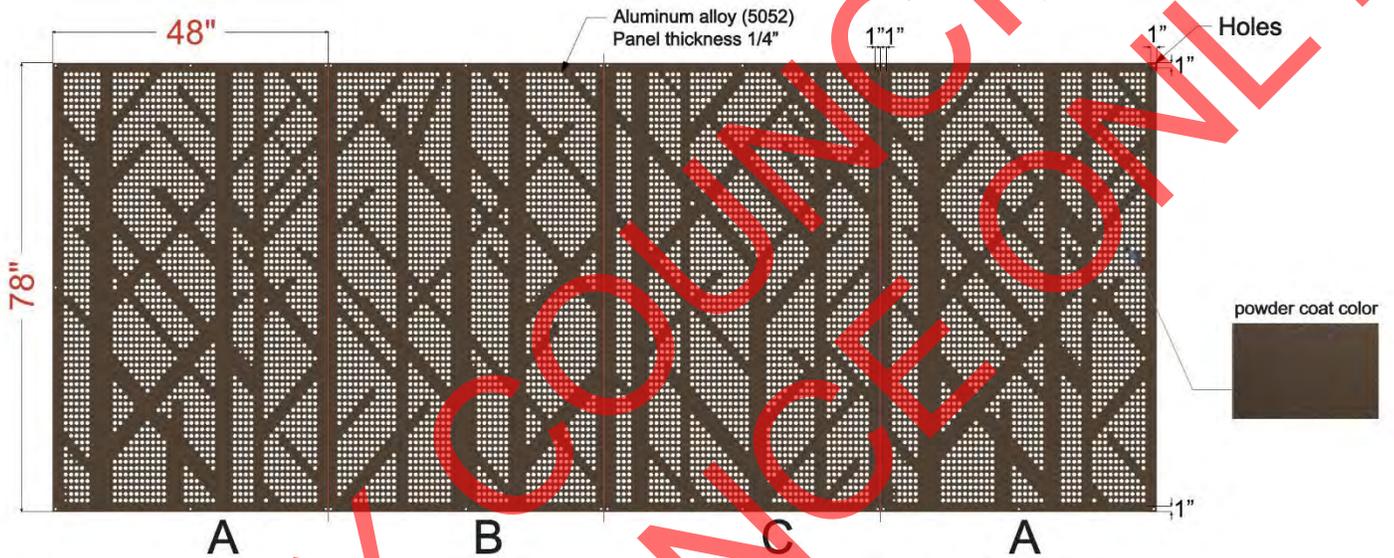
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**Notes:**

Graphics shown in Appendix B are for reference only, used to help identify graphic titles and graphic labels for installation.

**Aluminum Laser Cut Panels**

The graphic below shows the series of three designs “A”, “B”, and “C” of the Grove Pattern by Front Signs

**Interpretive Panels**

Refer to Section 10 14 00 “Park Signs” for more information. All interpretive panel graphics shown in Appendix B are to be used as reference only:

1. “Timeline of the CA Nursery Company and the CA Nursery Historical Park” – four (4) panels
2. “Catalog Covers Throughout the Decades” – four (4) panels
3. “Bulb Show”
4. “Retail Store”
5. “Lath Houses”
6. “Sales Yard and Sales Depot”

**Sign Panels for Upright-Double Sided Exhibit**

TIMELINE OF THE CALIFORNIA NURSERY COMPANY  
AND CALIFORNIA NURSERY HISTORICAL PARK

***FRONT SIDE***



Panel 1 of 4;

Panel 2 of 4

Panel 3 of 4

Panel 4 of 4

**CATALOG COVERS**

***BACK SIDE***



Panel 1 of 4;

Panel 2 of 4

Panel 3 of 4

Panel 4 of 4

**Sign Panels for Cantilevered Exhibit**



Bulb Show 42" W x 24" H

Retail Store 42" W x 24" H

Lath House 42" W x 24" H

Sales Yard and Sales Depot 42" W x 24" H

**END OF APPENDIX B**

**APPENDIX C**  
**GEOTECHNICAL EVALUATION REPORT**

By: Ninyo & Moore  
6/29/2018

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