

BID/PROJECT MANUAL

Fairfield Campus Entry Sidewalk Improvements PROJECT

CONTRACT NUMBER: 17-008

SOLANO COMMUNITY COLLEGE DISTRICT

June 21, 2017

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-DOCUMENT 00 01 15

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DRAWINGS

Civil plans, by CSW/ST2, 6/19/2017, 5 sheets, issued for bid/not for construction
Electrical plans by Wulff, 6/16/2017, 5 sheets, issued for bid/not for construction

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END OF DOCUMENT

NOTICE TO BIDDERS

1. Notice is hereby given that the governing board ("Board") of the Solano Community College District ("District") will receive sealed bids for the following project, Bid No. 17-008 ("Project" or "Contract"):

FAIRFIELD CAMPUS ENTRY SIDEWALK IMPROVEMENTS PROJECT

2. The Project consists of:

Replacement of existing sidewalk, curb and gutters, curb ramps and construction of new curb ramps and sidewalk, pavement striping/markings. Installation of new street light and pedestrian lights, and underground conduit/wiring, including appropriate testing, commissioning, and coordination with the City of Fairfield and PG&E scope of work as required per the approved plans and specifications. The estimated value of the project is \$200,000 to \$220,000.

3. To bid on this Project, the Bidder is required to possess the following State of California Contractor License: **A**

The Bidder's license(s) must remain active and in good standing throughout the term of the Contract.

4. To bid on this Project, the Bidder is required to be registered as a public works contractor with the Department of Industrial Relations. The Bidder's registration must remain active throughout the term of the Contract.

5. Contract Documents including drawings and specifications, are available on June 21, 2017, through BPXpress. They may be viewed and/or obtained by logging on to: www.blueprintexpress.com/smccdmeasureq or by calling BPXpress Reprographics at (707) 745-3593. Bidders can register with BPXpress and purchase a complete set of Bid documents for a non-refundable cost of \$60.

6. Sealed Bids will be received until 2:00 p.m., Thursday, July 13, 2017, at the Solano Community College, 4000 Suisun Valley Road, Building 600, Board Room, Fairfield, California 94534 at which time the bids will be opened and publicly read aloud. Any bid that is submitted after this time shall be non-responsive and returned to the bidder. Any claim by a bidder of error in its bid must be made in compliance with section 5100 et seq. of the Public Contract Code.

7. All bids shall be on the form provided by the District. Each bid must conform and be responsive to all pertinent Contract Documents, including, but not limited to, the Instructions to Bidders.

8. A bid bond by an admitted surety insurer on the form provided by the District, cash, or a cashier's check or a certified check, drawn to the order of the Solano Community College District, in the amount of ten percent (10%) of the total bid price, shall accompany the Bid Form and Proposal, as a guarantee that the Bidder will, within seven (7) calendar days after the date of the Notice of Award, enter into

a contract with the District for the performance of the services as stipulated in the bid.

9. A mandatory pre-bid conference and site visit will be held at the project site on Thursday, July 6, 2017 at 9:30 a.m. Meet at the campus parking lot closest to the intersection of Solano College Road and Suisun Valley Road. Failure to attend will render bid ineligible.
10. The successful Bidder shall be required to furnish a 100% Performance Bond and a 100% Payment Bond if it is awarded the contract for the Work.
11. The successful Bidder may substitute securities for any monies withheld by the District to ensure performance under the Contract, in accordance with the provisions of section 22300 of the Public Contract Code.
12. The Contractor and all Subcontractors under the Contractor shall pay all workers on all work performed pursuant to this Contract not less than the general prevailing rate of per diem wages and the general prevailing rate for holiday and overtime work as determined by the Director of the Department of Industrial Relations, State of California, for the type of work performed and the locality in which the work is to be performed within the boundaries of the District, pursuant to sections 1770 et seq. of the California Labor Code. Prevailing wage rates are also available from the District or on the Internet at: <<http://www.dir.ca.gov>>.
13. This Project is subject to labor compliance monitoring and enforcement by the Department of Industrial Relations pursuant to Labor Code section 1771.4 and subject to the requirements of Title 8 of the California Code of Regulations. The Contractor and all Subcontractors under the Contractor shall furnish electronic certified payroll records directly to the Labor Commissioner weekly or within ten (10) days of any request by the District or the Labor Commissioner. The successful Bidder shall comply with all requirements of Division 2, Part 7, Chapter 1, of the Labor Code.
14. The District shall award the Contract, if it awards it at all, to the lowest responsive responsible bidder based on:
 - A. The base bid amount only.
15. The Board reserves the right to reject any and all bids and/or waive any irregularity in any bid received. If the District awards the Contract, the security of unsuccessful bidder(s) shall be returned within sixty (60) days from the time the award is made. Unless otherwise required by law, no bidder may withdraw its bid for ninety (90) days after the date of the bid opening.

END OF DOCUMENT

INSTRUCTIONS TO BIDDERS

Contractors shall follow the instructions in this document, and shall submit all documents, forms, and information required for consideration of a Bid.

Solano Community College District ("District") will evaluate information submitted by the apparent low Bidder and, if incomplete or unsatisfactory to District, Bidder's bid may be rejected at the sole discretion of District.

1. Bids are requested for a general construction contract, or work described in general, for the following project ("Project" or "Contract"):

FAIRFIELD CAMPUS ENTRY SIDEWALK IMPROVEMENTS PROJECT

2. District will receive sealed Bids from Bidders as stipulated in the Notice to Bidders.
3. The District has prequalified bidders pursuant to Public Contract Code section 20651.5. Only prequalified bidders will be eligible to submit a bid for this Project. Any bid submitted by a bidder who is not prequalified shall be deemed non-responsive and will not be considered.
4. Bidders must submit Bids on the Bid Form and Proposal and all other required District forms. Bids not submitted on the District's required forms shall be deemed non-responsive and shall not be considered. Additional sheets required to fully respond to requested information are permissible.
5. Bidders must supply all information required by each Bid Document. Bids must be full and complete. District reserves the right in its sole discretion to reject any Bid as non-responsive as a result of any error or omission in the Bid. Bidders must complete and submit all of the following documents with the Bid Form and Proposal:
 - a. Bid Bond on the District's form or other security.
 - b. Designated Subcontractors List.
 - c. Site-Visit Certification, if a site visit was required Noncollusion Declaration.
 - d. Qualifying Experience
6. Bidders must submit with their Bids cash, a cashier's check or a certified check payable to District, or a bid bond by an admitted surety insurer of not less than ten percent (10%) of amount of base Bid, plus all additive alternates. If Bidder chooses to provide a Bid Bond as security, Bidder must use the required form of corporate surety provided by District. The Surety on Bidder's Bid Bond must be an insurer admitted in the State of California and authorized to issue surety bonds in the State of California. Bids submitted without necessary bid security will be deemed non-responsive and will not be considered.
7. If Bidder to whom Contract is awarded fails or neglects to enter into Contract and submit required bonds, insurance certificates, and all other required documents, within **SEVEN (7)** calendar days after the date of the Notice of Award, District may deposit Bid Bond, cash, cashier's check, or certified check for collection, and

proceeds thereof may be retained by District as liquidated damages for failure of Bidder to enter into Contract, in the sole discretion of District. It is agreed that calculation of damages District may suffer as a result of Bidder's failure to enter into the Contract would be extremely difficult and impractical to determine and that the amount of the Bidder's required bid security shall be the agreed and conclusively presumed amount of damages.

8. Bidders must submit with the Bid the Designated Subcontractors List for those subcontractors who will perform any portion of Work, including labor, rendering of service, or specially fabricating and installing a portion of the Work or improvement according to detailed drawings contained in the plans and specifications, in excess of one half of one percent (0.5%) of total Bid or \$10,000, whichever is greater. All of the listed subcontractors are required to be registered as a public works contractor with the Department of Industrial Relations. The subcontractor's registration must remain active throughout the term of the Contract. Failure to submit this list when required by law shall result in Bid being deemed non-responsive and the Bid will not be considered.
 - a. An inadvertent error in listing the California contractor license number on the Designated Subcontractors List shall not be grounds for filing a bid protest or grounds for considering the bid nonresponsive if the correct contractor's license number is submitted to the District within 24 hours after the bid opening and the corrected number corresponds with the submitted name and location for that subcontractor.
 - b. An inadvertent error listing an unregistered subcontractor shall not be grounds for filing a bid protest or grounds for considering the bid nonresponsive provided that any of the following apply:
 - (1) The subcontractor is registered prior to the bid opening.
 - (2) The subcontractor is registered and has paid the penalty registration fee within 24 hours after the bid opening.
 - (3) The subcontractor is replaced by another registered subcontractor pursuant to Public Contract Code section 4107.
9. If a mandatory pre-bid conference and site visit ("Site Visit") is requested as referenced in the Notice to Bidders, then Bidders must submit the Site-Visit Certification with their Bid. District will transmit to all prospective Bidders of record such Addenda as District in its discretion considers necessary in response to questions arising at the Site Visit. Oral statements shall not be relied upon and will not be binding or legally effective. Addenda issued by the District as a result of the Site Visit, if any, shall constitute the sole and exclusive record and statement of the results of the Site Visit.
10. Bidders shall submit the Noncollusion Declaration with their Bids. Bids submitted without the Noncollusion Declaration shall be deemed non-responsive and will not be considered.
11. Bids shall be clearly written without erasure or deletions. District reserves the right to reject any Bid containing erasures or deletions.

12. Bidders shall not modify the Bid Form and Proposal or qualify their Bids. Bidders shall not submit to the District a scanned, re-typed, word-processed, or otherwise recreated version of the Bid Form and Proposal or other District-provided document.
13. The Bidder and all Subcontractors under the Contractor shall pay all workers on all work performed pursuant to this Contract not less than the general prevailing rate of per diem wages and the general prevailing rate for holiday and overtime work as determined by the Director of the Department of Industrial Relations, State of California, for the type of work performed and the locality in which the work is to be performed within the boundaries of the District, pursuant to sections 1770 et seq. of the California Labor Code. Copies of the general prevailing rates of per diem wages for each craft, classification, or type of worker needed to execute the Contract, as determined by Director of the State of California Department of Industrial Relations, are available upon request at the District's principal office. Prevailing wage rates are also available on the internet at <http://www.dir.ca.gov>.
14. Submission of Bid signifies careful examination of Contract Documents and complete understanding of the nature, extent, and location of Work to be performed. Bidders must complete the tasks listed below as a condition to bidding, and submission of a Bid shall constitute the Bidder's express representation to District that Bidder has fully completed the following:
 - a. Bidder has visited the Site, if required, and has examined thoroughly and understood the nature and extent of the Contract Documents, Work, Site, locality, actual conditions, as-built conditions, and all local conditions and federal, state and local laws, and regulations that in any manner may affect cost, progress, performance, or furnishing of Work or that relate to any aspect of the means, methods, techniques, sequences, or procedures of construction to be employed by Bidder and safety precautions and programs incident thereto;
 - b. Bidder has conducted or obtained and has understood all examinations, investigations, explorations, tests, reports, and studies that pertain to the subsurface conditions, as-built conditions, underground facilities, and all other physical conditions at or contiguous to the Site or otherwise that may affect the cost, progress, performance, or furnishing of Work, as Bidder considers necessary for the performance or furnishing of Work at the Contract Sum, within the Contract Time, and in accordance with the other terms and conditions of Contract Documents, including specifically the provisions of the General Conditions; and no additional examinations, investigations, explorations, tests, reports, studies, or similar information or data are or will be required by Bidder for such purposes;
 - c. Bidder has correlated its knowledge and the results of all such observations, examinations, investigations, explorations, tests, reports, and studies with the terms and conditions of the Contract Documents;
 - d. Bidder has given the District prompt written notice of all conflicts, errors, ambiguities, or discrepancies that it has discovered in or among the Contract

Documents and the actual conditions, and the written resolution thereof by the District is acceptable to Bidder;

- e. Bidder has made a complete disclosure in writing to the District of all facts bearing upon any possible interest, direct or indirect, that Bidder believes any representative of the District or other officer or employee of the District presently has or will have in this Contract or in the performance thereof or in any portion of the profits thereof;
- e. Bidder must, prior to bidding, perform the work, investigations, research, and analysis required by this document and that Bidder represented in its Bid Form and Proposal and the Agreement that it performed prior to bidding. Contractor under this Contract is charged with all information and knowledge that a reasonable bidder would ascertain from having performed this required work, investigation, research, and analysis. Bid prices must include entire cost of all work "incidental" to completion of the Work.
- f. Conditions Shown on the Contract Documents: Information as to underground conditions, as-built conditions, or other conditions or obstructions, indicated in the Contract Documents, e.g., on Drawings or in Specifications, has been obtained with reasonable care, and has been recorded in good faith. However, District only warrants, and Contractor may only rely, on the accuracy of limited types of information.
 - (1) As to above-ground conditions or as-built conditions shown or indicated in the Contract Documents, there is no warranty, express or implied, or any representation express or implied, that such information is correctly shown or indicated. This information is verifiable by independent investigation and Contractor is required to make such verification as a condition to bidding. In submitting its Bid, Contractor shall rely on the results of its own independent investigation. In submitting its Bid, Contractor shall not rely on District-supplied information regarding above-ground conditions or as-built conditions.
 - (2) As to any subsurface condition shown or indicated in the Contract Documents, Contractor may rely only upon the general accuracy of actual reported depths, actual reported character of materials, actual reported soil types, actual reported water conditions, or actual obstructions shown or indicated. District is not responsible for the completeness of such information for bidding or construction; nor is District responsible in any way for any conclusions or opinions of Contractor drawn from such information; nor is the District responsible for subsurface conditions that are not specifically shown (for example, District is not responsible for soil conditions in areas contiguous to areas where a subsurface condition is shown).
- g. Conditions Shown in Reports and Drawings Supplied for Informational Purposes: Reference is made to the document entitled Geotechnical Data, and the document entitled Existing Conditions, for identification of:

- (1) Subsurface Conditions: Those reports of explorations and tests of subsurface conditions at or contiguous to the Site that have been utilized by Architect in preparing the Contract Documents; and
 - (2) Physical Conditions: Those drawings of physical conditions in or relating to existing surface or subsurface structures at or contiguous to the Site that has been utilized by Architect in preparing the Contract Documents.
 - (3) These reports and drawings are **not** Contract Documents and, except for any "technical" data regarding subsurface conditions specifically identified in Geotechnical Data and Existing Conditions, and underground facilities data, Contractor may not in any manner rely on the information in these reports and drawings. Subject to the foregoing, Contractor must make its own independent investigation of all conditions affecting the Work and must not rely on information provided by District.
15. Bidders may examine any available "as-built" drawings of previous work by giving District reasonable advance notice. District will not be responsible for accuracy of "as-built" drawings. The document entitled Existing Conditions applies to all supplied "as-built" drawings.
 16. All questions about the meaning or intent of the Contract Documents are to be directed in writing to the District. Interpretations or clarifications considered necessary by the District in response to such questions will be issued in writing by Addenda emailed, faxed, mailed, or delivered to all parties recorded by the District as having received the Contract Documents. Questions received less than **SEVEN (7)** calendar days prior to the date for opening Bids may not be answered. Only questions answered by formal written Addenda will be binding. Oral and other interpretations or clarifications will be without legal effect.
 17. Addenda may also be issued to modify other parts of the Contract Documents as deemed advisable by the District.
 18. Each Bidder must acknowledge each Addendum in its Bid Form and Proposal by number or its Bid shall be considered non-responsive. Each Addendum shall be part of the Contract Documents. A complete listing of Addenda may be secured from the District.
 19. Bids shall be based on products and systems specified in Contract Documents or listed by name in Addenda. Whenever in the Specifications any materials, process, or article is indicated or specified by grade, patent, or proprietary name, or by name of manufacturer, that Specification shall be deemed to be followed by the words "or equal." Bidder may, unless otherwise stated, offer any material, process, or article that shall be substantially equal or better in every respect to that so indicated or specified. The District is not responsible and/or liable in any way for a Contractor's damages and/or claims related, in any way, to that Contractor's basing its bid on any requested substitution that the District has not approved. Contractors and materials suppliers who submit requests for substitutions prior to the award of the Contract must do so in writing and in compliance with Public Contract Code section 3400. All requests must comply with the following:

- a. District must receive any request for substitution a minimum of **TEN (10)** calendar days prior to bid opening.
 - b. Within 35 days after the date of the Notice of Award, the Successful Bidder shall submit data substantiating a request for substitution containing sufficient information to assess acceptability of product or system and impact on Project, including, without limitation, the requirements specified in the Special Conditions and the Specifications. Insufficient information shall be grounds for rejection of substitution.
 - c. Approved substitutions, if any, shall be listed in Addenda. District reserves the right not to act upon submittals of substitutions until after bid opening.
 - d. Substitutions may be requested after Contract has been awarded only if indicated in and in accordance with requirements specified in the Special Conditions and the Specifications.
20. All Bids must be sealed, and marked with name and address of the Bidder and the Project Number, Bid number, Bid package, and time of bid opening. Bids will be received as indicated in the Notice to Bidders.
- a. Mark envelopes with the name of the Project.
 - b. Bids must be submitted to the **[District Facilities Office]** by date and time shown in the Notice to Bidders.
 - c. Bids must contain all documents as required herein.
21. Bids will be opened at or after the time indicated for receipt of bids.
22. This Contract may include alternates. Alternates are defined as alternate products, materials, equipment, systems, methods, or major elements of the construction that may, at the District's option and under terms established in the Contract and pursuant to section 20103.8 of the Public Contract Code, be selected for the Work.
23. The District shall award the Contract, if it awards it at all, to the lowest responsive responsible bidder based on the criteria as indicated in the Notice to Bidders. In the event two or more responsible bidders submit identical bids, the District shall select the Bidder to whom to award the Contract by lot.
24. Time for Completion: District may issue a Notice to Proceed within **THREE (3)** months from the date of the Notice of Award. Once Contractor has received the Notice to Proceed, Contractor shall complete the Work within the period of time indicated in the Contract Documents.
- a. In the event that the District desires to postpone issuing the Notice to Proceed beyond this 3-month period, it is expressly understood that with reasonable notice to the Contractor, the District may postpone issuing the Notice to Proceed.

- b. It is further expressly understood by Contractor that Contractor shall not be entitled to any claim of additional compensation as a result of the postponement of the issuance of the Notice to Proceed beyond a 3-month period. If the Contractor believes that a postponement of issuance of the Notice to Proceed will cause a hardship to the Contractor, the Contractor may terminate the Contract. Contractor's termination due to a postponement beyond this 3-month period shall be by written notice to District within **TEN (10)** calendar days after receipt by Contractor of District's notice of postponement.
 - c. It is further understood by the Contractor that in the event that Contractor terminates the Contract as a result of postponement by the District, the District shall only be obligated to pay Contractor for the Work that Contractor had performed at the time of notification of postponement and which the District had in writing authorized Contractor to perform prior to issuing a Notice to Proceed.
 - d. Should the Contractor terminate the Contract as a result of a notice of postponement, District shall have the authority to award the Contract to the next lowest responsive responsible bidder.
25. The Bidder to whom Contract is awarded shall execute and submit the following documents by 5:00 p.m. of the **SEVENTH (7th)** calendar day following the date of the Notice of Award. Failure to properly and timely submit these documents entitles District to reject the bid as non-responsive.
- a. Agreement: To be executed by successful Bidder. Submit four (4) copies, each bearing an original signature.
 - b. Escrow of Bid Documentation: This must include all required documentation. See the document Escrow of Bid Documentation for more information.
 - c. Performance Bond (100%): On the form provided in the Contract Documents and fully executed as indicated on the form.
 - d. Payment Bond (100%) (Contractor's Labor and Material Bond): On the form provided in the Contract Documents and fully executed as indicated on the form.
 - e. Insurance Certificates and Endorsements as required.
 - f. Workers' Compensation Certification.
 - g. Prevailing Wage and Related Labor Requirements Certification.
 - h. Drug-Free Workplace Certification. **[IF APPLICABLE]**
 - i. Tobacco-Free Environment Certification. **[IF APPLICABLE]**
 - j. Hazardous Materials Certification. **[IF APPLICABLE]**

- k. Lead-Based Paint Certification. **[IF APPLICABLE]**
 - l. Imported Materials Certification. **[IF APPLICABLE]**
 - m. Qualifying Experience Form.
26. Any bid protest by any Bidder regarding any other bid must be submitted in writing to the District, before 5:00 p.m. of the **THIRD (3rd)** business day following bid opening.
- a. Only a Bidder who has actually submitted a bid, and who could be awarded the Contract if the bid protest is upheld, is eligible to submit a bid protest. Subcontractors are not eligible to submit bid protests. A Bidder may not rely on the bid protest submitted by another Bidder.
 - b. A bid protest must contain a complete statement of any and all bases for the protest and all supporting documentation. Materials submitted after the bid protest deadline will not be considered.
 - c. The protest must refer to the specific portions of all documents that form the basis for the protest.
 - (1) Without limitation to other bases for protest, an inadvertent error in listing the California contractor license number on the Designated Subcontractors List shall not be grounds for filing a bid protest or grounds for considering the bid nonresponsive if the correct contractor's license number is submitted to the District within 24 hours after the bid opening and the corrected number corresponds with the submitted name and location for that subcontractor.
 - (2) Without limitation to other bases for protest, an inadvertent error listing an unregistered subcontractor shall not be grounds for filing a bid protest or grounds for considering the bid nonresponsive provided that any of the following apply:
 - (i) The subcontractor is registered prior to the bid opening.
 - (ii) The subcontractor is registered and has paid the penalty registration fee within 24 hours after the bid opening.
 - (iii) The subcontractor is replaced by another registered subcontractor pursuant to Public Contract Code section 4107.
 - d. The protest must include the name, address and telephone number of the person representing the protesting party.
 - e. The party filing the protest must concurrently transmit a copy of the protest and any attached documentation to all other parties with a direct financial

interest that may be adversely affected by the outcome of the protest. Such parties shall include all other bidders or proposers who appear to have a reasonable prospect of receiving an award depending upon the outcome of the protest.

- f. The procedure and time limits set forth in this paragraph are mandatory and are each bidder's sole and exclusive remedy in the event of bid protest. Failure to comply with these procedures shall constitute a waiver of any right to further pursue the bid protest, including filing a Government Code Claim or legal proceedings.
27. District reserves the right to reject any or all bids, including without limitation the right to reject any or all nonconforming, non-responsive, unbalanced, or conditional bids, to re-bid, and to reject the bid of any bidder if District believes that it would not be in the best interest of the District to make an award to that bidder, whether because the bid is not responsive or the bidder is unqualified or of doubtful financial ability or fails to meet any other pertinent standard or criteria established by District. District also reserves the right to waive inconsequential deviations not involving price, time, or changes in the Work. For purposes of this paragraph, an "unbalanced bid" is one having nominal prices for some work items and/or enhanced prices for other work items.
28. Discrepancies between written words and figures, or words and numerals, will be resolved in favor of numerals or figures.
29. Prior to the award of Contract, District reserves the right to consider the responsibility of the Bidder. District may conduct investigations as District deems necessary to assist in the evaluation of any bid and to establish the responsibility, including, without limitation, qualifications and financial ability of Bidders, proposed subcontractors, suppliers, and other persons and organizations to perform and furnish the Work in accordance with the Contract Documents to District's satisfaction within the prescribed time.

END OF DOCUMENT

DOCUMENT 00 21 13.1

BIDDER INFORMATION AND FORMS

1. Qualifying Experience Table required as part of bid.

END OF DOCUMENT

Qualifying Experience

The Contractor shall have successfully completed within the last five years a minimum of three Capital Improvement Program (CIP) projects for one or more public agencies; these projects shall involve work of similar type and complexity as the project being bid, with a contract price of not less than \$100,000. List the qualifying projects and other information as indicated below.

PUBLIC AGENCY/LOCATION	REFERENCE NAME, TITLE	TELEPHONE & EMAIL	PROJECT NAME	DATE COMPLETED	CONTRACT PRICE

EXISTING CONDITIONS

1. Summary

This document describes existing conditions at or near the Project, and use of information available regarding existing conditions. This document is **not** part of the Contract Documents. See General Conditions for definition(s) of terms used herein.

2. Reports and Information on Existing Conditions

- a. Documents providing a general description of the Site and conditions of the Work may have been collected by Solano Community College District ("District"), its consultants, contractors, and tenants. These documents may include previous contracts, contract specifications, tenant improvement contracts, as-built drawings, utility drawings, and information regarding underground facilities.
- b. Information regarding existing conditions may be inspected at the District offices or the Construction Manager's offices, if any, and copies may be obtained at cost of reproduction and handling upon Bidder's agreement to pay for such copies. These reports, documents, and other information are **not** part of the Contract Documents.
- c. Information regarding existing conditions may also be included in the Project Manual, but shall **not** be considered part of the Contract Documents.
- d. Prior to commencing this Work, Contractor and the District's representative shall survey the Site to document the condition of the Site. Contractor will record the survey in digital videotape format and provide an electronic copy to the District within fourteen (14) days of the survey.
- e. Contractor may also document any pre-existing conditions in writing, provided that both the Contractor and the District's representative agree on said conditions and sign a memorandum documenting the same.
- f. The reports and other data or information regarding existing conditions and underground facilities at or contiguous to the Project are the following:

[None]

3. Use of Information

- a. Information regarding existing conditions was obtained only for use of District and its consultants, contractors, and tenants for planning and design and is **not** part of the Contract Documents.
- b. District does not warrant, and makes no representation regarding, the accuracy or thoroughness of any information regarding existing conditions.

Bidder represents and agrees that in submitting a bid it is not relying on any information regarding existing conditions supplied by District.

- c. Under no circumstances shall District be deemed to warrant or represent existing above-ground conditions, as-built conditions, or other actual conditions, verifiable by independent investigation. These conditions are verifiable by Contractor by the performance of its own independent investigation that Contractor must perform as a condition to bidding and Contractor should not and shall not rely on this information or any other information supplied by District regarding existing conditions.
- d. Any information shown or indicated in the reports and other data supplied herein with respect to existing underground facilities at or contiguous to the Project may be based upon information and data furnished to District by the District's employees and/or consultants or builders of such underground facilities or others. District does not assume responsibility for the completeness of this information, and Bidder is solely responsible for any interpretation or conclusion drawn from this information.
- e. District shall be responsible only for the general accuracy of information regarding underground facilities, and only for those underground facilities that are owned by District, and only where Bidder has conducted the independent investigation required of it pursuant to the Instructions to Bidders, and discrepancies are not apparent.

4. Investigations/Site Examinations

- a. Before submitting a Bid, each Bidder is responsible for conducting or obtaining any additional or supplementary examinations, investigations, explorations, tests, studies, and data concerning conditions (surface, subsurface, and underground facilities) at or contiguous to the Site or otherwise, that may affect cost, progress, performance, or furnishing of Work or that relate to any aspect of the means, methods, techniques, sequences, or procedures of construction to be employed by Bidder and safety precautions and programs incident thereto or that Bidder deems necessary to determine its Bid for performing and furnishing the Work in accordance with the time, price, and other terms and conditions of Contract Documents.
- b. On request, District will provide each Bidder access to the Site to conduct such examinations, investigations, explorations, tests, and studies, as each Bidder deems necessary for submission of a Bid. Bidders must fill all holes and clean up and restore the Site to its former condition upon completion of its explorations, investigations, tests, and studies. Such investigations and Site examinations may be performed during any and all Site visits indicated in the Notice to Bidders and only under the provisions of the Contract Documents, including, but not limited to, proof of insurance and obligation to indemnify against claims arising from such work, and District's prior approval.

END OF DOCUMENT

BID FORM AND PROPOSAL

To: Governing Board of Solano Community College District ("District" or "Owner")

From: _____
(Proper Name of Bidder)

The undersigned declares that the Contract Documents including, without limitation, the Notice to Bidders and the Instructions to Bidders have been read and agrees and proposes to furnish all necessary labor, materials, and equipment to perform and furnish all work in accordance with the terms and conditions of the Contract Documents, including, without limitation, the Drawings and Specifications of Bid No. _____.

PROJECT: **FAIRFIELD CAMPUS ENTRY SIDEWALK IMPROVEMENTS**

("Project" or "Contract") and will accept in full payment for that Work the following total lump sum amount, all taxes included:

_____ dollars	\$	_____
BASE BID		

1. **Unit Prices.** The Bidder's Base Bid includes the following unit prices, which the Bidder must provide and the District may, at its discretion, utilize in valuing additive and/or deductive change orders:

Please add in additional sidewalk @ \$/SF, including subgrade preparation and base rock

2. **Allowance.** The Bidder's Base Bid shall include an allowance of \$2,000 for the required City of Fairfield encroachment fees

The above allowance shall only be allocated for actual permit fee costs relating to the Work. Contractor shall not bill for or be due any portion of this allowance unless the District has been presented with the City receipt of payment for the fees. Contractor hereby authorizes the District to execute a unilateral deductive change order at or near the end of the Project for all or any portion of the allowance not allocated.

3. The undersigned has reviewed the Work outlined in the Contract Documents and fully understands the scope of Work required in this Proposal, understands the construction and project management function(s) is described in the Contract Documents, and that each Bidder who is awarded a contract shall be in fact a prime contractor, not a subcontractor, to the District, and agrees that its Proposal, if accepted by the District, will be the basis for the Bidder to enter into a contract with the District in accordance with the intent of the Contract Documents.

4. The undersigned has notified the District in writing of any discrepancies or omissions or of any doubt, questions, or ambiguities about the meaning of any of the Contract Documents, and has contacted the Construction Manager before bid date to verify the issuance of any clarifying Addenda.

5. The undersigned agrees to commence work under this Contract on the date established in the Contract Documents and to complete all work within the time specified in the Contract Documents.
6. The liquidated damages clause of the General Conditions and Agreement is hereby acknowledged.
7. It is understood that the District reserves the right to reject this bid and that the bid shall remain open to acceptance and is irrevocable for a period of ninety (90) days.
8. The following documents are attached hereto:
 - Bid Bond on the District's form or other security
 - Designated Subcontractors List
 - Site-Visit Certification
 - Noncollusion Declaration
 - Qualifying Experience Form
9. Receipt and acceptance of the following addenda is hereby acknowledged:

No.____, Dated _____	No.____, Dated _____
No.____, Dated _____	No.____, Dated _____
No.____, Dated _____	No.____, Dated _____

10. Bidder acknowledges that the license required for performance of the Work is an **A** license.
11. The undersigned hereby certifies that Bidder is able to furnish labor that can work in harmony with all other elements of labor employed or to be employed on the Work.
12. Bidder specifically acknowledges and understands that if it is awarded the Contract, that it shall perform the Work of the Project while complying with all requirements of the Department of Industrial Relations [and with all requirements of the Project Labor Agreement].
13. The Bidder represents that it is competent, knowledgeable, and has special skills with respect to the nature, extent, and inherent conditions of the Work to be performed. Bidder further acknowledges that there are certain peculiar and inherent conditions existent in the construction of the Work that may create, during the Work, unusual or peculiar unsafe conditions hazardous to persons and property.
14. Bidder expressly acknowledges that it is aware of such peculiar risks and that it has the skill and experience to foresee and to adopt protective measures to adequately and safely perform the Work with respect to such hazards.

15. Bidder expressly acknowledges that it is aware that if a false claim is knowingly submitted (as the terms "claim" and "knowingly" are defined in the California False Claims Act, Cal. Gov. Code, §12650 et seq.), the District will be entitled to civil remedies set forth in the California False Claim Act. It may also be considered fraud and the Contractor may be subject to criminal prosecution.

16. The undersigned Bidder certifies that it is, at the time of bidding, and shall be throughout the period of the contract, licensed by the State of California to do the type of work required under the terms of the Contract Documents and registered as a public works contractor with the Department of Industrial Relations. Bidder further certifies that it is regularly engaged in the general class and type of work called for in the Contract Documents.

Furthermore, Bidder hereby certifies to the District that all representations, certifications, and statements made by Bidder, as set forth in this bid form, are true and correct and are made under penalty of perjury.

Dated this _____ day of _____ 20 ____

Name of Bidder _____

Type of Organization _____

Signed by _____

Title of Signer _____

Address of Bidder _____

Taxpayer's Identification No. of Bidder _____

Telephone Number _____

Fax Number _____

E-mail _____ Web page _____

Contractor's License No(s): No.: _____ Class: _____ Expiration Date: _____

No.: _____ Class: _____ Expiration Date: _____

No.: _____ Class: _____ Expiration Date: _____

Public Works Contractor Registration No.: _____

If Bidder is a corporation, affix corporate seal.

Name of Corporation: _____

President: _____

Secretary: _____

Treasurer: _____

Manager: _____

END OF DOCUMENT

BID BOND

(Note: If Bidder is providing a bid bond as its bid security, Bidder must use this form, NOT a surety company form.)

KNOW ALL PERSONS BY THESE PRESENTS:

That the undersigned, as _____ as Principal ("Principal"),
and _____ as Surety ("Surety"),
a corporation organized and existing under and by virtue of the laws of the State of California and authorized to do business as a surety in the State of California, are held and firmly bound unto the Solano Community College District ("District") of County, State of California as Obligee, in the sum of

_____ Dollars (\$ _____)

lawful money of the United States of America, for the payment of which sum well and truly to be made, we, and each of us, bind ourselves, our heirs, executors, administrators, successors, and assigns, jointly and severally, firmly by these presents.

THE CONDITION OF THIS OBLIGATION IS SUCH that whereas the Principal has submitted a bid to the District for all Work specifically described in the accompanying bid;

NOW, THEREFORE, if the Principal is awarded the Contract and, within the time and manner required under the Contract Documents, after the prescribed forms are presented to Principal for signature, enters into a written contract, in the prescribed form in accordance with the bid, and files two bonds, one guaranteeing faithful performance and the other guaranteeing payment for labor and materials as required by law, and meets all other conditions to the contract between the Principal and the Obligee becoming effective, or if the Principal shall fully reimburse and save harmless the Obligee from any damage sustained by the Obligee through failure of the Principal to enter into the written contract and to file the required performance and labor and material bonds, and to meet all other conditions to the Contract between the Principal and the Obligee becoming effective, then this obligation shall be null and void; otherwise, it shall be and remain in full force and effect. The full payment of the sum stated above shall be due immediately if Principal fails to execute the Contract within seven (7) days of the date of the District's Notice of Award to Principal.

Surety, for value received, hereby stipulates and agrees that no change, extension of time, alteration or addition to the terms of the Contract or the call for bids, or to the work to be performed thereunder, or the specifications accompanying the same, shall in any way affect its obligation under this bond, and it does hereby waive notice of any such change, extension of time, alteration or addition to the terms of the Contract or the call for bids, or to the work, or to the specifications.

In the event suit is brought upon this bond by the Obligee and judgment is recovered, the Surety shall pay all costs incurred by the Obligee in such suit, including a reasonable attorneys' fee to be fixed by the Court.

If the District awards the bid, the security of unsuccessful bidder(s) shall be returned within sixty (60) days from the time the award is made. Unless otherwise required by law, no bidder may withdraw its bid for ninety (90) days after the date of the bid opening.

IN WITNESS WHEREOF, this instrument has been duly executed by the Principal and Surety above named, on the _____ day of _____, 20____.

(Affix Corporate Seal)

Principal

By

(Affix Corporate Seal)

Surety

By

Name of California Agent of Surety

Address of California Agent of Surety

Telephone Number of California Agent of Surety

Bidder must attach Power of Attorney and Certificate of Authority for Surety and a Notarial Acknowledgment for all Surety's signatures. The California Department of Insurance must authorize the Surety to be an admitted Surety Insurer.

END OF DOCUMENT

DESIGNATED SUBCONTRACTORS LIST
(TO BE EXECUTED BY BIDDER AND SUBMITTED WITH BID)

PROJECT: **FAIRFIELD CAMPUS ENTRY SIDEWALK IMPROVEMENTS PROJECT**

Bidder acknowledges and agrees that under Public Contract Code section 4100, et seq., it must clearly set forth below the name, location and California contractor license number of each subcontractor who will perform work or labor or render service to the Bidder in or about the construction of the Work or who will specially fabricate and install a portion of the Work according to detailed drawings contained in the plans and specifications in an amount in excess of one-half of one percent (0.5%) of Bidder's total Bid and the kind of Work that each will perform. Vendors or suppliers of materials only do not need to be listed.

Bidder acknowledges and agrees that under Public Contract Code section 4100, et seq., if Bidder fails to list as to any portion of Work, or if Bidder lists more than one subcontractor to perform the same portion of Work, Bidder must perform that portion itself or be subjected to penalty under applicable law. In case more than one subcontractor is named for the same kind of Work, state the portion of the kind of Work that each subcontractor will perform.

If alternate bids are called for and Bidder intends to use subcontractors different from or in addition to those subcontractors listed for work under the base Bid, Bidder must list subcontractors that will perform Work in an amount in excess of one half of one percent (0.5%) of Bidder's total Bid, including alternates.

If further space is required for the list of proposed subcontractors, attach additional sheets showing the required information, as indicated below.

Subcontractor Name: _____

CA Cont. Lic. #: _____ Location: _____

Portion of Work: _____

Subcontractor Name: _____

CA Cont. Lic. #: _____ Location: _____

Portion of Work: _____

Subcontractor Name: _____

CA Cont. Lic. #: _____ Location: _____

Portion of Work: _____

Subcontractor Name: _____

CA Cont. Lic. #: _____ Location: _____

Portion of Work: _____

Subcontractor Name: _____

CA Cont. Lic. #: _____ Location: _____

Portion of Work: _____

Subcontractor Name: _____

CA Cont. Lic. #: _____ Location: _____

Portion of Work: _____

Subcontractor Name: _____

CA Cont. Lic. #: _____ Location: _____

Portion of Work: _____

Subcontractor Name: _____

CA Cont. Lic. #: _____ Location: _____

Portion of Work: _____

Subcontractor Name: _____

CA Cont. Lic. #: _____ Location: _____

Portion of Work: _____

Subcontractor Name: _____

CA Cont. Lic. #: _____ Location: _____

Portion of Work: _____

Date: _____

Proper Name of Bidder: _____

Signature: _____

Print Name: _____

Title: _____

END OF DOCUMENT

SITE VISIT CERTIFICATION

TO BE EXECUTED BY BIDDER AND SUBMITTED WITH BID
IF SITE VISIT WAS MANDATORY

PROJECT: **FAIRFIELD CAMPUS ENTRY SIDEWALK IMPROVEMENTS**

Check option that applies:

_____ I certify that I visited the Site of the proposed Work and became fully acquainted with the conditions relating to construction and labor. I fully understand the facilities, difficulties, and restrictions attending the execution of the Work under contract.

_____ I certify that _____ (Bidder's representative) visited the Site of the proposed Work and became fully acquainted with the conditions relating to construction and labor. The Bidder's representative fully understood the facilities, difficulties, and restrictions attending the execution of the Work under contract.

Bidder fully indemnifies the Solano Community College School District, its Architect, its Engineer, its Construction Manager, and all of their respective officers, agents, employees, and consultants from any damage, or omissions, related to conditions that could have been identified during my visit and/or the Bidder's representative's visit to the Site.

I certify under penalty of perjury under the laws of the State of California that the foregoing is true and correct.

Date: _____

Proper Name of Bidder: _____

Signature: _____

Print Name: _____

Title: _____

END OF DOCUMENT

**NON-COLLUSION DECLARATION
TO BE EXECUTED BY BIDDER AND SUBMITTED WITH BID
Public Contract Code Section 7106**

The undersigned declares:

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

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

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

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

Date: _____

Proper Name of Bidder: _____

Signature: _____

Print Name: _____

Title: _____

END OF DOCUMENT

WORKERS' COMPENSATION CERTIFICATION

PROJECT/CONTRACT NO.: **FAIRFIELD CAMPUS ENTRY SIDEWALK IMPROVEMENTS**

between Solano Community College District ("District") and _____
_____ ("Contractor" or "Bidder") ("Contract" or "Project").

Labor Code section 3700, in relevant part, provides:

Every employer except the State shall secure the payment of compensation in one or more of the following ways:

- a. By being insured against liability to pay compensation by one or more insurers duly authorized to write compensation insurance in this state; and/or
- b. By securing from the Director of Industrial Relations a certificate of consent to self-insure, which may be given upon furnishing proof satisfactory to the Director of Industrial Relations of ability to self-insure and to pay any compensation that may become due to his employees.

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

Date: _____

Proper Name of Contractor: _____

Signature: _____

Print Name: _____

Title: _____

(In accordance with Article Labor Code sections 1860 and 1861, the above certificate must be signed and filed with the awarding body prior to performing any Work under this Contract.)

END OF DOCUMENT

**PREVAILING WAGE AND
RELATED LABOR REQUIREMENTS CERTIFICATION**

PROJECT/CONTRACT NO.: **FAIRFIELD CAMPUS ENTRY SIDEWALK IMPROVEMENTS**

between Solano Community College_District ("District") and _____
_____ ("Contractor" or "Bidder") ("Contract" or "Project").

I hereby certify that I will conform to the State of California Public Works Contract requirements regarding prevailing wages, benefits, on-site audits with 48-hours notice, payroll records, and apprentice and trainee employment requirements, for all Work on the above Project including, without limitation, labor compliance monitoring and enforcement by the Department of Industrial Relations.

[IF THIS PROJECT USES FEDERAL FUNDS, DISTRICT SHOULD INCLUDE THE FOLLOWING] I hereby certify that I will also conform to the Federal Labor Standards Provisions regarding minimum wages, withholding, payrolls and basic records, apprentice and trainee employment requirements, equal employment opportunity requirements, Copeland Act requirements, Davis-Bacon and Related Act requirements, Contract Work Hours and Safety Standards Act requirements, and any and all other applicable requirements for federal funding for all Work on the above Project.

Date: _____

Proper Name of Contractor: _____

Signature: _____

Print Name: _____

Title: _____

END OF DOCUMENT

DRUG-FREE WORKPLACE CERTIFICATION

PROJECT/CONTRACT NO.: **FAIRFIELD CAMPUS ENTRY SIDEWALK IMPROVEMENTS**

between Solano Community College District ("District") and _____
_____ ("Contractor" or "Bidder") ("Contract" or "Project").

This Drug-Free Workplace Certification form is required from the successful Bidder pursuant to Government Code section 8350 et seq., the Drug-Free Workplace Act of 1990. The Drug-Free Workplace Act of 1990 requires that every person or organization awarded a contract or grant for the procurement of any property or service from any state agency must certify that it will provide a drug-free workplace by doing certain specified acts. In addition, the Act provides that each contract or grant awarded by a state agency may be subject to suspension of payments or termination of the contract or grant, and the contractor or grantee may be subject to debarment from future contracting, if the contracting agency determines that specified acts have occurred.

The District is not a "state agency" as defined in the applicable section(s) of the Government Code, but the District is a local agency and public school district under California law and requires all contractors on District projects to comply with the provisions and requirements of Government Code section 8350 et seq., the Drug-Free Workplace Act of 1990.

Contractor shall certify that it will provide a drug-free workplace by doing all of the following:

- a. Publishing a statement notifying employees that the unlawful manufacture, distribution, dispensation, possession, or use of a controlled substance is prohibited in the person's or organization's workplace and specifying actions which will be taken against employees for violations of the prohibition.
- b. Establishing a drug-free awareness program to inform employees about all of the following:
 - (1) The dangers of drug abuse in the workplace.
 - (2) The person's or organization's policy of maintaining a drug-free workplace.
 - (3) The availability of drug counseling, rehabilitation, and employee-assistance programs.
 - (4) The penalties that may be imposed upon employees for drug abuse violations.
- c. Requiring that each employee engaged in the performance of the contract or grant be given a copy of the statement required above, and that, as a condition of employment on the contract or grant, the employee agrees to abide by the terms of the statement.

I, the undersigned, agree to fulfill the terms and requirements of Government Code section 8355 listed above and will publish a statement notifying employees concerning (a) the prohibition of controlled substance at the workplace, (b) establishing a drug-free awareness program, and (c) requiring that each employee engaged in the performance of the Contract

be given a copy of the statement required by section 8355(a), and requiring that the employee agree to abide by the terms of that statement.

I also understand that if the District determines that I have either (a) made a false certification herein, or (b) violated this certification by failing to carry out the requirements of section 8355, that the Contract awarded herein is subject to termination, suspension of payments, or both. I further understand that, should I violate the terms of the Drug-Free Workplace Act of 1990, I may be subject to debarment in accordance with the requirements of the aforementioned Act.

I acknowledge that I am aware of the provisions of Government Code section 8350 et seq. and hereby certify that I will adhere to the requirements of the Drug-Free Workplace Act of 1990.

Date: _____

Proper Name of Contractor: _____

Signature: _____

Print Name: _____

Title: _____

END OF DOCUMENT

TOBACCO-FREE ENVIRONMENT CERTIFICATION

PROJECT/CONTRACT NO.: **FAIRFIELD CAMPUS ENTRY SIDEWALK IMPROVEMENTS**

between Solano Community College District ("District") and _____
_____ ("Contractor" or "Bidder") ("Contract" or "Project").

This Tobacco-Free Environment Certification form is required from the successful Bidder.

Pursuant to, without limitation, 20 U.S.C section 6083, Labor Code section 6400 et seq., Health & Safety Code section 104350 et seq. and District Board Policies, all District sites, including the Project site, are tobacco-free environments. Smoking and the use of tobacco products by all persons is prohibited on or in District property. District property includes school buildings, school grounds, school owned vehicles and vehicles owned by others while on District property.

I acknowledge that I am aware of the District's policy regarding tobacco-free environments at District sites, including the Project site and hereby certify that I will adhere to the requirements of that policy and not permit any of my firm's employees, agents, subcontractors, or my firm's subcontractors' employees or agents to use tobacco and/or smoke on the Project site.

Date: _____

Proper Name of Contractor: _____

Signature: _____

Print Name: _____

Title: _____

END OF DOCUMENT

LEAD-BASED MATERIALS CERTIFICATION

PROJECT/CONTRACT NO.: **FAIRFIELD CAMPUS ENTRY SIDEWALK IMPROVEMENTS**

between Solano Community College District ("District") and _____
_____ ("Contractor" or "Bidder") ("Contract" or "Project").

This certification provides notice to the Contractor that:

- (1) Contractor's work may disturb lead-containing building materials.
- (2) Contractor shall notify the District if any work may result in the disturbance of lead-containing building materials.
- (3) Contractor shall comply with the Renovation, Repair and Painting Rule, if lead-based paint is disturbed in a six-square-foot or greater area indoors or a 20-square-foot or greater area outdoors.

1. Lead as a Health Hazard

Lead poisoning is recognized as a serious environmental health hazard facing children today. Even at low levels of exposure, much lower than previously believed, lead can impair the development of a child's central nervous system, causing learning disabilities, and leading to serious behavioral problems. Lead enters the environment as tiny lead particles and lead dust disburse when paint chips, chalks, peels, wears away over time, or is otherwise disturbed. Ingestion of lead dust is the most common pathway of childhood poisoning; lead dust gets on a child's hands and toys and then into a child's mouth through common hand-to-mouth activity. Exposures may result from construction or remodeling activities that disturb lead paint, from ordinary wear and tear of windows and doors, or from friction on other surfaces.

Ordinary construction and renovation or repainting activities carried out without lead-safe work practices can disturb lead-based paint and create significant hazards. Improper removal practices, such as dry scraping, sanding, or water blasting painted surfaces, are likely to generate high volumes of lead dust.

Because the Contractor and its employees will be providing services for the District, and because the Contractor's work may disturb lead-containing building materials, CONTRACTOR IS HEREBY NOTIFIED of the potential presence of lead-containing materials located within certain buildings utilized by the District. All school buildings built prior to 1978 are presumed to contain some lead-based paint until sampling proves otherwise.

2. Overview of California Law

Education Code section 32240 et seq. is known as the Lead-Safe Schools Protection Act. Under this act, the Department of Health Services is to conduct a sample survey of schools in the State of California for the purpose of developing risk factors to predict lead contamination in public schools. (Ed. Code, § 32241.)

Any school that undertakes any action to abate existing risk factors for lead is required to utilize trained and state-certified contractors, inspectors, and workers. (Ed.

Code, § 32243, subd. (b).) Moreover, lead-based paint, lead plumbing, and solders, or other potential sources of lead contamination, shall not be utilized in the construction of any new school facility or the modernization or renovation of any existing school facility. (Ed. Code, § 32244.)

Both the Federal Occupational Safety and Health Administration ("Fed/OSHA") and the California Division of Occupational Safety and Health ("Cal/OSHA") have implemented safety orders applicable to all construction work where a contractor's employee may be occupationally exposed to lead.

The OSHA Regulations apply to all construction work where a contractor's employee may be occupationally exposed to lead. The OSHA Regulations contain specific and detailed requirements imposed on contractors subject to that regulation. The OSHA Regulations define construction work as work for construction, alteration, and/or repair, including painting and decorating. It includes, but is not limited to, the following:

- a. Demolition or salvage of structures where lead or materials containing lead are present;
- b. Removal or encapsulation of materials containing lead;
- c. New construction, alteration, repair, or renovation of structures, substrates, or portions thereof, that contain lead, or materials containing lead;
- d. Installation of products containing lead;
- e. Lead contamination/emergency cleanup;
- f. Transportation, disposal, storage, or containment of lead or materials containing lead on the site or location at which construction activities are performed; and
- g. Maintenance operations associated with the construction activities described in the subsection.

Because it is assumed by the District that all painted surfaces (interior as well as exterior) within the District contain some level of lead, it is imperative that the Contractor, its workers and subcontractors fully and adequately comply with all applicable laws, rules and regulations governing lead-based materials (including title 8, California Code of Regulations, section 1532.1).

Contractor shall notify the District if any Work may result in the disturbance of lead-containing building materials. Any and all Work that may result in the disturbance of lead-containing building materials shall be coordinated through the District. A signed copy of this Certification shall be on file prior to beginning Work on the Project, along with all current insurance certificates.

3. Renovation, Repair and Painting Rule, Section 402(c)(3) of the Toxic Substances Control Act

The EPA requires lead safe work practices to reduce exposure to lead hazards created by renovation, repair and painting activities that disturb lead-based paint. Pursuant to the Renovation, Repair and Painting Rule (RRP), renovations in homes, childcare facilities, and schools built prior to 1978 must be conducted by certified renovations firms, using renovators with training by a EPA-accredited training provider, and fully and adequately complying with all applicable laws, rules and regulations governing lead-based materials, including those rules and regulations appearing within title 40 of the Code of Federal Regulations as part 745 (40 CFR 745).

The RRP requirements apply to all contractors who disturb lead-based paint in a six-square-foot or greater area indoors or a 20-square-foot or greater area outdoors. If a DPH-certified inspector or risk assessor determines that a home constructed before 1978 is lead-free, the federal certification is not required for anyone working on that particular building.

4. Contractor's Liability

If the Contractor fails to comply with any applicable laws, rules, or regulations, and that failure results in a site or worker contamination, the Contractor will be held solely responsible for all costs involved in any required corrective actions, and shall defend, indemnify, and hold harmless the District, pursuant to the indemnification provisions of the Contract, for all damages and other claims arising therefrom.

If lead disturbance is anticipated in the Work, only persons with appropriate accreditation, registrations, licenses, and training shall conduct this Work.

It shall be the responsibility of the Contractor to properly dispose of any and all waste products, including, but not limited to, paint chips, any collected residue, or any other visual material that may occur from the prepping of any painted surface. It will be the responsibility of the Contractor to provide the proper disposal of any hazardous waste by a certified hazardous waste hauler. This company shall be registered with the Department of Transportation (DOT) and shall be able to issue a current manifest number upon transporting any hazardous material from any school site within the District.

The Contractor shall provide the District with any sample results prior to beginning Work, during the Work, and after the completion of the Work. The District may request to examine, prior to the commencement of the Work, the lead training records of each employee of the Contractor.

THE CONTRACTOR HEREBY ACKNOWLEDGES, UNDER PENALTY OF PERJURY, THAT IT:

1. HAS RECEIVED NOTIFICATION OF POTENTIAL LEAD-BASED MATERIALS ON THE OWNER'S PROPERTY;

2. IS KNOWLEDGEABLE REGARDING AND WILL COMPLY WITH ALL APPLICABLE LAWS, RULES, AND REGULATIONS GOVERNING WORK WITH, AND DISPOSAL, OF LEAD.

THE UNDERSIGNED WARRANTS THAT HE/SHE HAS THE AUTHORITY TO SIGN ON BEHALF OF AND BIND THE CONTRACTOR. THE DISTRICT MAY REQUIRE PROOF OF SUCH AUTHORITY.

Date: _____

Proper Name of Contractor: _____

Signature: _____

Print Name: _____

Title: _____

END OF DOCUMENT

IMPORTED MATERIALS CERTIFICATION

PROJECT/CONTRACT NO.: **FAIRFIELD CAMPUS ENTRY SIDEWALK IMPROVEMENTS**

between Solano Community College District ("District") and _____
_____ ("Contractor" or "Bidder") ("Contract" or "Project").

This form shall be executed by all entities that, in any way, provide or deliver and/or supply any soils, aggregate, or related materials ("Fill") to the Project Site. All Fill shall satisfy all requirements of any environmental review of the Project performed pursuant to the statutes and guidelines of the California Environmental Quality Act, section 21000 et seq. of the Public Resources Code ("CEQA"), and all requirements of section 17210 et seq. of the Education Code, including requirements for a Phase I environmental assessment acceptable to the State of California Department of Education and Department of Toxic Substances Control.

Certification of: Delivery Firm/Transporter Supplier Manufacturer
 Wholesaler Broker Retailer
 Distributor Other _____

Type of Entity Corporation General Partnership
 Limited Partnership Limited Liability Company
 Sole Proprietorship Other _____

Name of firm ("Firm"): _____

Mailing address: _____

Addresses of branch office used for this Project: _____

If subsidiary, name and address of parent company: _____

By my signature below, I hereby certify that I am aware of section 25260 of the Health and Safety Code and the sections referenced therein regarding the definition of hazardous material. I further certify on behalf of the Firm that all soils, aggregates, or related materials provided, delivered, and/or supplied or that will be provided, delivered, and/or supplied by this Firm to the Project Site are free of any and all hazardous material as defined in section 25260 of the Health and Safety Code. I further certify that I am authorized to make this certification on behalf of the Firm.

Date: _____

Proper Name of Firm: _____

Signature: _____

Print Name: _____

Title: _____

END OF DOCUMENT

SEX OFFENDER REGISTRATION ACT CERTIFICATION

PROJECT/CONTRACT NO.: **FAIRFIELD CAMPUS ENTRY SIDEWALK IMPROVEMENTS**

between the Solano Community College District ("District") and _____
_____ ("Contractor" or "Bidder") ("Contract" or "Project").

This certification provides notice to the Contractor that:

- Penal Code section 290.01 requires every person required to register pursuant to sections 290 to 290.009, inclusive, of the Sex Offender Registration Act who is carrying on a vocation at the community college for more than fourteen (14) days, or for an aggregate period exceeding thirty (30) days in a calendar year, shall, in addition to the registration required by the Sex Offender Registration Act, register with the campus police department within five working days of commencing employment at that community college on a form as may be required by the Department of Justice. The terms "employed or carries on a vocation" include employment whether or not financially compensated, volunteered, or performed for government or educational benefit.
- If the community college has no campus police department, the registrant shall instead register with the police of the city in which the campus is located or the sheriff of the county in which the campus is located if the campus is located in an unincorporated area or in a city that has no police department, on a form as may be required by the Department of Justice.
- The registrant shall also notify the campus police department within five (5) working days of ceasing to be employed, or ceasing to carry on a vocation, at the community college.

Contractor hereby acknowledges, under penalty of perjury, that it is aware of the provisions of section 290.01 of the Penal Code, and it will provide notice of the above provisions to all of its employees, subcontractors, and employees of subcontractors regardless of whether they are designated as employees or acting as independent contractors of the Contractor at least five (5) working days before commencing the performance of the Work of this Contract.

THE UNDERSIGNED WARRANTS THAT HE/SHE HAS THE AUTHORITY TO SIGN ON BEHALF OF AND BIND THE CONTRACTOR. THE DISTRICT MAY REQUIRE PROOF OF SUCH AUTHORITY.

Date: _____

Proper Name of Contractor: _____

Signature: _____

Print Name: _____

Title: _____

END OF DOCUMENT

POST BID INTERVIEW

PART 1 – GENERAL

1.01 SUMMARY

If requested by the District, this Section requires the apparent low bidder to attend and participate in a Post Bid Interview with the Construction Manager, prior to award of any contract by the District. The Post Bid Interview will be scheduled by the CONSTRUCTION Manager within three (3) calendar days after the date of bid.

1.02 REQUIRED ATTENDANCE

- A. A duly authorized representative of the apparent low bidder is required to attend the Post Bid Interview, in person.
- B. The apparent low bidder's authorized representative must have signatory authority on behalf of the apparent low bidder.
- C. Failure to attend the Post Bid Interview will be considered just cause for the District to reject the Bid.

1.03 POST BID INTERVIEW PROCEDURE

- A. The Construction Manager will review the Bid with the attendees.
- B. The Construction Manager will review the Contract Documents with the attendees, including but not limited to:
 - (1) Insurance
 - (2) Bonding
 - (3) Addenda
 - (4) Pre-Bid Clarifications
 - (5) Scope of Work
 - (6) Bid Packages Descriptions
 - (7) Bid Alternates
 - (8) The Contract Plans
 - (9) The Contract Specifications
 - (10) The Project Schedule and Schedule Requirements
 - (11) Critical Dates Requirement for Other Bid Packages

- (12) Prevailing Wage Requirements
- (13) Liquidated Damages
- (14) Required Documentation for Contract Administration
- (15) Contract Coordination Requirements

1.04 POST BID INTERVIEW DOCUMENTATION

The Construction Manager will document the Post Bid Interview on the form attached to this Section. Both the Apparent Low Bidder and the Construction Manager are required to sign the Post Bid Interview Documentation.

POST BID INTERVIEW

CONSTRUCTION MANAGER

[Name]

[Address 1]

[Address 2]

[Phone]

[Fax]

BIDDER: _____

DATE: _____ TIME: _____ PHONE # _____

I. INTRODUCTIONS:

A. Present	_____	_____
	CONTRACTOR	CONTRACTOR
	_____	_____
	[CM]	[CM]

II. PROPOSED CONTRACT: _____

III. PURPOSE OF INTERVIEW IS TO ASSURE:

A.	Do you acknowledge submission of a complete and accurate bid?	Yes	No
B.	Do you acknowledge the Bid Document submittal timelines after NOA and NTP and can you meet those timelines?	Yes	No
C.	Do you acknowledge the requirements for the escrow of bid documents?	Yes	No

IV. CONTRACTUAL REQUIREMENTS:

A.	Do you understand you are a prime contractor?	Yes	No
B.	Can you meet specified insurance requirements?	Yes	No
1.	Does any of your policies that require Additional Insured endorsements exceed the minimum coverage requirements?	Yes	No
2.	Are you requesting that the District accept an Umbrella or Excess Liability Insurance Policy to meet the policy limit?	Yes	No
3.	Will there be a gap between the per occurrence amount of any underlying policy and the start of the coverage under the Umbrella or Excess Liability Insurance Policy?	Yes	No

- | | | | |
|----|---|-----|----|
| C. | Will you provide the Performance, and a Labor and Material Bond for 100% of the Contract Price as stipulated? | Yes | No |
| 1. | Cost for bond: _____% | | |
| 2. | Is the cost of your bond in your base bid? | Yes | No |
| 3. | Is your surety licensed is issue bonds in California? | Yes | No |

V. SCOPE OF WORK:

- | | | | |
|----|--|-----|----|
| A. | Acknowledged Receipt of Addenda #1-__ | Yes | No |
| B. | Are the costs for addenda items included in your bid? (if applicable) | Yes | No |
| C. | Do you have a complete understanding of your Scope of Work under the proposed Agreement? | Yes | No |
| D. | You have re-reviewed the documents and understand the Scope of the Work. Are there any items that require clarification? | Yes | No |

If yes, please identify them.

1. _____

2. _____

3. _____

4. _____

5. _____

Is (are) the cost(s) for above items?	Yes	No
---------------------------------------	-----	----

- | | | | |
|----|---|-----|----|
| C. | Review bid alternative (if applicable) #1-__ | | |
| D. | Are the plans and specifications clear and understandable to your satisfaction? | Yes | No |

VI. SCHEDULE:

- A. Do you acknowledge and agree to the stipulated completion dates and milestones in the contract? Yes No
1. Will you provide a detailed construction schedule to _____ within the required ten (10) days, per the contract? Yes No
2. It is understood that the Project schedule is critical and that that weekend and overtime work may be required to meet the milestones. Yes No
3. It is understood that if rain does occur, then all dewatering and And protection of work is required, per the contract. Yes No
- If not, what must change and why? _____
- _____
- _____

- B. Identify critical materials, deliveries, long lead items and other dependencies, including Owner Furnished items that could affect the completion of your work.
1. _____
2. _____
3. _____
4. _____
5. _____

VII. CONTRACTOR COMMENTS/SUGGESTIONS:

1. _____
2. _____
3. _____
4. _____
5. _____

VIII. CONTRACTOR

You agree the information contained herein is part of your contractual obligations. Your signature acknowledges your agreement to perform all Work in the Contract Documents, and that costs for all Work are included in your bid.

The foregoing information is true and accurate, and I am authorized to sign as an officer of the company I am representing.

[Company Name]

Signature _____ Title: _____

Date: _____

IX. CONSTRUCTION MANAGER

Signature _____ Title: _____

Date: _____

Title of Document: POST BID INTERVIEW

Number of Pages: _____

Date of Document: _____

END OF DOCUMENT

NOTICE OF AWARD

Dated: _____ 20__

To: _____
(Contractor)

To: _____
(Address)

From: Governing Board ("Board") of Solano Community College District ("District" or "Owner")

PROJECT: **FAIRFIELD CAMPUS ENTRY SIDEWALK IMPROVEMENTS**

("Project" or "Contract").

Contractor has been awarded the referenced Contract on _____, 20__, by action of the District's Board.

The Contract Price is _____ Dollars (\$ _____), and includes alternates _____.

Three (3) copies of each of the Contract Documents (except Drawings) accompany this Notice of Award. Three (3) sets of the Drawings will be delivered separately or otherwise made available. Additional copies are available at cost of reproduction.

You must comply with the following conditions precedent within **SEVEN (7)** calendar days of the date of this Notice of Award.

The Bidder to whom Contract is awarded shall execute and submit the following documents by 5:00 p.m. of the **SEVENTH (7th)** calendar day following the date of the Notice of Award.

- a. Agreement: To be executed by successful Bidder. Submit four (4) copies, each bearing an original signature.
- b. Escrow of Bid Documentation: This must include all required documentation. See the document Escrow of Bid Documentation for more information.
- c. Performance Bond (100%): On the form provided in the Contract Documents and fully executed as indicated on the form.
- d. Payment Bond (Contractor's Labor & Material Bond) (100%): On the form provided in the Contract Documents and fully executed as indicated on the form.
- e. Insurance Certificates and Endorsements as required.
- f. Workers' Compensation Certification.

- g. Prevailing Wage and Related Labor Requirements Certification.
- h. Drug-Free Workplace Certification.
- i. Tobacco-Free Environment Certification.
- j. Lead-Based Paint Certification.
- k. Imported Materials Certification.

- l. Sex Offender Registration Act Certification

Failure to comply with these conditions within the time specified will entitle District to consider your bid abandoned, to annul this Notice of Award, and to declare your Bid Security forfeited, as well as any other rights the District may have against the Contractor.

After you comply with those conditions, District will return to you one fully signed counterpart of the Agreement.

SOLANO COMMUNITY COLLEGE SCHOOL DISTRICT

BY: _____

NAME: _____

TITLE: _____

END OF DOCUMENT

issued after the contract execution, and it is agreed that the first day of work may be as soon as 10 working days after contract execution.

5. **Completion-Extension of Time:** Should the Contractor fail to complete this Contract, and the Work provided herein, within the time fixed for completion, due allowance being made for the contingencies provided for herein, the Contractor shall become liable to the District for all loss and damage that the District may suffer on account thereof. The Contractor shall coordinate its work with the Work of all other contractors. The District shall not be liable for delays resulting from Contractor's failure to coordinate its Work with other contractors in a manner that will allow timely completion of Contractor's Work. Contractor shall be liable for delays to other contractors caused by Contractor's failure to coordinate its Work with the work of other contractors.

6. **Liquidated Damages:** Time is of the essence for all work under this Agreement. It is hereby understood and agreed that it is and will be difficult and/or impossible to ascertain and determine the actual damage that the District will sustain in the event of and by reason of Contractor's delay; therefore, Contractor agrees that it shall pay to the District the sum of Seven Hundred Fifty dollars (\$ 750.00) per day as liquidated damages for each and every day's delay beyond the time herein prescribed in finishing the Work. It is hereby understood and agreed that this amount is not a penalty.

In the event that any portion of the liquidated damages is not paid to the District, the District may deduct that amount from any money due or that may become due the Contractor under this Agreement. The District's right to assess liquidated damages is as indicated herein and in the General Conditions.

The time during which the Contract is delayed for cause as hereinafter specified may extend the time of completion for a reasonable time as the District may grant. This provision does not exclude the recovery of damages for delay by either party under other provisions in the Contract Documents.

7. **Loss Or Damage:** The District and its authorized representatives shall not in any way or manner be answerable or suffer loss, damage, expense, or liability for any loss or damage that may happen to the Work, or any part thereof, or in or about the same during its construction and before acceptance, and the Contractor shall assume all liabilities of every kind or nature arising from the Work, either by accident, negligence, theft, vandalism, or any cause whatever; and shall hold the District and its authorized representatives harmless from all liability of every kind and nature arising from accident, negligence, or any cause whatever.

8. **Insurance and Bonds:** Before commencing the Work, Contractor shall provide all required certificates of insurance, and payment and performance bonds as evidence thereof.

9. **Prosecution of Work:** If the Contractor should neglect to prosecute the Work properly or fail to perform any provisions of this contract, the District, may, pursuant to the General Conditions and without prejudice to any other remedy it may have, make good such deficiencies and may deduct the cost thereof from the payment then or thereafter due the Contractor.

10. **Authority of Architect, Project Inspector, and DSA:** Contractor hereby acknowledges that the Architect(s), the Project Inspector(s), and the Division of the State Architect have authority to approve and/or stop Work if the Contractor's Work does not comply with the requirements of the Contract Documents, Title 24 of the California Code of Regulations, and all applicable laws. The Contractor shall be liable for any delay caused by its non-compliant Work.
11. **Assignment of Contract:** Neither the Contract, nor any part thereof, nor any moneys due or to become due thereunder, may be assigned by the Contractor without the written approval of the District, nor without the written consent of the Surety on the Contractor's Performance Bond (the "Surety"), unless the Surety has waived in writing its right to notice of assignment.
12. **Classification of Contractor's License:** Contractor hereby acknowledges that it currently holds valid Type A Contractor's license(s) issued by the State of California, Contractor's State Licensing Board, in accordance with division 3, chapter 9, of the Business and Professions Code and in the classification called for in the Contract Documents.
13. **Registration as Public Works Contractor:** The Contractor and all Subcontractors currently are registered as public works contractors with the Department of Industrial Relations, State of California, in accordance with Labor Code section 1771.4.
14. **Payment of Prevailing Wages:** The Contractor and all Subcontractors shall pay all workers on all Work performed pursuant to this Contract not less than the general prevailing rate of per diem wages and the general prevailing rate for holiday and overtime work as determined by the Director of the Department of Industrial Relations, State of California, for the type of work performed and the locality in which the work is to be performed within the boundaries of the District, pursuant to sections 1770 et seq. of the California Labor Code.
15. This Project is subject to labor compliance monitoring and enforcement by the Department of Industrial Relations pursuant to Labor Code section 1771.4 and Title 8 of the California Code of Regulations. Contractor specifically acknowledges and understands that it shall perform the Work of this Agreement while complying with all the applicable provisions of Division 2, Part 7, Chapter 1, of the Labor Code, including, without limitation, the requirement that the Contractor and all of its Subcontractors shall timely submit complete and accurate electronic certified payroll records as required by the Contract Documents, or the District may not issue payment.
16. **Contract Price:** In consideration of the foregoing covenants, promises, and agreements on the part of the Contractor, and the strict and literal fulfillment of each and every covenant, promise, and agreement, and as compensation agreed upon for the Work and construction, erection, and completion as aforesaid, the District covenants, promises, and agrees that it will well and truly pay and cause to be paid to the Contractor in full, and as the full Contract Price and compensation for construction, erection, and completion of the Work hereinabove agreed to be performed by the Contractor, the following price:

Dollars

(\$ _____),

in lawful money of the United States, which sum is to be paid according to the schedule provided by the Contractor and accepted by the District and subject to additions and deductions as provided in the Contract. This amount supersedes any previously stated and/or agreed to amount(s).

- 17. **Severability:** If any term, covenant, condition, or provision in any of the Contract Documents is held by a court of competent jurisdiction to be invalid, void or unenforceable, the remainder of the provisions in the Contract Documents shall remain in full force and effect and shall in no way be affected, impaired, or invalidated thereby.

IN WITNESS WHEREOF, accepted and agreed on the date indicated above:

CONTRACTOR

DISTRICT

SOLANO COMMUNITY COLLEGE DISTRICT

By: _____

By: _____

Title: _____

Title: _____

NOTE: If the party executing this Contract is a corporation, a certified copy of the by-laws, or of the resolution of the Board of Directors, authorizing the officers of said corporation to execute the Contract and the bonds required thereby must be attached hereto.

END OF DOCUMENT

NOTICE TO PROCEED

Dated: _____, 20__

TO: _____
("Contractor")

ADDRESS: _____

PROJECT: **FAIRFIELD CAMPUS ENTRY SIDEWALK IMPROVEMENTS**

PROJECT/CONTRACT NO.: __ between the Solano Community College District and Contractor ("Contract").

You are notified that the Contract Time under the above Contract is 35 Working Days, and Contractor shall commence work on _____, 20__. By that date, you are to start performing your obligations under the Contract Documents. In accordance with the Agreement executed by Contractor, the date of completion is 30 working days which corresponds to a date of completion of _____, 20__. The date of completion has been adjusted for the following holidays: _____.

You must submit the following documents by 5:00 p.m. of the **(TENTH (10th))** calendar day following the date of this Notice to Proceed:

- a. Contractor's preliminary schedule of construction.
- b. Contractor's preliminary schedule of values for all of the Work.
- c. Contractor's preliminary schedule of submittals, including Shop Drawings, Product Data, and Samples submittals
- d. Contractor's Safety Plan specifically adapted for the Project.
- e. A complete subcontractors list, including the name, address, telephone number, facsimile number, California State Contractors License number, classification, and monetary value of all Subcontracts.

Thank you. We look forward to a very successful Project.

SOLANO COMMUNITY COLLEGE DISTRICT

BY: _____

NAME: _____

TITLE: _____

END OF DOCUMENT

ESCROW BID DOCUMENTATION

1. Requirement to Escrow Bid Documentation

- a. Contractor shall submit, within **SEVEN (7)** calendar days after the date of the Notice of Award, one copy of all documentary information received or generated by Contractor in preparation of bid prices for this Contract, as specified herein. This material is referred to herein as "Escrow Bid Documentation." The Escrow Bid Documentation of the Contractor will be held in escrow for the duration of the Contract.
- b. Contractor agrees, as a condition of award of the Contract, that the Escrow Bid Documentation constitutes all written information used in the preparation of its bid, and that no other written bid preparation information shall be considered in resolving disputes or claims. Contractor also agrees that nothing in the Escrow Bid Documentation shall change or modify the terms or conditions of the Contract Documents.
- c. The Escrow Bid Documentation will not be opened by District except as indicated herein. The Escrow Bid Documentation will be used only for the resolution of change orders and claims disputes.
- d. Contractor's submission of the Escrow Bid Documentation, as with the bonds and insurance documents required, is considered an essential part of the Contract award. Should the Contractor fail to make the submission within the allowed time specified above, District may deem the Contractor to have failed to enter into the Contract, and the Contractor shall forfeit the amount of its bid security, accompanying the Contractor's bid, and District may award the Contract to the next lowest responsive responsible bidder.
- e. NO PAYMENTS WILL BE MADE, NOR WILL DISTRICT ACCEPT PROPOSED CHANGE ORDERS UNTIL THE ABOVE REQUIRED INFORMATION IS SUBMITTED AND APPROVED.
- f. The Escrow Bid Documentation shall be submitted in person by an authorized representative of the Contractor to the District.

2. Ownership of Escrow Bid Documentation

- a. The Escrow Bid Documentation is, and shall always remain, the property of Contractor, subject to review by District, as provided herein.
- b. Escrow Bid Documentation constitute trade secrets, not known outside Contractor's business, known only to a limited extent and only by a limited number of employees of Contractor, safeguarded while in Contractor's possession, extremely valuable to Contractor, and could be extremely valuable to Contractor's competitors by virtue of it reflecting Contractor's contemplated techniques of construction. Subject to the provisions herein, District agrees to safeguard the Escrow Bid Documentation, and all

information contained therein, against disclosure to the fullest extent permitted by law.

3. Format and Contents of Escrow Bid Documentation

- a. Contractor may submit Escrow Bid Documentation in its usual cost-estimating format; a standard format is not required. The Escrow Bid Documentation shall be submitted in the language (e.g., English) of the specification.
- b. Escrow Bid Documentation must clearly itemize the estimated costs of performing the work of each bid item contained in the bid schedule, separating bid items into sub-items as required to present a detailed cost estimate and allow a detailed cost review. The Escrow Bid Documentation shall include all subcontractor bids or quotes, supplier bids or quotes, quantity takeoffs, crews, equipment, calculations of rates of production and progress, copies of quotes from subcontractors and suppliers, and memoranda, narratives, add/deduct sheets, and all other information used by the Contractor to arrive at the prices contained in the bid proposal. Estimated costs should be broken down into Contractor's usual estimate categories such as direct labor, repair labor, equipment ownership and operation, expendable materials, permanent materials, and subcontract costs as appropriate. Plant and equipment and indirect costs should be detailed in the Contractor's usual format. The Contractor's allocation of indirect costs, contingencies, markup, and other items to each bid item shall be identified.
- c. All costs shall be identified. For bid items amounting to less than \$10,000, estimated unit costs are acceptable without a detailed cost estimate, provided that labor, equipment, materials, and subcontracts, as applicable, are included and provided that indirect costs, contingencies, and markup, as applicable, are allocated.
- d. Bid Documentation provided by District should not be included in the Escrow Bid Documentation unless needed to comply with the following requirements.

4. Submittal of Escrow Bid Documentation

- a. The Escrow Bid Documentation shall be submitted by the Contractor in a sealed container within **SEVEN (7)** calendar days after the date of the Notice of Award. The container shall be clearly marked on the outside with the Contractor's name, date of submittal, project name and the words "Escrow Bid Documentation – Intended to be opened in the presence of Authorized Representatives of Both District and Contractor".
- b. By submitting Escrow Bid Documentation, Contractor represents that the material in the Escrow Bid Documentation constitutes all the documentary information used in preparation of the bid and that the Contractor has personally examined the contents of the Escrow Bid Documentation container and has found that the documents in the container are complete.
- c. If Contractor's proposal is based upon subcontracting any part of the work, each subcontractor whose total subcontract price exceeds 5 percent of the total contract price proposed by Contractor, shall provide separate Escrow

Documents to be included with those of Contractor. Those documents shall be opened and examined in the same manner and at the same time as the examination described above for Contractor.

- d. If Contractor wishes to subcontract any portion of the Work after award, District retains the right to require Contractor to submit Escrow Documents for the Subcontractor before the subcontract is approved.

5. Storage, Examination and Final Disposition of Escrow Bid Documentation

- a. The Escrow Bid Documentation will be placed in escrow, for the life of the Contract, in a mutually agreeable institution. The cost of storage will be paid by Contractor for the duration of the project until final Contract payment. The storage facilities shall be the appropriate size for all the Escrow Bid Documentation and located conveniently to both District's and Contractor's offices.
- b. The Escrow Bid Documentation shall be examined by both District and Contractor, at any time deemed necessary by either District or Contractor, to assist in the negotiation of price adjustments and change orders or the settlement of disputes and claims. In the case of legal proceedings, Escrow Bid Documentation shall be used subject to the terms of an appropriate protective order if requested by Contractor and ordered by a court of competent jurisdiction. Examination of the Escrow Bid Documentation is subject to the following conditions:
 - (1) As trade secrets, the Escrow Bid Documentation is proprietary and confidential to the extent allowed by law.
 - (2) District and Contractor shall each designate, in writing to the other party **SEVEN (7)** calendar days prior to any examination, the names of representatives who are authorized to examine the Escrow Bid Documentation. No other person shall have access to the Escrow Bid Documentation.
 - (3) Access to the documents may take place only in the presence of duly designated representatives of the District and Contractor. If Contractor fails to designate a representative or appear for joint examination on **SEVEN (7)** calendar days notice, then the District representative may examine the Escrow Bid Documents alone upon an additional **THREE (3)** calendar days notice if a representative of the Contractor does not appear at the time set.
 - (4) If a subcontractor has submitted sealed information to be included in the Escrow Bid Documents, access to those documents may take place only in the presence of a duly designated representative of the District, Contractor and that subcontractor. If that subcontractor fails to designate a representative or appear for joint examination on **SEVEN (7)** calendar days notice, then the District representative and/or the Contractor may examine the Escrow Bid Documentation without that subcontractor present upon an additional **THREE (3)** calendar days

notice if a representative of that subcontractor does not appear at the time set.

- c. The Escrow Bid Documentation will be returned to Contractor at such time as the Contract has been completed and final settlement has been achieved.

END OF DOCUMENT

ESCROW AGREEMENT IN LIEU OF RETENTION
Public Contract Code Section 22300

(Note: Contractor must use this form.)

This Escrow Agreement ("Escrow Agreement") is made and entered into this _____ day of _____, 20____, by and between the Solano Community College District ("District"), whose address is _____, California, and _____ ("Contractor"), whose address is _____, and _____ ("Escrow Agent"), a state or federally chartered bank in the state of California, whose address is _____.

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

1. Pursuant to section 22300 of Public Contract Code of the State of California, which is hereby incorporated by reference, Contractor has the following two (2) options:
 - Deposit securities with Escrow Agent as a substitute for retention earnings required to be withheld by District pursuant to the Construction Contract No. _____ entered into between District and Contractor for the _____ Project, in the amount of _____ Dollars (\$ _____) dated, _____, 20____, (the "Contract"); **or**
 - On written request of Contractor, District shall make payments of the retention earnings for the above referenced Contract directly to Escrow Agent.

When Contractor deposits the securities as a substitute for Contract earnings (first option), Escrow Agent shall notify District within ten (10) calendar days of the deposit. The market value of the securities at the time of substitution and at all times from substitution until the termination of the Escrow Agreement shall be at least equal to the cash amount then required to be withheld as retention under terms of Contract between District and Contractor.

Securities shall be held in name of Solano Community College Community College District, and shall designate Contractor as beneficial owner.

2. District shall make progress payments to Contractor for those funds which otherwise would be withheld from progress payments pursuant to Contract provisions, provided that Escrow Agent holds securities in form and amount specified above.
3. When District makes payment of retention earned directly to Escrow Agent, Escrow Agent shall hold them for the benefit of Contractor until the time that the escrow created under this Escrow Agreement is terminated. Contractor may direct the investment of the payments into securities. All terms and conditions of this Escrow

Agreement and the rights and responsibilities of the Parties shall be equally applicable and binding when District pays Escrow Agent directly.

4. Contractor shall be responsible for paying all fees for the expenses incurred by Escrow Agent in administering the Escrow Account, and all expenses of District. The District will charge Contractor \$_____ for each of District's deposits to the escrow account. These expenses and payment terms shall be determined by District, Contractor, and Escrow Agent.
5. Interest earned on securities or money market accounts held in escrow and all interest earned on that interest shall be for sole account of Contractor and shall be subject to withdrawal by Contractor at any time and from time to time without notice to District.
6. Contractor shall have the right to withdraw all or any part of the principal in the Escrow Account only by written notice to Escrow Agent accompanied by written authorization from District to Escrow Agent that District consents to withdrawal of amount sought to be withdrawn by Contractor.
7. District shall have the right to draw upon the securities and/or withdraw amounts from the Escrow Account in the event of default by Contractor. Upon seven (7) days' written notice to Escrow Agent from District of the default, if applicable, Escrow Agent shall immediately convert the securities to cash and shall distribute the cash as instructed by District.
8. Upon receipt of written notification from District certifying that the Contract is final and complete, and that Contractor has complied with all requirements and procedures applicable to the Contract, Escrow Agent shall release to Contractor all securities and interest on deposit less escrow fees and charges of the Escrow Account. The escrow shall be closed immediately upon disbursement of all monies and securities on deposit and payments of fees and charges.
9. Escrow Agent shall rely on written notifications from District and Contractor pursuant to Paragraphs 5 through 8, inclusive, of this Escrow Agreement and District and Contractor shall hold Escrow Agent harmless from Escrow Agent's release and disbursement of securities and interest as set forth above.
10. Names of persons who are authorized to give written notice or to receive written notice on behalf of District and on behalf of Contractor in connection with the foregoing, and exemplars of their respective signatures are as follows:

On behalf of District:

On behalf of Contractor:

Title

Title

Name

Name

Signature

Signature

Address

Address

On behalf of Escrow Agent:

Title

Name

Signature

Address

At the time of Escrow Account is opened, District and Contractor shall deliver to Escrow Agent a fully executed of this Agreement.

IN WITNESS WHEREOF, the parties have executed this Agreement by their proper officers on the date first set forth above.

On behalf of District:

Title

Name

Signature

Address

On behalf of Contractor:

Title

Name

Signature

Address

END OF DOCUMENT

PERFORMANCE BOND
(100% of Contract Price)

(Note: Bidders must use this form, NOT a surety company form.)

KNOW ALL PERSONS BY THESE PRESENTS:

WHEREAS, the governing board ("Board") of the Solano Community College District, ("District") and _____ ("Principal") have entered into a contract for the furnishing of all materials and labor, services and transportation, necessary, convenient, and proper to perform the following project:

FAIRFIELD CAMPUS ENTRY SIDEWALK IMPROVEMENTS PROJECT

("Project" or "Contract") which Contract dated _____, 20____, and all of the Contract Documents attached to or forming a part of the Contract, are hereby referred to and made a part hereof; and

WHEREAS, said Principal is required under the terms of the Contract to furnish a bond for the faithful performance of the Contract.

NOW, THEREFORE, the Principal and _____ ("Surety") are held and firmly bound unto the Board of the District in the penal sum of _____

Dollars (\$_____), lawful money of the United States, for the payment of which sum well and truly to be made we bind ourselves, our heirs, executors, administrators, successors, and assigns jointly and severally, firmly by these presents, to:

- Perform all the work required to complete the Project; and
- Pay to the District all damages the District incurs as a result of the Principal's failure to perform all the Work required to complete the Project.

The condition of the obligation is such that, if the above bounden Principal, his or its heirs, executors, administrators, successors, or assigns, shall in all things stand to and abide by, and well and truly keep and perform the covenants, conditions, and agreements in the Contract and any alteration thereof made as therein provided, on his or its part to be kept and performed at the time and in the intent and meaning, including all contractual guarantees and warranties of materials and workmanship, and shall indemnify and save harmless the District, its trustees, officers and agents, as therein stipulated, then this obligation shall become null and void, otherwise it shall be and remain in full force and virtue.

Surety expressly agrees that the District may reject any contractor or subcontractor proposed by Surety to fulfill its obligations in the event of default by the Principal. Surety shall not utilize Principal in completing the Work nor shall Surety accept a Bid from Principal for completion of the Work if the District declares the Principal to be in default and notifies

Surety of the District's objection to Principal's further participation in the completion of the Work.

As a condition precedent to the satisfactory completion of the Contract, the above obligation shall hold good for a period equal to the warranty and/or guarantee period of the Contract, during which time Surety's obligation shall continue if Contractor shall fail to make full, complete, and satisfactory repair and replacements and totally protect the District from loss or damage resulting from or caused by defective materials or faulty workmanship. The obligations of Surety hereunder shall continue so long as any obligation of Contractor remains. Nothing herein shall limit the District's rights or the Contractor or Surety's obligations under the Contract, law or equity, including, but not limited to, California Code of Civil Procedure section 337.15.

The Surety, for value received, hereby stipulates and agrees that no change, extension of time, alteration, or addition to the terms of the contract or to the work to be performed thereunder or the specifications accompanying the same shall in any way affect its obligation on this bond, and it does hereby waive notice of any such change, extension of time, alteration, or addition to the terms of the Contract or to the work or to the specifications.

IN WITNESS WHEREOF, two (2) identical counterparts of this instrument, each of which shall for all purposes be deemed an original thereof, have been duly executed by the Principal and Surety above named, on the _____ day of _____, 20____.

(Affix Corporate Seal)

Principal

By

Surety

By

Name of California Agent of Surety

Address of California Agent of Surety

Telephone No. of California Agent of Surety

Bidder must attach a Notarial Acknowledgment for all Surety's signatures and a Power of Attorney and Certificate of Authority for Surety. The California Department of Insurance must authorize the Surety to be an admitted surety insurer.

END OF DOCUMENT

PAYMENT BOND
Contractor's Labor & Material Bond
(100% of Contract Price)

(Note: Bidders must use this form, NOT a surety company form.)

KNOW ALL PERSONS BY THESE PRESENTS:

WHEREAS, the governing board ("Board") of the Solano Community College District, (or "District") and _____, ("Principal") have entered into a contract for the furnishing of all materials and labor, services and transportation, necessary, convenient, and proper to perform the following project:

FAIRFIELD CAMPUS ENTRY SIDEWALK IMPROVEMENTS PROJECT

("Project" or "Contract") which Contract dated _____, 20____, and all of the Contract Documents attached to or forming a part of the Contract, are hereby referred to and made a part hereof; and

WHEREAS, pursuant to law and the Contract, the Principal is required, before entering upon the performance of the work, to file a good and sufficient bond with the body by which the Contract is awarded in an amount equal to one hundred percent (100%) of the Contract price, to secure the claims to which reference is made in sections 9000 through 9510 and 9550 through 9566 of the Civil Code, and division 2, part 7, of the Labor Code.

NOW, THEREFORE, the Principal and _____ ("Surety") are held and firmly bound unto all laborers, material men, and other persons referred to in said statutes in the sum of _____ Dollars (\$_____), lawful money of the United States, being a sum not less than the total amount payable by the terms of Contract, for the payment of which sum well and truly to be made, we bind ourselves, our heirs, executors, administrators, successors, or assigns, jointly and severally, by these presents.

The condition of this obligation is that if the Principal or any of his or its subcontractors, of the heirs, executors, administrators, successors, or assigns of any, all, or either of them shall fail to pay for any labor, materials, provisions, provender, or other supplies, used in, upon, for or about the performance of the work contracted to be done, or for any work or labor thereon of any kind, or for amounts required to be deducted, withheld, and paid over to the Employment Development Department from the wages of employees of the Principal or any of his or its subcontractors of any tier under Section 13020 of the Unemployment Insurance Code with respect to such work or labor, that the Surety will pay the same in an amount not exceeding the amount herein above set forth, and also in case suit is brought upon this bond, will pay a reasonable attorney's fee to be awarded and fixed by the Court, and to be taxed as costs and to be included in the judgment therein rendered.

It is hereby expressly stipulated and agreed that this bond shall inure to the benefit of any and all persons, companies, and corporations entitled to file claims under section 9100 of

the Civil Code, so as to give a right of action to them or their assigns in any suit brought upon this bond.

Should the condition of this bond be fully performed, then this obligation shall become null and void; otherwise it shall be and remain in full force and affect.

And the Surety, for value received, hereby stipulates and agrees that no change, extension of time, alteration, or addition to the terms of Contract or the specifications accompanying the same shall in any manner affect its obligations on this bond, and it does hereby waive notice of any such change, extension, alteration, or addition.

IN WITNESS WHEREOF, two (2) identical counterparts of this instrument, each of which shall for all purposes be deemed an original thereof, have been duly executed by the Principal and Surety above named, on the _____ day of _____, 20____.

(Affix Corporate Seal)

Principal

By

Surety

By

Name of California Agent of Surety

Address of California Agent of Surety

Telephone No. of California Agent of Surety

Bidder must attach a Notarial Acknowledgment for all Surety's signatures and a Power of Attorney and Certificate of Authority for Surety. The California Department of Insurance must authorize the Surety to be an admitted surety insurer.

END OF DOCUMENT

[Community College District]
[Address]

CHANGE ORDER NO.:

CHANGE ORDER

Project:
Bid No.:

Date:
DSA File No.:
DSA Appl. No.:

The following parties agree to the terms of this Change Order:

Owner:
[Name / Address]

Contractor:
[Name / Address]

Architect:
[Name / Address]

Project Inspector:
[Name / Address]

Reference	Description	Cost	Days Ext.
PCO # Requested by: Performed by: Reason:	[Description of change] [Requester] [Performer] [Reason]	\$	
PCO # Requested by: Performed by: Reason:	[Description of change] [Requester] [Performer] [Reason]	\$	
PCO # Requested by: Performed by: Reason:	[Description of change] [Requester] [Performer] [Reason]	\$	
Contract time will be adjusted as follows: Previous Completion Date: [Date] [#] Calendar Days Extension Current Completion Date: [Date]		Original Contract Amount: \$ Amount of Previously Approved Change Order(s): \$ Amount of this Change Order: \$ Contract Amount: \$	

The undersigned Contractor approves the foregoing as to the changes, if any, and the Cost, if any, specified for each item and as to the extension of time allowed, if any, for completion of the entire work as stated therein, and agrees to furnish all labor, materials and services and perform all work necessary to complete any additional work specified for the consideration stated therein.

This change order is subject to approval by the governing board of this district and must be signed by the District.

The compensation and time, if any, granted herein represent a full accord and satisfaction for any and all time and cost impacts of the items herein, and Contractor waives any and all further compensation or time extension based on the items herein. The value of the extra work or changes expressly includes any and all of the Contractors costs and expenses, both direct and indirect, resulting

from additional time required on the project or resulting from delay to the project. Any costs, expenses, damages or time extensions not included are deemed waived.

Signatures:

District:

Contractor:

[Name] Date

[Name] Date

Architect:

Project Inspector:

[Name] Date

[Name] Date

END OF DOCUMENT

AGREEMENT AND RELEASE OF ANY AND ALL CLAIMS

THIS AGREEMENT AND RELEASE OF CLAIMS ("Agreement and Release") IS MADE AND ENTERED INTO THIS _____ DAY OF _____, 20__ by and between the SOLANO COMMUNITY COLLEGE DISTRICT ("District") and _____ ("Contractor"), whose place of business is _____.

RECITALS:

- 1. District and Contractor entered into PROJECT/CONTRACT NO.: **FAIRFIELD CAMPUS ENTRY SIDEWALK IMPROVEMENTS PROJECT** ("Contract" or "Project") in the County of _____, California.
- 2. The Work under the Contract has been completed.

NOW, THEREFORE, it is mutually agreed between District and Contractor as follows:

AGREEMENT

- 3. Contractor will only be assessed liquidated damages as detailed below:

Original Contract Sum	\$ _____
Modified Contract Sum	\$ _____
Payment to Date	\$ _____
Liquidated Damages	\$ _____
Payment Due Contractor	\$ _____

- 4. Subject to the provisions hereof, District shall forthwith pay to Contractor the undisputed sum of _____ Dollars (\$_____) under the Contract, less any amounts represented by any notice to withhold funds on file with District as of the date of such payment.
- 5. Contractor acknowledges and hereby agrees that there are no unresolved or outstanding claims in dispute against District arising from the performance of work under the Contract, except for the claims described in Paragraph 6 and continuing obligations described in Paragraph 8. It is the intention of the parties in executing this Agreement and Release that this Agreement and Release shall be effective as a full, final and general release of all claims, demands, actions, causes of action, obligations, costs, expenses, damages, losses and liabilities of Contractor against District, all its respective agents, employees, inspectors, assignees and transferees except for the Disputed Claim is set forth in Paragraph 6 and continuing obligations described in Paragraph 8 hereof.
- 6. The following claims are disputed (hereinafter, the "Disputed Claims") and are specifically excluded from the operation of this Agreement and Release:

<u>Claim No.</u> <u>Submitted</u>	<u>Description of Claim</u>	<u>Amount of Claim</u>	<u>Date Claim</u>
_____	_____	\$ _____	_____
_____	_____	\$ _____	_____
_____	_____	\$ _____	_____

[If further space is required, attach additional sheets showing the required information.]

7. Consistent with California Public Contract Code section 7100, Contractor hereby agrees that, in consideration of the payment set forth in Paragraph 4 hereof, Contractor hereby releases and forever discharges District, all its agents, employees, inspectors, assignees, and transferees from any and all liability, claims, demands, actions, or causes of action of whatever kind or nature arising out of or in any way concerned with the Work under the Contract.
8. Guarantees and warranties for the Work, and any other continuing obligation of Contractor, shall remain in full force and effect as specified in the Contract Documents.
9. To the furthest extent permitted by California law, Contractor shall defend, indemnify, and hold harmless the District, its agents, representatives, officers, consultants, employees, trustees, and volunteers (the "indemnified parties") from any and all losses, liabilities, claims, suits, and actions of any kind, nature, and description, including, but not limited to, attorneys' fees and costs, directly or indirectly arising out of, connected with, or resulting from the performance of the Contract unless caused wholly by the sole negligence or willful misconduct of the indemnified parties.
10. Contractor hereby waives the provisions of California Civil Code section 1542 which provides as follows:

A GENERAL RELEASE DOES NOT EXTEND TO CLAIMS WHICH THE CREDITOR DOES NOT KNOW OR SUSPECT TO EXIST IN HIS OR HER FAVOR AT THE TIME OF EXECUTING THE RELEASE, WHICH IF KNOWN BY HIM OR HER MUST HAVE MATERIALLY AFFECTED HIS OR HER SETTLEMENT WITH THE DEBTOR.
11. The provisions of this Agreement and Release are contractual in nature and not mere recitals and shall be considered independent and severable. If any such provision or any part thereof shall be at any time held invalid in whole or in part under any federal, state, county, municipal, or other law, ruling, or regulations, then such provision, or part thereof, shall remain in force and effect to the extent permitted by law, and the remaining provisions of this Agreement and Release shall also remain in full force and effect, and shall be enforceable.
12. All rights of District shall survive completion of the Work or termination of Contract, and execution of this Release.

* * * CAUTION: THIS IS A RELEASE - READ BEFORE EXECUTING * * *

SOLANO COMMUNITY COLLEGE DISTRICT

SIGNATURE: _____

PRINT NAME: _____

TITLE: _____

CONTRACTOR: _____

SIGNATURE: _____

PRINT NAME: _____

TITLE: _____

END OF DOCUMENT

GUARANTEE FORM

_____ ("Contractor") hereby agrees that the _____
_____ ("Work" of Contractor) which Contractor has installed for the Solano
Community College District ("District") for the following project:

PROJECT: **FAIRFIELD CAMPUS ENTRY SIDEWALK IMPROVEMENTS**

("Project" or "Contract") has been performed in accordance with the requirements of the
Contract Documents and that the Work as installed will fulfill the requirements of the
Contract Documents.

The undersigned agrees to repair or replace any or all of such Work that may prove to be
defective in workmanship or material together with any other adjacent Work that may be
displaced in connection with such replacement within a period of _____
year(s) from the date of completion as defined in Public Contract Code section 7107,
subdivision (c), ordinary wear and tear and unusual abuse or neglect excepted. The date of
completion is _____, 20____.

In the event of the undersigned's failure to comply with the above-mentioned conditions
within a reasonable period of time, as determined by the District, but not later than seven
(7) days after being notified in writing by the District, the undersigned authorizes the
District to proceed to have said defects repaired and made good at the expense of the
undersigned. The undersigned shall pay the costs and charges therefor upon demand.

Date: _____

Proper Name of Contractor: _____

Signature: _____

Print Name: _____

Title: _____

Representatives to be contacted for service subject to terms of Contract:

NAME: _____

ADDRESS: _____

PHONE NO.: _____

END OF DOCUMENT

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GENERAL CONDITIONS

1. CONTRACT TERMS AND DEFINITIONS

1.1. Definitions

Wherever used in the Contract Documents, the following terms shall have the meanings indicated, which shall be applicable to both the singular and plural thereof:

1.1.1. Adverse Weather: Shall be only weather that satisfies all of the following conditions: (1) unusually severe precipitation, sleet, snow, hail, heat, or cold conditions in excess of the norm for the location and time of year it occurred, (2) unanticipated, and (3) at the Project.

1.1.2. Approval, Approved, and/or Accepted: Refer to written authorization, unless stated otherwise.

1.1.3. Architect: The individual, partnership, corporation, joint venture, or any combination thereof, named as Architect, who will have the rights and authority assigned to the Architect in the Contract Documents. The term Architect means the Design Professional in General Responsible Charge as defined in DSA PR 13-02 on this Project or the Architect's authorized representative.

1.1.4. As-Built Drawings: Unless otherwise defined in the Special Conditions, reproducible blue line prints of drawings to be prepared on a monthly basis pursuant to the Contract Documents, that reflect changes made during the performance of the Work, recording differences between the original design of the Work and the Work as constructed since the preceding monthly submittal.

1.1.5. Bidder: A contractor who intends to provide a proposal to the District to perform the Work of this Contract.

1.1.6. Change Order: A written order to the Contractor authorizing an addition to, deletion from, or revision in the Work, and/or authorizing an adjustment in the Contract Price or Contract Time.

1.1.7. Claim: A Dispute that remains unresolved at the conclusion of the all the applicable Dispute Resolution requirements provided herein.

1.1.8. Construction Change Directive: A written order prepared and issued by the District, the Construction Manager, and/or the Architect and signed by the District and the Architect, directing a change in the Work.

1.1.9. Construction Manager: The individual, partnership, corporation, joint venture, or any combination thereof, or its authorized representative, named as such by the District. If no Construction Manager is used on the Project that is the subject of this Contract, then all references to Construction Manager herein shall be read to refer to District.

1.1.10. Construction Schedule: The progress schedule of construction of the Project as provided by Contractor and approved by District.

1.1.11. Contract, Contract Documents: The Contract consists exclusively of the documents evidencing the agreement of the District and Contractor, identified as the Contract Documents. The Contract Documents consist of the following documents:

- 1.1.11.1. Notice to Bidders
- 1.1.11.2. Instructions to Bidders
- 1.1.11.3. Bid Form and Proposal
- 1.1.11.4. Bid Bond
- 1.1.11.5. Designated Subcontractors List
- 1.1.11.6. Site-Visit Certification (if a site visit was required)
- 1.1.11.7. Noncollusion Declaration
- 1.1.11.8. Notice of Award
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- 1.1.11.20. Prevailing Wage Certification
- 1.1.11.21. Disabled Veterans Business Enterprise Participation Certification (if applicable)
- 1.1.11.22. Drug-Free Workplace Certification
- 1.1.11.23. Tobacco-Free Environment Certification
- 1.1.11.24. Hazardous Materials Certification
- 1.1.11.25. Lead-Based Paint Certification
- 1.1.11.26. Imported Materials Certification
- 1.1.11.27. Criminal Background Investigation/Fingerprinting Certification
- 1.1.11.28. Buy American Certification (if applicable)
- 1.1.11.29. Roofing Project Certification (if applicable)
- 1.1.11.30. Iran Contracting Act Certification (if applicable)
- 1.1.11.31. All Plans, Technical Specifications, and Drawings
- 1.1.11.32. Any and all addenda to any of the above documents
- 1.1.11.33. Any and all change orders or written modifications to the above documents if approved in writing by the District

1.1.12. Contract Price: The total monies payable to the Contractor under the terms and conditions of the Contract Documents.

1.1.13. Contract Time: The time period stated in the Agreement for the completion of the Work.

1.1.14. Contractor: The person or persons identified in the Agreement as contracting to perform the Work to be done under this Contract, or the legal representative of such a person or persons.

1.1.15. Daily Job Report(s): Daily Project reports prepared by the Contractor's employee(s) who are present on Site, which shall include the information required herein.

1.1.16. Day(s): Unless otherwise designated, day(s) means calendar day(s).

1.1.17. Department of Industrial Relations (or "DIR"): is responsible, among other things, for labor compliance monitoring and enforcement of California prevailing wage laws and regulations for public works contracts.

1.1.18. Dispute: A separate demand by Contractor for a time extension; payment of money or damages arising from Work done by or on behalf of the Contractor pursuant to the Contract and payment of which is not otherwise expressly provided for or Contractor is not otherwise entitled to; or an amount of payment disputed by the District.

1.1.19. District: The public agency or the school district for which the Work is performed. The governing board of the District or its designees will act for the District in all matters pertaining to the Contract. The District may, at any time,

1.1.19.1. Direct the Contractor to communicate with or provide notice to the Construction Manager or the Architect on matters for which the Contract Documents indicate the Contractor will communicate with or provide notice to the District; and/or

1.1.19.2. Direct the Construction Manager or the Architect to communicate with or direct the Contractor on matters for which the Contract Documents indicate the District will communicate with or direct the Contractor.

1.1.20. Drawings (or "Plans"): The graphic and pictorial portions of the Contract Documents showing the design, location, scope and dimensions of the work, generally including plans, elevations, sections, details, schedules, sequence of operation, and diagrams.

1.1.21. DSA: Division of the State Architect.

1.1.22. Force Account Directive: A process that may be used when the District and the Contractor cannot agree on a price for a specific portion of work or before the Contractor prepares a prices for a specific portion of work and whereby the Contractor performs the work as indicated herein on a time and materials basis.

1.1.23. Labor Commissioner's Office (or "Labor Commissioner") also known as the Division of Labor Standards Enforcement ("DLSE"): Division of the DIR responsible for adjudicating wage claims, investigating discrimination and public works complaints, and enforcing Labor Code statutes and Industrial Welfare Commission orders.

1.1.24. Municipal Separate Storm Sewer System (or "MS4"): A system of conveyances used to collect and/or convey storm water, including, without limitation, catch basins, curbs, gutters, ditches, man-made channels, and storm drains.

1.1.25. Premises: The real property owned by the District on which the Site is located.

1.1.26. Product(s): New material, machinery, components, equipment, fixtures and systems forming the Work, including existing materials or components required and approved by the District for reuse.

1.1.27. Product Data: Illustrations, standard schedules, performance charts, instructions, brochures, diagrams, and other information furnished by the Contractor to illustrate a material, product, or system for some portion of the Work.

1.1.28. Project: The planned undertaking as provided for in the Contract Documents.

1.1.29. Project Inspector (or "Inspector"): The individual(s) retained by the District in accordance with title 24 of the California Code of Regulations to monitor and inspect the Project.

1.1.30. Project Labor Agreement (or "PLA"): a prehire collective bargaining agreement in accordance with Public Contract Code section 2500 et seq. that establishes terms and conditions of employment for a specific construction project or projects and/or is an agreement described in Section 158(f) of Title 29 of the United States Code.

1.1.31. Program Manager: The individual, partnership, corporation, joint venture, or any combination thereof, or its authorized representative, named as such by the District. If no Program Manager is designated for Project that is the subject of this Contract, then all references to Project Manager herein shall be read to refer to District.

1.1.32. Provide: Shall include "provide complete in place," that is, "furnish and install," and "provide complete and functioning as intended in place" unless specifically stated otherwise.

1.1.33. Qualified SWPPP Practitioners ("QSP"): certified personnel that attended a State Water Resources Control Board sponsored or approved training class and passed the qualifying exam.

1.1.34. Record Drawings: Unless otherwise defined in the Special Conditions, Reproducible drawings (or Plans) prepared pursuant to the requirements of the Contract Documents, that reflect all changes made during the performance of the Work, recording differences between the original design of the Work and the Work as constructed upon completion of the Project.

1.1.35. Request for Information (or "RFI"):: A written request prepared by the Contractor requesting that the Architect provide additional information necessary to clarify or amplify an item in the Contract Documents that the Contractor believes is not clearly shown or called for in the Drawings or Specifications or other portions of

the Contract Documents, or to address problems that have arisen under field conditions.

1.1.36. Request for Substitution for Specified Item: A request by Contractor to substitute an equal or superior material, product, thing, or service for a specific material, product, thing, or service that has been designated in the Contract Documents by a specific brand or trade name.

1.1.37. Safety Orders: Written and/or verbal orders for construction issued by the California Division of Industrial Safety ("CalOSHA") or by the United States Occupational Safety and Health Administration ("OSHA").

1.1.38. Safety Plan: Contractor's safety plan specifically adapted for the Project. Contractor's Safety Plan shall comply with all provisions regarding Project safety, including all applicable provisions in these General Conditions.

1.1.39. Samples: Physical examples that illustrate materials, products, equipment, finishes, colors, or workmanship and that, when approved in accordance with the Contract Documents, establish standards by which portions of the Work will be judged.

1.1.40. Shop Drawings: All drawings, prints, diagrams, illustrations, brochures, schedules, and other data that are prepared by the Contractor, a subcontractor, manufacturer, supplier, or distributor, that illustrate how specific portions of the Work shall be fabricated or installed.

1.1.41. Site: The Project site as shown on the Drawings.

1.1.42. Specifications: That portion of the Contract Documents, Division 1 through Division 17, and all technical sections, and addenda to all of these, if any, consisting of written descriptions and requirements of a technical nature of materials, equipment, construction methods and systems, standards, and workmanship.

1.1.43. State: The State of California.

1.1.44. Storm Water Pollution Prevention Plan (or "SWPPP"): A document which identifies sources and activities at a particular facility that may contribute pollutants to storm water and contains specific control measures and time frames to prevent or treat such pollutants.

1.1.45. Subcontractor: A contractor and/or supplier who is under contract with the Contractor or with any other subcontractor, regardless of tier, to perform a portion of the Work of the Project.

1.1.46. Submittal Schedule: The schedule of submittals as provided by Contractor and approved by District.

1.1.47. Surety: The person, firm, or corporation that executes as surety the Contractor's Performance Bond and Payment Bond, and must be a California admitted surety insurer as defined in the Code of Civil Procedure section 995.120.

1.1.48. Work: All labor, materials, equipment, components, appliances, supervision, coordination, and services required by, or reasonably inferred from, the Contract Documents, that are necessary for the construction and completion of the Project.

1.2. Laws Concerning The Contract

Contract is subject to all provisions of the Constitution and laws of California and the United States governing, controlling, or affecting District, or the property, funds, operations, or powers of District, and such provisions are by this reference made a part hereof. Any provision required by law to be included in this Contract shall be deemed to be inserted.

1.3. No Oral Agreements

No oral agreement or conversation with any officer, agent, or employee of District, either before or after execution of Contract, shall affect or modify any of the terms or obligations contained in any of the documents comprising the Contract.

1.4. No Assignment

Contractor shall not assign this Contract or any part thereof including, without limitation, any services or money to become due hereunder without the prior written consent of the District. Assignment without District's prior written consent shall be null and void. Any assignment of money due or to be come due under this Contract shall be subject to a prior lien for services rendered or material supplied for performance of work called for under this Contract in favor of all persons, firms, or corporations rendering services or supplying material to the extent that claims are filed pursuant to the Civil Code, Code of Civil Procedure, Government Code, Labor Code, and/or Public Contract Code, and shall also be subject to deductions for liquidated damages or withholding of payments as determined by District in accordance with this Contract. Contractor shall not assign or transfer in any manner to a Subcontractor or supplier the right to prosecute or maintain an action against the District.

1.5. Notice And Service Thereof

1.5.1. Any notice from one party to the other or otherwise under Contract shall be in writing and shall be dated and signed by the party giving notice or by a duly authorized representative of that party. Any notice shall not be effective for any purpose whatsoever unless served in one of the following manners:

1.5.1.1. If notice is given by personal delivery thereof, it shall be considered delivered on the day of delivery.

1.5.1.2. If notice is given by overnight delivery service, it shall be considered delivered on (1) day after date deposited, as indicated by the delivery service.

1.5.1.3. If notice is given by depositing same in United States mail, enclosed in a sealed envelope, it shall be considered delivered three (3) days after date deposited, as indicated by the postmarked date.

1.5.1.4. If notice is given by registered or certified mail with postage prepaid, return receipt requested, it shall be considered delivered on the day the notice is signed for.

1.6. No Waiver

The failure of District in any one or more instances to insist upon strict performance of any of the terms of this Contract or to exercise any option herein conferred shall not be construed as a waiver or relinquishment to any extent of the right to assert or rely upon any such terms or option on any future occasion. No action or failure to act by the District, Architect, or Construction Manager shall constitute a waiver of any right or duty afforded the District under the Contract, nor shall any action or failure to act constitute an approval of or acquiescence in any breach thereunder, except as may be specifically agreed in writing.

1.7. Substitutions For Specified Items

Unless the Special Conditions contain different provisions, Contractor shall not substitute different items for any items identified in the Contract Documents without prior written approval of the District.

1.8. Materials and Work

1.8.1. Except as otherwise specifically stated in this Contract, Contractor shall provide and pay for all materials, labor, tools, equipment, transportation, supervision, temporary constructions of every nature, and all other services, management, and facilities of every nature whatsoever necessary to execute and complete this Contract within the Contract Time.

1.8.2. Unless otherwise specified, all materials shall be new and the best of their respective kinds and grades as noted or specified, and workmanship shall be of good quality.

1.8.3. Materials shall be furnished in ample quantities and at such times as to insure uninterrupted progress of Work and shall be stored properly and protected as required.

1.8.4. For all materials and equipment specified or indicated in the Drawings, the Contractor shall provide all labor, materials, equipment, and services necessary for complete assemblies and complete working systems, functioning as intended. Incidental items not indicated on Drawings, nor mentioned in the Specifications, that can legitimately and reasonably be inferred to belong to the Work described, or be necessary in good practice to provide a complete assembly or system, shall be furnished as though itemized here in every detail. In all instances, material and equipment shall be installed in strict accordance with each manufacturer's most recent published recommendations and specifications.

1.8.5. Contractor shall, after award of Contract by District and after relevant submittals have been approved, place orders for materials and/or equipment as specified so that delivery of same may be made without delays to the Work. Contractor shall, upon demand from District, present documentary evidence showing that orders have been placed.

1.8.6. District reserves the right but has no obligation, for any neglect in complying with the above instructions, to place orders for such materials and/or equipment as it may deem advisable in order that the Work may be completed at the date specified in the Agreement, and all expenses incidental to the procuring of said materials and/or equipment shall be paid for by Contractor or withheld from payment(s) to Contractor.

1.8.7. Contractor warrants good title to all material, supplies, and equipment installed or incorporated in Work and agrees upon completion of all Work to deliver the Site to District, together with all improvements and appurtenances constructed or placed thereon by it, and free from any claims, liens, or charges. Contractor further agrees that neither it nor any person, firm, or corporation furnishing any materials or labor for any work covered by the Contract shall have any right to lien any portion of the Premises or any improvement or appurtenance thereon, except that Contractor may install metering devices or other equipment of utility companies or of political subdivision, title to which is commonly retained by utility company or political subdivision. In the event of installation of any such metering device or equipment, Contractor shall advise District as to owner thereof.

1.8.7.1. If a lien or a claim based on a stop payment notice of any nature should at any time be filed against the Work or any District property, by any entity that has supplied material or services at the request of the Contractor, Contractor and Contractor's Surety shall promptly, on demand by District and at Contractor's and Surety's own expense, take any and all action necessary to cause any such lien or a claim based on a stop payment notice to be released or discharged immediately therefrom.

1.8.7.2. If the Contractor fails to furnish to the District within ten (10) calendar days after demand by the District, satisfactory evidence that a lien or a claim based on a stop payment notice has been so released, discharged, or secured, the District may discharge such indebtedness and deduct the amount required therefor, together with any and all losses, costs, damages, and attorney's fees and expense incurred or suffered by District from any sum payable to Contractor under the Contract.

1.8.8. Nothing contained in this Article, however, shall defeat or impair the rights of persons furnishing materials or labor under any bond given by Contractor for their protection or any rights under any law permitting such protection or any rights under any law permitting such persons to look to funds due Contractor in hands of District (e.g., stop payment notices), and this provision shall be inserted in all subcontracts and material contracts and notice of its provisions shall be given to all persons furnishing material for work when no formal contract is entered into for such material.

1.8.9. Title to new materials and/or equipment for the Work of this Contract and attendant liability for its protection and safety shall remain with Contractor until incorporated in the Work of this Contract and accepted by District. No part of any materials and/or equipment shall be removed from its place of storage except for immediate installation in the Work of this Contract. Should the District, in its discretion, allow the Contractor to store materials and/or equipment for the Work off-site, Contractor will store said materials and/or equipment at a bonded

warehouse and with appropriate insurance coverage at no cost to District. Contractor shall keep an accurate inventory of all materials and/or equipment in a manner satisfactory to District or its authorized representative and shall, at the District's request, forward it to the District.

2. [RESERVED]

3. ARCHITECT

3.1. The Architect shall represent the District during the Project and will observe the progress and quality of the Work on behalf of the District. Architect shall have the authority to act on behalf of District to the extent expressly provided in the Contract Documents and to the extent determined by District. Architect shall have authority to reject materials, workmanship, and/or the Work whenever rejection may be necessary, in Architect's reasonable opinion, to insure the proper execution of the Contract.

3.2. Architect shall, with the District and on behalf of the District, determine the amount, quality, acceptability, and fitness of all parts of the Work, and interpret the Specifications, Drawings, and shall, with the District, interpret all other Contract Documents.

3.3. Architect shall have all authority and responsibility established by law, including title 24 of the California Code of Regulations.

3.4. Contractor shall provide District and the Construction Manager with a copy of all written communication between Contractor and Architect at the same time as that communication is made to Architect, including, without limitation, all RFIs, correspondence, submittals, claims, and proposed change orders.

4. CONSTRUCTION MANAGER

4.1. If a construction manager is used on this Project ("Construction Manager" or "CM"), the Construction Manager will provide administration of the Contract on the District's behalf. After execution of the Contract and Notice to Proceed, all correspondence and/or instructions from Contractor and/or District shall be forwarded through the Construction Manager. The Construction Manager will not be responsible for and will not have control or charge of construction means, methods, techniques, sequences, or procedures or for safety precautions in connection with the Work, which shall all remain the Contractor's responsibility.

4.2. The Construction Manager, however, will have authority to reject materials and/or workmanship not conforming to the Contract Documents, as determined by the District, the Architect, and/or the Project Inspector. The Construction Manager shall also have the authority to require special inspection or testing of any portion of the Work, whether it has been fabricated, installed, or fully completed. Any decision made by the Construction Manager, in good faith, shall not give rise to any duty or responsibility of the Construction Manager to the Contractor, any Subcontractor, their agents, employees, or other persons performing any of the Work. The Construction Manager shall have free access to any or all parts of Work at any time.

4.3. If the District does not use a Construction Manager on this Project, all references to Construction Manager or CM shall be read as District.

5. INSPECTOR, INSPECTIONS, AND TESTS

5.1. Project Inspector

5.1.1. One or more Project Inspector(s), including special Project Inspector(s), as required, will be assigned to the Work by District, in accordance with requirements of title 24, part 1, of the California Code of Regulations, to enforce the building code and monitor compliance with Plans and Specifications for the Project previously approved by the DSA. Duties of Project Inspector(s) are specifically defined in section 4-342 of said part 1 of title 24.

5.1.2. No Work shall be carried on except with the knowledge and under the inspection of the Project Inspector(s). The Project Inspector(s) shall have free access to any or all parts of Work at any time. Contractor shall furnish Project Inspector(s) reasonable opportunities for obtaining such information as may be necessary to keep Project Inspector(s) fully informed respecting progress and manner of work and character of materials, including, but not limited to, submission of form DSA 156 (or the most current version) to the Project Inspector at least 48 hours in advance of the commencement and completion of construction of each and every aspect of the Work. Forms are available on the DSA's website at: <http://www.dgs.ca.gov/dsa/Forms.aspx>. Inspection of Work shall not relieve Contractor from an obligation to fulfill this Contract. Project Inspector(s) and the DSA are authorized to stop work whenever the Contractor and/or its Subcontractor(s) are not complying with the Contract Documents. Any work stoppage by the Project Inspector(s) and/or DSA shall be without liability to the District. Contractor shall instruct its Subcontractors and employees accordingly.

5.1.3. If Contractor and/or any Subcontractor requests that the Project Inspector(s) perform any inspection off-site, this shall only be done if it is allowable pursuant to applicable regulations and DSA, if the Project Inspector(s) agree to do so, and at the expense of the Contractor.

5.2. Tests and Inspections

5.2.1. Tests and Inspections shall comply with title 24, part 1, California Code of Regulations, group 1, article 5, section 4-335, and with the provisions of the Specifications.

5.2.2. The District will select an independent testing laboratory to conduct the tests. Selection of the materials required to be tested shall be by the laboratory or the District's representative and not by the Contractor. The Contractor shall notify the District's representative a sufficient time in advance of its readiness for required observation or inspection.

5.2.3. The Contractor shall notify the District's representative a sufficient time in advance of the manufacture of material to be supplied under the Contract Documents, which must by terms of the Contract Documents be tested, in order that the District may arrange for the testing of same at the source of supply. This notice shall be, at a minimum, seventy-two (72) hours prior to the manufacture of the material that needs to be tested.

5.2.4. Any material shipped by the Contractor from the source of supply prior to having satisfactorily passed such testing and inspection or prior to the receipt of notice from said representative that such testing and inspection will not be required, shall not be incorporated into and/or onto the Project.

5.2.5. The District will select and pay testing laboratory costs for all tests and inspections. Costs of tests of any materials found to be not in compliance with the Contract Documents shall be paid for by the District and reimbursed by the Contractor or deducted from the Contract Price.

5.3. Costs for After Hours and/or Off Site Inspections

If the Contractor performs Work outside the Inspector's regular working hours or requests the Inspector to perform inspections off Site, costs of any inspections required outside regular working hours or off Site shall be borne by the Contractor and may be invoiced to the Contractor by the District or the District may deduct those expenses from the next Progress Payment.

6. CONTRACTOR

Contractor shall construct the Work for the Contract price including any adjustment(s) to the Contract Price pursuant to provisions herein regarding changes to the Contract Price. Except as otherwise noted, Contractor shall provide and pay for all labor, materials, equipment, permits, fees, licenses, facilities, transportation, taxes, and services necessary for the proper execution and completion of the Work, except as indicated herein.

6.1. Status of Contractor

6.1.1. Contractor is and shall at all times be deemed to be an independent contractor and shall be wholly responsible for the manner in which it and its Subcontractors perform the services required of it by the Contract Documents. Nothing herein contained shall be construed as creating the relationship of employer and employee, or principal and agent, between the District, or any of the District's employees or agents, and Contractor or any of Contractor's Subcontractors, agents or employees. Contractor assumes exclusively the responsibility for the acts of its employees as they relate to the services to be provided during the course and scope of their employment. Contractor, its Subcontractors, agents, and its employees shall not be entitled to any rights or privileges of District employees. District shall be permitted to monitor the Contractor's activities to determine compliance with the terms of this Contract.

6.1.2. As required by law, Contractor and all Subcontractors shall be properly licensed and regulated by the Contractor's State License Board 9821 Business Park Drive, Sacramento, California 95827, <http://www.cslb.ca.gov>.

6.1.3. As required by law, Contractor and all Subcontractors shall be properly registered as public works contractors by the Department of Industrial Relations at <https://efiling.dir.ca.gov/PWCR/ActionServlet?action=displayPWCRRegistrationForm> or current URL.

6.2. Project Inspection Card(s)

Contractor shall verify that forms DSA 152 (or current version) are issued for the Project prior to the commencement of construction.

6.3. Contractor's Supervision

6.3.1. During progress of the Work, Contractor shall keep on the Premises, and at all other locations where any Work related to the Contract is being performed, a competent project manager and construction superintendent who are employees of the Contractor, to whom the District does not object and at least one of whom shall be fluent in English, written and verbal.

6.3.2. The project manager and construction superintendent shall both speak fluently the predominant language of the Contractor's employees.

6.3.3. Before commencing the Work herein, Contractor shall give written notice to District of the name of its project manager and construction superintendent. Neither the Contractor's project manager nor construction superintendent shall be changed except with prior written notice to District, unless the Contractor's project manager and/or construction superintendent proves to be unsatisfactory to Contractor, District, any of the District's employees, agents, the Construction Manager, or the Architect, in which case, Contractor shall notify District in writing. The Contractor's project manager and construction superintendent shall each represent Contractor, and all directions given to Contractor's project manager and/or construction superintendent shall be as binding as if given to Contractor.

6.3.4. Contractor shall give efficient supervision to Work, using its best skill and attention. Contractor shall carefully study and compare all Contract Documents, Drawings, Specifications, and other instructions and shall at once report to District, Construction Manager, and Architect any error, inconsistency, or omission that Contractor or its employees and Subcontractors may discover, in writing, with a copy to District's Project Inspector(s). The Contractor shall have responsibility for discovery of errors, inconsistencies, or omissions.

6.4. Duty to Provide Fit Workers

6.4.1. Contractor and Subcontractor(s) shall at all times enforce strict discipline and good order among their employees and shall not employ or work any unfit person or anyone not skilled in work assigned to that person. It shall be the responsibility of Contractor to ensure compliance with this requirement. District may require Contractor to permanently remove unfit persons from Project Site.

6.4.2. Any person in the employ of Contractor or Subcontractor(s) whom District may deem incompetent or unfit shall be excluded from working on the Project and shall not again be employed on the Project except with the prior written consent of District.

6.4.3. The Contractor shall furnish labor that can work in harmony with all other elements of labor employed or to be employed in the Work.

6.4.4. If Contractor intends to make any change in the name or legal nature of the Contractor's entity, Contractor must first notify the District. The District shall

determine if Contractor's intended change is permissible while performing this Contract.

6.5. Field Office

6.5.1. Contractor shall provide a temporary office on the Work Site for the District's use exclusively, during the term of the Contract.

6.6. Purchase of Materials and Equipment

The Contractor is required to order, obtain, and store materials and equipment sufficiently in advance of its Work at no additional cost or advance payment from District to assure that there will be no delays.

6.7. Documents On Work

6.7.1. Contractor shall at all times keep on the Work Site, or at another location as the District may authorize in writing, one legible copy of all Contract Documents, including Addenda and Change Orders, and Titles 19 and 24 of the California Code of Regulations, the specified edition(s) of the Uniform Building Code, all approved Drawings, Plans, Schedules, and Specifications, and all codes and documents referred to in the Specifications, and made part thereof. These documents shall be kept in good order and available to District, Construction Manager, Architect, Architect's representatives, the Project Inspector(s), and all authorities having jurisdiction. Contractor shall be acquainted with and comply with the provisions of these titles as they relate to this Project. (See particularly the duties of Contractor, Title 24, Part 1, California Code of Regulations, section 4-343.) Contractor shall also be acquainted with and comply with all California Code of Regulations provisions relating to conditions on this Project, particularly Titles 8 and 17. Contractor shall coordinate with Architect and Construction Manager and shall submit its verified report(s) according to the requirements of Title 24.

6.7.2. Daily Job Reports.

6.7.2.1. Contractor shall maintain, at a minimum, at least one (1) set of Daily Job Reports on the Project. These must be prepared by the Contractor's employee(s) who are present on Site, and must include, at a minimum, the following information:

- 6.7.2.1.1.** A brief description of all Work performed on that day.
- 6.7.2.1.2.** A summary of all other pertinent events and/or occurrences on that day.
- 6.7.2.1.3.** The weather conditions on that day.
- 6.7.2.1.4.** A list of all Subcontractor(s) working on that day,
- 6.7.2.1.5.** A list of each Contractor employee working on that day and the total hours worked for each employee.
- 6.7.2.1.6.** A complete list of all equipment on Site that day, whether in use or not.
- 6.7.2.1.7.** All complete list of all materials, supplies, and equipment delivered on that day.
- 6.7.2.1.8.** A complete list of all inspections and tests performed on that day.

6.7.2.2. Each day Contractor shall provide a copy of the previous day's Daily Job Report to the District or the Construction Manager.

6.8. Preservation of Records

The District shall have the right to examine and audit all Daily Job Reports or other Project records of Contractor's project manager(s), project superintendent(s), and/or project foreperson(s), all certified payroll records and/or related documents including, without limitation, payroll, payment, timekeeping and tracking documents; all books, estimates, records, contracts, documents, bid documents, bid cost data, subcontract job cost reports, and other data of the Contractor, any Subcontractor, and/or supplier, including computations and projections related to bidding, negotiating, pricing, or performing the Work or Contract modification, in order to evaluate the accuracy, completeness, and currency of the cost, manpower, coordination, supervision, or pricing data at no additional cost to the District. These documents may be duplicative and/or be in addition to any Bid Documents held in escrow by the District. The Contractor shall make available at its office at all reasonable times the materials described in this paragraph for the examination, audit, or reproduction until three (3) years after final payment under this Contract. Notwithstanding the provisions above, Contractor shall provide any records requested by any governmental agency, if available, after the time set forth above.

6.9. Integration of Work

6.9.1. Contractor shall do all cutting, fitting, patching, and preparation of Work as required to make its several parts come together properly, to fit it to receive or be received by work of other contractors, and to coordinate tolerances to various pieces of work, showing upon, or reasonably implied by, the Drawings and Specifications for the completed structure, and shall conform them as District and/or Architect may direct.

6.9.2. Contractor shall make its own layout of lines and elevations and shall be responsible for the accuracy of both Contractor's and Subcontractors' work resulting therefrom.

6.9.3. Contractor and all Subcontractors shall take all field dimensions required in performance of the Work, and shall verify all dimensions and conditions on the Site. All dimensions affecting proper fabrication and installation of all Work must be verified prior to fabrication by taking field measurements of the true conditions. If there are any discrepancies between dimensions in drawings and existing conditions which will affect the Work, Contractor shall bring such discrepancies to the attention of the District and Architect for adjustment before proceeding with the Work. In doing so, it is recognized that Contractor is not acting in the capacity of a licensed design professional, and that Contractor's examination is made in good faith to facilitate construction and does not create an affirmative responsibility to detect errors, omissions or inconsistencies in the Contract Documents or to ascertain compliance with applicable laws, building codes or regulations. Following receipt of written notice from Contractor, the District and/or Architect shall inform Contractor what action, if any, Contractor shall take with regard to such discrepancies

6.9.4. All cost caused by defective or ill-timed Work shall be borne by Contractor, inclusive of repair work.

6.9.5. Contractor shall not endanger any work performed by it or anyone else by cutting, excavating, or otherwise altering work and shall not cut or alter work of any other contractor except with consent of District.

6.10. Notifications

6.10.1. Contractor shall notify the Architect and Project Inspector, in writing, of the commencement of construction of each and every aspect of the Work at least 48 hours in advance by submitting form DSA 156 (or current version) to the Project Inspector. Forms are available on the DSA's website at:
<http://www.dgs.ca.gov/dsa/Forms.aspx>.

6.10.2. Contractor shall notify the Architect and Project Inspector, in writing, of the completion of construction of each and every aspect of the Work at least 48 hours in advance by submitting form DSA 156 (or current version) to the Project Inspector.

6.11. Obtaining of Permits, Licenses and Registration

Contractor shall secure and pay for all permits, licenses, registrations and certificates necessary for prosecution of Work, including but not limited to those listed in the Special Conditions, if any, before the date of the commencement of the Work or before the permits, licenses, registrations and certificates are legally required to continue the Work without interruption. The Contractor shall obtain and pay, only when legally required, for all licenses, registrations, permits, inspections, and inspection certificates required to be obtained from or issued by any authority having jurisdiction over any part of the Work included in the Contract. All final permits, licenses, and certificates shall be delivered to District before demand is made for final payment.

6.12. Royalties and Patents

6.12.1. Contractor shall obtain and pay, only when legally required, all royalties and license fees necessary for prosecution of Work before the earlier of the date of the commencement of the Work or the date that the license is legally required to continue the Work without interruption. Contractor shall defend suits or claims of infringement of patent, copyright, or other rights and shall hold the District, the Architect, and the Construction Manager harmless and indemnify them from loss on account thereof except when a particular design, process, or make or model of product is required by the Contract Documents. However, if the Contractor has reason to believe that the required design, process, or product is an infringement of a patent or copyright, the Contractor shall indemnify and defend the District, Architect and Construction Manager against any loss or damage unless the Contractor promptly informs the District of its information.

6.12.2. The review by the District or Architect of any method of construction, invention, appliance, process, article, device, or material of any kind shall be only its adequacy for the Work and shall not approve use by the Contractor in violation of any patent or other rights of any person or entity.

6.13. Work to Comply With Applicable Laws and Regulations

6.13.1. Contractor shall give all notices and comply with the following specific laws, ordinances, rules, and regulations and all other applicable laws, ordinances, rules, and regulations bearing on conduct of Work as indicated and specified, including but not limited to the appropriate statutes and administrative code sections. If Contractor observes that Drawings and Specifications are at variance therewith, or should Contractor become aware of the development of conditions not covered by Contract Documents that will result in finished Work being at variance therewith, Contractor shall promptly notify District in writing and any changes deemed necessary by District shall be made as provided in Contract for changes in Work.

- 6.13.1.1.** National Electrical Safety Code, U. S. Department of Commerce
- 6.13.1.2.** National Board of Fire Underwriters' Regulations
- 6.13.1.3.** Uniform Building Code, latest addition, and the California Code of Regulations, title 24, and other amendments
- 6.13.1.4.** Manual of Accident Prevention in Construction, latest edition, published by A.G.C. of America
- 6.13.1.5.** Industrial Accident Commission's Safety Orders, State of California
- 6.13.1.6.** Regulations of the State Fire Marshall (title 19, California Code of Regulations) and Pertinent Local Fire Safety Codes
- 6.13.1.7.** Americans with Disabilities Act
- 6.13.1.8.** Education Code of the State of California
- 6.13.1.9.** Government Code of the State of California
- 6.13.1.10.** Labor Code of the State of California, division 2, part 7, Public Works and Public Agencies
- 6.13.1.11.** Public Contract Code of the State of California
- 6.13.1.12.** California Art Preservation Act
- 6.13.1.13.** U. S. Copyright Act
- 6.13.1.14.** U. S. Visual Artists Rights Act

6.13.2. Contractor shall comply with all applicable mitigation measures, if any, adopted by any public agency with respect to this Project pursuant to the California Environmental Quality Act (Public Resources Code section 21000 et seq.)

6.13.3. If Contractor performs any Work that it knew, or through exercise of reasonable care should have known, to be contrary to any applicable laws, ordinance, rules, or regulations, Contractor shall bear all costs arising therefrom.

6.13.4. Where Specifications or Drawings state that materials, processes, or procedures must be approved by the DSA, State Fire Marshall, or other body or agency, Contractor shall be responsible for satisfying requirements of such bodies or agencies.

6.14. Safety/Protection of Persons and Property

6.14.1. The Contractor will be solely and completely responsible for conditions of the Work Site, including safety of all persons and property during performance of the Work. This requirement will apply continuously and not be limited to normal working hours.

6.14.2. The wearing of hard hats will be mandatory at all times for all personnel on Site. Contractor shall supply sufficient hard hats to properly equip all employees and visitors.

6.14.3. Any construction review of the Contractor's performance is not intended to include review of the adequacy of the Contractor's safety measures in, on, or near the Work Site.

6.14.4. Implementation and maintenance of safety programs shall be the sole responsibility of the Contractor.

6.14.5. The Contractor shall furnish to the District a copy of the Contractor's safety plan within the time frame indicated in the Contract Documents and specifically adapted for the Project.

6.14.6. Contractor shall be responsible for all damages to persons or property that occur as a result of its fault or negligence in connection with the prosecution of this Contract and shall take all necessary measures and be responsible for the proper care and completion and final acceptance by District. All Work shall be solely at Contractor's risk with the exception of damage to the Work caused by "acts of God" as defined in Public Contract Code section 7105.

6.14.7. Contractor shall take, and require Subcontractors to take, all necessary precautions for safety of workers on the Project and shall comply with all applicable federal, state, local, and other safety laws, standards, orders, rules, regulations, and building codes to prevent accidents or injury to persons on, about, or adjacent to premises where Work is being performed and to provide a safe and healthful place of employment. Contractor shall furnish, erect, and properly maintain at all times, all necessary safety devices, safeguards, construction canopies, signs, nets, barriers, lights, and watchmen for protection of workers and the public and shall post danger signs warning against hazards created by such features in the course of construction.

6.14.8. Hazards Control – Contractor shall store volatile wastes in covered metal containers and remove them from the Site daily. Contractor shall prevent accumulation of wastes that create hazardous conditions. Contractor shall provide adequate ventilation during use of volatile or noxious substances.

6.14.9. Contractor shall designate a responsible member of its organization on the Project, whose duty shall be to post information regarding protection and obligations of workers and other notices required under occupational safety and health laws, to comply with reporting and other occupational safety requirements, and to protect the life, safety, and health of workers. Name and position of person so designated shall be reported to District by Contractor.

6.14.10. Contractor shall correct any violations of safety laws, rules, orders, standards, or regulations. Upon the issuance of a citation or notice of violation by the Division of Occupational Safety and Health, Contractor shall correct such violation promptly.

6.14.11. Contractor shall comply with any District storm water requirements that are approved by the District and applicable to the Project, at no additional cost to the District.

6.14.12. In an emergency affecting safety of life or of work or of adjoining property, Contractor, without special instruction or authorization, shall act, at its discretion, to prevent such threatened loss or injury. Any compensation claimed by Contractor on account of emergency work shall be determined by agreement.

6.14.13. All salvage materials will become the property of the Contractor and shall be removed from the Site unless otherwise called for in the Contract Documents. However, the District reserves the right to designate certain items of value that shall be turned over to the District unless otherwise directed by District.

6.14.14. All connections to public utilities and/or existing on-site services shall be made and maintained in such a manner as to not interfere with the continuing use of same by the District during the entire progress of the Work.

6.14.15. Contractor shall provide such heat, covering, and enclosures as are necessary to protect all Work, materials, equipment, appliances, and tools against damage by weather conditions, such as extreme heat, cold, rain, snow, dry winds, flooding, or dampness.

6.14.16. The Contractor shall protect and preserve the Work from all damage or accident, providing any temporary roofs, window and door coverings, boxings, or other construction as required by the Architect. The Contractor shall be responsible for existing structures, walks, roads, trees, landscaping, and/or improvements in working areas; and shall provide adequate protection therefor. If temporary removal is necessary of any of the above items, or damage occurs due to the Work, the Contractor shall replace same at his expense with same kind, quality, and size of Work or item damaged. This shall include any adjoining property of the District and others.

6.14.17. Contractor shall take adequate precautions to protect existing roads, sidewalks, curbs, pavements, utilities, adjoining property, and structures (including, without limitation, protection from settlement or loss of lateral support), and to avoid damage thereto, and repair any damage thereto caused by construction operations.

6.14.18. Contractor shall confine apparatus, the storage of materials, and the operations of workers to limits indicated by law, ordinances, permits, or directions of Architect, and shall not interfere with the Work or unreasonably encumber Premises or overload any structure with materials. Contractor shall enforce all instructions of District and Architect regarding signs, advertising, fires, and smoking, and require that all workers comply with all regulations while on Project Site.

6.14.19. Contractor, Contractor's employees, Subcontractors, Subcontractors' employees, or any person associated with the Work shall conduct themselves in a manner appropriate for a school site. No verbal or physical contact with neighbors, students, and faculty, profanity, or inappropriate attire or behavior will be permitted. District may require Contractor to permanently remove non-complying persons from Project Site.

6.14.20. Contractor shall take care to prevent disturbing or covering any survey markers, monuments, or other devices marking property boundaries or corners. If

such markers are disturbed, Contractor shall have a civil engineer, registered as a professional engineer in California, replace them at no cost to District.

6.14.21. In the event that the Contractor enters into any agreement with owners of any adjacent property to enter upon the adjacent property for the purpose of performing the Work, Contractor shall fully indemnify, defend, and hold harmless each person, entity, firm, or agency that owns or has any interest in adjacent property. The form and content of the agreement of indemnification shall be approved by the District prior to the commencement of any Work on or about the adjacent property. The Contractor shall also indemnify the District as provided in the indemnification provision herein. These provisions shall be in addition to any other requirements of the owners of the adjacent property.

6.15. Working Evenings and Weekends

Contractor may be required to work evenings and/or weekends at no additional cost to the District. Contractor shall give the District seventy-two (72) hours notice prior to performing any evening and/or weekend work. Contractor shall perform all evening and/or weekend work only upon District's approval and in compliance with all applicable rules, regulations, laws, and local ordinances including, without limitation, all noise and light limitations. Contractor shall reimburse the District for any Inspector charges necessitated by the Contractor's evening and/or weekend work.

6.16. Cleaning Up

6.16.1. The Contractor shall provide all services, labor, materials, and equipment necessary for protecting the Work, all school occupants, furnishings, equipment, and building structure from damage until its completion and final acceptance by District. Dust barriers shall be provided to isolate dust and dirt from construction operations. At completion of the Work and portions thereof, Contractor shall clean to the original state any areas beyond the Work area that become dust laden as a result of the Work. The Contractor must erect the necessary warning signs and barricades to ensure the safety of all school occupants. The Contractor at all times must maintain good housekeeping practices to reduce the risk of fire damage and must make a fire extinguisher, fire blanket, and/or fire watch, as applicable, available at each location where cutting, braising, soldering, and/or welding is being performed or where there is an increased risk of fire.

6.16.2. Contractor at all times shall keep Premises free from debris such as waste, rubbish, and excess materials and equipment caused by the Work. Contractor shall not leave debris under, in, or about the Premises, but shall promptly remove same from the Premises on a daily basis. If Contractor fails to clean up, District may do so and the cost thereof shall be charged to Contractor. If Contract is for work on an existing facility, Contractor shall also perform specific clean-up on or about the Premises upon request by the District as it deems necessary for the continuing education process. Contractor shall comply with all related provisions of the Specifications.

6.16.3. If the Construction Manager, Architect, or District observes the accumulation of trash and debris, the District will give the Contractor a 24-hour written notice to mitigate the condition.

6.16.4. Should the Contractor fail to perform the required clean-up, or should the clean-up be deemed unsatisfactory by the District, the District will then perform the clean-up. All cost associated with the clean-up work (including all travel, payroll burden, and costs for supervision) will be deducted from the Contract Price, or District may withhold those amounts from payment(s) to Contractor.

7. SUBCONTRACTORS

7.1. Contractor shall provide the District with information for all Subcontracts as indicated in the Contractor's Submittals and Schedules Section herein.

7.2. No contractual relationship exists between the District and any Subcontractor, supplier, or sub-subcontractor by reason of this Contract.

7.3. Contractor agrees to bind every Subcontractor by terms of this Contract as far as those terms are applicable to Subcontractor's work including, without limitation, all labor, wage & hour, apprentice and related provisions and requirements. If Contractor shall subcontract any part of this Contract, Contractor shall be as fully responsible to District for acts and omissions of any Subcontractor and of persons either directly or indirectly employed by any Subcontractor, as it is for acts and omissions of persons directly employed by Contractor. The divisions or sections of the Specifications are not intended to control the Contractor in dividing the Work among Subcontractors or limit the work performed by any trade.

7.4. District's consent to, or approval of, or failure to object to, any Subcontractor under this Contract shall not in any way relieve Contractor of any obligations under this Contract and no such consent shall be deemed to waive any provisions of this Contract.

7.5. Contractor is directed to familiarize itself with sections 4100 through 4114 of the Public Contract Code of the State of California, as regards subletting and subcontracting, and to comply with all applicable requirements therein. In addition, Contractor is directed to familiarize itself with sections 1720 through 1861 of the Labor Code of the State of California, as regards the payment of prevailing wages and related issues, and to comply with all applicable requirements therein all including, without limitation, section 1775 and the Contractor's and Subcontractors' obligations and liability for violations of prevailing wage law and other applicable laws.

7.6. No Contractor whose Bid is accepted shall, without consent of the awarding authority and in full compliance with section 4100, et seq. of the Public Contract Code, and section 1771.1 of the Labor Code, including, without limitation, sections 4107, 4107.5, and 4109 of the Public Contract Code, either:

7.6.1. Substitute any person as a Subcontractor in place of the Subcontractor designated in the original Bid; or

7.6.2. Permit any Subcontract to be assigned or transferred, or allow any portion of the Work to be performed by anyone other than the original Subcontractor listed in the Bid; or

7.6.3. Sublet or subcontract any portion of the Work in excess of one-half of one percent (0.5%) of the Contractor's total bid as to which his original bid did not designate a Subcontractor.

7.7. The Contractor shall be responsible for the coordination of the trades, Subcontractors, sub-subcontractors, and material or equipment suppliers working on the Project.

~~**7.7.1.** If the Contract is valued at \$1 million or more and uses or plans to use state bond funds, Contractor is responsible for ensuring that first tier Subcontractors, holding C-4, C-7, C-10, C-16, C-20, C-34, C-36, C-38, C-42, C-43, and/or C-46 licenses, are prequalified by the District to work on the Project pursuant to Public Contract Code section 20111.6.~~

7.7.2. Contractor is responsible for ensuring that all Subcontractors are properly registered as public works contractors by the Department of Industrial Relations.

7.8. Contractor is solely responsible for settling any differences between the Contractor and its Subcontractor(s) or between Subcontractors.

7.9. Contractor must include in all of its subcontracts the assignment provisions as indicated in the Termination section of these General Conditions.

8. OTHER CONTRACTS/CONTRACTORS

8.1. District reserves the right to let other contracts, and/or to perform work with its own forces, in connection with the Project. Contractor shall afford other contractors reasonable opportunity for introduction and storage of their materials and execution of their work and shall properly coordinate and connect Contractor's Work with the work of other contractors.

8.2. In addition to Contractor's obligation to protect its own Work, Contractor shall protect the work of any other contractor that Contractor encounters while working on the Project.

8.3. If any part of Contractor's Work depends for proper execution or results upon work of District or any other contractor, the Contractor shall inspect and promptly report to the District in writing before proceeding with its Work any defects in District's or any other contractor's work that render Contractor's Work unsuitable for proper execution and results. Contractor shall be held accountable for damages to District for District's or any other contractor's work that Contractor failed to inspect or should have inspected. Contractor's failure to inspect and report shall constitute Contractor's acceptance of all District's or any other contractor's work as fit and proper for reception of Contractor's Work, except as to defects that may develop in District's or any other contractor's work after execution of Contractor's Work.

8.4. To ensure proper execution of its subsequent work, Contractor shall measure and inspect work already in place and shall at once report to the District in writing any discrepancy between that executed work and the Contract Documents.

8.5. Contractor shall ascertain to its own satisfaction the scope of the Project and nature of District's or any other contracts that have been or may be awarded by

District in prosecution of the Project to the end that Contractor may perform this Contract in light of the other contracts, if any.

8.6. Nothing herein contained shall be interpreted as granting to Contractor exclusive occupancy of the Site, the Premises, or of the Project. Contractor shall not cause any unnecessary hindrance or delay to the use and/or school operation(s) of the Premises and/or to District or any other contractor working on the Project. If simultaneous execution of any contract or school operation is likely to cause interference with performance of Contractor's Contract, Contractor shall coordinate with those contractor(s), person(s), and/or entity(s) and shall notify the District of the resolution.

9. DRAWINGS AND SPECIFICATIONS

9.1. A complete list of all Drawings that form a part of the Contract is to be found as an index on the Drawings themselves, and/or may be provided to the Contractor and/or in the Table of Contents.

9.2. Materials or Work described in words that so applied have a well known technical or trade meaning shall be deemed to refer to recognized standards, unless noted otherwise.

9.3. Trade Name or Trade Term. It is not the intention of this Contract to go into detailed descriptions of any materials and/or methods commonly known to the trade under "trade name" or "trade term." The mere mention or notation of "trade name" or "trade term" shall be considered a sufficient notice to Contractor that it will be required to complete the work so named, complete, finished, and operable, with all its appurtenances, according to the best practices of the trade.

9.4. The naming of any material and/or equipment shall mean furnishing and installing of same, including all incidental and accessory items thereto and/or labor therefor, as per best practices of the trade(s) involved, unless specifically noted otherwise.

9.5. Contract Documents are complementary, and what is called for by one shall be binding as if called for by all. As such, Drawings and Specifications are intended to be fully cooperative and to agree. However, if Contractor observes that Drawings and Specifications are in conflict, Contractor shall promptly notify District and Architect in writing, and any necessary changes shall be made as provided in the Contract Documents.

9.6. In the case of discrepancy or ambiguity in the Contract Documents, the order of precedence in the Agreement shall prevail. However, in the case of discrepancy or ambiguity solely between and among the Drawings and Specifications, the discrepancy or ambiguity shall be resolved in favor of the interpretation that will provide District with the functionally complete and operable Project described in the Drawings and Specifications. In case of ambiguity, conflict, or lack of information, District will furnish clarifications with reasonable promptness.

9.7. Drawings and Specifications are intended to comply with all laws, ordinances, rules, and regulations of constituted authorities having jurisdiction, and where referred to in the Contract Documents, the laws, ordinances, rules, and regulations shall be

considered as a part of the Contract within the limits specified. Contractor shall bear all expense of correcting work done contrary to said laws, ordinances, rules, and regulations.

9.8. Ownership of Drawings

All copies of Plans, Drawings, Designs, Specifications, and copies of other incidental architectural and engineering work, or copies of other Contract Documents furnished by District, are the property of District. They are not to be used by Contractor in other work and, with the exception of signed sets of Contract Documents, are to be returned to District on request at completion of Work, or may be used by District as it may require without any additional costs to District. Neither the Contractor nor any Subcontractor, or material or equipment supplier shall own or claim a copyright in the Drawings, Specifications, and other documents prepared by the Architect. District hereby grants the Contractor, Subcontractors, sub-subcontractors, and material or equipment suppliers a limited license to use applicable portions of the Drawings prepared for the Project in the execution of their Work under the Contract Documents.

10. CONTRACTOR'S SUBMITTALS AND SCHEDULES

Contractor's submittals shall comply with the provisions and requirements of the Specifications including, without limitation Submittals.

10.1. Schedule of Work, Schedule of Submittals, and Schedule of Values

10.1.1. Within **TEN (10)** calendar days after the date of the Notice to Proceed (unless otherwise specified in the Specifications), the Contractor shall prepare and submit to the District for review, in a form supported by sufficient data to substantiate its accuracy as the District may require:

10.1.1.1. Preliminary Schedule. A preliminary schedule of construction indicating the starting and completion dates of the various stages of the Work, including any information and following any form as may be specified in the Specifications. Once approved by District, this shall become the Construction Schedule. This schedule shall include and identify all tasks that are on the Project's critical path with a specific determination of the start and completion of each critical path task as well as all Contract milestones and each milestone's completion date(s) as may be required by the District.

10.1.1.2. Preliminary Schedule of Values. A preliminary schedule of values for all of the Work, which must include quantities and prices of items aggregating the Contract Price and must subdivide the Work into component parts in sufficient detail to serve as the basis for progress payments during construction. Unless the Special Conditions contain different limits, this preliminary schedule of values shall include, at a minimum, the following information and the following structure:

10.1.1.2.1. Divided into at least the following categories:

- 10.1.1.2.1.1.** Overhead and profit;
- 10.1.1.2.1.2.** Supervision;
- 10.1.1.2.1.3.** General conditions;

- 10.1.1.2.1.4. Layout;
- 10.1.1.2.1.5. Mobilization;
- 10.1.1.2.1.6. Submittals;
- 10.1.1.2.1.7. Bonds and insurance;
- 10.1.1.2.1.8. Close-out/Certification documentation;
- 10.1.1.2.1.9. Demolition;
- 10.1.1.2.1.10. Installation;
- 10.1.1.2.1.11. Rough-in;
- 10.1.1.2.1.12. Finishes;
- 10.1.1.2.1.13. Testing;
- 10.1.1.2.1.14. Punchlist and acceptance.

10.1.1.2.2. Divided by each of the following areas:

- 10.1.1.2.2.1. Site work;
- 10.1.1.2.2.2. By each building;
- 10.1.1.2.2.3. By each floor.

10.1.1.2.3. The preliminary schedule of values shall not provide for values any greater than the following percentages of the Contract value:

- 10.1.1.2.3.1. Mobilization and layout combined to equal not more than 1%;
- 10.1.1.2.3.2. Submittals, samples and shop drawings combined to equal not more than 3%;
- 10.1.1.2.3.3. Bonds and insurance combined to equal not more than 2%.

10.1.1.2.4. Closeout documentation shall have a value in the preliminary schedule of not less than 5%.

10.1.1.2.5. Notwithstanding any provision of the Contract Documents to the contrary, payment of the Contractor's overhead, supervision, general conditions costs, and profit, as reflected in the Cost Breakdown, shall be paid based on percentage complete, with the disbursement of Progress Payments and the Final Payment.

10.1.1.2.6. Contractor shall certify that the preliminary schedule of values as submitted to the District is accurate and reflects the costs as developed in preparing Contractor's bid. The preliminary schedule of values shall be subject to the District's review and approval of the form and content thereof. In the event that the District objects to any portion of the preliminary schedule of values, the District shall notify the Contractor, in writing, of the District's objection(s) to the preliminary schedule of values. Within five (5) calendar days of the date of the District's written objection(s), Contractor shall submit a revised preliminary schedule of values to the District for review and approval. The foregoing procedure for the preparation, review and approval of the preliminary schedule of values shall continue until the District has approved the entirety of the preliminary schedule of values.

10.1.1.2.7. Once the preliminary schedule of values is approved by the District, this shall become the Schedule of Values. The Schedule of Values

shall not be thereafter modified or amended by the Contractor without the prior consent and approval of the District, which may be granted or withheld in the sole discretion of the District.

10.1.1.3. Preliminary Schedule of Submittals. A preliminary schedule of submittals, including Shop Drawings, Product Data, and Samples submittals. Once approved by District, this shall become the Submittal Schedule. All submittals shall be forwarded to the District by the date indicated on the approved Submittal Schedule, unless an earlier date is necessary to maintain the Construction Schedule, in which case those submittals shall be forwarded to the District so as not to delay the Construction Schedule. Upon request by the District, Contractor shall provide an electronic copy of all submittals to the District.

10.1.1.4. Safety Plan. Contractor's Safety Plan specifically adapted for the Project. Contractor's Safety Plan shall comply with the following requirements:

10.1.1.4.1. All applicable requirements of California Division of Industrial Safety ("CalOSHA") and/or of the United States Occupational Safety and Health Administration ("OSHA").

10.1.1.4.2. All provisions regarding Project safety, including all applicable provisions in these General Conditions.

10.1.1.4.3. Contractor's Safety Plan shall be in English and in the language(s) of the Contractor's and its Subcontractors' employees.

10.1.1.5. Complete Subcontractor List. The name, address, telephone number, facsimile number, California State Contractors License number, classification, and monetary value of all Subcontracts for parties furnishing labor, material, or equipment for completion of the Project.

10.1.2. Contractor must provide all schedules both in hard copy and electronically, in a format (e.g., Microsoft Project or Primavera) approved in advance by the District.

10.1.3. The District will review the schedules submitted and the Contractor shall make changes and corrections in the schedules as requested by the District and resubmit the schedules until approved by the District.

10.1.4. The District shall have the right at any time to revise the schedule of values if, in the District's sole opinion, the schedule of values does not accurately reflect the value of the Work performed.

10.1.5. All submittals and schedules must be approved by the District before Contractor can rely on them as a basis for payment.

10.2. Monthly Progress Schedule(s)

10.2.1. Contractor shall provide Monthly Progress Schedule(s) to the District. A Monthly Progress Schedule shall update the approved Construction Schedule or the last Monthly Progress Schedule, showing all work completed and to be completed. The monthly Progress Schedule shall be sent within the timeframe requested by the District and shall be in a format acceptable to the District and contain a written narrative of the progress of work that month and any changes, delays, or events that may affect the work. The process for District approval of the Monthly Progress Schedule shall be the same as the process for approval of the Construction Schedule.

10.2.2. Contractor shall submit Monthly Progress Schedule(s) with all payment applications.

10.3. Material Safety Data Sheets (MSDS)

Contractor is required to ensure Material Safety Data Sheets are available in a readily accessible place at the Work Site for any material requiring a Material Safety Data Sheet per the Federal "Hazard Communication" standard, or employees right to know law. The Contractor is also required to ensure proper labeling on substance brought onto the job site and that any person working with the material or within the general area of the material is informed of the hazards of the substance and follows proper handling and protection procedures. Two additional copies of the Material Safety Data Sheets shall also be submitted directly to the District.

11. SITE ACCESS, CONDITIONS, AND REQUIREMENTS

11.1. Site Investigation

Before bidding on this Work, Contractor shall make a careful investigation of the Site and thoroughly familiarize itself with the requirements of the Contract. By the act of submitting a bid for the Work included in this Contract, Contractor shall be deemed to have made a complete study and investigation, and to be familiar with and accepted the existing conditions of the Site.

Prior to commencing the Work, Contractor and the District's representative shall survey the Site to document the condition of the Site. Contractor will record the survey in digital videotape format and provide an electronic copy to the District within fourteen (14) days of the survey. This electronic record shall serve as a basis for determining any damages caused by the Contractor during the Project. The Contractor may also document any pre-existing conditions in writing, provided that both the Contractor and the District's representative agree on said conditions and sign a memorandum documenting the same.

11.2. Soils Investigation Report

11.2.1. When a soils investigation report obtained from test holes at Site is available, that report shall be available to the Contractor but shall not be a part of this Contract. Any information obtained from that report or any information given on Drawings as to subsurface soil condition or to elevations of existing grades or elevations of underlying rock is approximate only, is not guaranteed, does not form a part of this Contract, and Contractor may not rely thereon. By submitting its bid,

Contractor acknowledges that it has made visual examination of Site and has made whatever tests Contractor deems appropriate to determine underground condition of soil.

11.2.2. Contractor agrees that no claim against District will be made by Contractor for damages and hereby waives any rights to damages if, during progress of Work, Contractor encounters subsurface or latent conditions at Site materially differing from those shown on Drawings or indicated in Specifications, or for unknown conditions of an unusual nature that differ materially from those ordinarily encountered in the work of the character provided for in Plans and Specifications, except as indicated in the provisions of these General Conditions regarding trenches, trenching, and/or existing utility lines.

11.3. Access to Work

District and its representatives shall at all times have access to Work wherever it is in preparation or progress, including storage and fabrication. Contractor shall provide safe and proper facilities for such access so that District's representatives may perform their functions.

11.4. Layout and Field Engineering

11.4.1. All field engineering required for layout of this Work and establishing grades for earthwork operations shall be furnished by Contractor at its expense. This Work shall be done by a qualified, California-registered civil engineer approved in writing by District and Architect. Any required Record and/or As-Built Drawings of Site development shall be prepared by the approved civil engineer.

11.4.2. The Contractor shall be responsible for having ascertained pertinent local conditions such as location, accessibility, and general character of the Site and for having satisfied itself as to the conditions under which the Work is to be performed. Contractor shall follow best practices, including but not limited to pot holing to avoid utilities. District shall not be liable for any claim for allowances because of Contractor's error, failure to follow best practices, or negligence in acquainting itself with the conditions at the Site.

11.4.3. Contractor shall protect and preserve established benchmarks and monuments and shall make no changes in locations without the prior written approval of District. Contractor shall replace any benchmarks or monuments that are lost or destroyed subsequent to proper notification of District and with District's approval.

11.5. Utilities

Utilities shall be provided as indicated in the Specifications.

11.6. Sanitary Facilities

Sanitary facilities shall be provided as indicated in the Specifications.

11.7. Surveys

Contractor shall provide surveys done by a California-licensed civil engineer surveyor to determine locations of construction, grading, and site work as required to perform the Work.

11.8. Regional Notification Center

The Contractor, except in an emergency, shall contact the appropriate regional notification center at least two (2) days prior to commencing any excavation if the excavation will be conducted in an area or in a private easement that is known, or reasonably should be known, to contain subsurface installations other than the underground facilities owned or operated by the District, and obtain an inquiry identification number from that notification center. No excavation shall be commenced and/or carried out by the Contractor unless an inquiry identification number has been assigned to the Contractor or any Subcontractor and the Contractor has given the District the identification number. Any damages arising from Contractor's failure to make appropriate notification shall be at the sole risk and expense of the Contractor. Any delays caused by failure to make appropriate notification shall be at the sole risk of the Contractor and shall not be considered for an extension of the Contract time.

11.9. Existing Utility Lines

11.9.1. Pursuant to Government Code section 4215, District assumes the responsibility for removal, relocation, and protection of main or trunk utility lines and facilities located on the construction Site at the time of commencement of construction under this Contract with respect to any such utility facilities that are not identified in the Plans and Specifications. Contractor shall not be assessed for liquidated damages for delay in completion of the Project caused by failure of District or the owner of a utility to provide for removal or relocation of such utility facilities.

11.9.2. Locations of existing utilities provided by District shall not be considered exact, but approximate within reasonable margin and shall not relieve Contractor of responsibilities to exercise reasonable care costs of repair due to Contractor's failure to do so. District shall compensate Contractor for the costs of locating, repairing damage not due to the failure of Contractor to exercise reasonable care, and removing or relocating such utility facilities not indicated in the Plans and Specifications with reasonable accuracy, and for equipment necessarily idle during such work.

11.9.3. No provision herein shall be construed to preclude assessment against Contractor for any other delays in completion of the Work. Nothing in this Article shall be deemed to require District to indicate the presence of existing service laterals, appurtenances, or other utility lines, within the exception of main or trunk utility lines. Whenever the presence of these utilities on the Site of the construction Project can be inferred from the presence of other visible facilities, such as buildings, meter junction boxes, on or adjacent to the Site of the construction.

11.9.4. If Contractor, while performing Work under this Contract, discovers utility facilities not identified by District in Contract Plans and Specifications, Contractor shall immediately notify the District and the utility in writing. The cost of repair for damage to above-mentioned visible facilities without prior written notification to the District shall be borne by the Contractor.

11.10. Notification

Contractor understands, acknowledges and agrees that the purpose for prompt notification to the District pursuant to these provisions is to allow the District to investigate the condition(s) so that the District shall have the opportunity to decide how the District desires to proceed as a result of the condition(s). Accordingly, failure of Contractor to promptly notify the District in writing, pursuant to these provisions, shall constitute Contractor's waiver of any claim for damages or delay incurred as a result of the condition(s).

11.11. Hazardous Materials

Contractor shall comply with all provisions and requirements of the Contract Documents related to hazardous materials including, without limitation, Hazardous Materials Procedures and Requirements.

11.12. No Signs

Neither the Contractor nor any other person or entity shall display any signs not required by law or the Contract Documents at the Site, fences trailers, offices, or elsewhere on the Site without specific prior written approval of the District.

12. TRENCHES

12.1. Trenches Greater Than Five Feet

Pursuant to Labor Code section 6705, if the Contract Price exceeds \$25,000 and involves the excavation of any trench or trenches five (5) feet or more in depth, the Contractor shall, in advance of excavation, promptly submit to the District and/or a registered civil or structural engineer employed by the District or Architect, a detailed plan, stamped by a licensed engineer retained by the Contractor, showing the design of shoring for protection from the hazard of caving ground during the excavation of such trench or trenches.

12.2. Excavation Safety

If such plan varies from the Shoring System Standards established by the Construction Safety Orders, the plan shall be prepared by a registered civil or structural engineer, but in no case shall such plan be less effective than that required by the Construction Safety Orders. No excavation of such trench or trenches shall be commenced until said plan has been accepted by the District or by the person to whom authority to accept has been delegated by the District.

12.3. No Tort Liability of District

Pursuant to Labor Code section 6705, nothing in this Article shall impose tort liability upon the District or any of its employees.

12.4. No Excavation Without Permits

The Contractor shall not commence any excavation Work until it has secured all necessary permits including the required CAL OSHA excavation/shoring permit. Any permits shall be prominently displayed on the Site prior to the commencement of any excavation.

12.5. Discovery of Hazardous Waste and/or Unusual Conditions

12.5.1. Pursuant to Public Contract Code section 7104, if the Work involves digging trenches or other excavations that extend deeper than four feet below the Surface, the Contractor shall promptly, and before the following conditions are disturbed, notify the District, in writing, of any:

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

12.5.1.2. Subsurface or latent physical conditions at the Site differing from those indicated.

12.5.1.3. Unknown physical conditions at the Site of any unusual nature, different materially from those ordinarily encountered and generally recognized as inherent in work of the character provided for in the Contract.

12.5.2. The District shall promptly investigate the conditions, and if it finds that the conditions do materially so differ, or do involve hazardous waste, and cause a decrease or increase in the Contractor's cost of, or the time required for, performance of any part of the Work, shall issue a Change Order under the procedures described herein.

12.5.3. In the event that a dispute arises between District and the Contractor whether the conditions materially differ, or involve hazardous waste, or cause a decrease or increase in the Contractor's cost of, or time required for, performance of any part of the Work, the Contractor shall not be excused from any scheduled completion date provided for by the Contract, but shall proceed with all work to be performed under the Contract. The Contractor shall retain any and all rights provided either by Contract or by law that pertain to the resolution of disputes and protests.

13. INSURANCE AND BONDS

13.1. Insurance

Unless different provisions and/or limits are indicated in the Special Conditions, all insurance required of Contractor and/or its Subcontractor(s) shall be in the amounts and include the provisions set forth herein.

13.1.1. Commercial General Liability and Automobile Liability Insurance

13.1.1.1. Contractor shall procure and maintain, during the life of this Contract, Commercial General Liability Insurance and Automobile Liability Insurance that shall protect Contractor, District, State, Construction Manager(s), Project Inspector(s), and Architect(s) from all claims for bodily injury, property damage, personal injury, death, advertising injury, and medical payments arising from operations under this Contract. This coverage shall be provided in a form at least as broad as Insurance Services (ISO) Form CG 0001 11188. Contractor shall ensure that Products Liability and Completed Operations coverage, Fire Damage Liability, and Any Auto including owned, non-owned, and hired, are included within the above policies and at the required limits, or Contractor shall procure and maintain these coverages separately.

13.1.1.2. Contractor's deductible or self-insured retention for its Commercial General Liability Insurance policy shall not exceed \$25,000 unless approved in writing by District.

13.1.1.3. All such policies shall be written on an occurrence form.

13.1.2. Excess Liability Insurance

13.1.2.1. Contractor may procure and maintain, during the life of this Contract, an Excess Liability Insurance Policy to meet the policy limit requirements of the required policies if Contractor's underlying policy limits are less than required.

13.1.2.2. There shall be no gap between the per occurrence amount of any underlying policy and the start of the coverage under the Excess Liability Insurance Policy. Any Umbrella or Excess Liability Insurance Policy shall be written on a following form and shall protect Contractor, District, State, Construction Manager(s), Project Manager(s), and Architect(s) in amounts and including the provisions as set forth in the Supplementary Conditions (if any) and/or Special Conditions, and that complies with all requirements for Commercial General Liability and Automobile Liability and Employers' Liability Insurance.

13.1.3. Subcontractor(s): Contractor shall require its Subcontractor(s), if any, to procure and maintain Commercial General Liability Insurance, Automobile Liability Insurance, and Excess Liability Insurance (if Subcontractor elects to satisfy, in part the insurance required herein by procuring and maintaining an Excess Liability Insurance Policy) with forms of coverage and limits equal to the amounts required of the Contractor.

13.1.4. Workers' Compensation and Employers' Liability Insurance

13.1.4.1. In accordance with provisions of section 3700 of the California Labor Code, the Contractor and every Subcontractor shall be required to secure the payment of compensation to its employees.

13.1.4.2. Contractor shall procure and maintain, during the life of this Contract, Workers' Compensation Insurance and Employers' Liability Insurance

for all of its employees engaged in work under this Contract, on/or at the Site of the Project. This coverage shall cover, at a minimum, medical and surgical treatment, disability benefits, rehabilitation therapy, and survivors' death benefits. Contractor shall require its Subcontractor(s), if any, to procure and maintain Workers' Compensation Insurance and Employers' Liability Insurance for all employees of Subcontractor(s). Any class of employee or employees not covered by a Subcontractor's insurance shall be covered by Contractor's insurance. If any class of employee or employee engaged in Work under this Contract, on or at the Site of the Project, is not protected under the Workers' Compensation Insurance, Contractor shall provide, or shall cause a Subcontractor to provide, adequate insurance coverage for the protection of any employee(s) not otherwise protected before any of those employee(s) commence work.

13.1.5. Builder's Risk Insurance: Builder's Risk "All Risk" Insurance

Contractor shall procure and maintain, during the life of this Contract, Builder's Risk (Course of Construction), or similar first party property coverage acceptable to the District, issued on a replacement cost value basis. The cost shall be consistent with the total replacement cost of all insurable Work of the Project included within the Contract Documents. Coverage is to insure against all risks of accidental physical loss and shall include without limitation the perils of vandalism and/or malicious mischief (both without any limitation regarding vacancy or occupancy), sprinkler leakage, civil authority, theft, sonic disturbance, earthquake, flood, collapse, wind, fire, war, terrorism, lightning, smoke, and rioting. Coverage shall include debris removal, demolition, increased costs due to enforcement of all applicable ordinances and/or laws in the repair and replacement of damaged and undamaged portions of the property, and reasonable costs for the Architect's and engineering services and expenses required as a result of any insured loss upon the Work and Project, including completed Work and Work in progress, to the full insurable value thereof.

13.1.6. Pollution Liability Insurance

13.1.6.1. Contractor shall procure and maintain Pollution Liability Insurance that shall protect Contractor, District, State, Construction Manager(s), Project Inspector(s), and Architect(s) from all claims for bodily injury, property damage, including natural resource damage, cleanup costs, removal, storage, disposal, and/or use of the pollutant arising from operations under this Contract, and defense, including costs and expenses incurred in the investigation, defense, or settlement of claims. Coverage shall apply to sudden and/or gradual pollution conditions resulting from the escape or release of smoke, vapors, fumes, acids, alkalis, toxic chemicals, liquids, or gases, natural gas, waste materials, or other irritants, contaminants, or pollutants, including asbestos. This coverage shall be provided in a form at least as broad as Insurance Services (ISO) Form CG 2415, or Contractor shall procure and maintain these coverages separately.

13.1.6.2. Contractor shall warrant that any retroactive date applicable to coverage under the policy predates the effective date of the Contract and that continuous coverage will be maintained or an extended reporting or discovery period will be exercised for a period of three (3) years, beginning from the time that the Work under the Contract is completed.

13.1.6.3. If Contractor is responsible for removing any pollutants from a site, then Contractor shall ensure that Any Auto, including owned, non-owned, and hired, are included within the above policies and at the required limits, to cover its automobile exposure from transporting the pollutants from the site to an approved disposal site. This coverage shall include the Motor Carrier Act Endorsement, MCS 90.

13.1.7. Proof of Carriage of Insurance and Other Requirements: Endorsements and Certificates

13.1.7.1. Contractor shall not commence Work nor shall it allow any Subcontractor to commence Work under this Contract, until Contractor and its Subcontractor(s) have procured all required insurance and Contractor has delivered in duplicate to the District complete endorsements (or entire insurance policies) and certificates indicating the required coverages have been obtained, and the District has approved these documents.

13.1.7.2. Endorsements, certificates, and insurance policies shall include the following:

13.1.7.2.1. A clause stating:

“This policy shall not be amended, canceled or modified and the coverage amounts shall not be reduced until notice has been mailed to District, Architect, and Construction Manager stating date of amendment, modification, cancellation or reduction. Date of amendment, modification, cancellation or reduction may not be less than thirty (30) days after date of mailing notice.”

13.1.7.2.2. Language stating in particular those insured, extent of insurance, location and operation to which insurance applies, expiration date, to whom cancellation and reduction notice will be sent, and length of notice period.

13.1.7.3. All endorsements, certificates and insurance policies shall state that District, its trustees, employees and agents, the State of California, Construction Manager(s), Project Manager(s), Inspector(s) and Architect(s) are named additional insureds under all policies except Workers' Compensation Insurance and Employers' Liability Insurance.

13.1.7.4. Insurance written on a “claims made” basis is to be renewed by the Contractor and all Subcontractors for a period of five (5) years following completion of the Work or termination of this Agreement. Such insurance must have the same coverage and limits as the policy that was in effect during the term of this Agreement, and will cover the Contractor and all Subcontractors for all claims made.

13.1.7.5. Contractor's and Subcontractors' insurance policy(s) shall be primary and non-contributory to any insurance or self-insurance maintained by District, its trustees, employees and/or agents, the State of California, Construction Manager(s), Project Manager(s), Inspector(s), and/or Architect(s).

13.1.7.6. All endorsements shall waive any right to subrogation against any of the named additional insureds.

13.1.7.7. Unless otherwise stated in the Special Conditions, all of Contractor's insurance shall be with insurance companies with an A.M. Best rating of no less than **A: VII.**

13.1.7.8. The insurance requirements set forth herein shall in no way limit the Contractor's liability arising out of or relating to the performance of the Work or related activities.

13.1.7.9. Failure of Contractor and/or its Subcontractor(s) to comply with the insurance requirements herein shall be deemed a material breach of the Agreement.

13.1.8. Insurance Policy Limits

Unless different limits are indicated in the Special Conditions, the limits of insurance shall not be less than the following amounts:

Commercial General Liability	Product Liability and Completed Operations, Fire Damage Liability – Split Limit	\$2,000,000 per occurrence; \$4,000,000 aggregate
Automobile Liability – Any Auto	Combined Single Limit	\$1,000,000
Workers Compensation		Statutory limits pursuant to State law
Employers' Liability		\$1,000,000
Builder's Risk (Course of Construction)		Issued for the value and scope of Work indicated herein.
Pollution Liability		\$1,000,000 per claim; \$2,000,000 aggregate

13.2. Contract Security - Bonds

13.2.1. Contractor shall furnish two surety bonds issued by a California admitted surety insurer as follows:

13.2.1.1. Performance Bond: A bond in an amount at least equal to one hundred percent (100%) of Contract Price as security for faithful performance of this Contract.

13.2.1.2. Payment Bond: A bond in an amount at least equal to one hundred percent (100%) of the Contract Price as security for payment of persons performing labor and/or furnishing materials in connection with this Contract.

13.2.2. Cost of bonds shall be included in the Bid and Contract Price.

13.2.3. All bonds related to this Project shall be in the forms set forth in these Contract Documents and shall comply with all requirements of the Contract Documents, including, without limitation, the bond forms.

14. WARRANTY/GUARANTEE/INDEMNITY

14.1. Warranty/Guarantee

14.1.1. The Contractor shall obtain and preserve for the benefit of the District, manufacturer's warranties on materials, fixtures, and equipment incorporated into the Work.

14.1.2. In addition to guarantees required elsewhere, Contractor shall, and hereby does guarantee and warrant all Work furnished on the job against all defects for a period of **ONE (1)** year after the later of the following dates:

14.1.2.1. The date of completion as defined in Public Contract Code section 7107, subdivision (c), or

14.1.2.2. The commissioning date for the Project, if any.

At the District's sole option, Contractor shall repair or replace any and all of that Work, together with any other Work that may be displaced in so doing, that may prove defective in workmanship and/or materials within a **ONE (1)** year period from date of completion as defined above without expense whatsoever to District. In the event of failure of Contractor and/or Surety to commence and pursue with diligence said replacements or repairs within ten (10) days after being notified in writing, Contractor and Surety hereby acknowledge and agree that District is authorized to proceed to have defects repaired and made good at expense of Contractor and/or Surety who hereby agree to pay costs and charges therefore immediately on demand.

14.1.3. If, in the opinion of District, defective work creates a dangerous condition or requires immediate correction or attention to prevent further loss to District or to prevent interruption of operations of District, District will attempt to give the notice required above. If Contractor or Surety cannot be contacted or neither complies with District's request for correction within a reasonable time as determined by District, District may, notwithstanding the above provision, proceed to make any and all corrections and/or provide attentions the District believes are necessary. The costs of correction or attention shall be charged against Contractor and Surety of the guarantees provided in this Article or elsewhere in this Contract.

14.1.4. The above provisions do not in any way limit the guarantees on any items for which a longer guarantee is specified or on any items for which a manufacturer gives a guarantee for a longer period. Contractor shall furnish to District all appropriate guarantee or warranty certificates as indicated in the Specifications or upon request by District.

14.1.5. Nothing herein shall limit any other rights or remedies available to District.

14.2. Indemnity

14.2.1. To the furthest extent permitted by California law, the Contractor shall indemnify, defend with legal counsel reasonably acceptable to the District, keep and hold harmless the District, the Architect, and the Construction Manager, their consultants and separate contractors, and their respective board members, officers, representatives, contractors, agents, and employees, in both individual and official capacities ("Indemnitees"), against all suits, claims, damages, losses, and expenses, including but not limited to attorney's fees, caused by, arising out of, resulting from, or incidental to, the performance of the Work under this Contract by the Contractor, its Subcontractors, vendors, or suppliers, except to the extent caused by the sole negligence, active negligence, or willful misconduct of the Indemnitees, and/or to any extent that would render these provisions void or unenforceable. This agreement and obligation of the Contractor shall not be construed to negate, abridge, or otherwise reduce any right or obligation of indemnity that would otherwise exist as to any party or person described herein. This indemnification, defense, and hold harmless obligation includes any failure or alleged failure by Contractor to comply with any provision of law, any failure or alleged failure to timely and properly fulfill all of its obligations under the Contract Documents in strict accordance with their terms, and without limitation, any stop payment notice actions or liens, including Civil Wage and Penalty Assessments and/or Orders by the California Department of Industrial Relations.

14.2.2. The Contractor shall give prompt notice to the District in the event of any injury (including death), loss, or damage included herein. Without limitation of the provisions herein, if the Contractor's agreement to indemnify, defend, and hold harmless the Indemnitees as provided herein shall be determined to be void or unenforceable, in whole or in part, it is the intention of the parties that these circumstances shall not otherwise affect the validity or enforceability of the Contractor's agreement to indemnify, defend, and hold harmless the rest of the Indemnitees, as provided herein. Further, the Contractor shall be and remain fully liable on its agreements and obligations herein to the full extent permitted by law.

14.2.3. In any and all claims against any of the Indemnitees by any employee of the Contractor, any Subcontractor, anyone directly or indirectly employed by any of them or anyone for whose acts any of them may be liable, the Contractor's indemnification obligation herein shall not be limited in any way by any limitation on the amount or type of damages, compensation, or benefits payable by or for the Contractor or any Subcontractor under workers' compensation acts, disability benefit acts, or other employee benefit acts.

14.2.4. The District may retain so much of the moneys due the Contractor as shall be considered necessary, until disposition of any such suit, claims or actions for damages or until the District, Architect and Construction Manager have received written agreement from the Contractor that they will unconditionally defend the District, Architect and Construction Manager, their officers, agents and employees, and pay any damages due by reason of settlement or judgment.

14.2.5. The defense and indemnification obligations hereunder shall survive the completion of Work, including the warranty/guarantee period, and/or the termination of the Agreement.

15. TIME

15.1. Notice to Proceed

15.1.1. District may issue a Notice to Proceed within three (3) months from the date of the Notice of Award. Once Contractor has received the Notice to Proceed, Contractor shall complete the Work within the period of time indicated in the Contract Documents.

15.1.2. In the event that the District desires to postpone issuing the Notice to Proceed beyond this 3-month period, it is expressly understood that with reasonable notice to the Contractor, the District may postpone issuing the Notice to Proceed. It is further expressly understood by Contractor that Contractor shall not be entitled to any claim of additional compensation as a result of the postponement of the issuance of the Notice to Proceed.

15.1.3. If the Contractor believes that a postponement of issuance of the Notice to Proceed will cause a hardship to Contractor, Contractor may terminate the Contract. Contractor's termination due to a postponement shall be by written notice to District within ten (10) days after receipt by Contractor of District's notice of postponement. It is further understood by Contractor that in the event that Contractor terminates the Contract as a result of postponement by the District, the District shall only be obligated to pay Contractor for the Work that Contractor had performed at the time of notification of postponement. Should Contractor terminate the Contract as a result of a notice of postponement, District shall have the authority to award the Contract to the next lowest responsive responsible bidder.

15.2. Computation of Time / Adverse Weather

15.2.1. The Contractor will only be allowed a time extension for Adverse Weather conditions if requested by Contractor and only if all of the following conditions are met:

15.2.1.1. The weather conditions constitute Adverse Weather, as defined herein and further specified in the Special Conditions;

15.2.1.2. Contractor can verify that the Adverse Weather caused delays in excess of five hours of the indicated labor required to complete the scheduled tasks of Work on the day affected by the Adverse Weather;

15.2.1.3. The Contractor's crew is dismissed as a result of the Adverse Weather;

15.2.1.4. Said delay adversely affects the critical path in the Construction Schedule; and

15.2.1.5. The number of days of delay for the month exceeds those indicated in the Special Conditions.

15.2.2. If the aforementioned conditions are met, a day-for-day extension will only be allowed for those days in excess of those indicated in the Special Conditions.

15.2.3. The Contractor shall work seven (7) days per week, if necessary, irrespective of inclement weather, to maintain access and the Construction Schedule, and to protect the Work under construction from the effects of Adverse Weather, all at no further cost to the District.

15.2.4. The Contract Time has been determined with consideration given to the average climate weather conditions prevailing in the County in which the Project is located.

15.3. Hours of Work

15.3.1. Sufficient Forces

Contractor and Subcontractors shall continuously furnish sufficient forces to ensure the prosecution of the Work in accordance with the Construction Schedule.

15.3.2. Performance During Working Hours

Work shall be performed during regular working hours as permitted by the appropriate governmental agency except that in the event of an emergency, or when required to complete the Work in accordance with job progress, Work may be performed outside of regular working hours with the advance written consent of the District and approval of any required governmental agencies.

15.4. Progress and Completion

15.4.1. Time of the Essence

Time limits stated in the Contract Documents are of the essence to the Contract. By executing the Agreement, the Contractor confirms that the Contract Time is a reasonable period for performing the Work.

15.4.2. No Commencement Without Insurance or Bonds

The Contractor shall not commence operations on the Project or elsewhere prior to the effective date of insurance and bonds. The date of commencement of the Work shall not be changed by the effective date of such insurance or bonds. If Contractor commences Work without insurance and bonds, all Work is performed at Contractor's peril and shall not be compensable until and unless Contractor secures bonds and insurance pursuant to the terms of the Contract Documents and subject to District claim for damages.

15.5. Schedule

Contractor shall provide to District, Construction Manager, and Architect a schedule in conformance with the Contract Documents and as required in the Notice to Proceed and the Contractor's Submittals and Schedules section of these General Conditions.

15.6. Expeditious Completion

The Contractor shall proceed expeditiously with adequate forces and shall achieve Completion within the Contract Time.

16. EXTENSIONS OF TIME – LIQUIDATED DAMAGES

16.1. Liquidated Damages

Contractor and District hereby agree that the exact amount of damages for failure to complete the Work within the time specified is extremely difficult or impossible to determine. If the Work is not completed within the time specified in the Contract Documents, it is understood that the District will suffer damage. It being impractical and unfeasible to determine the amount of actual damage, it is agreed the Contractor shall pay to District as fixed and liquidated damages, and not as a penalty, the amount set forth in the Agreement for each calendar day of delay in completion. Contractor and its Surety shall be liable for the amount thereof pursuant to Government Code section 53069.85.

16.2. Excusable Delay

16.2.1. Contractor shall not be charged for liquidated damages because of any delays in completion of Work which are not the fault of Contractor or its Subcontractors, including acts of God as defined in Public Contract Code section 7105, acts of enemy, epidemics, and quarantine restrictions. Contractor shall, within five (5) calendar days of beginning of any delay, notify District in writing of causes of delay including documentation and facts explaining the delay. District shall review the facts and extent of any delay and shall grant extension(s) of time for completing Work when, in its judgment, the findings of fact justify an extension. Extension(s) of time shall apply only to that portion of Work affected by delay, and shall not apply to other portions of Work not so affected. An extension of time may only be granted if Contractor has timely submitted the Construction Schedule as required herein.

16.2.2. Contractor shall notify the District pursuant to the claims provisions in these General Conditions of any anticipated delay and its cause. Following submission of a claim, the District may determine whether the delay is to be considered avoidable or unavoidable, how long it continues, and to what extent the prosecution and completion of the Work might be delayed thereby.

16.2.3. In the event the Contractor requests an extension of Contract Time for unavoidable delay, such request shall be submitted in accordance with the provisions in the Contract Documents governing changes in Work. When requesting time, requests must be submitted with full justification and documentation. If the Contractor fails to submit justification, it waives its right to a time extension at a later date. Such justification must be based on the official Construction Schedule as updated at the time of occurrence of the delay or execution of Work related to any changes to the Scope of Work. Any claim for delay must include the following information as support, without limitation:

16.2.3.1. The duration of the activity relating to the changes in the Work and the resources (manpower, equipment, material, etc.) required to perform the activities within the stated duration.

16.2.3.2. Specific logical ties to the Contract Schedule for the proposed changes and/or delay showing the activity/activities in the Construction Schedule

that are affected by the change and/or delay. (A portion of any delay of seven (7) days or more must be provided.)

16.2.3.3. A recovery schedule must be submitted within twenty (20) calendar days of written notification to the District of causes of delay.

16.3. No Additional Compensation for Delays Within Contractor's Control

16.3.1. Contractor is aware that governmental agencies, including, without limitation, the Division of the State Architect, the Department of General Services, gas companies, electrical utility companies, water districts, and other agencies may have to approve Contractor-prepared drawings or approve a proposed installation. Accordingly, Contractor shall include in its bid, time for possible review of its drawings and for reasonable delays and damages that may be caused by such agencies. Thus, Contractor is not entitled to make a claim for damages or delays arising from the review of Contractor's drawings.

16.3.2. Contractor shall only be entitled to compensation for delay when all of the following conditions are met:

16.3.2.1. The District is responsible for the delay;

16.3.2.2. The delay is unreasonable under the circumstances involved;

16.3.2.3. The delay was not within the contemplation of the District and Contractor; and

16.3.2.4. Contractor complies with the claims procedure of the Contract Documents.

16.4. Float or Slack in the Schedule

Float or slack is the amount of time between the early start date and the late start date, or the early finish date and the late finish date, of any of the activities in the schedule. Float or slack is not for the exclusive use of or benefit of either the District or the Contractor, but its use shall be determined solely by the District.

17. CHANGES IN THE WORK

17.1. No Changes Without Authorization

17.1.1. There shall be no change whatsoever in the Drawings, Specifications, or in the Work without an executed Change Order or a written Construction Change Directive authorized by the District as herein provided. District shall not be liable for the cost of any extra work or any substitutions, changes, additions, omissions, or deviations from the Drawings and Specifications unless the District's governing board has authorized the same and the cost thereof has been approved in writing by Change Order or Construction Change Directive. No extension of time for performance of the Work shall be allowed hereunder unless claim for such extension is made at the time changes in the Work are ordered, and such time duly adjusted in writing in the Change Order or Construction Change Directive. Contractor shall be responsible for any costs incurred by the District for professional services and DSA

fees and/or delay to the Project Schedule, if any, for DSA to review any request for changes to the DSA approved plans and specifications for the convenience of the Contractor and/or to accommodate the Contractor's means and methods. The provisions of the Contract Documents shall apply to all such changes, additions, and omissions with the same effect as if originally embodied in the Drawings and Specifications.

17.1.2. Contractor shall perform immediately all work that has been authorized by a fully executed Change Order or Construction Change Directive. Contractor shall be fully responsible for any and all delays and/or expenses caused by Contractor's failure to expeditiously perform this Work.

17.1.3. Should any Change Order result in an increase in the Contract Price, the cost of that Change Order shall be agreed to, in writing, in advance by Contractor and District and be subject to the monetary limitations set forth in Public Contract Code section 20118.4. In the event that Contractor proceeds with any change in Work without a Change Order executed by the District or Construction Change Directive, Contractor waives any claim of additional compensation or time for that additional work.

17.1.4. Contractor understands, acknowledges, and agrees that the reason for District authorization is so that District may have an opportunity to analyze the Work and decide whether the District shall proceed with the Change Order or alter the Project so that a change in Work becomes unnecessary.

17.2. Architect Authority

The Architect will have authority to order minor changes in the Work not involving any adjustment in the Contract Price, or an extension of the Contract Time, or a change that is inconsistent with the intent of the Contract Documents. These changes shall be effected by written Change Order, Construction Change Directive, or by Architect's response(s) to RFI(s)) by Architect's Supplemental Instructions ("ASI").

17.3. Change Orders

17.3.1. A Change Order is a written instrument prepared and issued by the District and/or the Architect and signed by the District (as authorized by the District's Board of Trustees), the Contractor, the Architect, and approved by the Project Inspector (if necessary) and DSA (if necessary), stating their agreement regarding all of the following:

17.3.1.1. A description of a change in the Work;

17.3.1.2. The amount of the adjustment in the Contract Price, if any; and

17.3.1.3. The extent of the adjustment in the Contract Time, if any.

17.4. Construction Change Directives

17.4.1. A Construction Change Directive is a written order prepared and issued by the District, the Construction Manager, and/or the Architect and signed by the

District and the Architect, directing a change in the Work. The District may as provided by law, by Construction Change Directive and without invalidating the Contract, order changes in the Work consisting of additions, deletions, or other revisions. The adjustment to the Contract Price or Time, if any, is subject to the provisions of this section regarding Changes in the Work. If all or a portion of the Project is being funded by funds requiring approval by the State Allocation Board (SAB), these revisions may be subject to compensation once approval of same is received and funded by the SAB, and funds are released by the Office of Public School Construction (OPSC). Any dispute as to the adjustment in the Contract Price, if any, of the Construction Change Directive or timing of payment shall be resolved pursuant to the Payment and Claims and Disputes provisions herein.

17.4.2. The District may issue a Construction Change Directive in the absence of agreement on the terms of a Change Order.

17.5. Force Account Directives

17.5.1. When work, for which a definite price has not been agreed upon in advance, is to be paid for on a force account basis, all direct costs necessarily incurred and paid by the Contractor for labor, material, and equipment used in the performance of that Work, shall be subject to the approval of the District and compensation will be determined as set forth herein.

17.5.2. The District will issue a Force Account Directive to proceed with the Work on a force account basis, and a not-to-exceed budget will be established by the District.

17.5.3. All requirements regarding direct cost for labor, labor burden, material, equipment, and markups on direct costs for overhead and profit described in this section shall apply to Force Account Directives. However, the District will only pay for actual costs verified in the field by the District or its authorized representative(s) on a daily basis.

17.5.4. The Contractor shall be responsible for all cost related to the administration of Force Account Directive. The markup for overhead and profit for Contractor modifications shall be full compensation to the Contractor to administer Force Account Directive.

17.5.5. The Contractor shall notify the District or its authorized representative(s) at least twenty-four (24) hours prior to proceeding with any of the force account work. Furthermore, the Contractor shall notify the District when it has consumed eighty percent (80%) of the budget, and shall not exceed the budget unless specifically authorized in writing by the District. The Contractor will not be compensated for force account work in the event that the Contractor fails to timely notify the District regarding the commencement of force account work, or exceeding the force account budget.

17.5.6. The Contractor shall diligently proceed with the work, and on a daily basis, submit a daily force account report on a form supplied by the District no later than 5:00 p.m. each day. The report shall contain a detailed itemization of the daily labor, material, and equipment used on the force account work only. The names of the individuals performing the force account work shall be included on the daily force

account reports. The type and model of equipment shall be identified and listed. The District will review the information contained in the reports, and sign the reports no later than the next work day, and return a copy of the report to the Contractor for their records. The District will not sign, nor will the Contractor receive compensation for work the District cannot verify. The Contractor will provide a weekly force account summary indicating the status of each Force Account Directive in terms of percent complete of the not-to-exceed budget and the estimated percent complete of the work

17.5.7. In the event the Contractor and the District reach a written agreement on a set cost for the work while the work is proceeding based on a Force Account Directive, the Contractor's signed daily force account reports shall be discontinued and all previously signed reports shall be invalid.

17.6. Price Request

17.6.1. Definition of Price Request

A Price Request ("PR") is a written request prepared by the Architect requesting the Contractor to submit to the District and the Architect an estimate of the effect of a proposed change in the Work on the Contract Price and the Contract Time.

17.6.2. Scope of Price Request

A Price Request shall contain adequate information, including any necessary Drawings and Specifications, to enable Contractor to provide the cost breakdowns required herein. The Contractor shall not be entitled to any additional compensation for preparing a response to a Price Request, whether ultimately accepted or not.

17.7. Proposed Change Order

17.7.1. Definition of Proposed Change Order

A Proposed Change Order ("PCO") is a written request prepared by the Contractor requesting that the District and the Architect issue a Change Order based upon a proposed change to the Work.

17.7.2. Changes in Contract Price

A PCO shall include breakdowns pursuant to the revisions herein to validate any change in Contract Price. In no case shall Contractor or any of its Subcontractors be permitted to reserve rights for additional compensation for Change Order Work.

17.7.3. Changes in Time

A PCO shall also include any changes in time required to complete the Project. Any additional time requested shall not be the number of days to make the proposed change, but must be based upon the impact to the Construction Schedule as defined in the Contract Documents. If Contractor fails to request a time extension in a PCO, then the Contractor is thereafter precluded from requesting time and/or claiming a delay. In no case shall Contractor or any of its Subcontractors be permitted to reserve rights for additional time for Change Order Work.

17.7.4. Unknown and/or Unforeseen Conditions

If Contractor submits a PCO requesting an increase in Contract Price and/or Contract Time that is based at least partially on Contractor's assertion that Contractor has encountered unknown and/or unforeseen condition(s) on the Project, then Contractor shall base the PCO on provable information that, beyond a reasonable doubt and to the District's satisfaction, demonstrates that the unknown and/or unforeseen condition(s) were actually unknown and/or unforeseen and that the condition(s) were reasonably unknown and/or unforeseen. If not, the District shall deny the PCO and the Contractor shall complete the Project without any increase in Contract Price and/or Contract Time based on that PCO.

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17.8. Format for Proposed Change Order

17.8.1. The following format shall be used as applicable by the District and the Contractor (e.g. Change Orders, PCO's) to communicate proposed additions and deductions to the Contract, supported by attached documentation. Any spaces left blank will be deemed no change to cost or time.

	<u>WORK PERFORMED OTHER THAN BY CONTRACTOR</u>	<u>ADD</u>	<u>DEDUCT</u>
(a)	<u>Material</u> (attach itemized quantity and unit cost plus sales tax)		
(b)	<u>Add Labor</u> (attach itemized hours and rates, fully encumbered)		
(c)	<u>Add Equipment</u> (attach suppliers' invoice)		
(d)	<u>Subtotal</u>		
(e)	<u>Add overhead and profit for any and all tiers of Subcontractor</u> , the total not to exceed ten percent (10%) of Item (d)		
(f)	<u>Subtotal</u>		
(g)	<u>Add overhead and profit for Contractor</u> , not to exceed five percent (5%) of Item (f)		
(h)	<u>Subtotal</u>		
(i)	<u>Add Bond and Insurance</u> , not to exceed one and a half percent (1.5%) of Item (h)		
(j)	<u>TOTAL</u>		
(k)	<u>Time</u> (zero unless indicated)		____ Calendar Days

	<u>WORK PERFORMED BY CONTRACTOR</u>	<u>ADD</u>	<u>DEDUCT</u>
(a)	<u>Material</u> (attach itemized quantity and unit cost plus sales tax)		
(b)	<u>Add Labor</u> (attach itemized hours and rates, fully encumbered)		
(c)	<u>Add Equipment</u> (attach suppliers' invoice)		
(d)	<u>Subtotal</u>		
(e)	<u>Add overhead and profit for Contractor</u> , not to exceed fifteen percent (15%) of Item (d)		
(f)	<u>Subtotal</u>		
(g)	<u>Add Bond and Insurance</u> , not to exceed one and a half percent (1.5%) of Item (f)		
(h)	<u>TOTAL</u>		
(i)	<u>Time</u> (zero unless indicated)		____ Calendar Days

	<u>WORK PERFORMED OTHER THAN BY CONTRACTOR</u>	<u>ADD</u>	<u>DEDUCT</u>
(a)	<u>Material</u> (attach itemized quantity and unit cost plus sales tax)		

(b)	Add Labor (attach itemized hours and rates, fully encumbered)		
(c)	Add Equipment (attach suppliers' invoice)		
(d)	Subtotal		
(e)	Add overhead and profit for any and all tiers of Subcontractor , the total not to exceed ten percent (10%) of Item (d)		
(f)	Subtotal		
(g)	Add overhead and profit for Contractor , not to exceed five percent (5%) of Item (f)		
(h)	Subtotal		
(i)	Add Bond and Insurance , not to exceed one and a half percent (1.5%) of Item (h)		
(j)	TOTAL		
(k)	Time (zero unless indicated)		____ Calendar Days

	WORK PERFORMED BY CONTRACTOR	ADD	DEDUCT
(a)	Material (attach itemized quantity and unit cost plus sales tax)		
(b)	Add Labor (attach itemized hours and rates, fully encumbered)		
(c)	Add Equipment (attach suppliers' invoice)		
(d)	Subtotal		
(e)	Add overhead and profit for Contractor , not to exceed fifteen percent (15%) of Item (d)		
(f)	Subtotal		
(g)	Add Bond and Insurance , not to exceed one and a half percent (1.5%) of Item (f)		
(h)	TOTAL		
(i)	Time (zero unless indicated)		____ Calendar Days

17.8.2. Labor. Contractor shall be compensated for the costs of labor actually and directly utilized in the performance of the Work. Such labor costs shall be limited to field labor for which there is a prevailing wage rate classification. Wage rates for labor shall not exceed the prevailing wage rates in the locality of the Site and shall be in the labor classification(s) necessary for the performance of the Work. Labor costs shall exclude costs incurred by the Contractor in preparing estimate(s) of the costs of the change in the Work, in the maintenance of records relating to the costs of the change in the Work, coordination and assembly of materials and information relating to the change in the Work or performance thereof, or the supervision and other overhead and general conditions costs associated with the change in the Work or performance thereof, including but not limited to the cost for the job superintendent.

17.8.3. Materials. Contractor shall be compensated for the costs of materials necessarily and actually used or consumed in connection with the performance of the change in the Work. Costs of materials may include reasonable costs of transportation from a source closest to the Site of the Work and delivery to the Site. If discounts by material suppliers are available for materials necessarily used in the performance of the change in the Work, they shall be credited to the District. If materials necessarily used in the performance of the change in the Work are obtained from a supplier or source owned in whole or in part by the Contractor, compensation therefor shall not exceed the current wholesale price for such materials. If, in the reasonable opinion of the District, the costs asserted by the Contractor for materials in connection with any change in the Work are excessive, or if the Contractor fails to provide satisfactory evidence of the actual costs of such materials from its supplier or vendor of the same, the costs of such materials and the District's obligation to pay for the same shall be limited to the then lowest wholesale price at which similar materials are available in the quantities required to perform the change in the Work. The District may elect to furnish materials for the change in the Work, in which event the Contractor shall not be compensated for the costs of furnishing such materials or any mark-up thereon.

17.8.4. Equipment. As a precondition for the District's duty to pay for Equipment rental or loading and transportation, Contractor shall provide satisfactory evidence of the actual costs of Equipment from the supplier, vendor or rental agency of same. Contractor shall be compensated for the actual cost of the necessary and direct use of Equipment in the performance of the change in the Work. Use of such Equipment in the performance of the change in the Work shall be compensated in increments of fifteen (15) minutes. Rental time for Equipment moved by its own power shall include time required to move such Equipment to the site of the Work from the nearest available rental source of the same. If Equipment is not moved to the Site by its own power, Contractor will be compensated for the loading and transportation costs in lieu of rental time. The foregoing notwithstanding, neither moving time or loading and transportation time shall be allowed if the Equipment is used for performance of any portion of the Work other than the change in the Work. Unless prior approval in writing is obtained by the Contractor from the Architect, the Project Inspector and the District, no costs or compensation shall be allowed for time while Construction Equipment is inoperative, idle or on standby, for any reason. Contractor shall not be entitled to an allowance or any other compensation for Equipment or tools used in the performance of change in the Work where such Equipment or tools have a replacement value of **\$500.00** or less. Equipment costs claimed by the Contractor in connection with the performance of any Work shall not exceed rental rates established by distributors or construction equipment rental agencies in the locality of the Site; any costs asserted which exceed such rental rates shall not be allowed or paid. Unless otherwise specifically approved in writing by the Architect, the Project Inspector and the District, the allowable rate for the use of Equipment in connection with the Work shall constitute full compensation to the Contractor for the cost of rental, fuel, power, oil, lubrication, supplies, necessary attachments, repairs or maintenance of any kind, depreciation, storage, insurance, labor (exclusive of labor costs of the Equipment operator), and any and all other costs incurred by the Contractor incidental to the use of such Equipment.

17.9. Change Order Certification

17.9.1. All Change Orders and PCOs must include the following certification by the Contractor:

17.9.1.1. The undersigned Contractor approves the foregoing as to the changes, if any, and the Contract Price specified for each item and as to the extension of time allowed, if any, for completion of the entire Work as stated herein, and agrees to furnish all labor, materials, and service, and perform all work necessary to complete any additional work specified for the consideration stated herein. Submission of sums which have no basis in fact or which Contractor knows are false are at the sole risk of Contractor and may be a violation of the False Claims Act set forth under Government Code section 12650 et seq. It is understood that the changes herein to the Contract shall only be effective when approved by the governing board of the District.

17.9.1.2. It is expressly understood that the value of the extra Work or changes expressly includes any and all of the Contractor's costs and expenses, direct and indirect, resulting from additional time required on the Project or resulting from delay to the Project. Any costs, expenses, damages, or time extensions not included are deemed waived.

17.10. Determination of Change Order Cost

17.10.1. The amount of the increase or decrease in the Contract Price from a Change Order, if any, shall be determined in one or more of the following ways as applicable to a specific situation and at the District's discretion:

17.10.1.1. District acceptance of a PCO;

17.10.1.2. By unit prices contained in Contractor's original bid;

17.10.1.3. By agreement between District and Contractor.

17.11. Deductive Change Orders

All deductive Change Order(s) must be prepared pursuant to the provisions herein. Where a portion of the Work is deleted from the Contract, the reasonable value of the deducted work less the value of work performed shall be considered the appropriate deduction. The value submitted on the Schedule of Values shall be used to calculate the credit amount unless the bid documentation is being held in escrow as part of the Contract Documents. If Contractor offers a proposed amount for a deductive Change Order(s), Contractor shall include a minimum of five percent (5%) total profit and overhead to be deducted with the amount of the work of the Change Order(s). If Subcontractor work is involved, Subcontractors shall also include a minimum of five percent (5%) profit and overhead to be deducted with the amount of its deducted work. Any deviation from this provision shall not be allowed.

17.12. Addition or Deletion of Alternate Bid Item(s)

If the Bid Form and Proposal includes proposal(s) for Alternate Bid Item(s), during Contractor's performance of the Work, the District may elect to add or delete any such Alternate Bid Item(s) if not included in the Contract at the time of award. If the District elects to add or delete Alternate Bid Item(s) after Contract award, the cost or credit for such Alternate Bid Item(s) shall be as set forth in the Bid Form and Proposal unless the parties agree to a different price and the Contract Time shall be adjusted by the number of days allocated in the Contract Documents. If days are not allocated in the Contract Documents, the Contract Time shall be equitably adjusted.

17.13. Discounts, Rebates, and Refunds

For purposes of determining the cost, if any, of any change, addition, or omission to the Work hereunder, all trade discounts, rebates, refunds, and all returns from the sale of surplus materials and equipment shall accrue and be credited to the Contractor, and the Contractor shall make provisions so that such discounts, rebates, refunds, and returns may be secured, and the amount thereof shall be allowed as a reduction of the Contractor's cost in determining the actual cost of construction for purposes of any change, addition, or omission in the Work as provided herein.

17.14. Accounting Records

With respect to portions of the Work performed by Change Orders and Construction Change Directives, the Contractor shall keep and maintain cost-accounting records satisfactory to the District, which shall be available to the District on the same terms as any other books and records the Contractor is required to maintain under the Contract Documents. Such records shall include without limitation hourly records for Labor and Equipment and itemized records of materials and Equipment used that day in connection with the performance of any Work. All records maintained hereunder shall be subject to inspection, review and/or reproduction by the District, the Architect or the Project Inspector upon request. In the event that the Contractor fails or refuses, for any reason, to maintain or make available for inspection, review and/or reproduction such records, the District's reasonable good faith determination of the extent of adjustment to the Contract Price shall be final, conclusive, dispositive and binding upon Contractor.

17.15. Notice Required

If the Contractor desires to make a claim for an increase in the Contract Price, or any extension in the Contract Time for completion, it shall notify the District pursuant to the provisions herein, including the Article on Claims and Disputes. No claim shall be considered unless made in accordance with this subparagraph. Contractor shall proceed to execute the Work even though the adjustment may not have been agreed upon. Any change in the Contract Price or extension of the Contract Time resulting from such claim shall be authorized by a Change Order.

17.16. Applicability to Subcontractors

Any requirements under this Article shall be equally applicable to Change Orders or Construction Change Directives issued to Subcontractors by the Contractor to the extent as required by the Contract Documents.

17.17. Alteration to Change Order Language

Contractor shall not alter Change Orders or reserve time in Change Orders. Contractor shall execute finalized Change Orders and proceed under the provisions herein with proper notice.

17.18. Failure of Contractor to Execute Change Order

Contractor shall be in default of the Contract if Contractor fails to execute a Change Order when the Contractor agrees with the addition and/or deletion of the Work in that Change Order.

18. REQUEST FOR INFORMATION

18.1. Any Request for Information shall reference all applicable Contract Document(s), including Specification section(s), detail(s), page number(s), drawing number(s), and sheet number(s), etc. The Contractor shall make suggestions and interpretations of the issue raised by each Request for Information. A Request for Information cannot modify the Contract Price, Contract Time, or the Contract Documents. Upon request by the District, Contractor shall provide an electronic copy of the Request for Information in addition to the hard copy.

18.2. The Contractor shall be responsible for any costs incurred for professional services that District may deduct from any amounts owing to the Contractor, if a Request for Information requests an interpretation or decision of a matter where the information sought is equally available to the party making the request. District, at its sole discretion, shall deduct from and/or invoice Contractor for all the professional services arising herein.

19. PAYMENTS

19.1. Contract Price

The Contract Price is stated in the Agreement and, including authorized adjustments, is the total amount payable by the District to the Contractor for performance of the Work under the Contract Documents.

19.2. Applications for Progress Payments

19.2.1. Procedure for Applications for Progress Payments

19.2.1.1. Application for Progress Payment

19.2.1.1.1. Not before the fifth (5th) day of each calendar month during the progress of the Work, Contractor shall submit to the District and the Architect an itemized Application for Payment for operations completed in accordance with the Schedule of Values. Such application shall be notarized, if required, and supported by the following or each portion thereof unless waived by the District in writing:

19.2.1.1.1.1. The amount paid to the date of the Application to the Contractor, to all its Subcontractors, and all others furnishing labor, material, or equipment for its Contract;

- 19.2.1.1.1.2.** The amount being requested under the Application for Payment by the Contractor on its own behalf and separately stating the amount requested on behalf of each of the Subcontractors and all others furnishing labor, material, and equipment under the Contract;
- 19.2.1.1.1.3.** The balance that will be due to each of such entities after said payment is made;
- 19.2.1.1.1.4.** A certification that the As-Built Drawings and annotated Specifications are current;
- 19.2.1.1.1.5.** Itemized breakdown of work done for the purpose of requesting partial payment;
- 19.2.1.1.1.6.** An updated and acceptable construction schedule in conformance with the provisions herein;
- 19.2.1.1.1.7.** The additions to and subtractions from the Contract Price and Contract Time;
- 19.2.1.1.1.8.** A total of the retentions held;
- 19.2.1.1.1.9.** Material invoices, evidence of equipment purchases, rentals, and other support and details of cost as the District may require from time to time;
- 19.2.1.1.1.10.** The percentage of completion of the Contractor's Work by line item;
- 19.2.1.1.1.11.** Schedule of Values updated from the preceding Application for Payment;
- 19.2.1.1.1.12.** A duly completed and executed conditional waiver and release upon progress payment compliant with Civil Code section 8132 from the Contractor and each subcontractor of any tier and supplier to be paid from the current progress payment;
- 19.2.1.1.1.13.** A duly completed and executed unconditional waiver and release upon progress payment compliant with Civil Code section 8134 from the Contractor and each subcontractor of any tier and supplier that was paid from the previous progress payment(s); and
- 19.2.1.1.1.14.** A certification by the Contractor of the following:

The Contractor warrants title to all Work performed as of the date of this payment application has been completed in accordance with the Contract Documents for the Project. The Contractor further warrants that all amounts have been paid for work which previous Certificates for Payment were issued and payments received and all Work performed as of the date of this payment application is free and clear of liens, claims, security interests, or encumbrances in favor of the

Contractor, Subcontractors, material and equipment suppliers, workers, or other persons or entities making a claim by reason of having provided labor, materials, and equipment relating to the Work, except those of which the District has been informed.

19.2.1.1.1.15. The Contractor shall be subject to the False Claims Act set forth in Government Code section 12650 et seq. for information provided with any Application for Progress Payment.

19.2.1.1.1.16. All remaining certified payroll records ("CPR(s)") for each journeyman, apprentice, worker, or other employee employed by the Contractor and/or each Subcontractor in connection with the Work for the period of the Application for Payment. As indicated herein, the District shall not make any payment to Contractor until:

19.2.1.1.1.16.1 Contractor and/or its Subcontractor(s) provide electronic CPRs weekly for all weeks any journeyman, apprentice, worker or other employee was employed in connection with the Work directly to the DIR, or within ten (10) days of any request by the District or the DIR, and

19.2.1.1.1.16.2 Any delay in Contractor and/or its Subcontractor(s) providing CPRs in a timely manner may directly delay the Contractor's payment.

19.2.2. Prerequisites for Progress Payments

19.2.2.1. First Payment Request: The following items, if applicable, must be completed before the District will accept and/or process the Contractor's first payment request:

19.2.2.1.1. Installation of the Project sign;

19.2.2.1.2. Installation of field office;

19.2.2.1.3. Installation of temporary facilities and fencing;

19.2.2.1.4. Schedule of Values;

19.2.2.1.5. Contractor's Construction Schedule;

19.2.2.1.6. Schedule of unit prices, if applicable;

19.2.2.1.7. Submittal Schedule;

19.2.2.1.8. Receipt by Architect of all submittals due as of the date of the payment application;

19.2.2.1.9. Copies of necessary permits;

19.2.2.1.10. Copies of authorizations and licenses from governing authorities;

19.2.2.1.11. Initial progress report;

19.2.2.1.12. Surveyor qualifications;

19.2.2.1.13. Written acceptance of District's survey of rough grading, if applicable;

19.2.2.1.14. List of all Subcontractors, with names, license numbers, telephone numbers, and Scope of Work;

19.2.2.1.15. All bonds and insurance endorsements; and

19.2.2.1.16. Resumes of Contractor's project manager, and if applicable, job site secretary, record documents recorder, and job site superintendent.

19.2.2.2. Second Payment Request The District will not process the second payment request until and unless all submittals and Shop Drawings have been accepted for review by the Architect.

19.2.2.3. No Waiver of Criteria Any payments made to Contractor where criteria set forth herein have not been met shall not constitute a waiver of said criteria by District. Instead, such payment shall be construed as a good faith effort by District to resolve differences so Contractor may pay its Subcontractors and suppliers. Contractor agrees that failure to submit such items may constitute a breach of contract by Contractor and may subject Contractor to termination.

19.3. Progress Payments

19.3.1. District's Approval of Application for Payment

19.3.1.1. Upon receipt of a Application for Payment, The District shall act in accordance with both of the following:

19.3.1.1.1. Each Application for Payment shall be reviewed by the District as soon as practicable after receipt for the purpose of determining that the Application for Payment is a proper Application for Payment.

19.3.1.1.2. Any Application for Payment determined not to be a proper Application for Payment suitable for payment shall be returned to the Contractor as soon as practicable, but not later than seven (7) days, after receipt. An Application for Payment returned pursuant to this paragraph shall be accompanied by a document setting forth in writing the reasons why the Application for Payment is not proper. The number of days available to the District to make a payment without incurring interest pursuant to this section shall be reduced by the number of days by which the District exceeds this seven-day return requirement.

19.3.1.1.3. An Application for Payment shall be considered properly executed if funds are available for payment of the Application for Payment, and payment is not delayed due to an audit inquiry by the financial officer of the District.

19.3.1.2. The District's review of the Contractor's Application for Payment will be based on the District's and the Architect's observations at the Site and the data comprising the Application for Payment that the Work has progressed to the point indicated and that, to the best of the District's and the Architect's knowledge, information, and belief, the quality of the Work is in accordance with the Contract Documents. The foregoing representations are subject to:

19.3.1.2.1. Observation of the Work for general conformance with the Contract Documents,

19.3.1.2.2. Results of subsequent tests and inspections,

19.3.1.2.3. Minor deviations from the Contract Documents correctable prior to completion, and

19.3.1.2.4. Specific qualifications expressed by the Architect.

19.3.1.3. District's approval of the certified Application for Payment shall be based on Contractor complying with all requirements for a fully complete and valid certified Application for Payment.

19.3.2. Payments to Contractor

19.3.2.1. Within thirty (30) days after approval of the Application for Payment, Contractor shall be paid a sum equal to ninety-five percent (95%) of the value of the Work performed (as verified by Architect and Inspector and certified by Contractor) up to the last day of the previous month, less the aggregate of previous payments and amount to be withheld. The value of the Work completed shall be Contractor's best estimate. No inaccuracy or error in said estimate shall operate to release the Contractor, or any Surety upon any bond, from damages arising from such Work, or from the District's right to enforce each and every provision of this Contract, and the District shall have the right subsequently to correct any error made in any estimate for payment.

19.3.2.2. The Contractor shall not be entitled to have any payment requests processed, or be entitled to have any payment made for Work performed, so long as any lawful or proper direction given by the District concerning the Work, or any portion thereof, remains incomplete.

19.3.2.3. If the District fails to make any progress payment within thirty (30) days after receipt of an undisputed and properly submitted Application for Payment from the Contractor, the District shall pay interest to the Contractor equivalent to the legal rate set forth in subdivision (a) of Section 685.010 of the Code of Civil Procedure.

19.3.3. No Waiver

No payment by District hereunder shall be interpreted so as to imply that District has inspected, approved, or accepted any part of the Work. Notwithstanding any payment, the District may enforce each and every provision of this Contract. The District may correct or require correction of any error subsequent to any payment.

19.4. Decisions to Withhold Payment

19.4.1. Reasons to Withhold Payment

The District may withhold payment in whole, or in part, to the extent reasonably necessary to protect the District if, in the District's opinion, the representations to the District required herein cannot be made. The District may withhold payment, in whole, or in part, to such extent as may be necessary to protect the District from loss because of, but not limited to:

19.4.1.1. Defective Work not remedied within **FORTY-EIGHT (48)** hours of written notice to Contractor.

19.4.1.2. Stop Payment Notices or other liens served upon the District as a result of the Contract. Contractor agrees that the District may withhold up to 125% of the amount claimed in the Stop Payment Notice to answer the claim and to provide for the District's reasonable cost of any litigation pursuant to the stop payment notice.

19.4.1.3. Liquidated damages assessed against the Contractor.

19.4.1.4. The cost of completion of the Contract if there exists reasonable doubt that the Work can be completed for the unpaid balance of the Contract Price or by the completion date.

19.4.1.5. Damage to the District or other contractor(s).

19.4.1.6. Unsatisfactory prosecution of the Work by the Contractor.

19.4.1.7. Failure to store and properly secure materials.

19.4.1.8. Failure of the Contractor to submit, on a timely basis, proper, sufficient, and acceptable documentation required by the Contract Documents, including, without limitation, a Construction Schedule, Schedule of Submittals, Schedule of Values, Monthly Progress Schedules, Shop Drawings, Product Data and samples, Proposed product lists, executed Change Orders, and/or verified reports.

19.4.1.9. Failure of the Contractor to maintain As-Built Drawings.

19.4.1.10. Erroneous estimates by the Contractor of the value of the Work performed, or other false statements in an Application for Payment.

19.4.1.11. Unauthorized deviations from the Contract Documents.

19.4.1.12. Failure of the Contractor to prosecute the Work in a timely manner in compliance with the Construction Schedule, established progress schedules, and/or completion dates.

19.4.1.13. Failure to provide acceptable electronic certified payroll records, as required by the Labor Code, by these Contract Documents, or by written request; for each journeyman, apprentice, worker, or other employee employed by the Contractor and/or by each Subcontractor in connection with the Work for the period of the Application for Payment or if payroll records are delinquent or inadequate.

19.4.1.14. Failure to properly pay prevailing wages as required in Labor Code section 1720 et seq., failure to comply with any other Labor Code requirements, and/or failure to comply with labor compliance monitoring and enforcement by the DIR.

19.4.1.15. Failure to properly pay prevailing wages as required in Labor Code section 1720 et seq., failure to comply with any other Labor Code requirements, and/or failure to comply with State labor compliance monitoring and enforcement, if applicable.

19.4.1.16. Failure to comply with any applicable federal statutes and regulations regarding minimum wages, withholding, payrolls and basic records, apprentice and trainee employment requirements, equal employment opportunity requirements, Copeland Act requirements, Davis-Bacon Act and related requirements, Contract Work Hours and Safety Standards Act requirements, if applicable.

19.4.1.17. Failure to properly maintain or clean up the Site.

19.4.1.18. Failure to timely indemnify, defend, or hold harmless the District.

19.4.1.19. Any payments due to the District, including but not limited to payments for failed tests, utilities changes, or permits.

19.4.1.20. Failure to pay Subcontractor(s) or supplier(s) as required by law and by the Contract Documents.

19.4.1.21. Failure to pay any royalty, license or similar fees.

19.4.1.22. Contractor is otherwise in breach, default, or in substantial violation of any provision of this Contract.

19.4.1.23. Failure to perform any implementation and/or monitoring required by any SWPPP for the Project and/or the imposition of any penalties or fines therefore whether imposed on the District or Contractor.

19.4.2. Reallocation of Withheld Amounts

19.4.2.1. District may, in its discretion, apply any withheld amount to pay outstanding claims or obligations as defined herein. In so doing, District shall make such payments on behalf of Contractor. If any payment is so made by District, then that amount shall be considered a payment made under Contract by District to Contractor and District shall not be liable to Contractor for any payment made in good faith. These payments may be made without prior judicial determination of claim or obligation. District will render Contractor an accounting of funds disbursed on behalf of Contractor.

19.4.2.2. If Contractor defaults or neglects to carry out the Work in accordance with the Contract Documents or fails to perform any provision thereof, District may, after **FORTY-EIGHT (48)** hours written notice to the Contractor and, without prejudice to any other remedy, make good such deficiencies. The District shall adjust the total Contract Price by reducing the amount thereof by the cost of making good such deficiencies. If District deems it inexpedient to correct Work that is damaged, defective, or not done in accordance with Contract provisions, an equitable reduction in the Contract Price (of at least one hundred fifty percent (150%) of the estimated reasonable value of the nonconforming Work) shall be made therefor.

19.4.3. Payment After Cure

When Contractor removes the grounds for declining approval, payment shall be made for amounts withheld because of them. No interest shall be paid on any retainage or amounts withheld due to the failure of the Contractor to perform in accordance with the terms and conditions of the Contract Documents.

19.5. Subcontractor Payments

19.5.1. Payments to Subcontractors

No later than seven (7) days after receipt, or pursuant to Business and Professions Code section 7108.5 and Public Contract Code section 7107, the Contractor shall pay to each Subcontractor, out of the amount paid to the Contractor on account of such Subcontractor's portion of the Work, the amount to which said Subcontractor is entitled. The Contractor shall, by appropriate agreement with each Subcontractor, require each Subcontractor to make payments to its Sub-subcontractors in a similar manner.

19.5.2. No Obligation of District for Subcontractor Payment

The District shall have no obligation to pay, or to see to the payment of, money to a Subcontractor except as may otherwise be required by law.

19.5.3. Joint Checks

District shall have the right in its sole discretion, if necessary for the protection of the District, to issue joint checks made payable to the Contractor and Subcontractors and/or material or equipment suppliers. The joint check payees shall be responsible for the allocation and disbursement of funds included as part of any such joint payment. In no event shall any joint check payment be construed to create any contract between the District and a Subcontractor of any tier, or a material or equipment supplier, any obligation from the District to such Subcontractor or a material or equipment supplier, or rights in such Subcontractor or a material or equipment supplier against the District.

20. COMPLETION OF THE WORK

20.1. Completion

20.1.1. District will accept completion of Contract and have the Notice of Completion recorded when the entire Work shall have been completed to the satisfaction of District.

20.1.2. The Work may only be accepted as complete by action of the governing board of the District.

20.1.3. District, at its sole option, may accept completion of Contract and have the Notice of Completion recorded when the entire Work shall have been completed to the satisfaction of District, except for minor corrective items, as distinguished from incomplete items. If Contractor fails to complete all minor corrective items within fifteen (15) days after the date of the District's acceptance of completion, District shall withhold from the final payment one hundred fifty percent (150%) of an estimate of the amount sufficient to complete the corrective items, as determined by District, until the item(s) are completed.

20.1.4. At the end of the 15-day period, if there are any items remaining to be corrected, District may elect to proceed as provided herein related to adjustments to Contract Price, and/or District's right to perform the Work of the Contractor.

20.2. Close-Out/Certification Procedures

20.2.1. Punch List

The Contractor shall notify the Architect when Contractor considers the Work complete. Upon notification, Architect will prepare a list of minor items to be completed or corrected ("Punch List"). The Contractor and/or its Subcontractors shall proceed promptly to complete and correct items on the Punch List. Failure to include an item on Punch List does not alter the responsibility of the Contractor to complete all Work in accordance with the Contract Documents.

20.2.2. Close-Out/Certification Requirements

20.2.2.1. Utility Connections

Buildings shall be connected to water, gas, sewer, and electric services, complete and ready for use. Service connections shall be made and existing services reconnected.

20.2.2.2. Record Drawings

20.2.2.2.1. Contractor shall provide exact Record Drawings of the Work upon completion of the Project as indicated in the Specifications.

20.2.2.2.2. Contractor is liable and responsible for any and all inaccuracies in the Record Drawings, even if inaccuracies become evident at a future date.

20.2.2.2.3. Upon completion of the Work and as a condition precedent to approval of final payment, Contractor shall obtain the Inspector's approval of the corrected prints and employ a competent draftsman to transfer the Record Drawings information to the most current version of Autocad that is, at that time, currently utilized for plan check submission by either the District, the Architect, OPSC, and/or DSA, and print a complete set of transparent sepias. When completed, Contractor shall deliver corrected sepias and diskette/CD/other data storage device acceptable to District with Autocad file to the District.

20.2.2.3. Maintenance Manuals: Contractor shall prepare all operation and maintenance manuals and date as indicated in the Specifications.

20.2.2.4. Source Programming: Contractor shall provide all source programming for all items in the Project.

20.2.2.5. Verified Reports: Contractor shall completely and accurately fill out and file forms DSA 6-C or DSA 152 (or current form), as appropriate. Refer to section 4-336 and section 4-343 of Part 1, Title 24 of the California Code of Regulations.

20.3. Final Inspection

20.3.1. Contractor shall comply with Punch List procedures as provided herein, and maintain the presence of a Project Superintendent and Project Manager until the Punch List is complete to ensure proper and timely completion of the Punch List. Under no circumstances shall Contractor demobilize its forces prior to completion of the Punch List. Upon receipt of Contractor's written notice that all of the Punch List items have been fully completed and the Work is ready for final inspection and acceptance, Architect and Project Inspector will inspect the Work and shall submit to Contractor and District a final inspection report noting the Work, if any, required in order to complete in accordance with the Contract Documents. Absent unusual circumstances, this report shall consist of the Punch List items not yet satisfactorily completed.

20.3.2. Upon Contractor's completion of all items on the Punch List and any other uncompleted portions of the Work, the Contractor shall notify the District and Architect, who shall again inspect such Work. If the Architect finds the Work complete and acceptable under the Contract Documents, the Architect will notify

Contractor, who shall then jointly submit to the Architect and the District its final Application for Payment.

20.3.3. Final Inspection Requirements

20.3.3.1. Before calling for final inspection, Contractor shall determine that the following have been performed:

- 20.3.3.1.1.** The Work has been completed.
- 20.3.3.1.2.** All life safety items are completed and in working order.
- 20.3.3.1.3.** Mechanical and electrical Work are complete and tested, fixtures are in place, connected, and ready for tryout.
- 20.3.3.1.4.** Electrical circuits scheduled in panels and disconnect switches labeled.
- 20.3.3.1.5.** Painting and special finishes complete.
- 20.3.3.1.6.** Doors complete with hardware, cleaned of protective film, relieved of sticking or binding, and in working order.
- 20.3.3.1.7.** Tops and bottoms of doors sealed.
- 20.3.3.1.8.** Floors waxed and polished as specified.
- 20.3.3.1.9.** Broken glass replaced and glass cleaned.
- 20.3.3.1.10.** Grounds cleared of Contractor's equipment, raked clean of debris, and trash removed from Site.
- 20.3.3.1.11.** Work cleaned, free of stains, scratches, and other foreign matter, of damaged and broken material replaced.
- 20.3.3.1.12.** Finished and decorative work shall have marks, dirt, and superfluous labels removed.
- 20.3.3.1.13.** Final cleanup, as provided herein.

20.4. Costs of Multiple Inspections

More than two (2) requests of the District to make a final inspection shall be considered an additional service of District, Architect, Construction Manager, and/or Project Inspector, and all subsequent costs will be invoiced to Contractor and if funds are available, withheld from remaining payments.

20.5. Partial Occupancy or Use Prior to Completion

20.5.1. District's Rights to Occupancy

The District may occupy or use any completed or partially completed portion of the Work at any stage, and such occupancy shall not constitute the District's Final Acceptance of any part of the Work. Neither the District's Final Acceptance, the making of Final Payment, any provision in Contract Documents, nor the use or occupancy of the Work, in whole or in part, by District shall constitute acceptance of Work not in accordance with the Contract Documents nor relieve the Contractor or the Contractor's Performance Bond Surety from liability with respect to any warranties or responsibility for faulty or defective Work or materials, equipment and workmanship incorporated therein. In the event that the District occupies or uses any completed or partially completed portion of the Work, the Contractor shall remain responsible for payments, security, maintenance, heat, utilities, damage to the Work, insurance, the period for correction of the Work, and the commencement of warranties required by the Contract Documents unless the Contractor requests in writing, and the District agrees, to otherwise divide those responsibilities. Any dispute as to responsibilities shall be resolved pursuant to the Claims and Disputes provisions herein, with the added provision that during the dispute process, the District shall have the right to occupy or use any portion of the Work that it needs or desires to use.

20.5.2. Inspection Prior to Occupancy or Use

Immediately prior to partial occupancy or use, the District, the Contractor, and the Architect shall jointly inspect the area to be occupied or portion of the Work to be used in order to determine and record the condition of the Work.

20.5.3. No Waiver

Unless otherwise agreed upon, partial or entire occupancy or use of a portion or portions of the Work shall not constitute beneficial occupancy or acceptance of the Work not complying with the requirements of the Contract Documents.

21. FINAL PAYMENT AND RETENTION

21.1. Final Payment

Upon receipt and approval of a valid and final Application for Payment, the Architect will issue a final Certificate of Payment. The District shall thereupon jointly inspect the Work and either accept the Work as complete or notify the Architect and the Contractor in writing of reasons why the Work is not complete. Upon acceptance of the Work of the Contractor as fully complete by the Governing Board of the District (that, absent unusual circumstances, will occur when the Punch List items have been satisfactorily completed), the District shall record a Notice of Completion with the County Recorder, and the Contractor shall, upon receipt of final payment from the District, pay the amount due Subcontractors.

21.2. Prerequisites for Final Payment The following conditions must be fulfilled prior to Final Payment:

21.2.1. A full release of all Stop Payment Notices served in connection with the Work shall be submitted by Contractor.

21.2.2. A duly completed and executed conditional waiver and release upon final payment compliant with Civil Code section 8136, from the Contractor and each subcontractor of any tier and supplier to be paid from the final payment.

21.2.3. A duly completed and executed unconditional waiver and release upon progress payment compliant with Civil Code section 8134, from the Contractor and each subcontractor of any tier and supplier that was paid from the previous progress payments.

21.2.4. A duly completed and executed Document 00880, "AGREEMENT AND RELEASE OF ANY AND ALL CLAIMS" from the Contractor.

21.2.5. The Contractor shall have made all corrections to the Work that are required to remedy any defects therein, to obtain compliance with the Contract Documents or any requirements of applicable codes and ordinances, or to fulfill any of the orders or directions of District required under the Contract Documents.

21.2.6. Each Subcontractor shall have delivered to the Contractor all written guarantees, warranties, applications, and bonds required by the Contract Documents for its portion of the Work.

21.2.7. Contractor must have completed all requirements set forth under "Close-Out/Certification Procedures," including, without limitation, submission of an approved set of complete Record Drawings.

21.2.8. Architect shall have issued its written approval that final payment can be made.

21.2.9. The Contractor shall have delivered to the District all manuals and materials required by the Contract Documents.

21.2.10. The Contractor shall have completed final clean-up as provided herein.

21.3. Retention

21.3.1. The retention, less any amounts disputed by the District or that the District has the right to withhold pursuant to provisions herein, shall be paid:

21.3.1.1. After approval of the District by the Architect's Certificate of Payment,

21.3.1.2. After the satisfaction of the conditions set forth herein, and

21.3.1.3. After forty-five (45) days after the recording of the Notice of Completion by District.

21.3.2. No interest shall be paid on any retention, or on any amounts withheld due to a failure of the Contractor to perform, in accordance with the terms and conditions of the Contract Documents, except as provided to the contrary in any

Escrow Agreement between the District and the Contractor pursuant to Public Contract Code section 22300.

21.4. Substitution of Securities The District will permit the substitution of securities in accordance with the provisions of Public Contract Code section 22300.

22. UNCOVERING OF WORK

If a portion of the Work is covered without Inspector or Architect approval or not in compliance with the Contract Documents, it must, if required in writing by the District, the Project Inspector, or the Architect, be uncovered for the Project Inspector's or the Architect's observation and be replaced at the Contractor's expense without change in the Contract Price or Contract Time.

23. NONCONFORMING WORK AND CORRECTION OF WORK

23.1. Nonconforming Work

23.1.1. Contractor shall promptly remove from Premises all Work identified by District as failing to conform to the Contract Documents whether incorporated or not. Contractor shall promptly replace and re-execute its own Work to comply with the Contract Documents without additional expense to the District and shall bear the expense of making good all work of other contractors destroyed or damaged by any removal or replacement pursuant hereto and/or any delays to the District or other Contractors caused thereby.

23.1.2. If Contractor does not remove Work that District has identified as failing to conform to the Contract Documents within a reasonable time, not to exceed **FORTY-EIGHT (48)** hours, District may remove it and may store any material at Contractor's expense. If Contractor does not pay expense(s) of that removal within ten (10) days' time thereafter, District may, upon ten (10) days' written notice, sell any material at auction or at private sale and shall deduct all costs and expenses incurred by the District and/or District may withhold those amounts from payment(s) to Contractor.

23.2. Correction of Work

23.2.1. Correction of Rejected Work

Pursuant to the notice provisions herein, the Contractor shall immediately correct the Work rejected by the District, the Architect, or the Project Inspector as failing to conform to the requirements of the Contract Documents, whether observed before or after Completion and whether or not fabricated, installed, or completed. The Contractor shall bear costs of correcting the rejected Work, including delay costs, additional testing, inspections, and compensation for the Inspector's or the Architect's services and expenses made necessary thereby.

23.2.2. One-Year Warranty Corrections

If, within one (1) year after the date of Completion of the Work or a designated portion thereof, or after the date for commencement of warranties established hereunder, or by the terms of an applicable special warranty required by the Contract Documents, any of the Work is found to be not in accordance with the requirements of the Contract Documents, the Contractor shall correct it promptly after receipt of written notice from the District to do so. This period of one (1) year shall be extended with respect to portions of the Work first performed after Completion by the period of time between Completion and the actual performance of the Work. This obligation hereunder shall survive acceptance of the Work under the Contract and termination of the Contract. The District shall give such notice promptly after discovery of the condition.

23.3. District's Right to Perform Work

23.3.1. If the Contractor should neglect to prosecute the Work properly or fail to perform any provisions of this contract, the District, after **FORTY-EIGHT (48)** hours written notice to the Contractor, may, without prejudice to any other remedy it may have, make good such deficiencies and may deduct the cost thereof from the payment then or thereafter due the Contractor.

23.3.2. If it is found at any time, before or after completion of the Work, that Contractor has varied from the Drawings and/or Specifications, including, but not limited to, variation in material, quality, form, or finish, or in the amount or value of the materials and labor used, District may require at its option:

23.3.2.1. That all such improper Work be removed, remade or replaced, and all work disturbed by these changes be made good by Contractor at no additional cost to the District;

23.3.2.2. That the District deduct from any amount due Contractor the sum of money equivalent to the difference in value between the work performed and that called for by the Drawings and Specifications; or

23.3.2.3. That the District exercise any other remedy it may have at law or under the Contract Documents, including but not limited to the District hiring its own forces or another contractor to replace the Contractor's nonconforming Work, in which case the District shall either issue a deductive Change Order, a Construction Change Directive, or invoice the Contractor for the cost of that work. Contractor shall pay any invoices within thirty (30) days of receipt of same or District may withhold those amounts from payment(s) to Contractor.

24. TERMINATION AND SUSPENSION

24.1. District's Right to Terminate Contractor for Cause

24.1.1. Grounds for Termination The District, in its sole discretion, may terminate the Contract and/or terminate the Contractor's right to perform the work of the Contract based upon the following:

24.1.1.1. Contractor refuses or fails to execute the Work or any separable part thereof with sufficient diligence as will ensure its completion within the time specified or any extension thereof, or

24.1.1.2. Contractor fails to complete said Work within the time specified or any extension thereof, or

24.1.1.3. Contractor persistently fails or refused to perform Work or provide material of sufficient quality as to be in compliance with Contract Documents; or

24.1.1.4. Contractor files a petition for relief as a debtor, or a petition is filed against the Contractor without its consent, and the petition not dismissed within sixty (60) days; or

24.1.1.5. Contractor makes a general assignment for the benefit of its creditors, or a receiver is appointed on account of its insolvency; or

24.1.1.6. Contractor persistently or repeatedly refuses fails, except in cases for which extension of time is provided, to supply enough properly skilled workers or proper materials to complete the Work in the time specified; or

24.1.1.7. Contractor fails to make prompt payment to Subcontractors, or for material, or for labor; or

24.1.1.8. Contractor persistently disregards laws, or ordinances, or instructions of District; or

24.1.1.9. Contractor fails to supply labor, including that of Subcontractors, that can work in harmony with all other elements of labor employed or to be employed on the Work; or

24.1.1.10. Contractor or its Subcontractor(s) is/are otherwise in breach, default, or in substantial violation of any provision of this Contract, including but not limited to a lapse in licensing or registration.

24.1.2. Notification of Termination

24.1.2.1. Upon the occurrence at District's sole determination of any of the above conditions, District may, without prejudice to any other right or remedy, serve written notice upon Contractor and its Surety of District's termination of this Contract and/or the Contractor's right to perform the work of the Contract. This notice will contain the reasons for termination. Unless, within three (3) days after the service of the notice, any and all condition(s) shall cease, and any and all violation(s) shall cease, or arrangement satisfactory to District for the correction of the condition(s) and/or violation(s) be made, this Contract shall cease and terminate. Upon Determination, Contractor shall not be entitled to receive any further payment until the entire Work is finished.

24.1.2.2. Upon Termination, District may immediately serve written notice of tender upon Surety whereby Surety shall have the right to take over and perform this Contract only if Surety:

24.1.2.2.1. Within three (3) days after service upon it of the notice of tender, gives District written notice of Surety's intention to take over and perform this Contract; and

24.1.2.2.2. Commences performance of this Contract within (three (3) days from date of serving of its notice to District.

24.1.2.3. Surety shall not utilize Contractor in completing the Project if the District notifies Surety of the District's objection to Contractor's further participation in the completion of the Project. Surety expressly agrees that any contractor which Surety proposes to fulfill Surety's obligations is subject to District's approval. District's approval shall not be unreasonably withheld, conditioned or delayed.

24.1.2.4. If Surety fails to notify District or begin performance as indicated herein, District may take over the Work and execute the Work to completion by any method it may deem advisable at the expense of Contractor and/or its Surety. Contractor and/or its Surety shall be liable to District for any excess cost or other damages the District incurs thereby. Time is of the essence in this Contract. If the District takes over the Work as herein provided, District may, without liability for so doing, take possession of and utilize in completing the Work such materials, appliances, plan, and other property belonging to Contractor as may be on the Site of the Work, in bonded storage, or previously paid for.

24.1.3. Effect of Termination

24.1.3.1. Contractor shall, only if ordered to do so by the District, immediately remove from the Site all or any materials and personal property belonging to Contractor that have not been incorporated in the construction of the Work, or which are not in place in the Work. The District retains the right, but not the obligation, to keep and use any materials and personal property belonging to Contractor that have not been incorporated in the construction of the Work, or which are not in place in the Work. The Contractor and its Surety shall be liable upon the performance bond for all damages caused the District by reason of the Contractor's failure to complete the Contract.

24.1.3.2. In the event that the District shall perform any portion of, or the whole of the Work, pursuant to the provisions of the General Conditions, the District shall not be liable nor account to the Contractor in any way for the time within which, or the manner in which, the Work is performed by the District or for any changes the District may make in the Work or for the money expended by the District in satisfying claims and/or suits and/or other obligations in connection with the Work.

24.1.3.3. In the event that the Contract is terminated for any reason, no allowances or compensation will be granted for the loss of any anticipated profit by the Contractor or any impact or impairment of Contractor's bonding capacity.

24.1.3.4. If the expense to the District to finish the Work exceeds the unpaid Contract Price, Contractor and Surety shall pay difference to District within twenty-one (21) days of District's request.

24.1.3.5. The District shall have the right (but shall have no obligation) to assume and/or assign to a general contractor or construction manager or other third party who is qualified and has sufficient resources to complete the Work, the rights of the Contractor under its subcontracts with any or all Subcontractors. In the event of an assumption or assignment by the District, no Subcontractor shall have any claim against the District or third party for Work performed by Subcontractor or other matters arising prior to termination of the Contract. The District or any third party, as the case may be, shall be liable only for obligations to the Subcontractor arising after assumption or assignment. Should the District so elect, the Contractor shall execute and deliver all documents and take all steps, including the legal assignment of its contractual rights, as the District may require, for the purpose of fully vesting in the District the rights and benefits of it Subcontractor under Subcontracts or other obligations or commitments. All payments due the Contractor hereunder shall be subject to a right of offset by the District for expenses and damages suffered by the District as a result of any default, acts, or omissions of the Contractor. Contractor must include this assignment provision in all of its contracts with its Subcontractors.

24.1.3.6. The foregoing provisions are in addition to and not in limitation of any other rights or remedies available to District.

24.1.4. Emergency Termination of Public Contracts Act of 1949

24.1.4.1. This Contract is subject to termination as provided by sections 4410 and 4411 of the Government Code of the State of California, being a portion of the Emergency Termination of Public Contracts Act of 1949.

24.1.4.1.1. Section 4410 of the Government Code states:

In the event a national emergency occurs, and public work, being performed by contract, is stopped, directly or indirectly, because of the freezing or diversion of materials, equipment or labor, as the result of an order or a proclamation of the President of the United States, or of an order of any federal authority, and the circumstances or conditions are such that it is impracticable within a reasonable time to proceed with a substantial portion of the work, then the public agency and the contractor may, by written agreement, terminate said contract.

24.1.4.1.2. Section 4411 of the Government Code states:

Such an agreement shall include the terms and conditions of the termination of the contract and provision for the payment of compensation or money, if any, which either party shall pay to the other or any other person, under the facts and circumstances in the case.

24.1.4.2. Compensation to the Contractor shall be determined at the sole discretion of District on the basis of the reasonable value of the Work done, including preparatory work. As an exception to the foregoing and at the District's discretion, in the case of any fully completed separate item or portion of the Work for which there is a separate previously submitted unit price or item on the accepted schedule of values, that price shall control. The District, at its sole

discretion, may adopt the Contract Price as the reasonable value of the work done or any portion thereof.

24.2. Termination of Contractor for Convenience

24.2.1. District in its sole discretion may terminate the Contract upon three (3) days written notice to the Contractor. Under a termination for convenience, the District retains the right to all the options available to the District if there is a termination for cause. In case of a termination for convenience, the Contractor shall have no claims against the District except:

24.2.1.1. The actual cost for labor, materials, and services performed that is unpaid and can be documented through timesheets, invoices, receipts, or otherwise, and

24.2.1.2. Five percent (5%) of the total cost of work performed as of the date of termination, or five percent (5%) of the value of the Work yet to be performed, whichever is less. This five percent (5%) amount shall be full compensation for all Contractor's and Subcontractor(s)' mobilization and/or demobilization costs and any anticipated loss profits resulting from termination of the Contractor for convenience.

24.3. Suspension of Work

24.3.1. District in its sole discretion may suspend, delay or interrupt the Work in whole or in part for such period of time as the District may determine upon three (3) days written notice to the Contractor.

24.3.1.1. An adjustment may be made for changes in the cost of performance of the Work caused by any such suspension, delay or interruption. No adjustment shall be made to the extent:

24.3.1.1.1. That performance is, was or would have been so suspended, delayed or interrupted by another cause for which Contractor is responsible; or

24.3.1.1.2. That an equitable adjustment is made or denied under another provision of the Contract; or

24.3.1.1.3. That the suspension of Work was the direct or indirect result of Contractor's failure to perform any of its obligations hereunder.

24.3.1.2. Any adjustments in cost of performance may have a fixed or percentage fee as provided in the section on Format for Proposed Change Order herein. This amount shall be full compensation for all Contractor's and its Subcontractor(s)' changes in the cost of performance of the Contract caused by any such suspension, delay or interruption.

25. CLAIMS AND DISPUTES

25.1. Performance During Dispute or Claim Process

Contractor shall continue to perform its Work under the Contract and shall not cause a delay of the Work during any dispute, claim, negotiation, mediation, or arbitration proceeding, except by written agreement by the District.

25.2. Definition of Dispute

25.2.1. The term "Dispute" means a separate demand by the Contractor for:

25.2.1.1. A time extension;

25.2.1.2. Payment of money or damages arising from Work done by or on behalf of the Contractor pursuant to the Contract and payment of which is not otherwise expressly provided for or Contractor is not otherwise entitled to; or

25.2.1.3. An amount of payment disputed by the District.

25.3. Dispute Presentation

25.3.1. If Contractor intends to apply for an increase in the Contract Price or Contract Time for any reason including, without limitation, the acts of District or its agents, Contractor shall, within ten (10) days after the event giving rise to the Dispute, give notice of the Dispute in writing and submit to the District a written statement of the damage sustained or time requested. On or before twenty (20) days after Contractor's written Notice of Dispute, Contractor shall file with the District an itemized statement of the details and amounts of its Dispute for any increase in the Contract Price or Contract Time. Otherwise, Contractor shall have waived and relinquished its dispute against the District and Contractor's claims for compensation or an extension of time shall be forfeited and invalidated. Contractor shall not be entitled to consideration for payment or time on account.

25.3.2. The Notice of Dispute shall identify:

25.3.2.1. The issues, events, conditions, circumstances and/or causes giving rise to the dispute;

25.3.2.2. The pertinent dates and/or durations and actual and/or anticipated effects on the Contract Price, Contract Schedule milestones and/or Contract Time adjustments; and

25.3.2.3. The line-item costs for labor, material, and/or equipment, if applicable.

25.3.3. The Notice of Dispute shall include the following certification by the Contractor:

25.3.3.1. The undersigned Contractor certifies under penalty of perjury that the attached dispute is made in good faith; that the supporting data is accurate and complete to the best of my knowledge and belief; that the amount requested

accurately reflects the adjustment for which Contractor believes the District is liable; and that I am duly authorized to certify the dispute on behalf of the Contractor.

25.3.3.2. Furthermore, Contractor understands that the value of the attached dispute expressly includes any and all of the Contractor's costs and expenses, direct and indirect, resulting from the Work performed on the Project, additional time required on the Project and/or resulting from delay to the Project. Any costs, expenses, damages, or time extensions not included are deemed waived.

25.3.4. If a Dispute, or any portion thereof, remains unresolved upon satisfaction of all applicable Dispute Resolution requirements, the Contractor shall comply with all claim resolution requirements as provided in Public Contract Code section 20104.

25.3.5. Contractor shall bind its Subcontractors to the provisions of this section and will hold the District harmless against disputes by Subcontractors.

25.4. Dispute Resolution

25.4.1. Contractor shall file with the District the Notice of Dispute, including the documents necessary to substantiate it, on or before the day of submitting the application for final payment.

25.4.2. District shall respond in writing within forty-five (45) days of receipt of the Dispute or may request in writing within thirty (30) days of receipt of the Dispute any additional documentation supporting the Dispute or relating to defenses or claims District may have against the Contractor.

25.4.2.1. If additional information is required, it shall be requested and provided by mutual agreement of the parties.

25.4.2.2. District's written response to the documented Dispute shall be submitted to the Contractor within fifteen (15) days after receipt of the further documentation or within a period of time no greater than that taken by the Contractor to produce the additional information, whichever is greater.

25.4.3. If Contractor disputes the District's written response, Contractor may file a claim pursuant to the Claim Resolution requirements provided herein.

25.5. Definition of Claim

25.5.1. The term "Claim" means a dispute that remains unresolved at the conclusion of the Dispute Resolution requirements as provided herein.

25.6. Claim Presentations

25.6.1. Contractor must timely submit the Notice of Claim and all documents necessary to substantiate any Claim. Otherwise, Contractor shall have waived and relinquished its Claim against the District and Contractor's Claims for compensation or an extension of time shall be forfeited and invalidated, and Contractor shall not be entitled to consideration for payment or time on account of the instant matter. No Claim shall be presented prior to Project completion. Any statute that might

otherwise govern the presentation of an unresolved Dispute, including but not limited to Government Code section 900 et seq. and Public Contract Code section 20104 et seq. shall be tolled for all purposes during the course of construction on the Project.

25.6.1.1. All Claims shall include the following certification by the Contractor:

25.6.1.1.1. The undersigned Contractor certifies under penalty of perjury that the attached claim is made in good faith; that the supporting data is accurate and complete to the best of my knowledge and belief; that the amount requested accurately reflects the adjustment for which Contractor believes the District is liable; and that I am duly authorized to certify the claim on behalf of the Contractor.

25.6.1.1.2. Furthermore, Contractor understands that the value of the attached claim expressly includes any and all of the Contractor's costs and expenses, direct and indirect, resulting from the Work performed on the Project, additional time required on the Project and/or resulting from delay to the Project. Any costs, expenses, damages, or time extensions not included are deemed waived.

25.6.2. The attention of the Contractor is drawn to Government Code section 12650, et seq. regarding penalties for false claims.

25.6.3. If a Claim, or any portion thereof, remains in dispute upon satisfaction of all applicable Dispute and Claim Resolution requirements, the Contractor shall comply with all claims presentation requirements as provided in Chapter 1 (commencing with section 900) and Chapter 2 (commencing with section 910) of Part 3 of Division 3.6 of Title 1 of Government Code as a condition precedent to the Contractor's right to bring a civil action against the District. For purposes of those provisions, the running of the time within which a Dispute or Claim must be presented to the District shall be tolled from the time the Contractor submits its written Dispute or Claim until the time the Dispute or Claim is denied, including any time utilized by any applicable meet and confer process.

25.6.4. The Contractor shall bind all its Subcontractors to the provisions of this section and will hold the District harmless against claims by Subcontractors.

25.7. Claim Resolution

25.7.1. In the event of a disagreement between the parties as to performance of the Work, the interpretation of this Contract, or payment or nonpayment for Work performed or not performed, the parties shall, after the conclusion of the Dispute Resolution requirements, attempt to resolve the Claim by those procedures set forth herein.

25.7.2. Claims of \$375,000 or Less

25.7.2.1. For all Claims of three hundred seventy-five thousand dollars (\$375,000) or less which arise between Contractor and District, the procedure set forth in Public Contract Code section 20104 et seq. shall apply:

25.7.2.1.1. Contractor shall file with the District any written Claim, including the documents necessary to substantiate it, upon the application for final payment.

25.7.2.1.2. For claims of less than fifty thousand dollars (\$50,000), the District shall respond in writing within forty-five (45) days of receipt of the Claim or may request in writing within thirty (30) days of receipt of the Claim any additional documentation supporting the claim or relating to defenses or claims the District may have against the Contractor.

25.7.2.1.2.1. If additional information is required, it shall be requested and provided by mutual agreement of the parties.

25.7.2.1.2.2. District's written response to the documented Claim shall be submitted to the Contractor within fifteen (15) days after receipt of the further documentation or within a period of time no greater than that taken by the Contractor to produce the additional information, whichever is greater.

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

25.7.2.1.3.1. If additional information is required, it shall be requested and provided upon mutual agreement of the District and the Contractor.

25.7.2.1.3.2. The District's written response to the claim, as further documented, shall be submitted to the Contractor within thirty (30) days after receipt of the further documentation, or within a period of time no greater than that taken by the Contractor to produce the additional information or requested documentation, whichever is greater.

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

25.7.2.3. Following the meet and confer conference, if the claim or any portion of it remains in dispute, the Contractor may file a claim as provided in Chapter 1 (commencing with Section 900) and Chapter 2 (commencing with Section 910) of Part 3 of Division 3.6 of Title 1 of the Government Code. For purposes of those provisions the running of the time within which a claim must be filed shall be tolled from the time the Contractor submits its written Claim until the time the Claim is denied, including any period of time utilized by the meet and confer process.

25.7.2.4. For any civil action filed to resolve claims filed pursuant to this section, within sixty (60) days, but no earlier than thirty (30) days, following the filing of responsive pleadings, the court shall submit the matter to nonbinding mediation unless waived by mutual stipulation of both parties. The mediation process shall provide for the selection within fifteen (15) days by both parties of a disinterested third person as mediator, shall be commenced within thirty (30) days of the submittal, and shall be concluded within fifteen (15) days from the commencement of the mediation unless a time requirement is extended upon a good cause showing to the court or by stipulation of both parties. If the parties fail to select a mediator within the 15-day period, any party may petition the court to appoint the mediator.

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

25.7.2.6. The District shall not fail to pay money as to any portion of a Claim which is undisputed except as otherwise provided in the Contract Documents. In any suit filed pursuant to this section, the District shall pay interest at the legal rate on any arbitration award or judgment. Interest shall begin to accrue on the date the suit is filed in a court of law.

25.7.3. Claims Over \$375,000

25.7.3.1. For all Claims of over three hundred seventy-five thousand dollars (\$375,000) which arise between a Contractor and the District, the following procedure shall apply:

25.7.3.1.1. The parties agree to first endeavor to settle the dispute in an amicable manner by mediation before having recourse to a judicial forum. The Claim shall be identified in writing to the District within thirty (30) days from the date of Contractor's application for final payment of all Contract balances not in dispute and shall be mediated within one hundred and twenty (120) days from the submission of the Claim to the District. For purposes of filing a Claim to mediation, the running of the time within which mediation must be filed shall be tolled from the time the Contractor submits its written Claim until the time the Claim is denied. Mediator fees and administrative costs of the mediation shall be shared equally by the parties.

25.7.3.1.2. District may assert any counter-claims it has for damages against Contractor, including, but not limited to, defective Work, delay damages, and liquidated damages.

25.7.4. Contractor shall bind its Subcontractors to the provisions of this section and will hold the District harmless against disputes by Subcontractors.

25.8. Dispute and Claim Resolution Non-Applicability

25.8.1. The procedures for dispute and claim resolutions set forth in this Article shall not apply to the following:

25.8.1.1. Personal injury, wrongful death or property damage claims;

25.8.1.2. Latent defect or breach of warranty or guarantee to repair;

25.8.1.3. Stop payment notices;

25.8.1.4. District's rights set forth in the Article on Suspension and Termination;

25.8.1.5. Disputes arising out of State labor compliance, if applicable; or

25.8.1.6. District rights and obligations as a public entity set forth in applicable statutes; provided, however, that penalties imposed against a public entity by statutes, including, but not limited to, Public Contract Code sections 20104.50 and 7107, shall be subject to the Dispute and Claim Resolution requirements provided in this Article.

25.9. Contractor's costs incurred in seeking relief under this Article are not recoverable from the District.

26. STATE LABOR, WAGE & HOUR, APPRENTICE, AND RELATED PROVISIONS

26.1. Labor Compliance and Enforcement

Since this Project is subject to labor compliance and enforcement by the Department of Industrial Relations ("DIR"), Contractor specifically acknowledges and understands that it shall perform the Work of this Agreement while complying with all the applicable provisions of Division 2, Part 7, Chapter 1, of the Labor Code and Title 8 of the California Code of Regulations, including, without limitation, the requirement that the Contractor and all Subcontractors shall timely furnish complete and accurate electronic certified payroll records directly to the DIR. The District may not issue payment if this requirement is not met.

26.2. Wage Rates, Travel, and Subsistence

26.2.1. Pursuant to the provisions of article 2 (commencing at section 1770), chapter 1, part 7, division 2, of the Labor Code of California, the general prevailing rate of per diem wages and the general prevailing rate for holiday and overtime work in the locality in which this public work is to be performed for each craft, classification, or type of worker needed to execute this Contract are on file at the District's principal office and copies will be made available to any interested party on request. Contractor shall obtain and post a copy of these wage rates at the job site.

26.2.2. Holiday and overtime work, when permitted by law, shall be paid for at the general prevailing rate of per diem wages for holiday and overtime work on file with the Director of the Department of Industrial Relations, unless otherwise specified. The holidays upon which those rates shall be paid need not be specified by

the District, but shall be all holidays recognized in the applicable collective bargaining agreement. If the prevailing rate is not based on a collectively bargained rate, the holidays upon which the prevailing rate shall be paid shall be as provided in Section 6700 of the Government Code.

26.2.3. Contractor shall pay and shall cause to be paid each worker engaged in Work on the Project the general prevailing rate of per diem wages determined by the Director of the Department of Industrial Relations, regardless of any contractual relationship which may be alleged to exist between Contractor or any Subcontractor and such workers.

26.2.4. If during the period this bid is required to remain open, the Director of the Department of Industrial Relations determines that there has been a change in any prevailing rate of per diem wages in the locality in which the Work under the Contract is to be performed, such change shall not alter the wage rates in the Notice to Bidders or the Contract subsequently awarded.

26.2.5. Pursuant to Labor Code section 1775, Contractor shall, as a penalty to District, forfeit the statutory amount (believed by the District to be currently up to two hundred dollars (\$200) for each calendar day, or portion thereof, for each worker paid less than the prevailing rates, determined by the District and/or the Director, for the work or craft in which that worker is employed for any public work done under Contract by Contractor or by any Subcontractor under it. The difference between such prevailing wage rates and the amount paid to each worker for each calendar day or portion thereof for which each worker was paid less than the prevailing wage rate shall be paid to each worker by Contractor.

26.2.6. Any worker employed to perform Work on the Project, which Work is not covered by any classification listed in the general prevailing wage rate of per diem wages determined by the Director, shall be paid not less than the minimum rate of wages specified therein for the classification which most nearly corresponds to Work to be performed by him, and such minimum wage rate shall be retroactive to time of initial employment of such person in such classification.

26.2.7. Pursuant to Labor Code section 1773.1, per diem wages are deemed to include employer payments for health and welfare, pension, vacation, travel time, subsistence pay, and apprenticeship or other training programs authorized by Labor Code section 3093, and similar purposes.

26.2.8. Contractor shall post at appropriate conspicuous points on the Site of Project, a schedule showing all determined minimum wage rates and all authorized deductions, if any, from unpaid wages actually earned. In addition, Contractor shall post a sign-in log for all workers and visitors to the Site, a list of all subcontractors of any tier on the Site, and the required Equal Employment Opportunity poster(s).

26.3. Hours of Work

26.3.1. As provided in article 3 (commencing at section 1810), chapter 1, part 7, division 2, of the Labor Code, eight (8) hours of labor shall constitute a legal days work. The time of service of any worker employed at any time by Contractor or by any Subcontractor on any subcontract under this Contract upon the Work or upon any part of the Work contemplated by this Contract shall be limited and restricted by Contractor to eight (8) hours per day, and forty (40) hours during any one week, except as hereinafter provided. Notwithstanding the provisions hereinabove set forth, Work performed by employees of Contractor in excess of eight (8) hours per day and forty (40) hours during any one week, shall be permitted upon this public work upon compensation for all hours worked in excess of eight (8) hours per day at not less than one and one-half times the basic rate of pay.

26.3.2. Contractor shall keep and shall cause each Subcontractor to keep an accurate record showing the name of and actual hours worked each calendar day and each calendar week by each worker employed by Contractor in connection with the Work or any part of the Work contemplated by this Contract. The record shall be kept open at all reasonable hours to the inspection of District and to the Division of Labor Standards Enforcement of the DIR.

26.3.3. Pursuant to Labor Code section 1813, Contractor shall as a penalty to the District forfeit the statutory amount (believed by the District to be currently twenty-five dollars (\$25)) for each worker employed in the execution of this Contract by Contractor or by any Subcontractor for each calendar day during which such worker is required or permitted to work more than eight (8) hours in any one calendar day and forty (40) hours in any one calendar week in violation of the provisions of article 3 (commencing at section 1810), chapter 1, part 7, division 2, of the Labor Code.

26.3.4. Any Work necessary to be performed after regular working hours, or on Sundays or other holidays shall be performed without additional expense to the District.

26.4. Payroll Records

26.4.1. Contractor shall upload, and shall cause each Subcontractor performing any portion of the Work under this Contract to upload, an accurate and complete certified payroll record ("CPR") using the Public Works Payroll Reporting Form, including certification (DIR [Form A-1-131](#) or current version), and Statement of Employer Payments (DIR Form PW 26) through the eCPR application using PDF to the DIR at <https://apps.dir.ca.gov/ecpr/DAS/AltLogin> or current application and URL, 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 by the Contractor and/or each Subcontractor in connection with the Work.

26.4.1.1. The CPRs enumerated hereunder shall be filed directly with the DIR on a weekly basis or to the requesting party, whether the District or DIR, within ten (10) days after receipt of each written request. The CPRs from the Contractor and each Subcontractor for each week shall be provided on or before Wednesday of the week following the week covered by the CPRs. District may not make any payment to Contractor until:

26.4.1.1.1. Contractor and/or its Subcontractor(s) provide CPRs acceptable to the DIR; and

26.4.1.1.2. Any delay in Contractor and/or its Subcontractor(s) providing CPRs to the DIR in a timely manner may directly delay Contractor's payment.

26.4.2. All CPRs shall be available for inspection at all reasonable hours at the principal office of Contractor on the following basis:

26.4.2.1. A certified copy of an employee's CPR shall be made available for inspection or furnished to the employee or his/her authorized representative on request.

26.4.2.2. CPRs shall be made available for inspection or furnished upon request to a representative of District, Division of Labor Standards Enforcement, Division of Apprenticeship Standards, and/or the DIR.

26.4.2.3. CPRs shall be made available upon request by the public for inspection or copies thereof made; provided, however, that a request by the public shall be made through the District, Division of Apprenticeship Standards, or the Division of Labor Standards Enforcement. If the requested CPRs have not been provided pursuant to the provisions herein, the requesting party shall, prior to being provided the records reimburse the costs of preparation by Contractor, Subcontractors, and the entity through which the request was made. The public shall not be given access to the records at the principal office of Contractor.

26.4.3. Any copy of records made available for inspection as copies and furnished upon request to the public or any public agency by District, Division of Apprenticeship Standards, or Division of Labor Standards Enforcement shall be marked or obliterated in such a manner as to prevent disclosure of an individual's name, address, and social security number. The name and address of Contractor awarded Contract or performing Contract shall not be marked or obliterated.

26.4.4. Contractor shall inform District of the location of the records enumerated hereunder, including the street address, city, and county, and shall, within five (5) working days, provide a notice of change of location and address.

26.4.5. In the event of noncompliance with the requirements of this section, Contractor shall have ten (10) days in which to comply subsequent to receipt of written notice specifying in what respects Contractor must comply with this section. Should noncompliance still be evident after the ten (10) day period, Contractor shall, as a penalty to District, forfeit up to one hundred dollars (\$100) for each calendar day, or portion thereof, for each worker, until strict compliance is effectuated. Upon the request of Division of Apprenticeship Standards or Division of Labor Standards Enforcement, these penalties shall be withheld from progress payments then due.

26.5. [RESERVED]

26.6. Apprentices

26.6.1. Contractor acknowledges and agrees that, if this Contract involves a dollar amount greater than or a number of working days greater than that specified in Labor Code section 1777.5, then this Contract is governed by the provisions of Labor Code Section 1777.5. It shall be the responsibility of Contractor to ensure compliance with this Article and with Labor Code section 1777.5 for all apprenticeship occupations.

26.6.2. Apprentices of any crafts or trades may be employed and, when required by Labor Code section 1777.5, shall be employed provided they are properly registered in full compliance with the provisions of the Labor Code.

26.6.3. Every such apprentice shall be paid the standard wage paid to apprentices under the regulations of the craft or trade at which he/she is employed, and shall be employed only at the work of the craft or trade to which she/he is registered.

26.6.4. Only apprentices, as defined in section 3077 of the Labor Code, who are in training under apprenticeship standards and written apprentice agreements under chapter 4 (commencing at section 3070), division 3, of the Labor Code, are eligible to be employed. The employment and training of each apprentice shall be in accordance with the provisions of the apprenticeship standards and apprentice agreements under which he/she is training.

26.6.5. Pursuant to Labor Code section 1777.5, if that section applies to this Contract as indicated above, Contractor and any Subcontractors employing workers in any apprenticeable craft or trade in performing any Work under this Contract shall apply to the applicable joint apprenticeship committee for a certificate approving the Contractor or Subcontractor under the applicable apprenticeship standards and fixing the ratio of apprentices to journeymen employed in performing the Work.

26.6.6. Pursuant to Labor Code section 1777.5, if that section applies to this Contract as indicated above, Contractor and any Subcontractor may be required to make contributions to the apprenticeship program.

26.6.7. If Contractor or Subcontractor willfully fails to comply with Labor Code section 1777.5, then, upon a determination of noncompliance by the Administrator of Apprenticeship, it shall:

26.6.7.1. Be denied the right to bid on any subsequent project for one (1) year from the date of such determination;

26.6.7.2. Forfeit as a penalty to District the full amount as stated in Labor Code section 1777.7. Interpretation and enforcement of these provisions shall be in accordance with the rules and procedures of the California Apprenticeship Council and under the authority of the Chief of the Division of Apprenticeship Standards.

26.6.8. Contractor and all Subcontractors shall comply with Labor Code section 1777.6, which section forbids certain discriminatory practices in the employment of apprentices.

26.6.9. Contractor shall become fully acquainted with the law regarding apprentices prior to commencement of the Work. Special attention is directed to sections 1777.5, 1777.6, and 1777.7 of the Labor Code, and title 8, California Code

of Regulations, section 200 et seq. Questions may be directed to the State Division of Apprenticeship Standards, 455 Golden Gate Avenue, San Francisco, California 94102.

26.7. Non-Discrimination

26.7.1. Contractor herein agrees not to discriminate in its recruiting, hiring, promotion, demotion, or termination practices on the basis of race, religious creed, national origin, ancestry, sex, age, or physical handicap in the performance of this Contract and to comply with the provisions of the California Fair Employment and Housing Act as set forth in part 2.8 of division 3 of the California Government Code, commencing at section 12900; the Federal Civil Rights Act of 1964, as set forth in Public Law 88-352, and all amendments thereto; Executive Order 11246, and all administrative rules and regulations found to be applicable to Contractor and Subcontractor.

26.7.2. Special requirements for Federally Assisted Construction Contracts: During the performance of this Contract, Contractor agrees to incorporate in all subcontracts the provisions set forth in Chapter 60-1.4(b) of Title 41 published in Volume 33 No. 104 of the Federal Register dated May 28, 1968.

26.8. Labor First Aid

Contractor shall maintain emergency first aid treatment for Contractor's workers on the Project which complies with the Federal Occupational Safety and Health Act of 1970 (29 U.S.C. § 651 et seq.) and the California Occupational Safety and Health Act of 1973 (8 Cal. Code of Regs., §1 et seq.).

27. [RESERVED]

28. MISCELLANEOUS

28.1. Assignment of Antitrust Actions

28.1.1. Section 7103.5(b) of the Public Contract Code states:

In entering into a public works contract or subcontract to supply goods, services, or materials pursuant to a public works contract, the Contractor or subcontractor offers and agrees to assign to the awarding body 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. Sec. 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, made and become effective at the time the awarding body tenders final payment to the Contractor, without further acknowledgment by the parties.

28.1.2. Section 4552 of the Government Code states:

In submitting a bid to a public purchasing body, the bidder offers and agrees that if the bid is accepted, it will assign to the purchasing body 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. Sec. 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, materials, or services by the bidder for sale to the purchasing body pursuant to the bid. Such assignment shall be made and become effective at the time the purchasing body tenders final payment to the bidder.

28.1.3. Section 4553 of the Government Code states:

If an awarding body or public purchasing body receives, either through judgment or settlement, a monetary recovery for a cause of action assigned under this chapter, the assignor shall be entitled to receive reimbursement for actual legal costs incurred and may, upon demand, recover from the public body any portion of the recovery, including treble damages, attributable to overcharges that were paid by the assignor but were not paid by the public body as part of the bid price, less the expenses incurred in obtaining that portion of the recovery.

28.1.4. Section 4554 of the Government Code states:

Upon demand in writing by the assignor, the assignee shall, within one year from such demand, reassign the cause of action assigned under this part if the assignor has been or may have been injured by the violation of law for which the cause of action arose and (a) the assignee has not been injured thereby, or (b) the assignee declines to file a court action for the cause of action.

28.1.5. Under this Article, "public purchasing body" is District and "bidder" is Contractor.

28.2. Excise Taxes

If, under Federal Excise Tax Law, any transaction hereunder constitutes a sale on which a Federal Excise Tax is imposed and the sale is exempt from such Federal Excise Tax because it is a sale to a State or Local Government for its exclusive use, District, upon request, will execute documents necessary to show (1) that District is a political subdivision of the State for the purposes of such exemption, and (2) that the sale is for the exclusive use of District. No Federal Excise Tax for such materials shall be included in any Contract Price.

28.3. Taxes

Contract Price is to include any and all applicable sales taxes or other taxes that may be due in accordance with section 7051 of the Revenue and Taxation Code; Regulation 1521 of the State Board of Equalization or any other tax code that may be applicable.

28.4. Shipments

All shipments must be F.O.B. destination to Site or sites, as indicated in the Contract Documents. There must be no charge for containers, packing, unpacking, drayage, or insurance. The total Contract Price shall be all inclusive (including sales tax) and no additional costs of any type will be considered.

28.5. Compliance with Government Reporting Requirements

If this Contract is subject to federal or other governmental reporting requirements because of federal or other governmental financing in whole or in part for the Project of which it is part, or for any other reason, Contactor shall comply with those reporting requirements at the request of the District at no additional cost.

END OF DOCUMENT

SPECIAL CONDITIONS

1. Substitution for Specified Items
2. Weather Days
3. Insurance Policy Limits
4. Permits, Certificates, Licenses, Fees, Approval
5. As-Builts and Record Drawings
6. Construction Manager
7. Program Manager
8. General Notes

SPECIAL CONDITIONS

1. Substitution for Specified Items

1.1. Whenever in the Specifications any materials, process, or article is indicated or specified by grade, patent, or proprietary name, or by name of manufacturer, that Specification shall be deemed to be followed by the words "or equal." Contractor may, unless otherwise stated, offer any material, process, or article that shall be substantially equal or better in every respect to that so indicated or specified.

1.1.1. If the material, process, or article offered by Contractor is not, in the opinion of the District, substantially equal or better in every respect to that specified, then Contractor shall furnish the material, process, or article specified in the Specifications without any additional compensation or change order.

1.1.2. This provision shall not be applicable with respect to any material, product, thing or service for which District made findings and gave notice in accordance with Public Contract Code section 3400(c); therefore, Contractor shall not be entitled to request a substitution with respect to those materials, products or services.

1.2. A request for a substitution shall be submitted as follows:

1.2.1. Contractor shall notify the District in writing of any request for a substitution at least ten (10) days prior to bid opening as indicated in the Instructions to Bidders.

1.2.2.

1.3. Within 35 days after the date of the Notice of Award, Contractor shall provide data substantiating a request for substitution of "an equal" item, including but not limited to the following:

1.3.1. All variations of the proposed substitute from the material specified including, but not limited to, principles of operation, materials, or construction finish, thickness or gauge of materials, dimensions, weight, and tolerances;

1.3.2. Available maintenance, repair or replacement services;

1.3.3. Increases or decreases in operating, maintenance, repair, replacement, and spare parts costs;

1.3.4. Whether or not acceptance of the substitute will require other changes in the Work (or in work performed by the District or others under Contract with the District); and

1.3.5. The time impact on any part of the Work resulting directly or indirectly from acceptance of the proposed substitute.

1.4. No substitutions shall be made until approved, in writing, by the District. The burden of proof as to equality of any material, process, or article shall rest with Contractor. The Contractor warrants that if substitutes are approved:

1.4.1. The proposed substitute is equal or superior in all respects to that specified, and that such proposed substitute is suitable and fit for the intended purpose and will perform adequately the function and achieve the results called for by the general design and the Contract Documents;

1.4.2. The Contractor provides the same warranties and guarantees for the substitute that would be provided for that specified;

1.4.3. The Contractor shall be fully responsible for the installation of the substitute and any changes in the Work required, either directly or indirectly, because of the acceptance of such substitute, with no increase in Contract Price or Contract Time. Incidental changes or extra component parts required to accommodate the substitute will be made by the Contractor without a change in the Contract Price or Contract Time;

1.4.4. The Contractor shall be responsible for any re-design costs occasioned by District's acceptance and/or approval of any substitute; and

1.4.5. The Contractor shall, in the event that a substitute is less costly than that specified, credit the District with one hundred percent (100%) of the net difference between the substitute and the originally specified material. In this event, the Contractor agrees to execute a deductive Change Order to reflect that credit.

1.5. In the event Contractor furnishes a material, process, or article more expensive than that specified, the difference in the cost of that material, process, or article so furnished shall be borne by Contractor.

1.6. In no event shall the District be liable for any increase in Contract Price or Contract Time due to any claimed delay in the evaluation of any proposed substitute or in the acceptance or rejection of any proposed substitute.

1.7. Contractor shall be responsible for any costs the District incurs for professional services and/or DSA fees or delay to the Project Schedule, if applicable, while DSA reviews changes for the convenience of Contractor and/or to accommodate Contractor's means and methods. District may deduct those costs from any amounts owing to the Contractor for the review of the request for substitution, even if the request for substitution is not approved. District, at its sole discretion, shall deduct from the payments due to and/or invoice Contractor for all the professional services and/or DSA fees or delay to the Project Schedule, if applicable, while DSA reviews changes for the convenience of Contractor and/or to accommodate Contractor's means and methods arising herein.

2. Weather Days

Delays due to Adverse Weather conditions will be determined based on actual conditions and reported weekly statement of working days.

3. Insurance Policy Limits [CHECK WITH DISTRICT'S RISK MANAGER OR INSURANCE ADVISOR. COVERAGES AND AMOUNTS BELOW ARE PLACEHOLDERS ONLY.]

All of Contractor's insurance shall be with insurance companies with an A.M. Best rating of no less than A:VII. The limits of insurance shall not be less than:

Commercial General Liability	Product Liability and Completed Operations, Fire Damage Liability – Split Limit	\$1,000,000 per occurrence; \$2,000,000 aggregate
Automobile Liability – Any Auto	Combined Single Limit	\$1,000,000
Workers Compensation		Statutory limits pursuant to State law
Employers' Liability		\$1,000,000

4. Permits, Certificates, Licenses, Fees, Approval

4.1. Payment of Fees for Permits, Certificates, Licenses, and Registrations.

As required in the General Conditions, the Contractor shall secure and pay for all permits, licenses, registrations, and certificates necessary for the prosecution of the Work. This will include an encroachment permit from the City of Fairfield for the portion of work within city right of way:

Refer to Appendix item 1 "City of Fairfield Permit Information" for permit application form and information on the City requirements, including sample traffic control plans. Contractor shall apply for the permit, prepare and provide traffic control plans, pay required fees, provide required bond and insurance to City and arrange for inspection and closing out of the permit. It is estimated that fees will be between \$1,000 and \$2,000. As shown in the Bid Form, an allowance of \$2,000 shall be included in the contractor's bid, and contractor shall provide the District receipts showing actual permit costs. The difference between the actual costs and the allowance will be credited or charged to the District in the first pay application. the entire inspection with the city (Grading, Electrical, Lane closure and Etc.).

4.2. General Permit For Storm Water Discharges Associated With Construction and Land Disturbance Activities

4.2.1. Contractor acknowledges that all California community college districts are obligated to develop and implement the following requirements for the discharge of storm water to surface waters from its construction and land disturbance activities (storm water requirements), without limitation:

4.2.1.1. Municipal Separate Storm Sewer System (MS4) is a system of conveyances used to collect and/or convey storm water, including, without limitation, catch basins, curbs, gutters, ditches, man-made channels, and storm drains.

4.2.1.2. Storm Water Pollution Prevention Plan (SWPPP) contains specific best management practices (BMPs) and establishes numeric effluent limitations at:

4.2.1.2.1. Sites where the District engages in maintenance (e.g., fueling, cleaning, repairing) for transportation activities.

4.2.1.2.2. Construction sites where:

4.2.1.2.2.1. One (1) or more acres of soil will be disturbed, or

4.2.1.2.2.2. The project is part of a larger common plan of development that disturbs more than one (1) acre of soil.

4.2.2. Contractor shall comply with any District storm water requirements that are approved by the District and applicable to the Project, at no additional cost to the District.

4.2.3. At no additional cost to the District, Contractor shall provide a Qualified Storm Water Practitioner who shall be onsite and implement and monitor any and all SWPPP requirements applicable to the Project, including but not limited to:

4.2.3.1. At least forty eight (48) hours prior to a forecasted rain event, implementing the Rain Event Action Plan (REAP) for any rain event requiring implementation of the REAP, including any erosion and sediment control measures needed to protect all exposed portions of the site; and

4.2.3.2. Monitoring any Numeric Action Levels (NALs), if applicable.

5. As-Builts and Record Drawings

5.1. Contractor shall submit Record Drawings with legible red marks on a clean set of plans (bond paper).

6. Construction Manager

The District will use a Construction Manager on the Project that is the subject of this Contract. Scott Christie, Swinerton Management & Consulting is the Construction Manager for this Project.

7. Program Manager

Kitchell CEM is the Program Manager designated for the Project that is the subject of this Contract.

8. General Notes

- 8.1. Contractor to provide staking and survey as needed by a qualified consultant.
- 8.2. Contractor to obtain city encroachment permit (see above item 4) and coordinate the entire inspection with the city (Grading, Electrical, Lane closure and Etc.) for that portion of work within city right of way.
- 8.3. The city limits lane closures to the hours of 9:00-3:30 Monday through Friday, and the inspection hours by the city inspector during normal business hours Monday through Friday.
- 8.4. As noted elsewhere, contractor shall submit a traffic control plan to city of Fairfield for work in city right of way. Contractor shall also submit for District approval a traffic control plan for work within college District property/roads, in accordance with MUTCD guidelines.
- 8.5. At the right turn pocket from Suisun Valley Rd. to Solano College Road (south entrance, at the project location), at least one of the two lanes shall remain open unless otherwise approved for specific limited construction operations.
- 8.6. Pothole prior to augering for pole foundations
- 8.7. Construction manager will issue Weekly Statement of Working Days in Caltrans format to report contract time usage and balance remaining.
- 8.8. Solano CCD have applied for and paid fees to PGE for the connection to PGE electric service for the city street light. Contractor to comply with all requirements, including PGE Green Book, latest edition, and be responsible for coordination of required PGE inspections for connection to the new street light, including trench and conduit inspection, conduit mandrel pull inspection, etc.

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8.9 District to provide contractor 12 surplus light poles and fixtures for installation as shown on the Plans. Contractor shall provide anchor bolts and all other materials necessary to make the lights functional. (Unused poles and fixtures to be returned to District)

8.10 Truncated domes shall be wet set in concrete, Armor tile or equivalent.

8.11 Reference specification and standards: Where specifications are not otherwise included in the contract documents, work shall comply with Caltrans Standard Specifications, 2010 version, and the City of Fairfield Specific Provisions.

8.12 City street light and all related facilities (conduit, pull box etc.) shall comply with city standard details included in this Project Manual. The pull box adjacent to the street light shall include the housekeeping pad as shown in city standard detail 71. Contractor shall provide the city street light; if delivery time of the light should fall beyond the time of completion, the District will adjust the completion date so that the light can be installed after other items of work are completed. Contractor shall remobilize as needed to accomplish the light installation and such cost shall be considered incidental and included in the bid price for the work.

END OF DOCUMENT

**HAZARDOUS MATERIALS
PROCEDURES & REQUIREMENTS**

1. Summary

This document includes information applicable to hazardous materials and hazard waste abatement.

2. Notice of Hazardous Waste or Materials Conditions

- a. Contractor shall give notice in writing to the District, the Construction Manager, and the Architect promptly, before any of the following conditions are disturbed, and in no event later than twenty-four (24) hours after first observance, of any:
 - (1) Material that Contractor believes may be material that is hazardous waste or hazardous material, as defined in section 25117 of the Health and Safety Code, that is required to be removed to a Class I, Class II, or Class III disposal site in accordance with provisions of existing law;
 - (2) Other material that may present a substantial danger to persons or property exposed thereto in connection with Work at the site.
- b. Contractor's written notice shall indicate whether the hazardous waste or material was shown or indicated in the Contract Documents to be within the scope of Work, and whether the materials were brought to the site by Contractor, its Subcontractors, suppliers, or anyone else for whom Contractor is responsible. As used in this section the term "hazardous materials" shall include, without limitation, asbestos, lead, Polychlorinated biphenyl (PCB), petroleum and related hydrocarbons, and radioactive material.
- c. In response to Contractor's written notice, the District shall investigate the identified conditions.
- d. If the District determines that conditions do not involve hazardous materials or that no change in terms of Contract is justified, the District shall so notify Contractor in writing, stating reasons. If the District and Contractor cannot agree on whether conditions justify an adjustment in Contract Price or Contract Time, or on the extent of any adjustment, Contractor shall proceed with the Work as directed by the District.
- e. If after receipt of notice from the District, Contractor does not agree to resume Work based on a reasonable belief it is unsafe, or does not agree to resume Work under special conditions, then District may order such portion of Work that is in connection with such hazardous condition or such affected area to be deleted from the Work, or performed by others, or District may invoke its rights to terminate the Contract in whole or in part. District will determine entitlement to or the amount or extent of an adjustment, if any, in Contract Price or Contract Time as a result of deleting such portion of Work, or performing the Work by others.

- f. If Contractor stops Work in connection with any hazardous condition and in any area affected thereby, Contractor shall immediately redeploy its workers, equipment, and materials, as necessary, to other portions of the Work to minimize delay and disruption.

3. Additional Warranties and Representations

- a. Contractor represents and warrants that it, its employees, and its subcontractors and their employees, shall at all times have the required levels of familiarity with the Site and the Work, training, and ability to comply fully with all applicable law and contract requirements for safe and expeditious performance of the Work, including whatever training is or may be required regarding the activities to be performed (including, but not limited to, all training required to address adequately the actual or potential dangers of Contract performance).
- b. Contractor represents and warrants that it, its employees, and its subcontractors and their employees, shall at all times have and maintain in good standing any and all certifications and licenses required by applicable federal, state, and other governmental and quasi-governmental requirements applicable to the Work.
- c. Contractor represents and warrants that it has studied carefully all requirements of the Specifications regarding procedures for demolition, hazardous waste abatement, or safety practices, specified in the Contract, and prior to submitting its bid, has either (a) verified to its satisfaction that the specified procedures are adequate and sufficient to achieve the results intended by the Contract Documents, or (b) by way of approved "or equal" request or request for clarification and written Addenda, secured changes to the specified procedures sufficient to achieve the results intended by the Contract Documents. Contractor accepts the risk that any specified procedure will result in a completed Project in full compliance with the Contract Documents.

4. Monitoring and Testing

- a. District reserves the right, in its sole discretion, to conduct air monitoring, earth monitoring, Work monitoring, and any other tests (in addition to testing required under the agreement or applicable law), to monitor Contract requirements of safe and statutorily compliant work methods and (where applicable) safe re-entry level air standards under state and federal law upon completion of the job, and compliance of the work with periodic and final inspection by public and quasi-public entities having jurisdiction.
- b. Contractor acknowledges that District has the right to perform, or cause to be performed, various activities and tests including, but not limited to, pre-abatement, during abatement, and post-abatement air monitoring, that District shall have no obligation to perform said activities and tests, and that a portion of said activities and tests may take place prior to the completion of the Work by Contractor. In the event District elects to perform these activities and tests, Contractor shall afford District ample access to the Site

and all areas of the Work as may be necessary for the performance of these activities and tests. Contractor will include the potential impact of these activities or tests by District in the Contract Price and the Scheduled Completion Date.

- c. Notwithstanding District's rights granted by this paragraph, Contractor may retain its own industrial hygiene consultant at Contractor's own expense and may collect samples and may perform tests including, but not limited to, pre-abatement, during abatement, and post-abatement personal air monitoring, and District reserves the right to request documentation of all such activities and tests performed by Contractor relating to the Work and Contractor shall immediately provide that documentation upon request.

5. Compliance with Laws

- a. Contractor shall perform safe, expeditious, and orderly work in accordance with the best practices and the highest standards in the hazardous waste abatement, removal, and disposal industry, the applicable law, and the Contract Documents, including, but not limited to, all responsibilities relating to the preparation and return of waste shipment records, all requirements of the law, delivering of all requisite notices, and obtaining all necessary governmental and quasi-governmental approvals.
- b. Contractor represents that it is familiar with and shall comply with all laws applicable to the Work or completed Work including, but not limited to, all federal, state, and local laws, statutes, standards, rules, regulations, and ordinances applicable to the Work relating to:
 - (1) The protection of the public health, welfare and environment;
 - (2) Storage, handling, or use of asbestos, PCB, lead, petroleum based products or other hazardous materials;
 - (3) The generation, processing, treatment, storage, transport, disposal, destruction, or other management of asbestos, PCB, lead, petroleum, or hazardous waste materials or other waste materials of any kind; and
 - (4) The protection of environmentally sensitive areas such as wetlands and coastal areas.

6. Disposal

- a. Contractor has the sole responsibility for determining current waste storage, handling, transportation, and disposal regulations for the job Site and for each waste disposal facility. Contractor must comply fully at its sole cost and expense with these regulations and any applicable law. District may, but is not obligated to, require submittals with this information for it to review consistent with the Contract Documents.
- b. Contractor shall develop and implement a system acceptable to District to track hazardous waste from the Site to disposal, including appropriate

"Hazardous Waste Manifests" on the EPA form, so that District may track the volume of waste it put in each landfill and receive from each landfill a certificate of receipt.

- c. Contractor shall provide District with the name and address of each waste disposal facility prior to any disposal, and District shall have the express right to reject any proposed disposal facility. Contractor shall not use any disposal facility to which District has objected. Contractor shall document actual disposal or destruction of waste at a designated facility by completing a disposal certificate or certificate of destruction forwarding the original to the District.

7. Permits

- a. Before performing any of the Work, and at such other times as may be required by applicable law, Contractor shall deliver all requisite notices and obtain the approval of all governmental and quasi-governmental authorities having jurisdiction over the Work. Contractor shall submit evidence satisfactory to District that it and any disposal facility
 - (1) have obtained all required permits, approvals, and the like in a timely manner both prior to commencement of the Work and thereafter as and when required by applicable law, and
 - (2) are in compliance with all such permits, approvals and the regulations.

For example, before commencing any work in connection with the Work involving asbestos-containing materials, or PCBs, or other hazardous materials subject to regulation, Contractor agrees to provide the required notice of intent to renovate or demolish to the appropriate state or federal agency having jurisdiction, by certified mail, return receipt requested, or by some other method of transmittal for which a return receipt is obtained, and to send a copy of that notice to District. Contractor shall not conduct any Work involving asbestos-containing materials or PCBs unless Contractor has first confirmed that the appropriate agency having jurisdiction is in receipt of the required notification. All permits, licenses, and bonds that are required by governmental or quasi-governmental authorities, and all fees, deposits, tap fees, offsite easements, and asbestos and PCB disposal facilities expenses necessary for the prosecution of the Work, shall be procured and paid for by Contractor. Contractor shall give all notices and comply with the all applicable laws bearing on the conduct of the Work as drawn and specified. If Contractor observes or reasonably should have observed that Plans and Specifications and other Contract Documents are at variance therewith, it shall be responsible for promptly notifying District in writing of such fact. If Contractor performs any Work contrary to applicable laws, it shall bear all costs arising therefrom.

- b. In the case of any permits or notices held in District's name or of necessity to be made in District's name, District shall cooperate with Contractor in securing the permit or giving the notice, but the Contractor shall prepare for District review and execution upon approval, all necessary applications, notices, and other materials.

8. Indemnification

To the extent permitted by law, the indemnities and limitations of liability expressed throughout the Contract Documents apply with equal force and effect to any claims or liabilities imposed or existing by virtue of the removal, abatement, and disposal of hazardous waste. This includes, but is not limited to, liabilities connected to the selection and use of a waste disposal facility, a waste transporter, personal injury, property damage, loss of use of property, damage to the environment or natural resources, or "disposal" and "release" of materials associated with the Work (as defined in 42 U.S.C. § 9601 et seq.).

9. Termination

District shall have an absolute right to terminate for default immediately without notice and without an opportunity to cure should Contractor knowingly or recklessly commit a material breach of the terms of the Contract Documents, or any applicable law, on any matter involving the exposure of persons or property to hazardous waste. However, if the breach of contract exposing persons or property to hazardous waste is due solely to an ordinary, unintentional, and non-reckless failure to exercise reasonable care, then the procedures for termination for cause shall apply without modification.

END OF DOCUMENT

SUMMARY OF WORK

PART 1 - GENERAL

1.01 RELATED DOCUMENTS AND PROVISIONS:

All Contract Documents should be reviewed for applicable provisions related to the provisions in this document, including without limitation:

- A. General Conditions, including, without limitation, Site Access Conditions and Requirements;
- B. Special Conditions.

1.02 SUMMARY OF WORK COVERED BY CONTRACT DOCUMENTS

- A. The Work of this Contract may consist of the following:

Replacement of existing sidewalk, curb and gutters, curb ramps and construction of new curb ramps and sidewalk, pavement striping/markings. Installation of new street light and pedestrian lights, and underground conduit/wiring, including appropriate testing, commissioning, and coordination with the City of Fairfield and PG&E scope of work as required per the approved plans and specifications.

1.03 CONTRACTS

- A. Perform the Work under a single, fixed-price Contract.

1.04 WORK BY OTHERS

- A. Work on the Project that will be performed and completed prior to the start of the Work of this Contract:
 - (1) **N/A**

1.05 CODES, REGULATIONS, AND STANDARDS

- A. The codes, regulations, and standards adopted by the state and federal agencies having jurisdiction shall govern minimum requirements for this project. Where codes, regulations, and standards conflict with the Contract Documents, these conflicts shall be brought to the immediate attention of the District and the Architect.
- B. Codes, regulations, and standards shall be as published effective as of date of bid opening, unless otherwise specified or indicated.

1.06 PROJECT RECORD DOCUMENTS:

- A. Contractor shall maintain on Site one set of the following record documents; Contractor shall record actual revisions to the Work:
 - (1) Contract Drawings.
 - (2) Specifications.
 - (3) Addenda.
 - (4) Change Orders and other modifications to the Contract.
 - (5) Reviewed shop drawings, product data, and samples.
 - (6) Field test records.
 - (7) Inspection certificates.
 - (8) Manufacturer's certificates.
- B. Contractor shall store Record Documents separate from documents used for construction. Provide files, racks, and secure storage for Record Documents and samples.
- C. Contractor shall record information concurrent with construction progress.
- D. Specifications: Contractor shall legibly mark and record at each product section of the Specifications the description of the actual product(s) installed, including the following:
 - (1) Manufacturer's name and product model and number.
 - (2) Product substitutions or alternates utilized.
 - (3) Changes made by Addenda and Change Orders and written directives.

1.07 EXAMINATION OF EXISTING CONDITIONS

- A. Contractor shall be held to have examined the Project Site and acquainted itself with the conditions of the Site or of the streets or roads approaching the Site.
- B. Prior to commencement of Work, Contractor shall survey the Site and existing buildings and improvements to observe existing damage and defects such as cracks, sags, broken, missing or damaged glazing, other building elements and Site improvements, and other damage.
- C. Should Contractor observe cracks, sags, and other damage to and defects of the Site and adjacent buildings, paving, and other items not indicated in the Contract Documents, Contractor shall immediately report same to the District and the Architect.

1.08 CONTRACTOR'S USE OF PREMISES

- A. If unoccupied and only with District's prior written approval, Contractor may use the building(s) at the Project Site without limitation for its operations, storage, and office facilities for the performance of the Work. If the District chooses to beneficially occupy any building(s), Contractor must obtain the District's written approval for Contractor's use of spaces and types of operations to be performed within the building(s) while so occupied. Contractor's access to the building(s) shall be limited to the areas indicated.
- B. If the space at the Project Site is not sufficient for Contractor's operations, storage, office facilities and/or parking, Contractor shall arrange and pay for any additional facilities needed by Contractor.
- C. Contractor shall not interfere with use of or access to occupied portions of the building(s) or adjacent property.
- D. Contractor shall maintain corridors, stairs, halls, and other exit-ways of building clear and free of debris and obstructions at all times.
- E. No one other than those directly involved in the demolition and construction, or specifically designated by the District or the Architect shall be permitted in the areas of work during demolition and construction activities.
- F. The Contractor shall install the construction security fence and maintain that it will be locked when not in use. Keys to this fencing will be provided to the District.

1.09 PROTECTION OF EXISTING STRUCTURES AND UTILITIES

- A. The Drawings show above-grade and below-grade structures, utility lines, and other installations that are known or believed to exist in the area of the Work. Contractor shall locate these existing installations before proceeding with excavation and other operations that could damage same; maintain them in service, where appropriate; and repair damage to them caused by the performance of the Work. Should damage occur to these existing installations, the costs of repair shall be at the Contractor's expense and made to the District's satisfaction.
- B. Contractor shall be alert to the possibility of the existence of additional structures and utilities. If Contractor encounters additional structures and utilities, Contractor will immediately report to the District for disposition of same as indicated in the General Conditions.

1.10 UTILITY SHUTDOWNS AND INTERRUPTIONS

- A. Contractor shall give the District a minimum of three (3) days written notice in advance of any need to shut off existing utility services or to effect equipment interruptions. The District will set exact time and duration for shutdown, and will assist Contractor with shutdown. Work required to re-establish utility services shall be performed by the Contractor.

- B. Contractor shall obtain District's written approval as indicated in the General Conditions in advance of deliveries of material or equipment or other activities that may conflict with District's use of the building(s) or adjacent facilities.

1.11 STRUCTURAL INTEGRITY

- A. Contractor shall be responsible for and supervise each operation and work that could affect structural integrity of various building elements, both permanent and temporary.
- B. Contractor shall include structural connections and fastenings as indicated or required for complete performance of the Work.

PART 2 – PRODUCTS Not Used.

PART 3 – EXECUTION Not Used.

END OF DOCUMENT

ALTERNATES AND UNIT PRICING

PART 1 – ALTERNATES

1.01 RELATED DOCUMENTS AND PROVISIONS:

All Contract Documents should be reviewed for applicable provisions related to the provisions in this document, including without limitation:

- A. General Conditions;
- B. Special Conditions;
- C. Bid Form and Proposal;
- D. Instruction to Bidders.

1.02 DESCRIPTION

The items of work indicated below propose modifications to, substitutions for, additions to and/or deletions from the various parts of the Work specified in other Sections of the Specifications. The acceptance or rejection of any of the alternates is strictly at the option of the District subject to District's acceptance of Contractor's stated prices contained in this Proposal.

1.03 GENERAL

Where an item is omitted, or scope of Work is decreased, all Work pertaining to the item whether specifically stated or not, shall be omitted and where an items is added or modified or where scope of Work is increased, all Work pertaining to that required to render same ready for use on the Project in accordance with intention of Drawings and Specifications shall be included in an agreed upon price amount.

1.04 BASE BID

The Base Bid includes all work required to construct the Project completely and in accordance with the Contract Documents.

1.05 ALTERNATES

Not used

PART 2 - UNIT PRICING

2.01 GENERAL

Contractor shall completely state all required figures based on Unit Prices listed below. Where scope of Work is decreased, all Work pertaining to the item, whether specifically stated or not, shall be omitted and where scope of Work is increased, all work pertaining to that item required to render same ready for use on the Project in

accordance with intention of Drawings and Specifications shall be included in an agreed upon price amount.

2.02 UNIT PRICES

Furnish unit prices for each of the named items on a square foot, lineal foot, or per each basis, as applies. Unit prices shall include all labor, materials, services, profit, overhead, insurance, bonds, taxes, and all other incidental costs of Contractor, subcontractors, and supplier(s).

Not used

END OF DOCUMENT

PRODUCT OPTIONS AND SUBSTITUTIONS

PART 1 - GENERAL

1.01 RELATED DOCUMENTS AND PROVISIONS

All Contract Documents should be reviewed for applicable provisions related to the provisions in this document, including without limitation:

- A. Instructions to Bidders;
- B. General Conditions, including, without limitation, Substitutions For Specified Items;
- C. Special Conditions.

1.02 SUBSTITUTIONS OF MATERIALS AND EQUIPMENT:

- A. Catalog numbers and specific brands or trade names followed by the designation "or equal" are used in conjunction with material and equipment required by the Specifications to establish the standards of quality, utility, and appearance required. Substitutions which are equal in quality, utility, and appearance to those specified may be reviewed subject to the provisions of the General Conditions.
- B. Wherever more than one manufacturer's product is specified, the first-named product is the basis for the design used in the work and the use of alternative-named manufacturers' products or substitutes may require modifications in that design. If such alternatives are proposed by Contractor and are approved by the District and/or the Architect, Contractor shall assume all costs required to make necessary revisions and modifications of the design resulting from the substitutions requested by the Contractor.
- C. When materials and equipment are specified by first manufacturer's name and product number, second manufacturer's name and "or approved equal," supporting data for the second product, if proposed by Contractor, shall be submitted in accordance with the requirements for substitutions.
- D. If the District and/or Architect, in reviewing proposed substitute materials and equipment, require revisions or corrections to be made to previously accepted Shop Drawings and supplemental supporting data to be resubmitted, Contractor shall promptly do so. If any proposed substitution is judged by the District and/or Architect to be unacceptable, the specified material or equipment shall be provided.
- E. Samples may be required. Tests required by the District and/or Architect for the determination of quality and utility shall be made at the expense of Contractor, with acceptance of the test procedure first given by the District.
- F. In reviewing the supporting data submitted for substitutions, the District and/or Architect will use for purposes of comparison all the characteristics of the

specified material or equipment as they appear in the manufacturer's published data even though all the characteristics may not have been particularly mentioned in the Contract Documents. If more than two (2) submissions of supporting data are required, the cost of reviewing the additional supporting data shall be borne by Contractor, and the District will deduct the costs from the Contract Price.

PART 2 – PRODUCTS Not Used.

PART 3 – EXECUTION Not Used.

END OF DOCUMENT

DOCUMENT 01 26 00

CHANGES IN THE WORK

**CONTRACTOR SHALL COMPLY WITH ALL APPLICABLE PROVISIONS IN THE
GENERAL CONDITIONS RELATED TO CHANGES AND/OR REQUESTS FOR CHANGES**

END OF DOCUMENT

DOCUMENT 01 29 00

**APPLICATION FOR PAYMENT AND
CONDITIONAL AND UNCONDITIONAL WAIVER AND RELEASE FORMS**

**CONTRACTOR SHALL COMPLY WITH ALL PROVISIONS IN THE GENERAL
CONDITIONS RELATED TO APPLICATIONS FOR PAYMENT AND/OR PAYMENTS.**

SOLANO COMMUNITY COLLEGE DISTRICT

**APPLICATION FOR PAYMENT AND
CONDITIONAL AND UNCONDITIONAL
WAIVER AND RELEASE FORMS
DOCUMENT 00 29 00-1**

**CONDITIONAL WAIVER AND RELEASE
ON PROGRESS PAYMENT**
(Civil Code Section 8132)

NOTICE: THIS DOCUMENT WAIVES THE CLAIMANT'S LIEN, STOP PAYMENT NOTICE, AND PAYMENT BOND RIGHTS EFFECTIVE ON RECEIPT OF PAYMENT. A PERSON SHOULD NOT RELY ON THIS DOCUMENT UNLESS SATISFIED THAT THE CLAIMANT HAS RECEIVED PAYMENT.

Name of Claimant: _____

Name of Customer: _____

Job Location: _____

Owner: _____

Through Date: _____

Conditional Waiver and Release

This document waives and releases lien, stop payment notice, and payment bond rights the claimant has for labor and service provided, and equipment and material delivered, to the customer on this job through the Through Date of this document. Rights based upon labor or service provided, or equipment or material delivered, pursuant to a written change order that has been fully executed by the parties prior to the date that this document is signed by the claimant, are waived and released by this document, unless listed as an Exception below. This document is effective only on the claimant's receipt of payment from the financial institution on which the following check is drawn:

Maker of Check: _____

Amount of Check: \$ _____

Check Payable to: _____

Exceptions

This document does not affect any of the following:

- (1) Retentions.
- (2) Extras for which the claimant has not received payment.
- (3) The following progress payments for which the claimant has previously given a conditional waiver and release but has not received payment:

Date(s) of waiver and release: _____

Amount(s) of unpaid progress payment(s): \$ _____

- (4) Contract rights, including (A) a right based on rescission, abandonment, or breach of contract, and (B) the right to recover compensation for work not compensated by the payment.

Claimant's Signature: _____

Claimant's Title: _____

Date of Signature: _____

**UNCONDITIONAL WAIVER AND RELEASE
ON PROGRESS PAYMENT**
(Civil Code Section 8134)

NOTICE TO CLAIMANT: THIS DOCUMENT WAIVES AND RELEASES LIEN, STOP PAYMENT NOTICE, AND PAYMENT BOND RIGHTS UNCONDITIONALLY AND STATES THAT YOU HAVE BEEN PAID FOR GIVING UP THOSE RIGHTS. THIS DOCUMENT IS ENFORCEABLE AGAINST YOU IF YOU SIGN IT, EVEN IF YOU HAVE NOT BEEN PAID. IF YOU HAVE NOT BEEN PAID, USE A CONDITIONAL WAIVER AND RELEASE FORM.

Name of Claimant: _____

Name of Customer: _____

Job Location: _____

Owner: _____

Through Date: _____

Unconditional Waiver and Release

This document waives and releases lien, stop payment notice, and payment bond rights the claimant has for labor and service provided, and equipment and material delivered, to the customer on this job through the Through Date of this document. Rights based upon labor or service provided, or equipment or material delivered, pursuant to a written change order that has been fully executed by the parties prior to the date that this document is signed by the claimant, are waived and released by this document, unless listed as an Exception below. The claimant has received the following progress payment: \$_____.

Exceptions

This document does not affect any of the following:

- (1) Retentions.
- (2) Extras for which the claimant has not received payment.
- (3) Contract rights, including (A) a right based on rescission, abandonment, or breach of contract, and (B) the right to recover compensation for work not compensated by the payment.

Claimant's Signature: _____

Claimant's Title: _____

Date of Signature: _____

**CONDITIONAL WAIVER AND RELEASE
ON FINAL PAYMENT**
(Civil Code Section 8136)

NOTICE: THIS DOCUMENT WAIVES THE CLAIMANT'S LIEN, STOP PAYMENT NOTICE, AND PAYMENT BOND RIGHTS EFFECTIVE ON RECEIPT OF PAYMENT. A PERSON SHOULD NOT RELY ON THIS DOCUMENT UNLESS SATISFIED THAT THE CLAIMANT HAS RECEIVED PAYMENT.

Name of Claimant: _____

Name of Customer: _____

Job Location: _____

Owner: _____

Conditional Waiver and Release

This document waives and releases lien, stop payment notice, and payment bond rights the claimant has for labor and service provided, and equipment and material delivered, to the customer on this job. Rights based upon labor or service provided, or equipment or material delivered, pursuant to a written change order that has been fully executed by the parties prior to the date that this document is signed by the claimant, are waived and released by this document, unless listed as an Exception below. This document is effective only on the claimant's receipt of payment from the financial institution on which the following check is drawn:

Maker of Check: _____

Amount of Check: \$ _____

Check Payable to: _____

Exceptions

This document does not affect any of the following: _____

Disputed claims for extras in the amount of: \$ _____

Claimant's Signature: _____

Claimant's Title: _____

Date of Signature: _____

**UNCONDITIONAL WAIVER AND RELEASE
ON FINAL PAYMENT**
(Civil Code Section 8138)

NOTICE TO CLAIMANT: THIS DOCUMENT WAIVES AND RELEASES LIEN, STOP PAYMENT NOTICE, AND PAYMENT BOND RIGHTS UNCONDITIONALLY AND STATES THAT YOU HAVE BEEN PAID FOR GIVING UP THOSE RIGHTS. THIS DOCUMENT IS ENFORCEABLE AGAINST YOU IF YOU SIGN IT, EVEN IF YOU HAVE NOT BEEN PAID. IF YOU HAVE NOT BEEN PAID, USE A CONDITIONAL WAIVER AND RELEASE FORM.

Name of Claimant: _____

Name of Customer: _____

Job Location: _____

Owner: _____

Unconditional Waiver and Release

This document waives and releases lien, stop payment notice, and payment bond rights the claimant has for all labor and service provided, and equipment and material delivered, to the customer on this job. Rights based upon labor or service provided, or equipment or material delivered, pursuant to a written change order that has been fully executed by the parties prior to the date that this document is signed by the claimant, are waived and released by this document, unless listed as an Exception below. The claimant has been paid in full.

Exceptions

This document does not affect any of the following: _____

Disputed claims for extras in the amount of: \$_____

Claimant's Signature: _____

Claimant's Title: _____

Date of Signature: _____

PROJECT MEETINGS

PART I – GENERAL

1.01 RELATED DOCUMENTS AND PROVISIONS:

All Contract Documents should be reviewed for applicable provisions related to the provisions in this document, including without limitation:

- A. General Conditions;
- B. Special Conditions;
- C. Summary of Work; and
- D. Submittals.

1.02 SECTION INCLUDES:

- A. Scheduling of Work under this Contract shall be performed by Contractor in accordance with requirements of this Section.
 - (1) Development of schedule, cost and resource loading of the schedule, monthly payment requests, and project status reporting requirements of the Contract shall employ computerized Critical Path Method (“CPM”) scheduling (“CPM Schedule”).
 - (2) CPM Schedule shall be cost loaded based on Schedule of Values as approved by District.
 - (3) Submit schedules and reports as specified in the General Conditions.
- B. Upon Award of Contract, Contractor shall immediately commence development of Initial and Original CPM Schedules to ensure compliance with CPM Schedule submittal requirements.

1.03 CONSTRUCTION SCHEDULE:

- A. Within ten (10) days of being awarded the Contract and before request for first progress payment, the Contractor shall prepare and submit to the Project Manager a construction progress schedule conforming to the Milestone Schedule below.
- B. The Construction Schedule shall be continuously updated, and an updated schedule shall be submitted with each application for progress payment. Each revised schedule shall indicate the work actually accomplished during the previous period and the schedule for completion of the remaining work.

C. Milestone Schedule:

ACTIVITY DESCRIPTION

REQUIRED COMPLETION

Project Time of Completion is 40 Working Days. The first working day shall be as shown in the Notice to Proceed

1.04 QUALIFICATIONS

- A. Contractor shall employ experienced scheduling personnel qualified to use the latest version of **Microsoft Project, Primavera Project Planner or equivalent**. Experience level required is set forth below. Contractor may employ such personnel directly or may employ a consultant for this purpose.
- (1) The written statement shall identify the individual who will perform CPM scheduling.
 - (2) Capability and experience shall be verified by description of construction projects on which individual has successfully applied computerized CPM.
 - (3) Required level of experience shall include at least two (2) projects of similar nature and scope with value not less than three-fourths ($\frac{3}{4}$) of the Total Bid Price of this Project. The written statement shall provide contact persons for referenced projects with current telephone and address information.
- B. District reserves the right to approve or reject Contractor's scheduler or consultant at any time. District reserves the right to refuse replacing Contractor's scheduler or consultant, if District believes replacement will negatively affect the scheduling of Work under this Contract.

1.05 GENERAL

- A. Progress Schedule shall be based on and incorporate milestone and completion dates specified in Contract Documents.
- B. Overall time of completion and time of completion for each milestone shown on Progress Schedule shall adhere to times in the Contract, unless an earlier (advanced) time of completion is requested by Contractor and agreed to by District. Any such agreement shall be formalized by a Change Order.
- (1) District is not required to accept an early completion schedule, i.e., one that shows earlier completion date than the Contract Time.
 - (2) Contractor shall not be entitled to extra compensation in event agreement is reached on an early completion schedule and Contractor completes its Work, for whatever reason, beyond completion date shown in its early completion schedule but within the Contract Time.

- (3) A schedule showing the work completed in less than the Contract Time, and that has been accepted by District, shall be considered to have Project Float. The Project Float is the time between the scheduled completion of the work and the Completion Date. Project Float is a resource available to both District and the Contractor.
- C. Ownership Project Float: Neither the District nor Contractor owns Project Float. The Project owns the Project 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.
- (1) For example, if Party A uses some, but not all of the Project Float and Party B later uses remainder of the Project Float as well as additional time beyond the Project Float, Party B shall be liable for the time that represents a delay to the Completion Date.
 - (2) Party A would not be responsible for the time since it did not consume the entire Project Float and additional Project Float remained; therefore, the Completion Date was unaffected by Party A.
- D. Progress Schedule shall be the basis for evaluating job progress, payment requests, and time extension requests. Responsibility for developing Contract CPM Schedule and monitoring actual progress as compared to Progress Schedule rests with Contractor.
- E. 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. District'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 District, or act to relieve Contractor of its responsibility for means and methods of construction.
- F. Software: Use **Software denoted in Section A above**. Such software shall be compatible with Windows operating system. Contractor shall transmit contract file to District on compact disk at times requested by District.
- G. Transmit each item under the form approved by District.
- (1) Identify Project with District Contract number and name of Contractor.
 - (2) Provide space for Contractor's approval stamp and District's review stamps.
 - (3) Submittals received from sources other than Contractor will be returned to the Contractor without District's review.

1.06 INITIAL CPM SCHEDULE

- A. Initial CPM Schedule submitted for review at the pre-construction conference shall serve as Contractor's schedule for up to ninety (90) calendar days after the Notice to Proceed.
- B. Indicate detailed plan for the Work to be completed in first ninety (90) days of the Contract; details of planned mobilization of plant and equipment; sequence of early operations; procurement of materials and equipment. Show Work beyond ninety (90) calendar days in summary form.
- C. Initial CPM Schedule shall be time-scaled.
- D. Initial CPM Schedule shall be cost and resource loaded. Accepted cost and resource loaded schedule will be used as basis for monthly progress payments until acceptance of the Original CPM Schedule. Use of Initial CPM Schedule for progress payments shall not exceed ninety (90) calendar days.
- E. District and Contractor shall meet to review and discuss the Initial CPM Schedule within seven (7) calendar days after it has been submitted to District.
 - (1) District's review and comment on the schedule shall be limited to Contract conformance (with sequencing, coordination, and milestone requirements).
 - (2) Contractor shall make corrections to schedule necessary to comply with Contract requirements and shall adjust schedule to incorporate any missing information requested by District. Contractor shall resubmit Initial CPM Schedule if requested by District.
- F. If, during the first ninety (90) days after Notice to Proceed, the Contractor is of the opinion that any of the Work included on its Initial CPM Schedule has been impacted, the Contractor shall submit to District a written Time Impact Evaluation ("TIE") in accordance with Article 1.12 of this Section. The TIE shall be based on the most current update of the Initial CPM Schedule.

1.07 ORIGINAL CPM SCHEDULE

- A. Submit a detailed proposed Original CPM Schedule presenting an orderly and realistic plan for completion of the Work in conformance with requirements as specified herein.
- B. Progress Schedule shall include or comply with following requirements:
 - (1) Time scaled, cost and resource (labor and major equipment) loaded CPM schedule.

- (2) No activity on schedule shall have duration longer than fifteen (15) work days, with exception of submittal, approval, fabrication and procurement activities, unless otherwise approved by District.
 - (a) Activity durations shall be total number of actual work days required to perform that activity.
- (3) The start and completion dates of all items of Work, their major components, and milestone completion dates, if any.
- (4) District -furnished materials and equipment, if any, identified as separate activities.
- (5) Activities for maintaining Project Record Documents.
- (6) Dependencies (or relationships) between activities.
- (7) Processing/approval of submittals and shop drawings for all material and equipment required per the Contract. 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 District. 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.
- (8) 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.
- (9) Activity description; what Work is to be accomplished and where.
- (10) The total cost of performing each activity shall be total of labor, material, and equipment, excluding overhead and profit of Contractor. Overhead and profit of the General Contractor shall be shown as a separate activity in the schedule. Sum of cost for all activities shall equal total Contract value.
- (11) Resources required (labor and major equipment) to perform each activity.
- (12) Responsibility code for each activity corresponding to Contractor or Subcontractor responsible for performing the Work.

- (13) Identify the activities which constitute the controlling operations or critical path. No more than twenty-five (25%) of the activities shall be critical or near critical. Near critical is defined as float in the range of one (1) to (10) days.
 - (14) Twenty (20) workdays for developing punch list(s), completion of punch-list items, and final clean up for the Work or any designated portion thereof. No other activities shall be scheduled during this period.
 - (15) Interface with the work of other contractors, District, and agencies such as, but not limited to, utility companies.
 - (16) 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 District, 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 District, 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 District. District shall be permitted to attend scheduled meetings as an observer.
 - (17) Activity durations shall be in Work days.
 - (18) Submit with the schedule a list of anticipated non-Work days, such as weekends and holidays. The Progress Schedule shall exclude in its Work day calendar all non-Work days on which Contractor anticipates critical Work will not be performed.
- C. Original CPM Schedule Review Meeting: Contractor shall, within sixty (60) days from the Notice to Proceed date, meet with District to review the Original CPM Schedule submittal.
- (1) Contractor shall have its Project Manager, Project Superintendent, Project Scheduler, and key Subcontractor representatives, as required by District, in attendance. The meeting will take place over a continuous one (1) day period.

- (2) District's review will be limited to submittal's conformance to Contract requirements including, but not limited to, coordination requirements. However, review may also include:
 - (a) Clarifications of Contract Requirements.
 - (b) Directions to include activities and information missing from submittal.
 - (c) Requests to Contractor to clarify its schedule.
- (3) Within five (5) days of the Schedule Review Meeting, Contractor shall respond in writing to all questions and comments expressed by District at the Meeting.

1.08 ADJUSTMENTS TO CPM SCHEDULE

- A. Adjustments to Original CPM Schedule: Contractor shall have adjusted the Original CPM Schedule submittal to address all review comments from original CPM Schedule review meeting and resubmit network diagrams and reports for District's review.
 - (1) District, within ten (10) days from date that Contractor submitted the revised schedule, will either:
 - (a) Accept schedule and cost and resource loaded activities as submitted, or
 - (b) Advise Contractor in writing to review any part or parts of schedule which either do not meet Contract requirements or are unsatisfactory for District to monitor Project's progress, resources, and status or evaluate monthly payment request by Contractor.
 - (2) District may accept schedule with conditions that the first monthly CPM Schedule update be revised to correct deficiencies identified.
 - (3) When schedule is accepted, it shall be considered the "Original CPM Schedule" which will then be immediately updated to reflect the current status of the work.
 - (4) District reserves right to require Contractor to adjust, add to, or clarify any portion of schedule which may later be discovered to be insufficient for monitoring of Work or approval of partial payment requests. No additional compensation will be provided for such adjustments, additions, or clarifications.

- B. Acceptance of Contractor's schedule by District will be based solely upon schedule's compliance with Contract requirements.
 - (1) By way of Contractor assigning activity durations and proposing sequence of Work, Contractor agrees to utilize sufficient and necessary management and other resources to perform work in accordance with the schedule.
 - (2) Upon submittal of schedule update, updated schedule shall be considered "current" CPM Schedule.
 - (3) Submission of Contractor's schedule to District shall not relieve Contractor of total responsibility for scheduling, sequencing, and pursuing Work to comply with requirements of Contract Documents, including adverse effects such as delays resulting from ill-timed Work.
- C. Submittal of Original CPM Schedule, and subsequent schedule updates, shall be understood to be Contractor's representation that the Schedule meets requirements of Contract Documents and that Work shall be executed in sequence indicated on the schedule.
- D. Contractor shall distribute Original CPM Schedule to Subcontractors for review and written acceptance, which shall be noted on Subcontractors' letterheads to Contractor and transmitted to District for the record.

1.09 MONTHLY CPM SCHEDULE UPDATE SUBMITTALS

- A. Following acceptance of Contractor's Original CPM Schedule, Contractor shall monitor progress of Work and adjust schedule each month to reflect actual progress and any anticipated changes to planned activities.
 - (1) Each schedule update submitted shall be complete, including all information requested for the Original CPM Schedule submittal.
 - (2) Each update shall continue to show all Work activities including those already completed. These completed activities shall accurately reflect "as built" information by indicating when activities were actually started and completed.
- B. A meeting will be held on approximately the twenty-fifth (25th) of each month to review the schedule update submittal and progress payment application.
 - (1) At this meeting, at a minimum, the following items will be reviewed: Percent (%) complete of each activity; Time Impact Evaluations for Change Orders and Time Extension Request; actual and anticipated activity sequence changes; actual and anticipated duration changes; and actual and anticipated Contractor delays.
 - (2) These meetings are considered a critical component of overall monthly schedule update submittal and Contractor shall have appropriate

personnel attend. At a minimum, these meetings shall be attended by Contractor's General Superintendent and Scheduler.

- (3) Contractor shall plan on the meeting taking no less than four (4) hours.
- C. Within five (5) working days after monthly schedule update meeting, Contractor shall submit the updated CPM Schedule update.
- D. Within five (5) work days of receipt of above noted revised submittals, District will either accept or reject monthly schedule update submittal.
 - (1) If accepted, percent (%) complete shown in monthly update will be basis for Application for Payment by the Contractor. The schedule update shall be submitted as part of the Contractor's Application for Payment.
 - (2) If rejected, update shall be corrected and resubmitted by Contractor before the Application for Payment is submitted.
- E. Neither updating, changing or revising of any report, curve, schedule, or narrative submitted to District by Contractor under this Contract, nor District's review or acceptance of any such report, curve, schedule or narrative shall have the effect of amending or modifying in any way the Completion Date or milestone dates or of modifying or limiting in any way Contractor's obligations under this Contract.

1.10 SCHEDULE REVISIONS

- A. Updating the Schedule to reflect actual progress shall not be considered revisions to the Schedule. Since scheduling is a dynamic process, revisions to activity durations and sequences are expected on a monthly basis.
- B. To reflect revisions to the schedule, the Contractor shall provide District with a written narrative with a full description and reasons for each Work activity revised. For revisions affecting the sequence of work, the Contractor shall provide a schedule diagram which compares the original sequence to the revised sequence of work. The Contractor shall provide the written narrative and schedule diagram for revisions two (2) working days in advance of the monthly schedule update meeting.
- C. Schedule revisions shall not be incorporated into any schedule update until the revisions have been reviewed by District. District may request further information and justification for schedule revisions and Contractor shall, within three (3) days, provide District with a complete written narrative response to District's request.
- D. If the Contractor's revision is still not accepted by District, and the Contractor disagrees with District's position, the Contractor has seven (7) calendar days from receipt of District's letter rejecting the revision to provide a written narrative providing full justification and explanation for the revision. The Contractor's failure to respond in writing within seven (7) calendar days of

District's written rejection of a schedule revision shall be contractually interpreted as acceptance of District's position, and the Contractor waives its rights to subsequently dispute or file a claim regarding District's position.

- E. At District's discretion, the Contractor can be required to provide Subcontractor certifications of performance regarding proposed schedule revisions affecting said Subcontractors.

1.11 RECOVERY SCHEDULE

- A. If the Schedule Update shows a completion date twenty-one (21) calendar days beyond the Contract Completion Date, or individual milestone completion dates, the Contractor shall submit to District the proposed revisions to recover the lost time within seven (7) calendar days. As part of this submittal, the Contractor shall provide a written narrative for each revision made to recapture the lost time. If the revisions include sequence changes, the Contractor shall provide a schedule diagram comparing the original sequence to the revised sequence of work.
- B. The revisions shall not be incorporated into any schedule update until the revisions have been reviewed by District.
- C. If the Contractor's revisions are not accepted by District, District and the Contractor shall follow the procedures in paragraph 1.09.C, 1.09.D and 1.09.E above.
- D. At District's discretion, the Contractor can be required to provide Subcontractor certifications for revisions affecting said Subcontractors.

1.12 TIME IMPACTS EVALUATION ("TIE") FOR CHANGE ORDERS, AND OTHER DELAYS

- A. When Contractor is directed to proceed with changed Work, the Contractor shall prepare and submit within fourteen (14) calendar days from the Notice to Proceed a TIE which includes both a written narrative and a schedule diagram depicting how the changed Work affects other schedule activities. The schedule diagram shall show how the Contractor proposes to incorporate the changed Work in the schedule and how it impacts the current schedule-update critical path. The Contractor is also responsible for requesting time extensions based on the TIE's impact on the critical path. The diagram must be tied to the main sequence of schedule activities to enable District to evaluate the impact of changed Work to the scheduled critical path.
- B. Contractor shall be required to comply with the requirements of Paragraph 1.09.A for all types of delays such as, but not limited to, Contractor/Subcontractor delays, adverse weather delays, strikes, procurement delays, fabrication delays, etc.
- C. Contractor shall be responsible for all costs associated with the preparation of TIEs, and the process of incorporating them into the current schedule update. The Contractor shall provide District with four (4) copies of each TIE.

- D. Once agreement has been reached on a TIE, the Contract Time will be adjusted accordingly. If agreement is not reached on a TIE, the Contract Time may be extended in an amount District allows, and the Contractor may submit a claim for additional time claimed by contractor.

1.13 TIME EXTENSIONS

- A. The Contractor is responsible for requesting time extensions for time impacts that, in the opinion of the Contractor, impact the critical path of the current schedule update. Notice of time impacts shall be given in accord with the General Conditions.
- B. Where an event for which District is responsible impacts the projected Completion Date, the Contractor shall provide a written mitigation plan, including a schedule diagram, which explains how (e.g., increase crew size, overtime, etc.) the impact can be mitigated. The Contractor shall also include a detailed cost breakdown of the labor, equipment, and material the Contractor would expend to mitigate District-caused time impact. The Contractor shall submit its mitigation plan to District within fourteen (14) calendar days from the date of discovery of the impact. The Contractor is responsible for the cost to prepare the mitigation plan.
- C. Failure to request time, provide TIE, or provide the required mitigation plan will result in Contractor waiving its right to a time extension and cost to mitigate the delay.
- D. No time will be granted under this Contract for cumulative effect of changes.
- E. District will not be obligated to consider any time extension request unless the Contractor complies with requirements of Contract Documents.
- F. Failure of the Contractor to perform in accordance with the current schedule update shall not be excused by submittal of time extension requests.
- G. If the Contractor does not submit a TIE within the required fourteen (14) calendar days for any issue, it is mutually agreed that the Contractor does not require a time extension for said issue.

1.14 SCHEDULE REPORTS

- A. Submit four (4) copies of the following reports with the Initial CPM Schedule, the Original CPM Schedule, and each monthly update.
- B. Required Reports:
 - (1) Two activity listing reports: one sorted by activity number and one by total Project Float. These reports shall also include each activity's early/late and actual start and finish dates, original and remaining duration, Project Float, responsibility code, and the logic relationship of activities.

- (2) Cost report sorted by activity number including each activity's associated cost, percentage of Work accomplished, earned value- to-date, previous payments, and amount earned for current update period.**Error! Bookmark not defined.**
- (3) Schedule plots presenting time-scaled network diagram showing activities and their relationships with the controlling operations or critical path clearly highlighted.
- (4) Cash flow report calculated by early start, late start, and indicating actual progress. Provide an exhibit depicting this information in graphic form.
- (5) Planned versus actual resource (i.e., labor) histogram calculated by early start and late start.

C. Other Reports

In addition to above reports, District may request, from month-to-month, any two of the following reports. Submit four (4) copies of all reports.

- (1) Activities by early start.
- (2) Activities by late start.
- (3) Activities grouped by Subcontractors or selected trades.
- (4) Activities with scheduled early start dates in a given time frame, such as fifteen (15) or thirty (30) day outlook.

D. Furnish District with report files on compact disks containing all schedule files for each report generated.

1.15 PROJECT STATUS REPORTING

- A. In addition to submittal requirements for CPM scheduling identified in this Section, Contractor shall provide a monthly project status report (i.e., written narrative report) to be submitted in conjunction with each CPM Schedule as specified herein. Status reporting shall be in form specified below.
- B. Contractor shall prepare monthly written narrative reports of status of Project for submission to District. Written status reports shall include:
 - (1) Status of major Project components (percent (%) complete, amount of time ahead or behind schedule) and an explanation of how Project will be brought back on schedule if delays have occurred.
 - (2) Progress made on critical activities indicated on CPM Schedule.
 - (3) Explanations for any lack of work on critical path activities planned to be performed during last month.

- (4) Explanations for any schedule changes, including changes to logic or to activity durations.
- (5) List of critical activities scheduled to be performed next month.
- (6) Status of major material and equipment procurement.
- (7) Any delays encountered during reporting period.
- (8) Contractor shall provide printed report indicating actual versus planned resource loading for each trade and each activity. This report shall be provided on weekly and monthly basis.
 - (a) Actual resource shall be accumulated in field by Contractor, and shall be as noted on Contractor's daily reports. These reports will be basis for information provided in computer-generated monthly and weekly printed reports.
 - (b) Contractor shall explain all variances and mitigation measures.
- (9) Contractor may include any other information pertinent to status of Project. Contractor shall include additional status information requested by District at no additional cost.
- (10) Status reports, and the information contained therein, shall not be construed as claims, notice of claims, notice of delay, or requests for changes or compensation.

1.16 WEEKLY SCHEDULE REPORT

At the Weekly Progress Meeting, the Contractor shall provide and present a time-scaled three (3) week look-ahead schedule that is based and correlated by activity number to the current schedule (i.e., Initial, Original CPM, or Schedule Update).

1.17 DAILY CONSTRUCTION REPORTS

On a daily basis, Contractor shall submit a daily activity report to District for each workday, including weekends and holidays when worked. Contractor shall develop the daily construction reports on a computer-generated database capable of sorting daily Work, manpower, and manhours by Contractor, Subcontractor, area, sub-area, and Change Order Work. Upon request of District, furnish computer disk of this data base. Obtain District's written approval of daily construction report data base format prior to implementation. Include in report:

- A. Project name and Project number.
- B. Contractor's name and address.
- C. Weather, temperature, and any unusual site conditions.

- D. Brief description and location of the day's scheduled activities and any special problems and accidents, including Work of Subcontractors. Descriptions shall be referenced to CPM scheduled activities.
- E. Worker quantities for its own Work force and for Subcontractors of any tier.
- F. Equipment, other than hand tools, utilized by Contractor and Subcontractors.

1.18 PERIODIC VERIFIED REPORTS

Contractor shall complete and verify construction reports on a form prescribed by the Division of the State Architect and file reports on the first day of February, May, August, and November during the preceding quarter year; at the completion of the Contract; at the completion of the Work; at the suspension of Work for a period of more than one (1) month; whenever the services of Contractor or any of Contractor's Subcontractors are terminated for any reason; and at any time a special verified report is required by the Division of the State Architect. Refer to section 4-336 and section 4-343 of Part 1, Title 24 of the California Code of Regulations.

PART 2 - PRODUCTS Not Used.

PART 3 - EXECUTION Not Used.

END OF DOCUMENT

SUBMITTALS

PART 1 - GENERAL

1.01 RELATED DOCUMENTS AND PROVISIONS:

All Contract Documents should be reviewed for applicable provisions related to the provisions in this document, including without limitation:

- A. General Conditions, including, without limitation, Contractor's Submittals and Schedules, Drawings and Specifications;
- B. Special Conditions.

1.02 SECTION INCLUDES:

- A. Definitions:
 - (1) Shop Drawings and Product Data are as indicated in the General Conditions and include, but are not limited to, fabrication, erection, layout and setting drawings, formwork and falsework drawings, manufacturers' standard drawings, descriptive literature, catalogues, brochures, performance and test data, wiring and control diagrams. In addition, there are other drawings and descriptive data pertaining to materials, equipment, piping, duct and conduit systems, and methods of construction as may be required to show that the materials, equipment or systems and all positions conform to the requirement of the Contract Documents, including, without limitation, the Drawings.
 - (2) "Manufactured" applies to standard units usually mass-produced; "fabricated" means specifically assembled or made out of selected materials to meet design requirements. Shop Drawings shall establish the actual detail of manufactured or fabricated items, indicated proper relation to adjoining work and amplify design details of mechanical and electrical equipment in proper relation to physical spaces in the structure.
 - (3) Manufacturer's Instructions: Where any item of Work is required by the Contract Documents to be furnished, installed, or performed, at a minimum, in accordance with a specified product manufacturer's instructions, the Contractor shall procure and distribute copies of these to the District, the Architect, and all other concerned parties and shall furnish, install, or perform the work, at a minimum, in accordance with those instructions.
- B. Samples, Shop Drawings, Product Data, and other items as specified, in accordance with the following requirements:

- (1) Contractor shall submit all Shop Drawings, Product Data, and Samples to the District, the Architect, the Project Inspector, and the Construction Manager.
- (2) Contractor shall comply with all time frames herein and in the General Conditions and, in any case, shall submit required information in sufficient time to permit proper consideration and action before ordering any materials or items represented by such Shop Drawings, Product Data, and/or Samples.
- (3) Contractor shall comply with all time frames herein and in the General Conditions and, in any case, shall allow sufficient time so that no delay occurs due to required lead time in ordering or delivery of any item to the Site. Contractor shall be responsible for any delay in progress of Work due to its failure to observe these requirements.
- (4) Time for completion of Work shall not be extended on account of Contractor's failure to promptly submit Shop Drawings, Product Data, and/or Samples.
- (5) Reference numbers on Shop Drawings shall have Architectural and/or Engineering Contract Drawings reference numbers for details, sections, and "cuts" shown on Shop Drawings. These reference numbers shall be in addition to any numbering system that Contractor chooses to use or has adopted as standard.
- (6) When the magnitude or complexity of submittal material prevents a complete review within the stated time frame, Contractor shall make this submittal in increments to avoid extended delays.
- (7) Contractor shall certify on submittals for review that submittals conform to Contract requirements. In event of any variance, Contractor shall specifically state in transmittal and on Shop Drawings, portions vary and require approval of a substitute. Also certify that Contractor-furnished equipment can be installed in allocated space.
- (8) Unless specified otherwise, sampling, preparation of samples, and tests shall be in accordance with the latest standard of the American Society for Testing and Materials.
- (9) Upon demand by Architect or District, Contractor shall submit samples of materials and/or articles for tests or examinations and consideration before Contractor incorporates same in Work. Contractor shall be solely responsible for delays due to sample(s) not being submitted in time to allow for tests. Acceptance or rejection will be expressed in writing. Work shall be equal to approved samples in every respect. Samples that are of value after testing will remain the property of Contractor.

C. Submittal Schedule:

- (1) Contractor shall prepare its proposed submittal schedule that is coordinated with the its proposed construction schedule and submit both

to the District within ten (10) days after the date of the Notice to Proceed. Contractor's proposed schedules shall become the Project Construction Schedule and the Project Submittal Schedule after each is approved by the District.

- (2) Contractor is responsible for all lost time should the initial submittal be rejected, marked "revised and resubmit", etc.
- (3) All Submittals shall be forwarded to the District by the date indicated on the approved Submittal Schedule, unless an earlier date is necessary to maintain the Construction Schedule, in which case those Submittals shall be forwarded to the District so as not to delay the Construction Schedule..

1.03 SHOP DRAWINGS:

- A. Contractor shall submit one reproducible transparency and six (6) opaque reproductions. The District will review and return the reproducible copy and one (1) opaque reproduction to Contractor.
- B. Before commencing installation of any Work, the Contractor shall submit and receive approval of all drawings, descriptive data, and material list(s) as required to accomplish Work.
- C. Review of Shop Drawings is regarded as a service to assist Contractor and in all cases original Contract Documents shall take precedence as outlined under General Conditions.
- D. No claim for extra time or payment shall be based on work shown on Shop Drawings unless the claim is (1) noted on Contractor's transmittal letter accompanying Shop Drawings and (2) Contractor has complied with all applicable provisions of the General Conditions, including, without limitation, provisions regarding changes and payment, and all required written approvals.
- E. District shall not review Shop Drawings for quantities of materials or number of items supplied.
- F. District's and/or Architect's review of Shop Drawing will be general. District and/or Architect review does not relieve Contractor of responsibility for accuracy, proper fitting, construction of Work, furnishing of materials, or Work required by Contract Documents and not indicated on Shop Drawings. Shop Drawing reviewed by District and/or Architect is not to be construed as approving departures from Contract Documents.
- G. Review of Shop Drawings and Schedules does not relieve Contractor from responsibility for any aspect of those Drawings or Schedules that is a violation of local, County, State, or Federal laws, rules, ordinances, or rules and regulations of commissions, boards, or other authorities or utilities having jurisdiction.
- H. Before submitting Shop Drawings for review, Contractor shall check Shop Drawings of its subcontractors for accuracy, and confirm that all Work

contiguous with and having bearing on other work shown on Shop Drawings is accurately drawn and in conformance with Contract Documents.

I. Submitted drawings and details must bear stamp of approval of Contractor:

- (1) Stamp and signature shall clearly certify that Contractor has checked Shop Drawings for compliance with Drawings.
- (2) If Contractor submits a Shop Drawing without an executed stamp of approval, or whenever it is evident (despite stamp) that Drawings have not been checked the District and/or Architect will not consider them and will return them to the Contractor for revision and resubmission. In that event, it will be deemed that Contractor has not complied with this provision and Contractor shall bear risk of all delays to same extent as if it had not submitted any Shop Drawings or details.

J. Submission of Shop Drawings (in either original submission or when resubmitted with correction) constitutes evidence that Contractor has checked all information thereon and that it accepts and is willing to perform Work as shown.

K. Contractor shall pay for cost of any changes in construction due to improper checking and coordination. Contractor shall be responsible for all additional costs, including coordination. Contractor shall be responsible for costs incurred by itself, the District, the Architect, the Project Inspector, the Construction Manager, any other Subcontractor or contractor, etc., due to improperly checked and/or coordination of submittals.

L. Shop Drawings must clearly delineate the following information:

- (1) Project name and address.
- (2) Architect's name and project number.
- (3) Shop Drawing title, number, date, and scale.
- (4) Names of Contractor, Subcontractor(s) and fabricator.
- (5) Working and erection dimensions.
- (6) Arrangements and sectional views.
- (7) Necessary details, including complete information for making connections with other Work.
- (8) Kinds of materials and finishes.
- (9) Descriptive names of materials and equipment, classified item numbers, and locations at which materials or equipment are to be installed in the Work. Contractor shall use same reference identification(s) as shown on Contract Drawings.

- M. Contractor shall prepare composite drawings and installation layouts when required to solve tight field conditions.
- (1) Shop Drawings shall consist of dimensioned plans and elevations and must give complete information, particularly as to size and location of sleeves, inserts, attachments, openings, conduits, ducts, boxes, structural interferences, etc.
 - (2) Contractor shall coordinate these composite Shop Drawings and installation layouts in the field between itself and its Subcontractor(s) for proper relationship to the Work, the work of other trades, and the field conditions. The Contractor shall check and approve all submittal(s) before submitting them for final review.

1.04 PRODUCT DATA OR NON REPRODUCIBLE SUBMITTALS:

- A. Contractor shall submit manufacturer's printed literature in original form. Any fading type of reproduction will not be accepted. Contractor must submit a minimum of six (6) each, to the District. District shall return one (1) to the Contractor, who shall reproduce whatever additional copies it requires for distribution.
- B. Contractor shall submit six (6) copies of a complete list of all major items of mechanical, plumbing, and electrical equipment and materials in accordance with the approved Submittal Schedule, except as required earlier to comply with the approved Construction Schedule. Other items specified are to be submitted prior to commencing Work. Contractor shall submit items of like kind at one time in a neat and orderly manner. Partial lists will not be acceptable.
- C. Submittals shall include manufacturer's specifications, physical dimensions, and ratings of all equipment. Contractor shall furnish performance curves for all pumps and fans. Where printed literature describes items in addition to that item being submitted, submitted item shall be clearly marked on sheet and superfluous information shall be crossed out. If highlighting is used, Contractor shall mark all copies.
- D. Equipment submittals shall be complete and include space requirements, weight, electrical and mechanical requirements, performance data, and supplemental information that may be requested.

1.05 SAMPLES:

- A. Contractor shall submit for approval Samples as required and within the time frame in the Contract Documents. Materials such as concrete, mortar, etc., which require on-site testing will be obtained from Project Site.
- B. Contractor shall submit four (4) samples except where greater or lesser number is specifically required by Contract Documents including, without limitation, the Specifications.

- (1) Samples must be of sufficient size and quality to clearly illustrate functional characteristics, with integrally related parts and attachment devices.
- (2) Samples must show full range of texture, color, and pattern.
- C. Contractor shall make all Submittals, unless it has authorized Subcontractor(s) to submit and Contractor has notified the District in writing to this effect.
- D. Samples to be shipped prepaid or hand-delivered to the District.
- E. Contractor shall mark samples to show name of Project, name of Contractor submitting, Contract number and segment of Work where representative Sample will be used, all applicable Specifications Sections and documents, Contract Drawing Number and detail, and ASTM or FS reference, if applicable.
- F. Contractor shall not deliver any material to Site prior to receipt of District's and/or Architect's completed written review and approval. Contractor shall furnish materials equal in every respect to approved Samples and execute Work in conformance therewith.
- G. District's and/or Architect's review, acceptance, and/or approval of Sample(s) will not preclude rejections of any material upon discovery of defects in same prior to final acceptance of completed Work.
- H. After a material has been approved, no change in brand or make will be permitted.
- I. Contractor shall prepare its Submittal Schedule and submit Samples of materials requiring laboratory tests to specified laboratory for testing not less than ninety (90) days before such materials are required to be used in Work.
- J. Samples which are rejected must be resubmitted promptly after notification of rejection and be marked "Resubmitted Sample" in addition to other information required.
- K. Field Samples and Mock-Ups are to be removed by Contractor at District's direction:
 - (1) Size: As Specified.
 - (2) Furnish catalog numbers and similar data, as requested.

1.06 REVIEW AND RESUBMISSION REQUIREMENTS:

- A. The District will arrange for review of Sample(s), Shop Drawing(s), Product Data, and other submittal(s) by appropriate reviewer and return to Contractor as provided below within twenty-one (21) days after receipt or within twenty-one (21) days after receipt of all related information necessary for such review, whichever is later.

- B. One (1) copy of product or materials data will be returned to Contractor with the review status.
- C. Samples to be incorporated into the Work will be returned to Contractor, together with a written notice designating the Sample with the appropriate review status and indicating errors discovered on review, if any. Other Samples will not be returned, but the same notice will be given with respect thereto, and that notice shall be considered a return of the Sample.
- D. Contractor shall revise and resubmit any Sample(s), Shop Drawing(s), Product Data, and other submittal(s) as required by the reviewer. Such resubmittals will be reviewed and returned in the same manner as original Sample(s), Shop Drawing(s), Product Data, and other submittal(s), within fourteen (14) days after receipt thereof or within fourteen (14) days after receipt of all related information necessary for such review.
- E. Contractor may proceed with any of the Work covered by Sample(s), Shop Drawing(s), Product Data, and other submittal(s) upon its return if designated as no exception taken, or revise as noted, provided the Contractor proceeds in accordance with the District and/or the Architect's notes and comments.
- F. Contractor shall not begin any of the work covered by a Sample(s), Shop Drawing(s), Product Data, and other submittal(s), designated as revise and resubmit or rejected, until a revision or correction thereof has been reviewed and returned to Contractor.
- G. Sample(s), Shop Drawing(s), Product Data, and other submittal(s) designated as revise and resubmit or rejected and requiring resubmittal, shall be revised or corrected and resubmitted to the District no later than fourteen (14) days or a shorter period as required to comply with the approved Construction Schedule, after its return to Contractor.
- H. Neither the review nor the lack of review of any Sample(s), Shop Drawing(s), Product Data, and other submittal(s) shall waive any of the requirements of the Contract Documents, or relieve Contractor of any obligation thereunder.
- I. District's and/or Architect's review of Shop Drawings does not relieve the Contractor of responsibility for any errors that may exist. Contractor is responsible for the dimensions and design of adequate connections and details and for satisfactory construction of all the Work.

PART 2 – PRODUCTS Not Used.

PART 3 - EXECUTION Not Used.

END OF DOCUMENT

SITE STANDARDS

PART 1 – GENERAL

1.01 RELATED DOCUMENTS AND PROVISIONS:

All Contract Documents should be reviewed for applicable provisions related to the provisions in this document, including without limitation:

- A. General Conditions, including without limitation, Site Access, Conditions, and Regulations;
- B. Special Conditions;
- C. Drug-Free Workplace Certification;
- D. Tobacco-Free Environment Certification;
- E. Criminal Background Investigation/Fingerprinting Certification;
- F. Temporary Facilities and Controls.

1.02 REQUIREMENTS OF THE DISTRICT:

- A. Drug-Free Schools and Safety Requirements:
 - (1) All school sites and other District Facilities have been declared "Drug-Free Zones." No drugs, alcohol and/or smoking are allowed at any time in any buildings and/or grounds on District property. No students, staff, visitors, or contractors are to use drugs on these sites.
 - (2) Smoking and the use of tobacco products by all persons is prohibited on or in District property. District property includes school buildings, school grounds, school owned vehicles and vehicles owned by others while on District property. Contractor shall be post: "Non-Smoking Area" in a highly visible location on Site. Contractor may designate a smoking area outside of District property within the public right-of-way, provided that this area remains quiet and unobtrusive to adjacent neighbors. This smoking area is to be kept clean at all times.
 - (3) Contractor shall ensure that no alcohol, firearms, weapons, or controlled substances enter or are used at the Site. Contractor shall immediately remove from the Site and terminate the employment of any employee(s) found in violation of this provision.
- B. Language: Unacceptable and/or loud language will not be tolerated, "Cat calls" or other derogatory language toward students or public will not be allowed.
- C. Disturbing the Peace (Noise and Lighting):

- (1) Contractor shall observe the noise ordinance of the Site at all times including, without limitation, all applicable local, city, and/or state laws, ordinances, and/or regulations regarding noise and allowable noise levels.
- (2) The use of radios, etc., shall be controlled to keep all sound at a level that cannot be heard beyond the immediate area of use. District reserves the right to prohibit the use of radios at the Site, except for handheld communication radios (e.g., Nextel phones or radios).
- (3) If portable lights are used after dark, all light must be located so as not to direct light into neighboring property.

D. Traffic:

- (1) Driving on the Premises shall be limited to periods when students and public are not present. If driving or deliveries must be made during the school hours, two (2) or more ground guides shall lead the vehicle across the area of travel. In no case shall driving take place across playgrounds or other pedestrian paths during recess, lunch, and/or class period changes. The speed limit on-the Premises shall be five (5) miles per hour (maximum) or less if conditions require.
- (2) All paths of travel for deliveries, including without limitation, material, equipment, and supply deliveries, shall be reviewed and approved by District in advance. Any damage will be repaired to the pre-damaged condition by the Contractor.
- (3) District shall designate a construction entry to the Site. If Contractor requests, District determines it is required, and to the extent possible, District shall designate a staging area so as not to interfere with the normal functioning of school facilities. Location of gates and fencing shall be approved in advance with District and at Contractor's expense.
- (4) Parking areas shall be reviewed and approved by District in advance. No parking is to occur under the drip line of trees or in areas that could otherwise be damaged.

E. All of the above shall be observed and complied with by the Contractor and all workers on the Site. Failure to follow these directives could result in individual(s) being suspended or removed from the work force at the discretion of the District. The same rules and regulations shall apply equally to delivery personnel, inspectors, consultants, and other visitors to the Site.

PART 2 - PRODUCTS Not Used.

PART 3 - EXECUTION Not Used.

END OF DOCUMENT

REGULATORY REQUIREMENTS

PART 1 - GENERAL

1.01 RELATED DOCUMENTS AND PROVISIONS:

All Contract Documents should be reviewed for applicable provisions related to the provisions in this document, including without limitation:

- A. General Conditions, including, without limitation, Obtaining of Permits and Licenses and Work to Comply with All Applicable Regulations;
- B. Special Conditions;
- C. Quality Control.

1.02 DESCRIPTION:

This section covers the general requirements for regulatory requirements pertaining to the Work and is supplementary to all other regulatory requirements mentioned or referenced elsewhere in the Contract Documents.

1.03 REQUIREMENTS OF REGULATORY AGENCIES:

- A. All statutes, ordinances, laws, rules, codes, regulations, standards, and the lawful orders of all public authorities having jurisdiction of the Work, are hereby incorporated into these Contract Documents as if repeated in full herein and are intended to be included in any reference to Code or Building Code, unless otherwise specified, including, without limitation, the references in the list below. Contractor shall make available at the Site copies of all the listed documents applicable to the Work as the District and/or Architect may request, including, without limitation, applicable portions of the California Code of Regulations ("CCR").
- B. This Project shall be governed by applicable regulations, including, without limitation, the State of California 's Administrative Regulations for the Division of the State Architect-Structural Safety (DSA/SS), Chapter 4, Part 1, Title 24, CCR, and the most current version on the date the bids are opened and as it pertains to school construction including, without limitation:
 - (1) Test and testing laboratory per Section 4-335 (District shall pay for the testing laboratory.)
 - (2) Special inspections per Section 4-333(c).
 - (3) Verified reports per Section 4-365 & 4-343(c).

- (4) Duties of the Architect & Engineers shall be per Section 4-333(a) and 4-341.
- (5) Duties of the Contractor shall be per Section 4-343.
- (6) Addenda and Change Orders per Section 4-338.

Contractor shall keep and make available a copy of Part 1 and 2 of the most current version of Title 24 at the Site during construction.

C. Items of deferred approval shall be clearly marked on the first sheet of the Architect's and/or Engineer's approved Drawings. All items later submitted for approval shall be per Title 24 requirements to the DSA.

- (1) Building Standards Administrative Code, Part 1, Title 24, CCR
- (2) California Building Code (CBC), Part 2, Title 24, CCR; (Uniform Building code volumes 1-3 and California Amendments).
- (3) California Electrical Code (CEC), Part 3, Title 24, CCR; (National Electrical Code and California Amendments).
- (4) California Mechanical Code (CMC), Part 4, Title 24, CCR; (Uniform Mechanical Code and California Amendments).
- (5) California Plumbing Code (CPC), Part 5, Title 24, CCR; (Uniform Plumbing Code and California Amendments).
- (6) California Fire Code (CFC), Part 9, Title 24, CCR; (Fire Plumbing Code and California Amendments).
- (7) California Referenced Standards Code, Part 12, Title 24, CCR.
- (8) State Fire Marshal Regulations, Public Safety, Title 19, CCR.
- (9) Partial List of Applicable NFPA Standards:
 - (a) NFPA 13 - Automatic Sprinkler System.
 - (b) NFPA 14 - Standpipes Systems.
 - (c) NFPA 17A - Wet Chemical System
 - (d) NFPA 24 - Private Fire Mains.
 - (e) (California Amended) NFPA 72 - National Fire Alarm Codes.
 - (f) NFPA 253 - Critical Radiant Flux of Floor Covering System.

(g) NFPA 2001 - Clean Agent Fire Extinguishing Systems.

(10) California Division of the State Architect interpretation of Regulations.

PART 2 – PRODUCTS Not Used.

PART 3 – EXECUTION Not Used.

END OF DOCUMENT

ABBREVIATIONS AND ACRONYMS

PART 1 – GENERAL

1.01 RELATED DOCUMENTS AND PROVISIONS:

All Contract Documents should be reviewed for applicable provisions related to the provisions in this document, including without limitation:

- A. General Conditions including without limitation, Definitions;
- B. Special Conditions.

1.02 DOCUMENT INCLUDES:

- A. Abbreviations used throughout the Contract Documents.
- B. Reference to a technical society, organization, or body is by abbreviation, as follows:

1.	AA	Aluminum Association
2.	AAMA	Architectural Aluminum Manufacturers Association
3.	AASHTO	American Association of State Highway and Transportation Officials
4.	ABPA	Acoustical and Board Products Association
5.	ACI	American Concrete Institute
6.	AGA	American Gas Association
7.	AGC	Associated General Contractors
8.	AHC	Architectural Hardware Consultant
9.	AI	Asphalt Institute
10.	AIA	American Institute of Architects
11.	AIEE	American Institute of Electrical Engineers
12.	AISC	American Institute of Steel Construction
13.	AISI	American Iron and Steel Institute
14.	AMCA	Air Moving and Conditioning Association
15.	ANSI	American National Standards Institute
16.	APA	American Plywood Association
17.	ARI	Air Conditioning and Refrigeration Institute
18.	ASHRAE	American Society of Heating, Refrigeration and Air Conditioning Engineers
19.	ASME	American Society of Mechanical Engineers
20.	ASSE	American Society of Structural Engineers
21.	ASTM	American Society of Testing and Materials
22.	AWPB	American Wood Preservers Bureau
23.	AWPI	American Wood preservers Institute
24.	AWS	American Welding Society
25.	AWSC	American Welding Society Code
26.	AWI	Architectural Woodwork Institute
27.	AWWA	American Water Works Association

28.	BIA	Brick Institute of America
29.	CCR	California Code of Regulations
30.	CLFMI	Chain Link Fence Manufacturers Institute
31.	CMG	California Masonry Guild
32.	CRA	California Redwood Association
33.	CRSI	Concrete Reinforcing Steel Institute
34.	CS	Commercial Standards
35.	CSI	Construction Specifications Institute
36.	CTI	Cooling Tower Institute
37.	FGMA	Flat Glass Manufacturer's Association
38.	FIA	Factory Insurance Association
39.	FM	Factory Mutual
40.	FS	Federal Specification
41.	FTI	Facing Title Institute
42.	GA	Gypsum Association
43.	ICC	International Code Council
44.	IEEE	Institute of Electrical and Electronic Engineers
45.	IES	Illumination Engineering Society
46.	LIA	Lead Industries Association
47.	MIA	Marble Institute of America
48.	MLMA	Metal Lath Manufacturers Association
49.	MS	Military Specifications
50.	NAAMM	National Association of Architectural Metal Manufacturers
51.	NBHA	National Builders Hardware Association
52.	NBFU	National Board of Fire Underwriters
53.	NBS	National Bureau of Standards
54.	NCMA	National Concrete Masonry Association
55.	NEC	National Electrical Code
56.	NEMA	National Electrical Manufacturers Association
57.	NFPA	National Fire Protection Association/National Forest Products Association
58.	NMWIA	National Mineral Wool Insulation Association
59.	NTMA	National Terrazzo and Mosaic Association
60.	NWMA	National Woodwork Manufacturer's Association
61.	ORS	Office of Regulatory Services (California)
62.	OSHA	Occupational Safety and Health Act
63.	PCI	Precast Concrete Institute
64.	PCA	Portland Cement Association
65.	PDCA	Painting and Decorating Contractors of America
66.	PDI	Plumbing Drainage Institute
67.	PEI	Porcelain Enamel Institute
68.	PG&E	Pacific Gas & Electric Company
69.	PS	Product Standards
70.	SDI	Steel Door Institute; Steel Deck Institute
71.	SJI	Steel Joist Institute
72.	SSPC	Steel Structures Painting Council
73.	TCA	Tile Council of America
74.	TPI	Truss Plate Institute
75.	UBC	Uniform Building Code
76.	UL	Underwriters Laboratories Code
77.	UMC	Uniform Mechanical Code

78.	USDA	United States Department of Agriculture
79.	VI	Vermiculite Institute
80.	WCLA	West Coast Lumberman's Association
81	WCLB	West Coast Lumber Bureau
82.	WEUSER	Western Electric Utilities Service Engineering Requirements
83.	WIC	Woodwork Institute of California
84.	WPOA	Western Plumbing Officials Association

PART 2 - PRODUCTS Not Used.

PART 3 - EXECUTION Not Used.

END OF DOCUMENT

DEFINITIONS

PART 1 - GENERAL

1.01 RELATED DOCUMENTS AND PROVISION

All Contract Documents should be reviewed for applicable provisions related to the provisions in this document, including without limitation:

- A. General Conditions including without limitation, Definitions;
- B. Special Conditions.

1.02 QUALITY ASSURANCE:

- A. For products or workmanship specified by association, trade, or Federal Standards, Contractor shall comply with requirements of the standard, except when more rigid requirements are specified in the Contract Documents, or are required by applicable codes.
- B. Contractor shall conform to current reference standard publication date in effect on the date of bid opening.
- C. Contractor shall obtain copies of standards unless specifically required not to by the Contract Documents.
- D. Contractor shall maintain a copy of all standards at jobsite during submittals, planning, and progress of the specific Work, until final completion, unless specifically required not to by the Contract Documents.
- E. Should specified reference standards conflict with Contract Documents, Contractor shall request clarification from the District and./or the Architect before proceeding.
- F. The contractual relationship of the parties to the Contract shall not be altered from the contractual relationship as indicated in the Contract Documents by mention or inference otherwise in any referenced document.
- G. Governing Codes shall be as shown in the Contract Documents including, without limitation, the Specifications.

END OF DOCUMENT

REFERENCES**PART 1 - GENERAL****1.01 SCHEDULE OF REFERENCES:**

The following information is intended only for the general assistance of the Contractor, and the District does not represent that all of the information is current. It is the Contractor's responsibility to verify the correct information for each of the entities listed.

AA	Aluminum Association 1525 Wilson Blvd., Suite 600 Arlington, VA 22209 www.aluminum.org	703/358-2960
AABC	Associated Air Balance Council 1518 K Street, NW, Suite 503 Washington, DC 20005 www.aabchq.com	202/737-0202
AAMA	American Architectural Manufacturers Association 1827 Walden Office Sq., Suite 550 Schaumburg, IL 60173-4268 www.aamanet.org	847/303-5664
AASHTO	American Association of State Highway and Transportation Officials 444 N Capitol St. NW - Suite 249 Washington, DC 20001 www.transportation.org	202/624-5800
AATCC	American Association of Textile Chemists and Colorists P.O. Box 12215 One Davis Drive Research Triangle Park, NC 27709 2215 www.aatcc.org	919/549-8141
ACA	American Coatings Association 1500 Rhode Island Ave., NW Washington DC, 20005 www.paint.org	202/462-6272
ACI	American Concrete Institute 38800 Country Club Dr. Farmington Hills, MI 48331-3439 www.aci-int.org	248/848-3700
ACPA	American Concrete Pipe Association 8445 Freeport Parkway, Suite 350 Irving, TX 75063-2595 www.concrete-pipe.org	972/506-7216

ADC	Air Diffusion Council 1901 N. Roselle Road, Suite 800 Schaumburg, Illinois 60195 www.flexibleduct.org	847/706-6750
AF&PA	American Forest and Paper Association 1111 Nineteenth Street, NW, Suite 800 Washington, DC 20036 www.afandpa.org	202/463-2700
AGA	American Gas Association 400 North Capitol Street, NW Washington, DC 20001 www.aga.org	202/824-7000
AGC	Associate General Contractors of America 2300 Wilson Blvd., Suite 400 Arlington, VA 22201 www.agc.org	703/548-3118
AHA	American Hardboard Association 1210 West Northwest Highway Palatine, IL 60067 domensino.com/AHA/default.htm	847/934-8800
AI	Asphalt Institute 2696 Research Park Drive Lexington, KY 40511-8480 www.asphaltinstitute.org	859/288-4960
AIA	The American Institute of Architects 1735 New York Ave., NW Washington, DC 20006-5292 www.aia.org	202/626-7300
AISC	American Institute of Steel Construction One East Wacker Drive Suite 700 Chicago, IL 60601-1802 www.aisc.org	312.670.2400
AIA	American Insurance Association (formerly the National Board of Fire Underwriters) 2101 L Street, NW, Suite 400 Washington, DC 20037 www.aiadc.org	202/828-7100
AISI	American Iron and Steel Institute 25 Massachusetts Ave., NW, Suite 800 Washington, DC 20001 www.steel.org	202/452.7100
AITC	American Institute of Timber Construction 7012 S. Revere Parkway Suite 140 Centennial, CO 80112 www.aitc-glulam.org	303/792.9559

ALI	Associated Laboratories, Inc. P.O. Box 152837 Dallas, TX 75315 www.assoc-labs.com	214/565-0593
ALSC	American Lumber Standards Committee, Inc. P.O. Box 210 Germantown, MD 20875 www.alsc.org	301/972-1700
AMCA	Air Movement and Control Association International, Inc. 30 W. University Drive Arlington Heights, IL 60004 www.amca.org	847/394-0150
ANLA	American Nursery & Landscape Association 1200 G Street NW, Suite 800 Washington, DC 20005 www.anla.org	202/789-2900
ANSI	American National Standards Institute 1899 L Street, NW, 11th Floor Washington, DC, 20036 www.ansi.org	202/293.8020
APA	APA-The Engineered Wood Association 7011 S. 19th Street Tacoma, WA 98466-5333 www.apawood.org	253/565-6600
APA	Architectural Precast Association 6710 Winkler Road, Suite 8 Fort Myers, Florida 33919 www.archprecast.org	239/454-6989
ARI	Air Conditioning and Refrigeration Institute 4100 N. Fairfax Drive, Suite 200 Arlington, VA 22203 www.lightindustries.com/ARI	703/524-8800
ARMA	Asphalt Roofing Manufacturers Association Public Information Department 750 National Press Building 529 14th Street, NW Washington, DC 20045 www.asphaltroofing.org	202/591-2450
ASA	The Acoustical Society of America ASA Office Manager Suite 1N01 2 Huntington Quadrangle Melville, NY 11747-4502 http://asa.aip.org	516/576-2360

ASCE	American Society of Civil Engineers 1801 Alexander Bell Drive Reston, VA 20191 www.asce.org	800/548-2723 703/295-6300
ASHRAE	American Society of Heating, Refrigerating and Air Conditioning Engineers 1791 Tullie Circle, NE Atlanta, GA 30329-2305 www.ashrae.org	800/527-4723 404/636-8400
ASLA	American Society of Landscape Architects 636 Eye Street, NW Washington, DC 20001-3736 www.asla.org	202/898-2444
ASME	American Society of Mechanical Engineers Three Park Avenue New York, NY 10016-5990 www.asme.org	800/434-2763
ASPE	American Society of Plumbing Engineers 2980 S River Rd. Des Plaines, IL 60018 http://aspe.org	847/296-0002
ASQ	American Society for Quality P.O. Box 3005 Milwaukee, WI 53201-3005 or 600 North Plankinton Avenue Milwaukee, WI 53203 http://asq.org	800/248-1946 414/272-8575
ASSE	American Society of Sanitary Engineering 901 Canterbury, Suite A Westlake, Ohio 44145 www.asse-plumbing.org	440/835-3040
ASTM	ASTM International 100 Barr Harbor Drive PO Box C700 West Conshohocken, PA, 19428-2959 www.astm.org	610/832-9500
AWCI	Association of the Wall and Ceiling Industry 513 West Broad Street, Suite 210 Falls Church, VA 22046 www.awci.org	703/538-1600
AWPA	American Wood Protection Association P.O. Box 361784 Birmingham, AL 35236-1784 www.awpa.com	205/733-4077

AWPI	American Wood Preservers Institute 2750 Prosperity Ave. Suite 550 Fairfax, VA 22031-4312 www.arcat.com	800/356-AWPI 703/204-0500
AWS	American Welding Society 8669 Doral Boulevard, Suite 130 Doral, Florida 33166 www.aws.org	800/443-9353 305/443-9353
AWI	Architectural Woodwork Institute 46179 Westlake Drive, Suite 120 Potomac Falls, VA 20165-5874 www.awinet.org	571/323-3636
AWWA	American Water Works Association 6666 West Quincy Avenue Denver, CO 80235 www.awwa.org	800/926-7337 303/794 7711
BHMA	Builders Hardware Manufacturers Association 355 Lexington Avenue, 15th floor New York, NY 10017 www.buildershardware.com	212/297-2122
BIA	The Brick Industry Association 1850 Centennial Park Drive, Suite 301 Reston, VA 20191 www.gobrick.com	703/620-0010
CGA	Compressed Gas Association 14501 George Carter Way, Suite 103 Chantilly VA 20151-2923 www.cganet.com	703/788-2700
CISCA	Ceilings & Interior Systems Construction Association 1010 Jorie Blvd, Suite 30 Oak Brook, IL 60523 www.cisca.org	630/584-1919
CISPI	Cast Iron Soil Pipe Institute 1064 Delaware Avenue SE Atlanta, GA 30316 www.cispi.org	404/622-0073
CLFMI	Chain Link Fence Manufacturers Institute 10015 Old Columbia Road, Suite B-215 Columbia, MD 21046 www.associationsites.com/main- pub.cfm?usr=clfma	410/290-6267
CPA	Composite Panel Association 19465 Deerfield Avenue, Suite 306 Leesburg, VA 20176 www.compositepanel.org	703/724-1128

CPSC	Consumer Product Safety Commission 4330 East West Highway Bethesda, MD 20814 www.cpsc.gov	301/504-7923 800/638-2772
CRA	California Redwood Association 405 Enfrente Drive, Suite 200 Novato, CA 94949 www.calredwood.org	415/382-0662
CRI	Carpet and Rug Institute P.O. Box 2048 Dalton, Georgia 30722-2048 www.carpet-rug.org	706/278-3176
CRSI	Concrete Reinforcing Steel Institute 933 N. Plum Grove Road Schaumburg, IL 60173 4758 www.crsi.org	847/517-1200
CSI	The Construction Specifications Institute 110 South Union Street, Suite 100 Alexandria VA 22314 www.csinet.org	800/689-2900
CTIOA	Ceramic Tile Institute of America 12061 Jefferson Blvd. Culver City, CA 90230-6219 www.ctioa.org	310/574-7800
DHI	Door and Hardware Institute (formerly National Builders Hardware Association) 14150 Newbrook Dr. Chantilly, VA 20151 www.dhi.org	703/222-2010
DIPRA	Ductile Iron Pipe Research Association 2000 2nd Avenue, South Suite 429 Birmingham, AL 35233 www.dipra.org	205/402-8700
DOC	U.S. Department of Commerce 1401 Constitution Ave., NW Washington, D.C. 20230 www.commerce.gov	202/482-2000
DOT	U.S. Department of Transportation 1200 New Jersey Avenue, SE Washington, DC 20590 www.dot.gov	855/368-4200
EJMA	Expansion Joint Manufacturers Association, Inc. 25 North Broadway Tarrytown, NY 10591 www.ejma.org	914/332-0040

EPA	Environmental Protection Agency Ariel Rios Building 1200 Pennsylvania Avenue, N.W. Washington, DC 20460 www.epa.gov	202/272-0167
FCICA	Floor Covering Installation Contractors Association 7439 Millwood Drive West Bloomfield, MI 48322 www.fcica.com	248/661-5015 877/TO-FCICA
FM Global	Factory Mutual Insurance Company Mary Breighner Global Practice Leader Education, Public Entities, Health Care FM Global 9 Woodcrest Court Cincinnati, OH 45246 www.fmglobal.com	513/742-9516
FS	General Services Administration (GSA) Index of Federal Specifications, Standards and Commercial Item Descriptions 470 East L'Enfant Plaza, SW, Suite 8100 Washington, DC 20407 www.gsa.gov	202/619-8925
GA	The Gypsum Association 6525 Belcrest Road, Suite 480 Hyattsville, MD 20782 www.gypsum.org	301/277-8686
GANA	Glass Association of North America 800 SW Jackson St., Suite 1500 Topeka, KS 66612-1200 www.glasswebsite.com	785/271-0208
HMA	Hardwood Manufacturers Association 665 Rodi Road, Suite 305 Pittsburgh, PA 15235 http://hmamembers.org	412/244-0440
HPVA	Hardwood Plywood & Veneer Association 1825 Michael Faraday Drive Reston, Virginia 20190 www.hpva.org	703/435-2900

IAPMO	International Association of Plumbing and Mechanical Officials (formerly the Western Plumbing Officials Association) 4755 E. Philadelphia St. Ontario, CA 91761 www.iapmo.org	909/472-4100
ICC	International Code Council 500 New Jersey Avenue, NW, 6th Floor Washington, DC 20001 www.iccsafe.org	888/422-7233
IEEE	Institute of Electrical and Electronics Engineers 3 Park Avenue, 17th Floor New York, NY 10016-5997 www.ieee.org	212/419-7900
IES	Illuminating Engineering Society 120 Wall Street, Floor 17 New York, NY 10005-4001 www.ies.org	212/248-5000
ITRK	Intertek Testing Services 3933 US Route 11 Cortland, NY 13045 www.intertek.com	607/753-6711
MCAA	Mechanical Contractors Association of America 1385 Piccard Drive Rockville, MD 20850 www.mcaa.org	301/869-5800
MIA	Marble Institute of America 28901 Clemens Rd, Ste 100 Cleveland, OH 44145 www.marble-institute.com	440/250-9222
MMPA (formerly WMMPA)	Moulding & Millwork Producers Association (formerly Wood Moulding & Millwork Producers Association) 507 First Street Woodland, CA 95695 www.wmmpa.com	530/661-9591 800/550-7889
MSS	Manufacturers Standardization Society (MSS) of the Valve and Fittings Industry 127 Park Street, NE Vienna, VA 22180-4602 http://mss-hq.org	703/281-6613
NAAMM	National Association of Architectural Metal Manufacturers 800 Roosevelt Rd. Bldg. C, Suite 312 Glen Ellyn, IL 60137 www.naamm.org	630/942-6591

NAIMA	North American Insulation Manufacturers Association 44 Canal Center Plaza, Suite 310 Alexandria, VA 22314 www.naima.org	703/684-0084
NAPA	National Asphalt Pavement Association 5100 Forbes Blvd. Lanham, MD USA 20706-4407 www.asphaltpavement.org	888/468-6499 301/731-4748
NCSPA	National Corrugated Steel Pipe Association 14070 Proton Road, Suite 100 LB9 Dallas, TX 75244 www.ncspa.org	972/850-1907
NCMA	National Concrete Masonry Association 13750 Sunrise Valley Drive Herndon, VA 20171-4662 www.ncma.org	703/713-1900
NEBB	National Environmental Balancing Bureau 8575 Grovemont Circle Gaithersburg, MD 20877 www.nebb.org	301/977-3698
NECA	National Electrical Contractors Association 3 Bethesda Metro Center, Suite 1100 Bethesda, MD 20814 www.necanet.org	301/657-3110
	National Electrical Manufacturers Association 1300 North 17th Street, Suite 1752 Rosslyn, Virginia 22209 www.nema.org	703/841-3200
NEII	National Elevator Industry, Inc. 1677 County Route 64 P.O. Box 838 Salem, New York 12865-0838 www.neii.org	518/854-3100
NFPA	National Fire Protection Association 1 Batterymarch Park Quincy, Massachusetts USA 02169-7471 www.nfpa.org	617/770-3000
NHLA	National Hardwood Lumber Association PO Box 34518 Memphis, TN 38184 www.nhla.com	901/377-1818

NIA	National Insulation Association 12100 Sunset Hills Road, Suite 330 Reston, VA 20190 www.insulation.org	703/464-6422
NRCA	National Roofing Contractors Association 10255 W. Higgins Road, Suite 600 Rosemont, IL 60018-5607 www.nrca.net	847/299-9070
NSF	NSF International P.O. Box 130140 789 N. Dixboro Road Ann Arbor, MI 48113-0140, USA www.nsf.org	800/673-6275 734/769-8010
NTMA	National Terrazzo and Mosaic Association PO Box 2605 Fredericksburg, TX 78624 www.ntma.com	800/323-9736
OSHA	Occupational Safety and Health Act U.S. Department of Labor Occupational Safety & Health Administration 200 Constitution Ave., NW Washington, D.C. 20210 www.osha.gov	800/321-OSHA (6742)
PCA	Portland Cement Association 5420 Old Orchard Road Skokie, IL 60077 or 500 New Jersey Ave., N.W. 7 th Floor Washington, D.C. 20001 www.cement.org	847/966-6200 202/408-9494
PCI	Precast/Prestressed Concrete Institute 200 W. Adams St. #2100 Chicago, IL 60606 www.pci.org	312/786-0300
PDCA	Painting and Decorating Contractors of America 2316 Millpark Drive, Ste 220 Maryland Heights, MO 63043 www.pdca.com	800/332-PDCA (7322) 314/514-7322
PDI	Plumbing & Drainage Institute 800 Turnpike Street, Suite 300 North Andover, MA 01845 http://pdionline.org	978/557-0720 800/589-8956
PEI	Porcelain Enamel Institute, Inc. P.O. Box 920220 Norcross, GA 30010 www.porcelainenamel.com	770/676-9366

PG&E	Pacific Gas & Electric Company www.pge.com	800/743-5000
PLANET	Professional Landcare Network 950 Herndon Parkway, Suite 450 Herndon, Virginia 20170 www.landcarenetwork.org	703/736-9666 800/395-2522 703/736-9668
RFCI	Resilient Floor Covering Institute 115 Broad Street, Suite 201 La Grange GA 30240 www.rfci.com	706/882-3833
RIS	Redwood Inspection Service 818 Grayson Road, Suite 201 Pleasant Hill, CA 94523 www.redwoodinspection.com	925/935-1499
SDI	Steel Deck Institute P.O. Box 25 Fox River Grove, IL 60021 www.sdi.org	847/458-4647
SDI	Steel Door Institute 30200 Detroit Road Westlake, Ohio 44145 www.steeldoor.org	440/899-0010
SJI	Steel Joist Institute 234 W. Cheves Street Florence, SC 29501 http://steeljoist.org	843/407-4091
SMA	Stucco Manufacturers Association 500 East Yale Loop Irvine, CA 92614 www.stuccomfgassoc.com	949/387.7611
SMACNA	Sheet Metal and Air Conditioning Contractors' National Association 4201 Lafayette Center Drive Chantilly, Virginia 20151-1219 www.smacna.org	703/803-2980
SPI	SPI: The Plastics Industry Trade Association, Inc. 1667 K St., NW, Suite 1000 Washington, DC 20006 www.plasticsindustry.org	202/974-5200
SSPC	Society for Protective Coatings (formerly the Steel Structures Painting Council) 40 24th St 6th Fl Pittsburgh, PA 15222 www.sspc.org	412/281-2331 877/281-7772

TCA	The Tile Council of North America 100 Clemson Research Blvd. Anderson, SC 29625 www.tcnatile.com	864/646-8453
TPI	Truss Plate Institute 218 North Lee Street, Suite 312 Alexandria, VA 22314 www.tpinst.org	703/683-1010
TPI	Turfgrass Producers International 2 East Main Street East Dundee, IL 60118 www.turfgrassod.org	800/405-8873 847/649-5555
TCIA	Tree Care Industry Association (formerly the National Arborist Association) 136 Harvey Road, Suite 101 Londonderry, NH 03053 www.tcia.org	800/733-2622
TVI	The Vermiculite Institute c/o The Schundler Company 150 Whitman Avenue Edison, NJ. 08817 www.vermiculiteinstitute.org	732/287-2244
UL	Underwriters Laboratories Inc. 333 Pfingsten Road Northbrook, IL 60062-2096 www.ul.com	847/272-8800 877/854-3577
UNI	Uni-Bell PVC Pipe Association 2711 LBJ Freeway, Suite 1000 Dallas, TX 75234 www.uni-bell.org	972/243-3902
USDA	U.S. Department of Agriculture 1400 Independence Ave., S.W. Washington, DC 20250 www.usda.gov	202/720-2791
WA	Wallcoverings Association 401 North Michigan Avenue Suite 2200 Chicago, IL 60611 www.wallcoverings.org	312/321-5166

WCLIB	West Coast Lumber Inspection Bureau P.O. Box 23145 Portland, OR 97281 or 6980 S.W. Varns Tigard, OR 97223 www.wclib.org	503/639-0651
WCMA	Window Covering Manufacturers Association 355 Lexington Avenue 15th Floor New York, New York 10017 www.wcmanet.org	212/297-2122
WDMA	Window & Door Manufacturers Association 401 N. Michigan Avenue, Suite 2200 Chicago, IL 60611 or 2025 M Street, NW, Ste. 800 Washington, D.C. 20036-3309 www.wdma.com	312/321-6802 202/367-1157
WI	Woodwork Institute P.O. Box 980247 West Sacramento, CA 95798 www.wicnet.org	916/372-9943
WRI	Wire Reinforcement Institute 942 Main Street Hartford, CT 06103 www.wirereinforcementinstitute.org	860/240-9545
WWCA	Western Wall & Ceiling Contractors Association 1910 N. Lime St. Orange, California 92865 www.wwcca.org	714/221-5520
WWPA	Western Wood Products Association 522 SW Fifth Ave., Suite 500 Portland, OR 97204-2122 www2.wwpa.org	503/224-3930

PART 2 - PRODUCTS Not Used.

PART 3 - EXECUTION Not Used.

END OF DOCUMENT

MATERIALS AND EQUIPMENT

PART 1 - GENERAL

1.01 RELATED DOCUMENTS AND PROVISIONS

All Contract Documents should be reviewed for applicable provisions related to the provisions in this document, including without limitation:

- A. General Conditions, including, without limitation, Purchase of Materials and Equipment;
- B. Special Conditions;
- C. Imported Materials Certification.

1.02 MATERIAL AND EQUIPMENT

- A. Only items approved by the District and/or Architect shall be used.
- B. Contractor shall submit lists of products and other product information in accordance with the Contract Documents, including, without limitation, the provisions regarding the submittals.

1.03 MATERIAL AND EQUIPMENT COLORS

- A. The District and/or Architect will provide a schedule of colors.
- B. No individual color selections will be made until after approval of all pertinent materials and equipment and after receipt of appropriate samples in accordance with the Contract Documents, including, without limitation, the provisions regarding the submittals.
- C. Contractor shall request priority in writing for any item requiring advance ordering to maintain the approved Construction Schedule.

1.04 DELIVERY, STORAGE, AND HANDLING

- A. Contractor shall deliver manufactured materials in original packages, containers, or bundles (with seals unbroken), bearing name or identification mark of manufacturer.
- B. Contractor shall deliver fabrications in as large assemblies as practicable; where specified as shop-primed or shop-finished, package or crate as required to preserve such priming or finish intact and free from abrasion.
- C. Contractor shall store materials in such a manner as necessary to properly protect them from damage. Materials or equipment damaged by handling, weather, dirt, or from any other cause will not be accepted.

- D. Materials are not be acceptable that have been warehoused for long periods of time, stored or transported in improper environment, improperly packaged, inadequately labeled, poorly protected, excessively shipped, deviated from normal distribution pattern, or reassembled.
- E. Contractor shall store material so as to cause no obstructions of sidewalks, roadways, and underground services. Contractor shall protect material and equipment furnished under Contract.
- F. Contractor may store materials on Site with prior written approval by the District, all material shall remain under Contractor's control and Contractor shall remain liable for any damage to the materials. Should the Project Site not have storage area available, the Contractor shall provide for off-site storage at a bonded warehouse and with appropriate insurance coverage at no cost to District.
- G. When any room in Project is used as a shop or storeroom, the Contractor shall be responsible for any repairs, patching, or cleaning necessary due to that use. Location of storage space shall be subject to prior written approval by District.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

- A. Manufacturers listed in various sections of Contract Documents are names of those manufacturers that are believed to be capable of supplying one or more of items specified therein.
- B. The listing of a manufacturer does not imply that every product of that manufacturer is acceptable as meeting the requirements of the Contract Documents.

2.02 FACILITIES AND EQUIPMENT

Contractor shall provide, install, maintain, and operate a complete and adequate facility for handling, the execution, disposal, and distribution of material and equipment as required for proper and timely performance of Work connected with Contract.

2.03 MATERIAL REFERENCE STANDARDS

Where material is specified solely by reference to "standard specifications" and if requested by District, Contractor shall submit for review data on actual material proposed to be incorporated into Work of Contract listing name and address of vendor, manufacturer, or producer, and trade or brand names of those materials, and data substantiating compliance with standard specifications.

PART 3 - EXECUTION

3.01 WORKMANSHIP

- A. Where not more specifically described in any other Contract Documents, workmanship shall conform to methods and operations of best standards and accepted practices of trade or trades involved and shall include items of fabrication, construction, or installation regularly furnished or required for completion (including finish and for successful operation, as intended).
- B. Work shall be executed by tradespersons skilled in their respective lines of Work. When completed, parts shall have been durably and substantially built and present a neat appearance.

3.02 COORDINATION

- A. Contractor shall coordinate installation of Work so as to not interfere with installation of others. Adjustment or rework because of Contractor's failure to coordinate will be at no additional cost to District.
- B. Contractor shall examine in-place work for readiness, completeness, fitness to be concealed or to receive other work, and in compliance with Contract Documents. Concealing or covering Work constitutes acceptance of additional cost which will result should in-place Work be found unsuitable for receiving other Work or otherwise deviating from the requirements of the Contract Documents.

3.03 COMPLETENESS

Contractor shall provide all portions of the Work, unless clearly stated otherwise, installed complete and operational with all elements, accessories, anchorages, utility connections, etc., in manner to assure well-balanced performance, in accordance with manufacturer's recommendations and by Contract Documents. For example, electric water coolers require water, electricity, and drain services; roof drains require drain system; sinks fit within countertop, etc. Terms such as "installed complete," "operable condition," "for use intended," "connected to all utilities," "terminate with proper cap," "adequately anchored," "patch and refinish," "to match similar," should be assumed to apply in all cases, except where completeness of functional or operable condition is specifically stated as not required.

3.04 APPROVED INSTALLER OR APPLICATOR

Installation by a manufacturer's approved installer or applicator is an understood part of Specifications and only approved installer or applicator is to provide on-site Work where specified manufacturer has on-going program of approving (i.e. certifying, bonding, re-warranting) installers or applicators. Newly established relationships between a manufacturer and an installer or applicator who does not have other approved applicator work in progress or completed is not approved for this Project.

3.05 MANUFACTURER'S RECOMMENDATIONS

All installations shall be in accordance with manufacturer's published recommendations and specific written directions of manufacturer's representative. Should Contract Documents differ from recommendations of manufacturer or directions of his representative, Contractor shall analyze differences, make recommendations to the District and the Architect in writing, and shall not proceed until interpretation or clarification has been issued by the District and/or the Architect.

END OF DOCUMENT

QUALITY CONTROL

PART 1 - GENERAL

1.01 RELATED DOCUMENTS AND PROVISIONS:

All Contract Documents should be reviewed for applicable provisions related to the provisions in this document, including without limitation:

- A. General Conditions, including, without limitation, Inspector, Inspections and Tests, Uncovering of Work and Non-conforming of Work and Correction of Work;
- B. Special Conditions.

1.02 RELATED CODES:

- A. The Work is governed by requirements of Title 24, California Code of Regulations ("CCR"), and the Contractor shall keep a copy of these available at the job Site for ready reference during construction.
- B. The Division of the State Architect ("DSA") shall be notified at or before the start of construction.

1.03 OBSERVATION AND SUPERVISION:

- A. The District and Architect or their appointed representatives will review the Work and the Contractor shall provide facilities and access to the Work at all times as required to facilitate this review. Administration by the Architect and any consulting Structural Engineer will be in accordance with applicable regulations, including, without limitation, CCR, Part 1, Title 24, Section 4-341.
- B. One or more Project Inspector(s) approved by DSA and employed by or in contract with the District, referred to hereinafter as the "Project Inspector", will observe the work in accordance with CCR, Part 1, Title 24, Sections 4-333(b) and 4-342:
 - (1) The Project Inspector shall have access to the Work wherever it is in preparation or progress for ascertaining that the Work is in accordance with the Contract Documents and all applicable code sections.. The Contractor shall provide facilities and access as required and shall provide assistance for sampling or measuring materials.
 - (2) The Project Inspector will notify the District and Architect and call the attention of the Contractor to any observed failure of Work or material to conform to Contract Documents.
 - (3) The Project Inspector shall observe and monitor all testing and inspection activities required.

The Contractor shall conform with all applicable laws as indicated in the Contract Documents, including, without limitation, to CCR, Part 1, Title 24, Section 4-343. The Contractor shall supervise and direct the Work and maintain a competent superintendent on the job who is authorized to act in all matters pertaining to the Work. The Contractor's superintendent shall also inspect all materials, as they arrive, for compliance with the Contract Documents. Contractor shall reject defective Work or materials immediately upon delivery or failure of the Work or material to comply with the Contract Documents. The Contractor shall submit verified reports as indicated in the Contract Documents, including, without limitation, the Specifications and as required by Part 1, Title 24, Section 4-336.

1.04 TESTING AGENCIES:

- A. Testing agencies and tests shall be in conformance with the General Documents and the requirements of Part 1, Title 24, Section 4- 335.
- B. Testing and inspection in connection with earthwork shall be under the direction of the District's consulting soils engineer, if any, referred to hereinafter as the "Soils Engineer."
- C. Testing and inspection of construction materials and workmanship shall be performed by a qualified laboratory, referred to hereinafter as the "Testing Laboratory." The Testing Laboratory shall be under direction of an engineer registered in the State of California, shall conform to requirements of ASTM E329, and shall be employed by or in contract with the District.

1.05 TESTS AND INSPECTIONS:

- A. The Contractor shall be responsible for notifying the District and Project Inspector of all required tests and inspections. Contractor shall notify the District and Project Inspector at least seventy-two hours (72) hours in advance of performing any Work requiring testing or inspection.
- B. The Contractor shall provide access to Work to be tested and furnish incidental labor, equipment, and facilities to facilitate all inspections and tests.
- C. The District will pay for first inspections and tests required by the "CCR", and other inspections or tests that the District and/or the Architect may direct to have made, including the following principal items:
 - (1) Tests and observations for earthwork and paving.
 - (2) Tests for concrete mix designs, including tests of trial batches.
 - (3) Tests and inspections for structural steel work.
 - (4) Field tests for framing lumber moisture content.
 - (5) Additional tests directed by the District that establish that materials and installation comply with the Contract Documents.
 - (6) Test and observation of welding and expansion anchors.

- D. The District may at its discretion, pay and back charge the Contractor for:
- (1) Retests or reinspections, if required, and tests or inspections required due to Contractor error or lack of required identifications of material.
 - (2) Uncovering of work in accordance with Contract Documents.
 - (3) Testing done on weekends, holidays, and overtime will be chargeable to the Contractor for the overtime portion.
 - (4) Testing done off Site.
- E. Testing and inspection reports and certifications:
- (1) If initially received by Contractor, Contractor shall provide to each of the following a copy of the agency or laboratory report of each test or inspection or certification.
 - a. The District;
 - b. The Construction Manager, if any;
 - c. The Architect;
 - d. The Consulting Engineer, if any;
 - e. Other engineers on the Project, as appropriate;
 - f. The Project Inspector; and
 - g. The Contractor.
 - (2) When the test or inspection is one required by the CCR, a copy of the report shall also be provided to the DSA.

PART 2 - PRODUCTS

2.01 TYPE OF TEST AND INSPECTIONS:

[THE FOLLOWING ARE EXAMPLES ONLY AND SHOULD BE REVISED AFTER CONSULTATIONS WITH ARCHITECT.]

- A. Slump Test
ASTM C 143

B. Concrete Tests

Testing agency shall test concrete used in the work per the following paragraphs:

- (1) Compressive Strength:
 - a. Minimum number of tests required: One (1) set of three (3) cylinders for each 100 cubic yards (Sec. 2604(h) 01) of concrete or major fraction thereof, placed in one (1) day. See Title 24, Section 2605(g).
 - b. Two cylinders of each set shall be tested at twenty-eight (28) days. One (1) cylinder shall be held in reserve and tested only when directed by the Architect or District.
 - c. Concrete shall test the minimum ultimate compressive strength in 28 days, as specified on the structural drawings.
 - d. In the event that the twenty-eight (28) day test falls below the minimum specified strength, the effective concrete in place shall be tested by taking cores in accordance with UBC Standard No. 26-13 and tested as required for cylinders.
 - e. In the event that the test on core specimens falls below the minimum specified strength, the concrete will be deemed defective and shall be removed and replaced upon such direction of the Architect, and in a manner acceptable to the Division of the State Architect.

C. Reinforcing, Steel

D. Structural Steel Per Title 24 and as noted:

- (1) Material: Steel per Table in Title 24, Section 2712.
- (2) Qualification of Welders (UBC Std. 27-6).
- (3) Shop fabrication (Section 2712(d). Structural steel only).
- (4) Shop and field welding (Section 2712(e)).

PART 3 - EXECUTION Not Used.

END OF DOCUMENT

TEMPORARY FACILITIES AND CONTROLS

PART 1 – GENERAL

1.01 RELATED DOCUMENTS AND PROVISIONS:

All Contract Documents should be reviewed for applicable provisions related to the provisions in this document, including without limitation:

- A. General Conditions;
- B. Special Conditions;
- C. Site Standards.

1.02 TEMPORARY UTILITIES:

- A. Electric Power and Lighting
 - (1) Contractor will pay for power during the course of the Work. To the extent power is available in the building(s) or on the Site, Contractor may use the District's existing utilities by making prearranged payments to the District for the utilities used by Contractor and all Subcontractors. Contractor shall be responsible for providing temporary facilities required to deliver that power service from its existing location in the building(s) or on the Site to point of intended use.
 - (2) Contractor shall verify characteristics of power available in building(s) or on the Site. Contractor shall take all actions required to make modifications where power of higher voltage or different phases of current are required. Contractor shall be fully responsible for providing that service and shall pay all costs required therefor.
 - (3) Contractor shall furnish, wire for, install, and maintain temporary electrical lights wherever it is necessary to provide illumination for the proper performance and/or observation of the Work: a minimum of 20 foot-candles for rough work and 50 foot-candles for finish work.
 - (4) Contractor shall be responsible for maintaining existing lighting levels in the project vicinity should temporary outages or service interruptions occur.

B. Heat and Ventilation

- (1) Contractor shall provide temporary heat to maintain environmental conditions to facilitate progress of the Work, to meet specified minimum conditions for the installation and curing of materials, and to protect materials and finishes from damage due to improper temperature and humidity conditions. Portable heaters shall be standard units complete with controls.
- (2) Contractor shall provide forced ventilation and dehumidification, as required, of enclosed areas for proper installation and curing of materials, to disperse humidity, and to prevent hazardous accumulations of dust, fumes, vapors, and gases.
- (3) Contractor shall pay the costs of installation, maintenance, operation, and removal of temporary heat and ventilation, including costs for fuel consumed, required for the performance of the Work.

C. Water

- (1) Contractor will pay for water during the course of the Work. To the extent water is then available in the building(s) or on the Site, Contractor may use the District's existing utilities by making prearranged payments to the District for the utilities used by Contractor and all Subcontractors. Contractor shall be responsible for providing temporary facilities required to deliver such utility service from its existing location in the building(s) or on the Site to point of intended use.
- (2) Contractor shall use backflow preventers on water lines at point of connection to District's water supply. Backflow preventers shall comply with requirements of Uniform Plumbing Code.
- (3) Contractor shall make potable water available for human consumption.

D. Sanitary Facilities

- (1) Contractor shall provide sanitary temporary facilities in no fewer numbers than required by law and such additional facilities as may be directed by the Inspector for the use of all workers. The facilities shall be maintained in a sanitary condition at all times and shall be left at the Site until removal is directed by the Inspector or Contractor completes all other work at the Site.
- (2) Use of toilet facilities in the Work under construction shall not be permitted except by consent of the Inspector and the District.

- E. Telephone Service
 - (1) Contractor shall arrange with local telephone service company for telephone service for the performance of the Work. Contractor shall, at a minimum, provide in its field office one line for telephone and one line for fax machine.
 - (2) Contractor shall pay the costs for telephone and fax lines installation, maintenance, service, and removal.
- F. Fire Protection:
 - (1) Contractor shall provide and maintain fire extinguishers and other equipment for fire protection. Such equipment shall be designated for use for fire protection only and shall comply with all requirements of the California Fire, State Fire Marshall and/or its designee.
 - (2) Where on-site welding and burning of steel is unavoidable, Contractor shall provide protection for adjacent surfaces.
- G. Trash Removal:
 - (1) Contractor shall provide trash removal on a timely basis.
- H. Temporary Facilities:
 - (1) **none**

1.03 CONSTRUCTION AIDS:

- A. Plant and Equipment:
 - (1) Contractor shall furnish, operate, and maintain a complete plant for fabricating, handling, conveying, installing, and erecting materials and equipment; and for conveyances for transporting workmen. Include elevators, hoists, debris chutes, and other equipment, tools, and appliances necessary for performance of the Work.
 - (2) Contractor shall maintain plant and equipment in safe and efficient operating condition. Damages due to defective plant and equipment, and uses made thereof, shall be repaired by Contractor at no expense to the District.
- B. None of the District's tools and equipment shall be used by Contractor for the performance of the Work.

1.04 BARRIERS AND ENCLOSURES:

- A. Contractor shall obtain the District's written permission for locations and types of temporary barriers and enclosures, including fire-rated materials proposed for use, prior to their installation.

- B. Contractor shall provide and maintain temporary enclosures to prevent public entry and to protect persons using other buildings and portions of the Site and/or Premises, the public, and workers. Contractor shall also protect the Work and existing facilities from the elements, and adjacent construction and improvements, persons, and trees and plants from damage and injury from demolition and construction operations.
- C. Contractor shall provide site access to existing facilities for persons using other buildings and portions of the Site, the public, and for deliveries and other services and activities.
- D. Tree and Plant Protection:
 - (1) Contractor shall preserve and protect existing trees and plants on the Premises that are not designated or required to be removed, and those adjacent to the Premises.
 - (2) Contractor shall provide barriers to a minimum height of 4'-0" around drip line of each tree and plant, around each group of trees and plants, as applicable, in the proximity of demolition and construction operations.
 - (3) Contractor shall not park trucks, store materials, perform Work or cross over landscaped areas. Contractor shall not dispose of paint thinners, water from cleaning, plastering or concrete operations, or other deleterious materials in landscaped areas, storm drain systems, or sewers. Plant materials damaged as a result of the performance of the Work shall, at the option of the District and at Contractor's expense, either be replaced with new plant materials equal in size to those damaged or by payment of an amount representing the value of the damaged materials as determined by the District.
 - (4) Contractor shall remove soil that has been contaminated during the performance of the Work by oil, solvents, and other materials which could be harmful to trees and plants, and replace with good soil, at Contractor's expense.
 - (5) Excavation Around Trees:
 - (a) Excavation within drip lines of trees shall be done only where absolutely necessary and with written permission from the District.
 - (b) Where trenching for utilities is required within drip lines, tunneling under and around roots shall be by hand digging and shall be approved by the District. Main lateral roots and taproots shall not be cut. All roots 2 inches in diameter and larger shall be tunneled under and heavily wrapped with wet burlap so as to prevent scarring or excessive drying. Smaller roots that interfere with installation of new work may be cut

with prior approval by the District. Roots must first be cut with a Vermeer, or equivalent, root cutter prior to any trenching.

- (c) Where excavation for new construction is required within drip line of trees, hand excavation shall be employed to minimize damage to root system. Roots shall be relocated in backfill areas wherever possible. If encountered immediately adjacent to location of new construction, roots shall be cut approximately 6 inches back from new construction.
- (d) Approved excavations shall be carefully backfilled with the excavated materials approved for backfilling. Backfill shall conform to adjacent grades without dips, sunken areas, humps, or other surface irregularities. Do not use mechanical equipment to compact backfill. Tamp carefully using hand tools, refilling and tamping until Final Acceptance as necessary to offset settlement.
- (e) Exposed roots shall not be allowed to dry out before permanent backfill is placed. Temporary earth cover shall be provided, or roots shall be wrapped with four layers of wet, untreated burlap and temporarily supported and protected from damage until permanently relocated and covered with backfill.
- (f) Accidentally broken roots should be sawed cleanly 3 inches behind ragged end.

1.05 SECURITY:

The Contractor shall be responsible for project security for materials, tools, equipment, supplies, and completed and partially completed Work.

1.06 TEMPORARY CONTROLS:

A. Noise Control

- (1) Contractor acknowledges that adjacent facilities may remain in operation during all or a portion of the Work period, and it shall take all reasonable precautions to minimize noise as required by applicable laws and the Contract Documents.
- (2) Notice of proposed noisy operations, including without limitation, operation of pneumatic demolition tools, concrete saws, and other equipment, shall be submitted to the District a minimum of forty-eight (48) hours in advance of their performance.

B. Noise and Vibration

- (1) Equipment and impact tools shall have intake and exhaust mufflers.

- (2) Contractor shall cooperate with District to minimize and/or cease the use of noisy and vibratory equipment if that equipment becomes objectionable by its longevity.

C. Dust and Dirt

- (1) Contractor shall conduct demolition and construction operations to minimize the generation of dust and dirt, and prevent dust and dirt from interfering with the progress of the Work and from accumulating in the Work and adjacent areas including, without limitation, occupied facilities.
- (2) Contractor shall periodically water exterior demolition and construction areas to minimize the generation of dust and dirt.
- (3) Contractor shall ensure that all hauling equipment and trucks carrying loads of soil and debris shall have their loads sprayed with water or covered with tarpaulins, and as otherwise required by local and state ordinance.
- (4) Contractor shall prevent dust and dirt from accumulating on walks, roadways, parking areas, and planting, and from washing into sewer and storm drain lines.

D. Water

Contractor shall not permit surface and subsurface water, and other liquids, to accumulate in or about the vicinity of the Premises. Should accumulation develop, Contractor shall control the water or other liquid, and suitably dispose of it by means of temporary pumps, piping, drainage lines, troughs, ditches, dams, or other methods.

E. Pollution

- (1) No burning of refuse, debris, or other materials shall be permitted on or in the vicinity of the Premises.
- (2) Contractor shall comply with applicable regulatory requirements and anti-pollution ordinances during the conduct of the Work including, without limitation, demolition, construction, and disposal operations.

F. Lighting

- (1) If portable lights are used after dark, all light must be located so as not to direct light into neighboring property.

1.07 JOB SIGN(S):

Not Used

1.08 PUBLICITY RELEASES:

- A. Contractor shall not release any information, story, photograph, plan, or drawing relating information about the Project to anyone, including press and other public communications medium, including, without limitation, on website(s).

PART 2 – PRODUCTS Not used.

PART 3 – EXECUTION Not used.

END OF DOCUMENT

CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL

PART 1 - GENERAL

1.01 RELATED DOCUMENTS AND PROVISIONS:

All Contract Documents should be reviewed for applicable provisions related to the provisions in this document, including without limitation:

- A. General Conditions;
- B. Special Conditions;
- C. Document 01 50 00.

1.02 SECTION INCLUDES:

- A. Administrative and procedural requirements for the following:
 - (1) Salvaging non-hazardous construction waste.
 - (2) Recycling non-hazardous construction waste.
 - (3) Disposing of non-hazardous construction waste.

1.03 DEFINITIONS:

- A. Construction Waste: Building and site improvement materials and other solid waste resulting from construction, remodeling, renovation, or repair operations. Construction waste includes packaging.
- B. Demolition Waste: Building and site improvement materials resulting from demolition or selective demolition operations.
- C. Disposal: Removal off-site of demolition and construction waste and subsequent sale, recycling, reuse, or deposit in landfill or incinerator acceptable to authorities having jurisdiction.
- D. Recycle: Recovery of demolition or construction waste for subsequent processing in preparation for reuse.
- E. Salvage: Recovery of demolition or construction waste and subsequent sale or reuse in another facility.
- F. Salvage and Reuse: Recovery of demolition or construction waste and subsequent incorporation into the Work.

1.04 PERFORMANCE REQUIREMENTS:

- A. General: Develop waste management plan that results in end-of Project rates for salvage/recycling of fifty percent (50%) by weight (or by volume, but not a combination) of total waste generated by the Work.

1.05 SUBMITTALS:

- A. Waste Management Plan: Submit waste management plan within 30 days of date established for commencement of the Work.
- B. Waste Reduction Progress Reports: Concurrent with each Application for Payment, submit copies of report. Include the following information:
 - (1) Material category.
 - (2) Generation point of waste.
 - (3) Total quantity of waste in tons or cubic yards.
 - (4) Quantity of waste salvaged, both estimated and actual in tons or cubic yards.
 - (5) Quantity of waste recycled, both estimated and actual in tons or cubic yards.
 - (6) Total quantity of waste recovered (salvaged plus recycled) in tons or cubic yards.
 - (7) Total quantity of waste recovered (salvaged plus recycled) as a percentage of total waste.
- C. Waste Reduction Calculations: Before request for final payment, submit copies of calculated end-of-Project rates for salvage, recycling, and disposal as a percentage of total waste generated by the Work.
- D. Records of Donations: Indicate receipt and acceptance of salvageable waste donated to individuals and organizations. Indicate whether organization is tax exempt.
- E. Records of Sales: Indicate receipt and acceptance of salvageable waste sold to individuals and organizations. Indicate whether organization is tax exempt.
- F. Recycling and Processing Facility Records: Indicate receipt and acceptance of recyclable waste by recycling and processing facilities licensed to accept them. Include manifests, weight tickets, receipts, and invoices.

- G. Landfill and Incinerator Disposal Records: Indicate receipt and acceptance of waste by landfills and incinerator facilities licensed to accept them. Include manifests, weight tickets, receipts, and invoices.
- H. CHPS Submittal: CHPS letter template for Credit ME2.0 and ME2.1, signed by Contractor, tabulating total waste material, quantities diverted and means by which it is diverted, and statement that requirements for the credit have been met.
- I. Qualification Data: For Waste Management Coordinator.
- J. Statement of Refrigerant Recovery: Signed by refrigerant recovery technician responsible for recovering refrigerant, stating that all refrigerant that was present was recovered and that recovery was performed according to EPA regulations. Include name and address of technician and date refrigerant was recovered.
- K. Submittal procedures and quantities are specified in Document 01300.

1.06 QUALITY ASSURANCE:

- A. Waste Management Coordinator Qualifications: LEED Accredited Professional by U.S. Green Building Council.
- B. Regulatory Requirements: Comply with hauling and disposal regulations of authorities having jurisdiction.
- C. Waste Management Conference: Conduct conference at Project site to comply with requirements. Review methods and procedures related to waste management including, but not limited to, the following:
 - (1) Review and discuss waste management plan including responsibilities of Waste Management Coordinator.
 - (2) Review requirements for documenting quantities of each type of waste and its disposition.
 - (3) Review and finalize procedures for materials separation and verify availability of containers and bins needed to avoid delays.
 - (4) Review procedures for periodic waste collection and transportation to recycling and disposal facilities.
 - (5) Review waste management requirements for each trade.

1.07 WASTE MANAGEMENT PLAN:

- A. General: Develop plan consisting of waste identification, waste reduction work plan, and cost/revenue analysis. Indicate quantities by weight or volume, but use same units of measure throughout waste management plan.
- B. Waste Identification: Indicate anticipated types and quantities of site-clearing and construction waste generated by the Work. Include estimated quantities and assumptions for estimates.
- C. Waste Reduction Work Plan: List each type of waste and whether it will be salvaged, recycled, or disposed of in landfill or incinerator. Include points of waste generation, total quantity of each type of waste, quantity for each means of recovery, and handling and transportation procedures.
 - (1) Salvaged Materials for Reuse: For materials that will be salvaged and reused in this Project, describe methods for preparing salvaged materials before incorporation into the Work.
 - (2) Salvaged Materials for Sale: For materials that will be sold to individuals and organizations, include list of their names, addresses, and telephone numbers.
 - (3) Salvaged Materials for Donation: For materials that will be donated to individuals and organizations, include list of their names, addresses, and telephone numbers.
 - (4) Recycled Materials: Include list of local receivers and processors and type of recycled materials each will accept. Include names, addresses, and telephone numbers.
 - (5) Disposed Materials: Indicate how and where materials will be disposed of. Include name, address, and telephone number of each landfill and incinerator facility.
 - (6) Handling and Transportation Procedures: Include method that will be used for separating recyclable waste including sizes of containers, container labeling, and designated location on Project site where materials separation will be located.

PART 2 - PRODUCTS Not Used.

PART 3 - EXECUTION

3.01 PLAN IMPLEMENTATION:

- A. General: Implement approved waste management plan. Provide handling, containers, storage, signage, transportation, and other items as required to implement waste management plan during the entire duration of the Contract.
 - (1) Comply with Document 01500 for operation, termination, and removal requirements.
- B. Waste Management Coordinator: Engage a waste management coordinator to be responsible for implementing, monitoring, and reporting status of waste management work plan. Coordinator shall be present at Project site full time for duration of Project.
- C. Training: Train workers, subcontractors, and suppliers on proper waste management procedures, as appropriate for the Work occurring at Project site.
 - (1) Distribute waste management plan to everyone concerned within 3 days of submittal return.
 - (2) Distribute waste management plan to entities when they first begin work on site. Review plan procedures and locations established for salvage, recycling, and disposal.
- D. Site Access and Temporary Controls: Conduct waste management operations to ensure minimum interference with roads, streets, walks, walkways, and other adjacent occupied and used facilities.
 - (1) Designate and label specific areas of Project site necessary for separating materials that are to be salvaged, recycled, reused, donated, and sold.
 - (2) Comply with Document 01500 for controlling dust and dirt, environmental protection, and noise control.

3.02 RECYCLING CONSTRUCTION WASTE:

- A. General: Recycle paper and beverage containers used by on-site workers.
- B. Recycling Incentives: Revenues, savings, rebates, tax credits, and other incentives received for recycling waste materials shall accrue to the Contractor.
- C. Procedures: Separate recyclable waste from other waste materials, trash, and debris. Separate recyclable waste by type at Project site to the maximum extent practical.

- (1) Provide appropriately marked containers or bins for controlling recyclable waste until they are removed from Project Site. Include list of acceptable and unacceptable materials at each container and bin.
 - (a) Inspect containers and bins for contamination and remove contaminated materials if found.
 - (2) Stockpile processed materials on site without intermixing with other materials. Place, grade, and shape stockpiles to drain surface water. Cover to prevent windblown dust.
 - (3) Stockpile materials away from construction area. Do not store within drip line of remaining trees.
 - (4) Store components off the ground and protect from the weather.
 - (5) Remove recyclable waste off District property and transport to recycling receiver or processor.
- D. Packaging:
- (1) Cardboard and Boxes: Break down packaging into flat sheets. Bundle and store in a dry location.
 - (2) Polystyrene Packaging: Separate and bag material.
 - (3) Pallets: As much as possible, require deliveries using pallets to remove pallets from Project Site. For pallets that remain on Site, break down pallets into component wood pieces and comply with requirements for recycling wood.
 - (4) Crates: Break down crates into component wood pieces and comply with requirements for recycling wood.
- E. Site-Clearing Wastes: Chip brush, branches, and trees on site.
- F. Wood Materials:
- (1) Clean Cut-Offs of Lumber: Grind or chip into small pieces.
 - (2) Clean Sawdust: Bag sawdust that does not contain painted or treated wood.
- G. Gypsum Board: Stack large clean pieces on wood pallets and store in a dry location.
- (1) Clean Gypsum Board: Grind scraps of clean gypsum board using small mobile chipper or hammer mill. Screen out paper after grinding.

3.03 DISPOSAL OF WASTE:

- A. General: Except for items or materials to be salvaged, recycled, or otherwise reused, remove waste materials from Project Site and legally dispose of them in a landfill or incinerator acceptable to authorities having jurisdiction.
 - (1) Except as otherwise specified, do not allow waste materials that are to be disposed of accumulate on site.
 - (2) Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and areas.
- B. Burning: Do not burn waste materials.
- C. Disposal: Transport waste materials off District property and legally dispose of them.

END OF SECTION

DOCUMENT 01 64 00

OWNER-FURNISHED PRODUCTS

PART 1 – GENERAL

1.01 RELATED DOCUMENTS AND PROVISIONS:

All Contract Documents should be reviewed for applicable provisions related to the provisions in this document, including without limitation:

- A. General Conditions;
- B. Special Conditions; and
- C. Materials and Equipment.

1.02 SECTION INCLUDES:

- A. Requirements for the following:
 - (1) Installing Owner-furnished materials and equipment.
 - (2) Providing necessary utilities, connections and rough-ins.

1.03 DEFINITIONS

- A. Owner: District, who is providing/furnishing materials and equipment.
- B. Installer Contactor: Contractor, who is installing the materials and equipment furnished by the Owner.

1.04 PRODUCT DELIVERY, STORAGE, AND HANDLING:

- A. Receive, store and handle products in accordance with the manufacturer's instructions.
- B. Protect equipment items as required to prevent damage during storage and construction.

PART 2 – PRODUCTS

2.01 GENERAL PRODUCT REQUIREMENTS:

- A. Installer Contractor's Responsibilities:
 - (1) Verify mounting and utility requirements for Owner-furnished materials and equipment items.

- (2) Provide mounting and utility rough in for all items where required.
 - (a) Rough in locations, sizes, capacities, and similar type items shall be as indicated and required by product manufacturer.

B. Owner and Installer Contractor(s) Responsibilities:

- (1) Owner-Furnished/Contractor Installed ("OFICI"): Furnished by the Owner; installed by the Installer Contractor.
 - (a) General: Owner and Installer Contractor(s) will coordinate deliveries of materials and equipment to coincide with the construction schedule.
 - (b) Owner will furnish specified materials and equipment delivered to the site. Owner/vendor's representative shall be present on Site at the time of delivery to comply with the contract requirements and Specifications Section 01600, Materials and Equipment, Article 1.04.
 - (c) The Owner furnishing specified materials and equipment is responsible to provide manufacturer guarantees as required by the Contract to the Installer Contractor.
 - (d) The Installer Contractor shall:
 - 1) Review, verify and accept the approved manufacturer's submittal/Shop Drawings for all materials and equipment required to be installed by the Installer Contractor and furnished by the Owner. Any discrepancies, including but not limited to possible space conflicts, should be brought to the attention of the Project Manager and/or Program Manager, if applicable.
 - 2) Coordinate timely delivery. Installer Contractor shall receive materials and equipment at Site when delivered and give written receipt at time of delivery, noting visible defects or omissions; if such declaration is not given, the Installer Contractor shall assume responsibility for such defects and omissions.
 - 3) Store materials and equipment until ready for installation and protect from loss and damage. Installer Contractor is responsible for providing adequate storage space.
 - 4) Coordinate with other bid package contractors and field measurement to ensure complete installation.
 - 5) Uncrate, assemble, and set in place.
 - 6) Provide adequate supports.

- 7) Install materials and equipment in accordance with manufacturer's recommendations, instructions, and Shop Drawings, supplying labor and material required and making mechanical, plumbing, and electrical connections required to operate equipment.
- 8) Be certified by equipment manufacturer for installation of the specific equipment supplied by the Owner.
- 9) Provide anchorage and/or bracing as required for seismic restraint per Title 24, UBC Standard 27-11 and all other applicable codes.
- 10) Provide the contract-required warranty/guarantee for all work, materials/equipment and installation upon its completion and acceptance by the District. Guarantee includes all costs associated with the removal, shipping to and from the Site, and re-installation of any equipment found to be defective.

C. Compatibility with Space and Service Requirements:

- (1) Equipment items shall be compatible with space limitations indicated and as shown on the Contract Documents and specified in other sections of the Specifications.
- (2) Modifications to equipment items required to conform to space limitations specified for rough in shall not cause additional cost to the District.

D. Manufacturer's printed descriptions, specifications, and instructions shall govern the Work unless specifically indicated or specified otherwise.

2.02 FURNISHED MATERIALS AND EQUIPMENT

- A. All furnished materials and equipment are indicated or scheduled on the Contract Documents.

PART 3 – EXECUTION

3.01 INSTALLATION

- A. Install equipment items in accordance with the manufacturer's instructions.
- B. Set equipment items securely in place, rigidly or flexibly mounted in accordance with manufacturers' directions.
- C. Make electrical and mechanical connections as indicated and required.
- D. Touch-up and restore damaged or defaced finishes to the District's satisfaction.

3.02 CLEANING AND PROTECTION

- A. Repair or replace items not acceptable to the Architect.
- B. Upon completion of installation, clean equipment items in accordance with manufacturer's recommendations, and protect from damage until final acceptance of the Work by the District.

END OF DOCUMENT

SECTION 01 66 00

PRODUCT DELIVERY, STORAGE AND HANDLING

PART 1 - GENERAL

1.01 RELATED DOCUMENTS AND PROVISIONS

All Contract Documents should be reviewed for applicable provisions related to the provisions in this document, including without limitation:

- A. General Conditions, including, without limitation, Site Access, Conditions and Requirements;
- B. Special Conditions.

1.02 PRODUCTS

- A. Products are as defined in the General Conditions.
- B. Contractor shall not use and/or reuse materials and/or equipment removed from existing Premises, except as specifically permitted by the Contract Documents.
- C. Contractor shall provide interchangeable components of the same manufacturer, for similar components.

1.03 TRANSPORTATION AND HANDLING

- A. Contractor shall transport and handle Products in accordance with manufacturer's instructions.
- B. Contractor shall promptly inspect shipments to confirm that Products comply with requirements, quantities are correct, and products are undamaged.
- C. Contractor shall provide equipment and personnel to handle Products by methods to prevent soiling, disfigurement, or damage.

1.04 STORAGE AND PROTECTION

- A. Contractor shall store and protect Products in accordance with manufacturer's instructions, with seals and labels intact and legible. Contractor shall store sensitive products in weather-tight, climate controlled enclosures.
- B. For exterior storage of fabricated Products, Contractor shall place on sloped supports, above ground.
- C. Contractor shall provide off-site storage and protection when Site does not permit on-site storage or protection.

- D. Contractor shall cover products subject to deterioration with impervious sheet covering and provide ventilation to avoid condensation.
- E. Contractor shall store loose granular materials on solid flat surfaces in a well-drained area and prevent mixing with foreign matter.
- F. Contractor shall provide equipment and personnel to store Products by methods to prevent soiling, disfigurement, or damage.
- G. Contractor shall arrange storage of Products to permit access for inspection and periodically inspect to assure Products are undamaged and are maintained under specified conditions.

PART 2 – PRODUCTS Not Used.

PART 3 - EXECUTION Not Used.

END OF DOCUMENT

FIELD ENGINEERING

PART 1 - GENERAL

1.01 RELATED DOCUMENTS AND PROVISIONS:

All Contract Documents should be reviewed for applicable provisions related to the provisions in this document, including without limitation:

- A. General Conditions, including, without limitation, Site Investigation, and Soils Investigation Report;
- B. Special Conditions;
- C. Site-Visit Certification.

1.02 REQUIREMENTS INCLUDED:

- A. Contractor shall provide and pay for field engineering services by a California-registered engineer, required for the project, including, without limitations:
 - (1) Survey work required in execution of the Project.
 - (2) Civil or other professional engineering services specified, or required to execute Contractor's construction methods.

1.03 QUALIFICATIONS OF SURVEYOR OR ENGINEERS:

Contractor shall only use a qualified licensed engineer or registered land surveyor, to whom District makes no objection.

1.04 SURVEY REFERENCE POINTS:

- A. Existing basic horizontal and vertical control points for the Project are those designated on the Drawings.
- B. Contractor shall locate and protect control points prior to starting Site Work and preserve all permanent reference points during construction. In addition Contractor shall:
 - (1) Make no changes or relocation without prior written notice to District and Architect.
 - (2) Report to District and Architect when any reference point is lost or destroyed, or requires relocation because of necessary changes in grades or locations.
 - (3) Require surveyor to replace Project control points based on original survey control that may be lost or destroyed.

1.05 RECORDS:

Contractor shall maintain a complete, accurate log of all control and survey work as it progresses.

1.06 SUBMITTALS:

- A. Contractor shall submit name and address of Surveyor and Professional Engineer to District and Architect prior to its/their work on the Project.
- B. On request of District and Architect, Contractor shall submit documentation to verify accuracy of field engineering work, at no additional cost to the District.
- C. Contractor shall submit a certificate signed by registered engineer or surveyor certifying that elevations and locations of improvements are in conformance or nonconformance with Contract Documents.

PART 2 – PRODUCTS Not Used.

PART 3 - EXECUTION

3.01 COMPLIANCE WITH LAWS:

Contractor is responsible for meeting all applicable codes, OSHA, safety and shoring requirements.

3.02 NONCONFORMING WORK:

Contractor is responsible for any re-surveying required by correction of nonconforming work.

END OF DOCUMENT

CUTTING AND PATCHING

1. PART 1 – GENERAL

1.01 RELATED DOCUMENTS AND PROVISIONS:

All Contract Documents should be reviewed for applicable provisions related to the provisions in this document, including without limitation:

- A. General Conditions, including, without limitation, Inspector, Inspections, and Tests, Integration of Work, Nonconforming Work, and Correction of Work, and Uncovering Work;
- B. Special Conditions;
- C. Hazardous Materials Procedures and Requirements;
- D. Hazardous Materials Certification;
- E. Lead-Based Paint Certification;
- F. Imported Materials Certification.

1.02 CUTTING AND PATCHING:

- A. Contractor shall be responsible for all cutting, fitting, and patching, including associated excavation and backfill, required to complete the Work or to:
 - (1) Make several parts fit together properly.
 - (2) Uncover portions of Work to provide for installation of ill-timed Work.
 - (3) Remove and replace defective Work.
 - (4) Remove and replace Work not conforming to requirements of Contract Documents.
 - (5) Remove Samples of installed Work as specified for testing.
 - (6) Provide routine penetrations of non-structural surfaces for installation of piping and electrical conduit.
 - (7) Attaching new materials to existing remodeling areas – including painting (or other finishes) to match existing conditions.
- B. In addition to Contract requirements, upon written instructions from the District, Contractor shall uncover Work to provide for observations of covered Work in accordance with the Contract Documents; remove samples of installed materials for testing as directed by District; and remove Work to provide for alteration of existing Work.

- C. Contractor shall not cut or alter Work, or any part of it, in such a way that endangers or compromises the integrity of the Work, the Project, or work of others.

1.03 SUBMITTALS:

- A. Prior to any cutting or alterations that may affect the structural safety of Project, or work of others, and well in advance of executing such cutting or alterations, Contractor shall submit written notice to District pursuant to the applicable notice provisions of the Contract Documents, requesting consent to proceed with the cutting or alteration, including the following:
 - (1) The work of the District or other trades.
 - (2) Structural value or integrity of any element of Project.
 - (3) Integrity or effectiveness of weather-exposed or weather-resistant elements or systems.
 - (4) Efficiency, operational life, maintenance or safety of operational elements.
 - (5) Visual qualities of sight-exposed elements.
- B. Contractor's Request shall also include:
 - (1) Identification of Project.
 - (2) Description of affected Work.
 - (3) Necessity for cutting, alteration, or excavations.
 - (4) Affects of Work on District, other trades, or structural or weatherproof integrity of Project.
 - (5) Description of proposed Work:
 - (a) Scope of cutting, patching, alteration, or excavation.
 - (b) Trades that will execute Work.
 - (c) Products proposed to be used.
 - (d) Extent of refinishing to be done.
 - (6) Alternates to cutting and patching.
 - (7) Cost proposal, when applicable.
 - (8) The scheduled date the Contractor intends to perform the Work and the duration of time to complete the Work.

(9) Written permission of other trades whose Work will be affected.

1.04 QUALITY ASSURANCE:

- A. Contractor shall ensure that cutting, fitting, and patching shall achieve security, strength, weather protection, appearance for aesthetic match, efficiency, operational life, maintenance, safety of operational elements, and the continuity of existing fire ratings.
- B. Contractor shall ensure that cutting, fitting, and patching shall successfully duplicate undisturbed adjacent profiles, materials, textures, finishes, colors, and that materials shall match existing construction. Where there is dispute as to whether duplication is successful or has been achieved to a reasonable degree, the District's decision shall be final.

1.05 PAYMENT FOR COSTS:

- A. Cost caused by ill-timed or defective Work or Work not conforming to Contract Documents, including costs for additional services of the District, its consultants, including but not limited to the Construction Manager, the Architect, the Project Inspector(s), Engineers, and Agents, will be paid by Contractor and/or deducted from the Contract by the District.
- B. District shall only pay for cost of Work if it is part of the original Contract Price or if a change has been made to the contract in compliance with the provisions of the General Conditions. Cost of Work performed upon instructions from the District, other than defective or nonconforming Work, will be paid by District on approval of written Change Order. Contractor shall provide written cost proposals prior to proceeding with cutting and patching.

PART 2 - PRODUCTS

2.01 MATERIALS:

- A. Contractor shall provide for replacement and restoration of Work removed. Contractor shall comply with the Contract Documents and with the Industry Standard(s), for the type of Work, and the Specification requirements for each specific product involved. If not specified, Contractor shall first recommend a product of a manufacturer or appropriate trade association for approval by the District.
- B. Materials to be cut and patched include those damaged by the performance of the Work.

PART 3 – EXECUTION

3.01 INSPECTION:

- A. Contractor shall inspect existing conditions of the Site and the Work, including elements subject to movement or damage during cutting and patching,

excavating and backfilling. After uncovering Work, Contractor shall inspect conditions affecting installation of new products.

- B. Contractor shall report unsatisfactory or questionable conditions in writing to District as indicated in the General Conditions and shall proceed with Work as indicated in the General Conditions by District.

3.02 PREPARATION:

- A. Contractor shall provide shoring, bracing and supports as required to maintain structural integrity for all portions of the Project, including all requirements of the Project.
- B. Contractor shall provide devices and methods to protect other portions of Project from damage.
- C. Contractor shall, provide all necessary protection from weather and extremes of temperature and humidity for the Project, including without limitation, any work that may be exposed by cutting and patching Work. Contractor shall keep excavations free from water.

3.03 ERECTION, INSTALLATION AND APPLICATION:

- A. With respect to performance, Contractor shall:
 - (1) Execute fitting and adjustment of products to provide finished installation to comply with and match specified tolerances and finishes.
 - (2) Execute cutting and demolition by methods that will prevent damage to other Work, and provide proper surfaces to receive installation of repairs and new Work.
 - (3) Execute cutting, demolition excavating, and backfilling by methods that will prevent damage to other Work and damage from settlement.
- B. Contractor shall employ original installer or fabricator to perform cutting and patching for:
 - (1) Weather-exposed surfaces and moisture-resistant elements such as roofing, sheet metal, sealants, waterproofing, and other trades.
 - (2) Sight-exposed finished surfaces.
- C. Contractor shall execute fitting and adjustment of products to provide a finished installation to comply with specified products, functions, tolerances, and finishes as shown or specified in the Contract Documents including, without limitation, the Drawings and Specifications.
- D. Contractor shall fit Work airtight to pipes, sleeves, ducts, conduit, and other penetrations through surfaces. Contractor shall conform to all Code requirements for penetrations or the Drawings and Specifications, whichever

calls for a higher quality or more thorough requirement. Contractor shall maintain integrity of both rated and non-rated fire walls, ceilings, floors, etc.

- E. Contractor shall restore Work which has been cut or removed. Contractor shall install new products to provide completed Work in accordance with requirements of the Contract Documents and as required to match surrounding areas and surfaces.
- F. Contractor shall refinish all continuous surfaces to nearest intersection as necessary to match the existing finish to any new finish.

END OF DOCUMENT

ALTERATION PROJECT PROCEDURES

PART 1 – GENERAL

1.01 RELATED DOCUMENTS AND PROVISIONS:

All Contract Documents should be reviewed for applicable provisions related to the provisions in this document, including without limitation:

- A. General Conditions, including, without limitation, Integration of Work, Purchase of Materials and Equipment, Uncovering of Work and Non-conforming Work and Correction of Work and Trenches;
- B. Special Conditions.

PART 2 - PRODUCTS

2.01 PRODUCTS FOR PATCHING AND EXTENDING WORK:

- A. New Materials: As specified in the Contract Documents including, without limitation, in the Specifications, Contractor shall match existing products, conditions, and work for patching and extending work.
- B. Type and Quality of Existing Products: Contractor shall determine by inspection, by testing products where necessary, by referring to existing conditions and to the Work as a standard.

PART 3 - EXECUTION

3.01 EXAMINATION:

- A. Contractor shall verify that demolition is complete and that areas are ready for installation of new Work.
- B. By beginning restoration Work, Contractor acknowledges and accepts the existing conditions.

3.02 PREPARATION:

- A. Contractor shall cut, move, or remove items as necessary for access to alterations and renovation Work. Contractor shall replace and restore these at completion.
- B. Contractor shall remove unsuitable material not as salvage unless otherwise indicated in the Contract Documents. Unsuitable material may include, without limitation, rotted wood, corroded metals, and deteriorated masonry and concrete. Contractor shall replace materials as specified for finished Work.

- C. Contractor shall remove debris and abandoned items from all areas of the Site and from concealed spaces.
- D. Contractor shall prepare surface and remove surface finishes to provide for proper installation of new Work and finishes.
- E. Contractor shall close openings in exterior surfaces to protect existing work from weather and extremes of temperature and humidity. Contractor shall insulate ductwork and piping to prevent condensation in exposed areas. Contractor shall insulate building cavities for thermal and/or acoustical protection, as detailed.

3.03 INSTALLATION:

- A. Contractor shall coordinate Work of all alternations and renovations to expedite completion and to accommodate District occupancy.
- B. Designated Areas and Finishes: Contractor shall complete all installations in all respects, including operational, mechanical work and electrical work.
- C. Contractor shall remove, cut, and patch Work in a manner to minimize damage and to provide a means of restoring Products and finishes to original or specified condition.
- D. Contractor shall refinish visible existing surfaces to remain in renovated rooms and spaces, to specified condition for each material, with a neat transition to adjacent finishes.
- E. Contractor shall install products as specified in the Contract Documents, including without limitation, the Specifications.

3.04 TRANSITIONS:

- A. Where new Work abuts or aligns with existing, Contractor shall perform a smooth and even transition. Patched Work must match existing adjacent work in texture and appearance.
- B. When finished surfaces are cut so that a smooth transition with new Work is not possible, Contractor shall terminate existing surface along a straight line at a natural line of division and make a recommendation for resolution to the District and the Architect for review and approval.

3.05 ADJUSTMENTS:

- A. Where removal of partitions or walls results in adjacent spaces becoming one, Contractor shall rework floors, walls, and ceilings to a smooth plane without breaks, steps, or bulkheads.
- B. Where a change of plane of 1/4 inch or more occurs, Contractor shall submit a recommendation for providing a smooth transition to the District and the Architect for review and approval.

- C. Contractor shall trim existing doors as necessary to clear new floor finish and refinish trim as required.
- D. Contractor shall fit Work at penetrations of surfaces.

3.06 REPAIR OF DAMAGED SURFACES:

- A. Contractor shall patch or replace portions of existing surfaces which are damaged, lifted, discolored, or showing other imperfections.
- B. Contractor shall repair substrate prior to patching finish.

3.07 CULTIVATED AREAS AND OTHER SURFACE IMPROVEMENTS:

- A. Cultivated or planted areas and other surface improvements which are damaged by actions of the Contractor shall be restored by Contractor to their original condition or better, where indicated.
- B. Contractor shall protect and replace, if damaged, all existing guard posts, barricades, and fences.
- C. Contractor shall give special attention to avoid damaging or killing trees, bushes and/or shrubs on the Premises and/or identified the Contract Documents, including without limitation, the Drawings.

3.08 FINISHES:

- A. Contractor shall finish surfaces as specified in the Contract Documents, including without limitations, the provisions of all Divisions of the Specifications.
- B. Contractor shall finish patches to produce uniform finish and texture over entire area. When finish cannot be matched, Contractor shall refinish entire surface to nearest intersections.

3.09 CLEANING:

- A. Contractor shall continually clean the Site and the Premises as indicated in the Contract Documents, including without limitation, the provisions in the General Conditions and the Specifications regarding cleaning.

END OF DOCUMENT

CONTRACT CLOSEOUT AND FINAL CLEANING

PART 1 - GENERAL

1.01 RELATED DOCUMENTS AND PROVISIONS

All Contract Documents should be reviewed for applicable provisions related to the provisions in this document, including without limitation:

- A. General Conditions, including, without limitation, Completion of Work;
- B. Special Conditions;
- C. Temporary Facilities and Controls.

1.02 CLOSEOUT PROCEDURES

Contractor shall comply with all closeout provisions as indicated in the General Conditions.

1.03 FINAL CLEANING

- A. Contractor shall execute final cleaning prior to final inspection.
- B. Contractor shall clean interior and exterior glass and surfaces exposed to view; remove temporary labels, tape, stains, and foreign substances, polish transparent and glossy surfaces, wax and polish new vinyl floor surfaces, vacuum carpeted and soft surfaces.
- C. Contractor shall clean equipment and fixtures to a sanitary condition.
- D. Contractor shall replace filters of operating equipment.
- E. Contractor shall clean debris from roofs, gutters, down spouts, and drainage systems.
- F. Contractor shall clean Site, sweep paved areas, and rake clean landscaped surfaces.
- G. Contractor shall remove waste and surplus materials, rubbish, and construction facilities from the Site.

1.04 ADJUSTING

Contractor shall adjust operating products and equipment to ensure smooth and unhindered operation.

1.05 RECORD DOCUMENTS AND SHOP DRAWINGS

- A. Contractor shall legibly mark each item to record actual construction, including:
- (1) Measured depths of foundation in relation to finish floor datum.
 - (2) Measured horizontal and vertical locations of underground utilities and appurtenances, referenced to permit surface improvements.
 - (3) Measured locations of internal utilities and appurtenances concealed in construction, referenced to visible and accessible features of the Work.
 - (4) Field changes of dimension and detail.
 - (5) Details not on original Contract Drawings
 - (6) Changes made by modification(s).
 - (7) References to related Shop Drawings and modifications.
- B. Contractor will provide one set of Record Drawings to District.
- C. Contractor shall submit all required documents to District and/or Architect prior to or with its final Application for Payment.

1.06 INSTRUCTION OF DISTRICT PERSONNEL

- A. Before final inspection, at agreed upon times, Contractor shall instruct District's designated personnel in operation, adjustment, and maintenance of products, equipment, and systems.
- B. For equipment requiring seasonal operation, Contractor shall perform instructions for other seasons within six months.
- C. Contractor shall use operation and maintenance manuals as basis for instruction. Contractor shall review contents of manual with personnel in detail to explain all aspects of operation and maintenance.
- D. Contractor shall prepare and insert additional data in Operation and Maintenance Manual when need for such data becomes apparent during instruction.
- E. Contractor shall use operation and maintenance manuals as basis for instruction. Contractor shall review contents of manual with personnel in detail to explain all aspects of operation and maintenance.

1.07 SPARE PARTS AND MAINTENANCE MATERIALS

- A. Contractor shall provide products, spare parts, maintenance, and extra materials in quantities specified in the Specifications and in Manufacturer's recommendations.
- B. Contractor shall provide District all required Operation and Maintenance Data.

PART 2 – PRODUCTS Not used.

PART 3 – EXECUTION Not used.

END OF DOCUMENT

OPERATION AND MAINTENANCE DATA

PART 1 – GENERAL

1.01 RELATED DOCUMENTS AND PROVISIONS:

All Contract Documents should be reviewed for applicable provisions related to the provisions in this document, including without limitation:

- A. General Conditions, including, without limitation, Completion of the Work;
- B. Special Conditions.

1.02 QUALITY ASSURANCE:

Contractor shall prepare instructions and data by personnel experienced in maintenance and operation of described products.

1.03 FORMAT:

- A. Contractor shall prepare data in the form of an instructional manual entitled "OPERATIONS AND MAINTENANCE MANUAL & INSTRUCTIONS" ("Manual").
- B. Binders: Contractor shall use commercial quality, 8-1/2 by 11 inch, three-side rings, with durable plastic covers; two inch maximum ring size. When multiple binders are used, Contractor shall correlate data into related consistent groupings.
- C. Cover: Contractor shall identify each binder with typed or printed title "OPERATION AND MAINTENANCE MANUAL & INSTRUCTIONS"; and shall list title of Project and identify subject matter of contents.
- D. Contractor shall arrange content by systems process flow under section numbers and sequence of Table of Contents of the Contract Documents.
- E. Contractor shall provide tabbed fly leaf for each separate product and system, with typed description of product and major component parts of equipment.
- F. Text: The content shall include Manufacturer's printed data, or typewritten data on 24 pound paper.
- G. Drawings: Contractor shall provide with reinforced punched binder tab and shall bind in with text; folding larger drawings to size of text pages.

1.04 CONTENTS, EACH VOLUME:

- A. Table of Contents: Contractor shall provide title of Project; names, addresses, and telephone numbers of the Architect, any engineers, subconsultants, Subcontractor(s), and Contractor with name of responsible parties; and schedule of products and systems, indexed to content of the volume.

- B. For Each Product or System: Contractor shall list names, addresses, and telephone numbers of Subcontractor(s) and suppliers, including local source of supplies and replacement parts.
- C. Product Data: Contractor shall mark each sheet to clearly identify specific products and component parts, and data applicable to installation. Delete inapplicable information.
- D. Drawings: Contractor shall supplement product data to illustrate relations of component parts of equipment and systems, to show control and flow diagrams. Contractor shall not use Project Record Documents as maintenance drawings.
- E. Text: The Contractor shall include any and all information as required to supplement product data. Contractor shall provide logical sequence of instructions for each procedure, incorporating manufacturer's instructions.
- F. Warranties and Bonds: Contractor shall bind in one copy of each.

1.05 MANUAL FOR MATERIALS AND FINISHES:

- A. Building Products, Applied Materials, and Finishes: Contractor shall include product data, with catalog number, size, composition, and color and texture designations. Contractor shall provide information for re-ordering custom manufactured products.
- B. Instructions for Care and Maintenance: Contractor shall include Manufacturer's recommendations for cleaning agents and methods, precautions against detrimental agents and methods, and recommended schedule for cleaning and maintenance.
- C. Moisture Protection and Weather Exposed Products: Contractor shall include product data listing applicable reference standards, chemical composition, and details of installation. Contractor shall provide recommendations for inspections, maintenance, and repair.
- D. Additional Requirements: Contractor shall include all additional requirements as specified in the Specifications.
- E. Contractor shall provide a listing in Table of Contents for design data, with tabbed fly sheet and space for insertion of data.

1.06 MANUAL FOR EQUIPMENT AND SYSTEMS:

- A. Each Item of Equipment and Each System: Contractor shall include description of unit or system, and component parts and identify function, normal operating characteristics, and limiting conditions. Contractor shall include performance curves, with engineering data and tests, and complete nomenclature, and commercial number of replaceable parts.

- B. Panelboard Circuit Directories: Contractor shall provide electrical service characteristics, controls, and communications.
- C. Contractor shall include color coded wiring diagrams as installed.
- D. Operating Procedures: Contractor shall include start-up, break-in, and routine normal operating instructions and sequences. Contractor shall include regulation, control, stopping, shut-down, and emergency instructions. Contractor shall include summer, winter, and any special operating instructions.
- E. Maintenance Requirements: Contractor shall include routine procedures and guide for trouble-shooting; disassembly, repair, and reassembly instructions; and alignment, adjusting, balancing, and checking instructions.
- F. Contractor shall provide servicing and lubrication schedule, and list of lubricants required.
- G. Contractor shall include manufacturer's printed operation and maintenance instructions.
- H. Contractor shall include sequence of operation by controls manufacturer.
- I. Contractor shall provide original manufacturer's parts list, illustrations, assembly drawings, and diagrams required for maintenance.
- J. Contractor shall provide control diagrams by controls manufacturer as installed.
- K. Contractor shall provide Contractor's coordination drawings, with color coded piping diagrams as installed.
- L. Contractor shall provide charts of valve tag numbers, with location and function of each valve, keyed to flow and control diagrams.
- M. Contractor shall provide list of original manufacturer's spare parts, current prices, and recommended quantities to be maintained in storage.
- N. Additional Requirements: Contractor shall include all additional requirements as specified in Specification(s).
- O. Contractor shall provide a listing in Table of Contents for design data, with tabbed fly sheet and space for insertion of data.

1.08 SUBMITTAL:

- A. Contractor shall submit to the District for review two (2) copies of preliminary draft or proposed formats and outlines of the contents of the Manual within thirty (30) days of Contractor's start of Work.
- B. For equipment, or component parts of equipment put into service during construction and to be operated by District, Contractor shall submit draft

content for that portion of the Manual within ten (10) days after acceptance of that equipment or component.

- C. Contractor shall submit two (2) copies of a complete Manual in final form prior to final Application for Payment. Copy will be returned with Architect/Engineer comments. Contractor must revise the content of the Manual as required by District prior to District's approval of Contractor's final Application for Payment.
- D. Contractor must submit two (2) copies of revised Manual in final form within ten (10) days after final inspection.

PART 2 – PRODUCTS Not Used.

PART 3 – EXECUTION Not Used.

END OF DOCUMENT

WARRANTIES

PART 1 - GENERAL

1.01 RELATED DOCUMENTS AND PROVISIONS

All Contract Documents should be reviewed for applicable provisions related to the provisions in this document, including without limitation:

- A. General Conditions, including, without limitation, Warranty/Guarantee Information;
- B. Special Conditions.

1.02 FORMAT

- A. Binders: Contractor shall use commercial quality, 8-1/2 by 11 inch, three-side rings, with durable plastic covers; two inch maximum ring size.
- B. Cover: Contractor shall identify each binder with typed or printed title "WARRANTIES" and shall list title of Project.
- C. Table of Contents: Contractor shall provide title of Project; name, address, and telephone number of Contractor and equipment supplier, and name of responsible principal. Contractor shall identify each item with the number and title of the specific Specification, document, provision, or section in which the name of the product or work item is specified.
- D. Contractor shall separate each warranty with index tab sheets keyed to the Table of Contents listing, providing full information and using separate typed sheets as necessary. Contractor shall list each applicable and/or responsible Subcontractor(s), supplier(s), and/or manufacturer(s), with name, address, and telephone number of each responsible principal(s).

1.03 PREPARATION:

- A. Contractor shall obtain warranties, executed in duplicate by each applicable and/or responsible subcontractor(s), supplier(s), and manufacturer(s), within ten (10) days after completion of the applicable item or work. Except for items put into use with District's permission, Contractor shall leave date of beginning of time of warranty until the date of completion is determined.
- B. Contractor shall verify that documents are in proper form, contain full information, and are notarized, when required.
- C. Contractor shall co-execute submittals when required.
- D. Contractor shall retain warranties until time specified for submittal.

1.04 TIME OF SUBMITTALS:

- A. For equipment or component parts of equipment put into service during construction with District's permission, Contractor shall submit a draft warranty for that equipment or component within ten (10) days after acceptance of that equipment or component.
- B. Contractor shall submit for District approval all warranties and related documents within ten (10) days after date of completion. Contractor must revise the warranties as required by the District prior to District's approval of Contractor's final Application for Payment.
- C. For items of work delayed beyond date of completion, provide updated submittal within ten days after acceptance, listing the date of acceptance as start of warranty period.

PART 2 - PRODUCTS Not Used.

PART 3 – EXECUTION Not Used.

END OF DOCUMENT

RECORD DOCUMENTS

PART 1 - GENERAL

1.01 RELATED DOCUMENTS AND PROVISIONS:

All Contract Documents should be reviewed for applicable provisions related to the provisions in this document, including without limitation:

- A. General Conditions, including, without limitation, Documents on Work;
- B. Special Conditions.

PART 2 - RECORD DRAWINGS

2.01 GENERAL:

- A. As indicated in the Contract Documents, the District will provide Contractor with one set of reproducible (mylars) plans of the original Contract Drawings.
- B. Contractor shall maintain at each Project Site one set of marked-up plans and shall transfer all changes and information to those marked-up plans, as often as required in the Contract Documents, but in no case less than once each month. Contractor shall submit to the Project Inspector one set of reproducible vellums of the Project Record Drawings ("As-Builts") showing all changes incorporated into the Work since the preceding monthly submittal. The As-Builts shall be available at the Project Site. The Contractor shall submit reproducible vellums at the conclusion of the Project following review of the blueline prints.
- C. Label and date each Record Drawing "RECORD DOCUMENT" in legibly printed letters.
- D. All deviations in construction, including but not limited to pipe and conduit locations and deviations caused by without limitation Change Orders, Construction Claim Directives, RFI's, and Addenda, shall be accurately and legibly recorded by Contractor.
- E. Locations and changes shall be done by Contractor in a neat and legible manner and, where applicable, indicated by drawing a "cloud" around the changed or additional information.

2.02 RECORD DRAWING INFORMATION:

- A. Contractor shall record the following information:
- (1) Locations of Work buried under or outside each building, including, without limitation, all utilities, plumbing and electrical lines, and conduits.
 - (2) Actual numbering of each electrical circuit.
 - (3) Locations of significant Work concealed inside each building whose general locations are changed from those shown on the Contract Drawings.
 - (4) Locations of all items, not necessarily concealed, which vary from the Contract Documents.
 - (5) Installed location of all cathodic protection anodes.
 - (6) Deviations from the sizes, locations, and other features of installations shown in the Contract Documents.
 - (7) Locations of underground work, points of connection with existing utilities, changes in direction, valves, manholes, catch basins, capped stubouts, invert elevations, etc.
 - (8) Sufficient information to locate Work concealed in each building with reasonable ease and accuracy.
- In some instances, this information may be recorded by dimension. In other instances, it may be recorded in relation to the spaces in the building near which it was installed.
- B. Contractor shall provide additional drawings as necessary for clarification.
- C. Contractor shall provide reproducible record drawings, made from final Shop Drawings marked "No Exceptions Taken" or "Approved as Noted."

PART 3 - RECORD SPECIFICATIONS

3.01 GENERAL:

Contractor shall mark each section legibly to record manufacturer, trade name, catalog number, and supplier of each Product and item of equipment actually installed.

PART 4 - MAINTENANCE OF RECORD DOCUMENTS

4.01 GENERAL

- A. Contractor shall store Record Documents apart from documents used for construction as follows:
 - (1) Provide files and racks for storage of Record Documents.
 - (2) Maintain Record Documents in a clean, dry, legible condition and in good order.
- B. Do not use Record Documents for construction purposes.

PART 5 – PRODUCTS Not Used.

END OF DOCUMENT

SECTION 26 05 01
BASIC ELECTRICAL REQUIREMENTS

PART 1 GENERAL

1.1 SCOPE

- A. This section supplements all sections of this Division and shall apply to all phases of work hereinafter specified, shown on the drawings, or required to provide a complete installation of electrical systems for the Project. The intent of the Specifications is to provide a complete electrical system that includes all documents that are a part of the Contract.
 - 1. Work Included: Furnish all labor, material, services and skilled supervision necessary for the construction, erection, installation, connections, testing, adjustment and commissioning of all circuits and electrical equipment specified herein, or shown or noted on the Drawings, and its delivery to the Owner complete in all respects ready for use.
- B. Contract Drawings: The Contract Drawings are shown in part diagrammatic, intended to convey the Scope of Work indicating the intended general arrangement of equipment, conduit and outlets. Follow the contract drawings in laying out the work and verify spaces for the installation of the materials and equipment based on actual dimensions of equipment furnished. Where conflicts occur, the most stringent application shall apply wherever a question exists as to the exact intended location of outlets or equipment obtain instructions from the Architect before proceeding with the Work.
- C. Equipment or Fixtures: Equipment and fixtures shall be connected to provide circuit continuity in accordance with the Specifications whether or not each piece of conductor, conduit, or protective device is shown between such items of equipment or fixtures, and the point of circuit origin.
- D. Work Installed but Furnished under Other Sections: The Electrical Work includes the installation or connection of certain materials and equipment furnished under other sections. Verify installation details. Foundations for apparatus and equipment will be furnished under other sections unless otherwise noted or detailed.

1.2 GENERAL REQUIREMENTS

- A. Guarantee: Furnish a written guarantee for a period of one year from date of filing of notice of completion.
- B. Equipment Safety: All electrical materials and equipment shall be new and shall be listed by Underwriter's Laboratories and bear their label, or listed and certified by a nationally recognized testing authority where UL does not have an approval. Custom made equipment must have complete test data submitted by the manufacturer attesting to its safety.
- C. Codes and Regulations:
 - 1. Design, manufacture, testing and method of installation of all apparatus and materials furnished under the requirements of these specifications shall conform to the latest publications or standard rules of the following:
 - a. Institute of Electrical and Electronic Engineers

- b. National Electrical Manufacturers' Association – NEMA
- c. California Fire Code – CFC
- d. California Building Code – CBC
- e. Underwriters' Laboratories, Inc. – UL
- f. National Fire Protection Association –NFPA
- g. Federal Specifications - Fed. Spec.
- h. American Society for Testing and Materials – ASTM
- i. American National Standards Institute –ANSI
- j. American Standard Association – ASA
- k. California Electrical Code – CEC
- l. National Electrical Safety Code –NESC
- m. Insulated Power Cable Engineers Association – IPCEA
- n. Public Utilities Commission – PUC
- o. California Code of Regulations, Title 8, Subchapter 5
- p. California Code of Regulations, Title 24
- q. State & Municipal Codes in Force in the Specific Project Area
- r. Occupational Safety and Health Administration–OSHA

2. The term "Code", when used within the specifications, shall refer to the Publications, Standards, ordinances and codes, listed above. In the case where the codes have different levels of requirements the most stringent rules shall apply.

D. Seismic Design of Electrical Equipment:

- 1. All electrical prefabricated equipment is to be designed and constructed in such a manner that all portions, elements, sub-assemblies and/or parts of said equipment and the equipment as a whole, including their attachments, will resist a horizontal load equal to the operating weights of those parts multiplied times the following factors:

Type of Equipment	Horizontal CP	Vertical CP
Rigid and rigidly supported piping or equipment such as boilers, chillers, pumps, motors, transformers, unit substations and control panels.	0.50	0.33
Flexible and flexibly supported equipment such as air-handling units, piping and other equipment so supported that the fundamental period of vibration of the equipment and its supporting system is greater than 0.05 seconds. Communication equipment and emergency stand-by equipment	1.00	0.67

2. Load is to be applied at the center of gravity of the part and to be in any direction horizontally. Design stresses shall be in accordance with the specifications for design of the American Institute of Steel Construction. Anchorage, support and/or attachment of said prefabricated equipment to the structure should be in accordance with the details found in the plans and specifications.
 3. It is the entire responsibility of the Contractor to verify the design of equipment so that the strength and anchorage of the internal components of the equipment exceeds the force level used to restrain and anchor the unit itself to the supporting structure.
 4. State of California requires that certain electrical equipment and components installed for this project require special seismic certification. The contractor and vendor shall provide the special seismic certification per OSHPD CAN 2-1708A.5.
 5. Provide seismic restraints per applicable code for electrical equipment and raceways. Design and provide restraints to prevent permanent displacement in any direction caused by lateral motion, overturning or uplift. Contractor shall provide all required seismic restraint drawings signed by a California registered structural engineer. These drawings shall be submitted to structural engineer of record and the design team for comments. Contractor shall submit the drawings to OSHPD for approval.
- E. Requirements of Regulatory Agencies:
1. Codes, Permits and Fees: Where the Contract Documents exceed minimum requirements, the Contract Documents take precedence. Where code conflicts occur, the most stringent shall apply unless variance is approved. Where provisions in the drawings and specifications differ in regard to code application, size, quality, quantity or type of equipment, Contractor shall include in the bid, costs for the most costly provision either denoted in the specifications or on the drawings. This provision shall apply as an amendment to the California Public Contracts Code.
 - a. Comply with all requirements for permits, licenses, fees and Code. Permits, licenses, fees, inspections and arrangements required for the Work shall be obtained by the Contractor at his expense, unless otherwise specified.
 - b. Comply with the requirements of the applicable utility companies serving the Project. Make all arrangements with the utility companies for proper coordination of the Work.
 2. Substitutions: The materials, products, and equipment described in the Contract Documents establish a standard of required function, dimension, appearance, and quality. Architect may consider requests for substitutions of specified equipment, materials, or products in cases of product unavailability and then only when request are submitted in accordance with the provisions of the Contract Documents, Division 1, and are received by the Architect a minimum of 21 days prior to the date established for the receipt of the bid. No substitutions will be considered after the date of the receipt of the bid or contract award unless there is cause for a substitution which complies in every respect to the provisions of the Contract Documents, Division 1. Substitution requests shall be made in accordance with Public Contracts Code (AB2084) revisions as follows:
 - a. No substitutions are allowed after bid opening.
 - b. All substitutions must be requested 21 days prior to bid opening date.

- c. Final addendum naming approved substitutions of materials/equipment must be issued 7 days prior to bid date.
- F. Record Drawings: Comply with Division 1. Keep up to date, monthly payments withheld if not updated.
- G. Shop Drawings and Submittals: Submittals on all material prior to installation.
 - 1. Drawings shall be submitted, as required under Division 1.
 - 2. Submit complete schedule of submittals for review and acceptance no later than 30 days after signing contract. Service equipment submittals shall be submitted after, or concurrent with submission and approval of short circuit, ARC-flash and coordination study.
 - 3. Shop drawings shall be submitted on, but not limited to, the following:
 - a. Equipment Wiring Connections
 - b. Low-Voltage Electrical Power Conductors and Cables
 - c. Grounding and Bonding for Electrical Systems
 - d. Hangers and Supports for Electrical Systems
 - e. Raceway and Boxes for Electrical Systems
 - f. Electrical Underground Ducts and Manholes
 - g. Electrical Utility Services
- H. Trenching and Backfilling: All trenching and backfilling for electrical work shall be the responsibility of the contractor and shall be done in accordance with Division 2, 31 and 33 of this specification. The Contractor shall examine the drawings of all other sections to determine locations of all existing underground lines. The Contractor shall use extreme caution when working in the vicinity of these lines and shall be responsible for the proper and approved repair of any damage caused by his work.
- I. Cutting and Patching:
 - 1. Obtain written permission from the Architect before core drilling or cutting any structural members. Exact method and location of conduit penetrations and/or openings in concrete walls, floors, or ceilings shall be as approved by the Architect.
 - 2. All core drilling, cutting and patching for this work shall be performed under this Section of the specifications. Use craftsmen skilled in their respective sections for cutting, fitting, repairing, patching of plaster and finishing of materials including carpentry work, metal work or concrete work required for this Work. Do not weaken walls, partitions or floor with cutting. Holes required to be cut in floors must be drilled without excessive breaking out around the holes. Patching and/or refinishing shall be determined by the Architect.
 - 3. Use care in piercing waterproofing. After the part piercing the waterproofing has been set in place, seal openings and make absolutely watertight.
 - 4. Seal all openings to meet the fire rating of the particular wall floor or ceiling.

1.3 JOB CONDITIONS

A. Protection:

1. Protection of apparatus, materials and equipment. Take such precautions as necessary to properly protect all apparatus, fixtures, appliances, material, equipment and installations from damage of any kind. The Engineer may reject any particular piece or pieces of material, apparatus or equipment scratched, dented or otherwise damaged.
2. Seal equipment or components exposed to the weather and make watertight and insect proof. Protect equipment outlets and conduit openings with temporary plugs or caps at all times that work is not in progress.

B. Sequencing and Scheduling:

1. Work lines and established heights shall be in strict accordance with architectural drawings and specifications insofar as these drawings and specifications extend. Verify all dimensions shown and establish all elevations and detailed dimensions not shown.
2. Lay out and coordinate all work well enough in advance to avoid conflicts or interferences with other work in progress so that in case of interference the electrical layout may be altered to suit the conditions, prior to the installation of any work and without additional cost to the Owner. Conflicts arising from lack of coordination shall be this Contractor's responsibility. Maintain all code-required clearances about electrical equipment. Unless specifically noted otherwise, establish the exact location of electrical equipment based on the actual dimensions of equipment furnished.

1.4 DRAWINGS

- A. Electrical layouts are generally diagrammatic and although size and location of equipment is for reference only, contractor shall make use of all data in contract documents and verify this information at building site.
- B. Locations of items on the drawings may be distorted for purposes of clearness and legibility. Actual locations of architectural and mechanical items are shown on architectural and mechanical drawings.
- C. Manufacturer's drawings and instructions shall be followed in all cases where the makers of devices and equipment furnish directions, where details are not shown on the drawings, or where described in the specifications.
- D. Work installed in a manner contrary to that shown in the contract documents shall be removed and reinstalled when so directed by the architect. Discrepancies and questionable points shall be immediately reported to the architect for clarification.

1.5 WORK IN COOPERATION WITH OTHER SECTIONS

- A. Examine the drawings and specifications and determine the work to be performed by the electrical, mechanical and other sections. Provide the type and amount of electrical materials and equipment necessary to place this work in proper operation, completely wired, tested and ready for use. This shall include all conduit, wire, motor starters, disconnects, relays, time clocks and other devices for the required operation sequence of all electrical, mechanical and other systems or equipment. Where a conflict occurs on drawings, the most stringent shall apply.

- B. Plan all work so that it proceeds with a minimum of interference with other sections. Inform all parties concerned of openings required for equipment or conduit required in the building construction for electrical work and provide all special frames, sleeves and anchor bolts as required. Coordinate the electrical work with the mechanical installation. Promptly report to the Architect any delay or difficulties encountered in the installation of this work which might prevent prompt and proper installation, or make it unsuitable to connect with or receive the work of other sections. Failure to so report shall constitute an acceptance of the work of other sections as being fit and proper for the execution of this work.

1.6 MAINTENANCE, SERVICING AND INSTRUCTION MANUALS, AND WIRING DIAGRAMS

- A. Prior to substantial completion, the contractor shall submit 5 copies of operating and maintenance and servicing instructions, as well as an equal number of copies of complete wiring diagrams all neatly bound in hard cover 3-ring binders with table of contents and tabs for the following items or equipment:
 - 1. Equipment Wiring Connections
 - 2. Lighting Control Devices
 - 3. Exterior Lighting
- B. All wiring diagrams shall specifically cover the installed system indicating zones, wiring, and components added to the system. Typical drawings will not be accepted.

1.7 FINAL INSPECTION AND ACCEPTANCE

- A. After all requirements of the specifications and/or the drawings have been fully completed representatives of the Owner will inspect the Work. The Contractor shall provide competent personnel to demonstrate the operation of any item of system, to the full satisfaction of each representative. The Contractor shall provide 4 hours of minimum scheduled operation and maintenance training for maintenance staff on each system indicated in 1.8A above. See specific sections for additional training/operation hours required for facility personnel.
- B. Final acceptance of the work will be made by the Owner after receipt of approval and recommendation of acceptance from each representative.
- C. The Contractor shall furnish Record Drawings before final payment of retention.

PART 2 PRODUCTS – NOT USED

PART 3 EXECUTION

3.1 EXECUTION

- A. Layout and installation of electrical work shall be coordinated with the overall construction schedule of work schedules of various trades to prevent delay in completion of the project.
- B. Dimensions and information regarding accurate locations of equipment and structural limitations and finishes shall be coordinated and verified with other divisions of work. Be prepared to promptly furnish dimensions and information regarding electrical work to other trades and cooperate with them to secure coordination and the best progress of the project.

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- C. The drawings do not show off-sets, bends and special fittings or junction or pull boxes necessary to meet job conditions. These items shall be provided as required.

END OF SECTION

BASIC ELECTRICAL REQUIREMENTS

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SECTION 26 05 19

LOW-VOLTAGE ELECTRICAL POWER CONDUCTORS AND CABLES

PART 1 GENERAL

1.1 SUMMARY

- A. Section includes building wire and cable and wiring connectors and connections.

1.2 REFERENCES

- A. International Electrical Testing Association:
1. NETA ATS - Acceptance Testing Specifications for Electrical Power Distribution Equipment and Systems.
- B. National Fire Protection Association:
1. ANSI/NFPA 70 - National Electrical Code/California Electrical Code.
 2. NFPA 262 - Standard Method of Test for Flame Travel and Smoke of Wires and Cables for Use in Air-Handling Spaces.
- C. Underwriters Laboratories, Inc.:
1. UL 1277 - Standard for Safety for Electrical Power and Control Tray Cables with Optional Optical-Fiber Members.
- D. Furnish products listed and classified by Underwriters Laboratories, Inc. or testing firm acceptable to authority having jurisdiction as suitable for purpose specified and shown

1.3 SYSTEM DESCRIPTION

- A. Product Requirements: Provide products as follows:
1. Install products in accordance with manufacturer's instructions.
 2. Solid conductor for feeders and branch circuits 12 AWG and smaller.
 3. Stranded conductors for control circuits.
 4. Conductor not smaller than 12 AWG for power and lighting circuits.
 5. Conductor not smaller than 16 AWG for control circuits.
 6. 10 AWG conductors for 20 amperes, 120-volt branch circuits longer than 75 feet, minimum.
 7. 10 AWG conductors for 20 amperes, 277-volt branch circuits longer than 200 feet, minimum.
- B. Wiring Methods: Provide the following wiring methods:
1. Concealed Dry Interior Locations: Use only building wire, type THHN/THWN insulation in raceway.
 2. Exposed Dry Interior Locations: Use only building wire, Type THHN/THWN insulation, in raceway.
 3. Above Accessible Ceilings: Use only building wire, Type THHN/THWN insulation, in raceway.

1.4 DESIGN REQUIREMENTS

- A. Conductor sizes are based on aluminum.

1.5 SUBMITTALS

- A. Division 01 - Submittal Procedures: Requirements for submittals.
- B. Product Data: Provide for each building wire and each cable assembly type.
- C. Test Reports: Indicate procedures and values obtained.
- D. Manufacturer's Installation Instructions: Indicate application conditions and limitations of use stipulated by product testing agency specified under Regulatory Requirements.
- E. Test Reports: Indicate procedures and values obtained.
- F. Acceptance or no exceptions taken by the engineer on any substitution proposed by the contractor shall not be construed as relieving the contractor from compliance with the project's specifications and performance requirements nor departure there from. The contractor remains responsible for details and accuracy for confirming and correlating quantities and dimensions and for the selection of fabrication processes, techniques and assembly, coordination of his work with that of all other trades and making any needed modifications consequent to the substitution at his own cost and for performing the work in a safe manner.

1.6 CLOSEOUT SUBMITTALS

- A. Division 01 - Execution and Closeout Requirements: Requirements for submittals.
- B. Project Record Documents: Record actual locations of components and circuits.

1.7 QUALITY ASSURANCE

- A. Perform Work in accordance with standards herein.
- B. Maintain one copy of each document on site.

1.8 QUALIFICATIONS

- A. Manufacturer: Company specializing in manufacturing products specified in this section with minimum ten years documented experience.

1.9 FIELD MEASUREMENTS

- A. Verify field measurements are as indicated on Drawings.

1.10 COORDINATION

- A. Division 01 - Administrative Requirements: Requirements for coordination.
- B. Where wire and cable destination is indicated and routing is not shown, determine routing and lengths required. Do not use lengths shown on schedules.
- C. Wire and cable routing indicated is approximate unless dimensioned.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Southwire
- B. Carol
- C. Rome
- D. General Cable
- E. Substitutions: Division 01 - Product Requirements

2.2 BUILDING WIRE

- A. Conductor: Aluminum.
- B. Insulation: Voltage Rating: 600 volts.
- C. Insulation Temperature Rating: 75 degrees C wet, 90 degrees C dry.

2.3 WIRING CONNECTORS

- A. Solderless Pressure Connectors
- B. Spring Wire Connectors
- C. Compression Connectors

2.4 TERMINATIONS

- A. Terminal Lugs for Wires 6 AWG and Smaller: Solderless, compression type copper.
- B. Lugs for Wires 4 AWG and Larger: Color keyed, compression type copper, with insulating sealing collars.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Division 01 - Administrative Requirements: Coordination and project conditions.
- B. Verify interior of building has been protected from weather.
- C. Verify mechanical work likely to damage wire and cable has been completed.
- D. Verify raceway installation is complete and supported.

3.2 PREPARATION

- A. Completely and thoroughly swab raceway before installing wire.

3.3 INSTALLATION

- A. Route wire and cable to meet Project conditions.
- B. Neatly train and lace wiring inside boxes, equipment, and panelboards.
- C. Identify and color code wire and cable under provisions of Division 26. Identify each conductor with its circuit number or other designation indicated.
- D. Special Techniques--Building Wire in Raceway:
 - 1. Pull conductors into raceway at same time.

2. Install building wire 4 AWG and larger with pulling equipment and lubricant.
- E. Special Techniques - Cable:
 1. Protect exposed cable from damage.
 2. Support cables above accessible ceiling, per Division 26 Hangers and Supports for Electrical Systems. Do Not Rest Cable on Ceiling Panels.
 3. Use suitable cable fittings and connectors.
- F. Special Techniques - Wiring Connections:
 1. Clean conductor surfaces before installing lugs and connectors.
 2. Make splices, taps, and terminations to carry full ampacity of conductors with no perceptible temperature rise.
 3. Tape uninsulated conductors and connectors with electrical tape to 150 percent of insulation rating of conductor.
 4. Install high compression type split bolt connectors for copper conductor splices and taps, 6 AWG and larger.
 5. Install solderless pressure connectors with insulating covers for copper conductor splices and taps, 8 AWG and smaller.
 6. Install insulated spring wire connectors with plastic caps for copper conductor splices and taps, 10 AWG and smaller.
- G. Install terminal lugs on ends of 600 volt wires unless lugs are furnished on connected device, such as circuit breakers.
- H. Size lugs in accordance with manufacturer's recommendations and terminating wire sizes. Install 2-hole type lugs to connect wires 4 AWG and larger to copper bus bars.
- I. For terminal lugs fastened together such as on motors, transformers, and other apparatus, or when space between studs is small enough that lugs can turn and touch each other, insulate for dielectric strength of 2-1/2 times normal potential of circuit.

3.4 WIRE COLOR

- A. General:
 1. For wire sizes 10 AWG and smaller, install wire colors in accordance with the following:
 - a. Black, red, and blue for circuits at 120/208 volts single or three phase.
 - b. Brown, orange, and yellow for circuits at 277/480 volts single or three phase.
 2. For wire sizes 8 AWG and larger, install wire colors in accordance with the following:
 - a. Black, red, and blue for circuits at 120/208 volts single or three phase.
 - b. Orange, brown, and yellow for circuits at 277/480 volts single or three phase.
- B. Neutral Conductors: White. When two or more neutrals are located in one conduit, individually identify each with proper circuit number.
- C. Branch Circuit Conductors: Install three or four wire home runs with each phase uniquely color coded.

- D. Feeder Circuit Conductors: Uniquely color code each phase.
- E. Ground Conductors:
 - 1. For 6 AWG and smaller: Green.
 - 2. For 4 AWG and larger: Green.

3.5 FIELD QUALITY CONTROL

- A. Division 01 - Quality Requirements and Execution and Closeout Requirements: Field inspecting, testing, adjusting, and balancing.
- B. Inspect and test in accordance with NETA ATS, except Section 4.
- C. Perform inspections and tests listed in NETA ATS, Section 7.3.1.

END OF SECTION

SECTION 26 05 26

GROUNDING AND BONDING FOR ELECTRICAL

SYSTEMS PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Rod electrodes.
 - 2. Wire.
 - 3. Mechanical connectors.
 - 4. Exothermic connections.
- B. Related Sections:
 - 1. Division 03 - Concrete Reinforcing: Bonding or welding bars when reinforcing steel is used for electrodes.
 - 2. Division 09 - Access Flooring: Grounding systems for access flooring.
 - 3. Division 33 - Site Grounding: Site related grounding components for buildings and facilities.

1.2 REFERENCES

- A. Institute of Electrical and Electronics Engineers:
 - 1. IEEE 142 - Recommended Practice for Grounding of Industrial and Commercial Power Systems.
 - 2. IEEE 1100 - Recommended Practice for Powering and Grounding Electronic Equipment.
- B. International Electrical Testing Association:
 - 1. NETA ATS - Acceptance Testing Specifications for Electrical Power Distribution Equipment and Systems.
- C. National Fire Protection Association:
 - 1. ANSI/NFPA 70 - National Electrical Code.
 - 2. NFPA 99 - Standard for Health Care Facilities.

1.3 SYSTEM DESCRIPTION

- A. Grounding systems use the following elements as grounding electrodes:
 - 1. Metal building frame.
 - 2. Concrete-encased electrode.
 - 3. Metal underground water piping system.
 - 4. Rod and pipe electrodes.

1.4 PERFORMANCE REQUIREMENTS

- A. Grounding System Resistance: 5 ohms maximum.

1.5 SUBMITTALS

- A. Division 01 - Submittal Procedures: Requirements for submittals.
- B. Product Data: Submit data on grounding electrodes and connections.
- C. Test Reports: Indicate overall resistance to ground and resistance of each electrode.
- D. Manufacturer's Certificate: Certify Products meet or exceed specified requirements.
- E. Acceptance or no exceptions taken by the engineer on any substitution proposed by the contractor shall not be construed as relieving the contractor from compliance with the project's specifications and performance requirements nor departure there from. The contractor remains responsible for details and accuracy for confirming and correlating quantities and dimensions and for the selection of fabrication processes, techniques and assembly, coordination of his work with that of all other trades and making any needed modifications consequent to the substitution at his own cost and for performing the work in a safe manner.

1.6 CLOSEOUT SUBMITTALS

- A. Division 01 - Execution and Closeout Requirements: Requirements for submittals.
- B. Project Record Documents: Record actual locations of components and grounding electrodes.

1.7 QUALITY ASSURANCE

- A. Provide grounding materials conforming to requirements of CEC, IEEE 142, and UL labeled.
- B. Maintain two copies of each document on site.

1.8 QUALIFICATIONS

- A. Manufacturer: Company specializing in manufacturing Products specified in this section with minimum three years documented experience.
- B. Installer: Company specializing in performing work of this section with minimum five years documented experience and approved by manufacturer.

1.9 REGULATORY REQUIREMENTS

- A. Conform to requirements of ANSI/NFPA 70.
- B. Furnish products listed and classified by Underwriters Laboratories, Inc. or testing firm acceptable to authority having jurisdiction as suitable for purpose specified and shown.

1.10 PRE-INSTALLATION MEETINGS

- A. Division 01 - Administrative Requirements: Pre-installation meeting.
- B. Convene minimum one week prior to commencing work of this section.

1.11 DELIVERY, STORAGE, AND HANDLING

- A. Division 01 - Product Requirements: Requirements for transporting, handling, storing, and protecting products.
- B. Accept materials on site in original factory packaging, labeled with manufacturer's identification.

- C. Protect from weather and construction traffic, dirt, water, chemical, and mechanical damage, by storing in original packaging.
- D. Do not deliver items to project before time of installation. Limit shipment of bulk and multiple-use materials to quantities needed for immediate installation.

1.12 COORDINATION

- A. Division 01 - Administrative Requirements: Requirements for coordination.
- B. Complete grounding and bonding of building reinforcing steel prior to concrete placement.

PART 2 PRODUCTS

2.1 ROD ELECTRODES

- A. Product Description:
 - 1. Material: Copper-clad steel.
 - 2. Diameter: 3/4 inch.
 - 3. Length: 10 feet.
- B. Connector: Connector for exothermic welded connection.

2.2 WIRE

- A. Material: Stranded copper.
- B. Grounding Electrode Conductor: Copper conductor bare.
- C. Bonding Conductor: Copper conductor bare.

2.3 MECHANICAL CONNECTORS

- A. Description: Bronze connectors, suitable for grounding and bonding applications, in configurations required for particular installation.

2.4 EXOTHERMIC CONNECTIONS

- A. Product Description: Exothermic materials, accessories, and tools for preparing and making permanent field connections between grounding system components.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Division 01 - Administrative Requirements: Verification of existing conditions before starting work.
- B. Verify final backfill and compaction has been completed before driving rod electrodes.

3.2 PREPARATION

- A. Remove paint, rust, mill oils and surface contaminants at connection points.

3.3 INSTALLATION

- A. Install in accordance with IEEE 142.
- B. Install rod electrodes at locations as indicated on Drawings. Install additional rod electrodes to achieve specified resistance to ground.

- C. Install grounding and bonding conductors concealed from view.
- D. Install grounding well pipe with cover at each rod location. Install well pipe top flush with finished grade.
- E. Install minimum 4 AWG bare copper wire in foundation footing.
- F. Install grounding electrode conductor and connect to reinforcing steel in foundation footing as indicated on Drawings.
- G. Bond together metal siding not attached to grounded structure; bond to ground.
- H. Bond together reinforcing steel and metal accessories in fountain structures.
- I. Equipment Grounding Conductor: Install separate, insulated conductor within each feeder and branch circuit raceway. Terminate each end on suitable lug, bus, or bushing.
- J. Install continuous grounding using underground cold water system and building steel as grounding electrode. Where water piping is not available install artificial station ground by means of driven rods or buried electrodes.
- K. Permanently ground entire light and power system in accordance with CEC, including service equipment, distribution panels, lighting panelboards, switch and starter enclosures, motor frames, grounding type receptacles, and other exposed non-current carrying metal parts of electrical equipment.
- L. Install branch circuits feeding isolated ground receptacles with separate insulated grounding conductor, connected only at isolated ground receptacle, ground terminals, and at ground bus of serving panel.
- M. Accomplish grounding of electrical system by using insulated grounding conductor installed with feeders and branch circuit conductors in conduits. Size grounding conductors in accordance with CEC. Install from grounding bus of serving panel to ground bus of served panel, grounding screw of receptacles, lighting fixture housing, light switch outlet boxes or metal enclosures of service equipment.
- N. Grounding electrical system using continuous metal raceway system enclosing circuit conductors in accordance with CEC.
- O. Permanently attach equipment and grounding conductors prior to energizing equipment.

3.4 FIELD QUALITY CONTROL

- A. Division 01 - Quality Requirements and Execution and Closeout Requirements: Field inspecting, testing, adjusting, and balancing.
- B. Inspect and test in accordance with NETA ATS, except Section 4.
- C. Grounding and Bonding: Perform inspections and tests listed in NETA ATS, Section 7.13.
- D. Perform ground resistance testing in accordance with IEEE 142.
- E. Perform leakage current tests in accordance with NFPA 99.
- F. Perform continuity testing in accordance with IEEE 142.
- G. When improper grounding is found on receptacles, check receptacles in entire project and correct. Perform retest.

END OF SECTION

SECTION 26 05 29

HANGERS AND SUPPORTS FOR ELECTRICAL

SYSTEMS PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Conduit supports.
 - 2. Formed steel channel.
 - 3. Sleeves.
 - 4. Mechanical sleeve seals.
 - 5. Equipment bases and supports.
- B. Related Sections:
 - 1. Division 07 - Firestopping

1.2 REFERENCES

- A. ASTM International:
 - 1. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials.
 - 2. ASTM E119 - Standard Test Methods for Fire Tests of Building Construction and Materials.
- B. FM Global:
 - 1. FM - Approval Guide, A Guide to Equipment, Materials & Services Approved By Factory Mutual Research for Property Conservation.
- C. National Fire Protection Association:
 - 1. NFPA 70 - National Electrical Code.
- D. Underwriters Laboratories Inc.:
 - 1. UL 723 - Tests for Surface Burning Characteristics of Building Materials.
- E. Intertek Testing Services (Warnock Hersey Listed):
 - 1. WH - Certification Listings.

1.3 SUBMITTALS

- A. Division 01 - Submittal Procedures: Requirements for submittals.
- B. Shop Drawings: Indicate system layout with location and detail of trapeze hangers.
- C. Product Data Hangers and Supports: Submit manufacturers catalog data including load capacity.
- D. Design Data: Indicate load carrying capacity of trapeze hangers and hangers and supports.
- E. Manufacturer's Installation Instructions Hangers and Supports: Submit special procedures and assembly of components.
- F. Manufacturer's Certificate: Certify products meet or exceed specified requirements.

- G. Acceptance or no exceptions taken by the engineer on any substitution proposed by the contractor shall not be construed as relieving the contractor from compliance with the project's specifications and performance requirements nor departure there from. The contractor remains responsible for details and accuracy for confirming and correlating quantities and dimensions and for the selection of fabrication processes, techniques and assembly, coordination of his work with that of all other trades and making any needed modifications consequent to the substitution at his own cost and for performing the work in a safe manner.

1.4 QUALIFICATIONS

- A. Manufacturer: Company specializing in manufacturing Products specified in this section with minimum five years documented experience.
- B. Installer: Company specializing in performing work of this section with minimum five years documented experience, approved by manufacturer.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Division 01 - Product Requirements: Requirements for transporting, handling, storing, and protecting products.
- B. Accept materials on site in original factory packaging, labeled with manufacturer's identification.
- C. Protect from weather and construction traffic, dirt, water, chemical, and mechanical damage, by storing in original packaging.

1.6 ENVIRONMENTAL REQUIREMENTS

- A. Division 01 - Product Requirements: Environmental conditions affecting products on site.

PART 2 PRODUCTS

2.1 CONDUIT SUPPORTS

- A. Hanger Rods: Threaded high tensile strength galvanized carbon steel with free running threads.
- B. Beam Clamps: Malleable Iron, with tapered hole in base and back to accept either bolt or hanger rod. Set screw: hardened steel.
- C. Conduit clamps for trapeze hangers: Galvanized steel, notched to fit trapeze with single bolt to tighten.
- D. Conduit clamps - general purpose: One-hole malleable iron for surface mounted conduits.
- E. Cable Ties: High strength nylon temperature rated to 185 degrees F, self locking.

2.2 FORMED STEEL CHANNEL

- A. Product Description: Galvanized 12 gage thick steel. With 9/16 inch holes 8 inches on center.

2.3 SLEEVES

- A. Sleeves for conduits Through Fire Rated and Fire Resistive Floors and Walls, and Fire Proofing: Prefabricated fire rated sleeves including seals, UL listed.
- B. Fire-stopping Insulation: Glass fiber type, non-combustible.

2.4 MECHANICAL SLEEVE SEALS

- A. Product Description: Modular mechanical type, consisting of interlocking synthetic rubber links shaped to continuously fill annular space between object and sleeve, connected with bolts and pressure plates causing rubber sealing elements to expand when tightened, providing watertight seal and electrical insulation.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Division 01 - Administrative Requirements: Verification of existing conditions before starting work.
- B. Verify openings are ready to receive sleeves.
- C. Verify openings are ready to receive firestopping.

3.2 PREPARATION

- A. Clean substrate surfaces of dirt, dust, grease, oil, loose material, or other matter affecting bond of firestopping material.
- B. Remove incompatible materials affecting bond.
- C. Install backing or damming materials to arrest liquid material leakage.
- D. Obtain permission from Architect/Engineer before using powder-actuated anchors.
- E. Obtain permission from Architect/Engineer before drilling or cutting structural members.

3.3 INSTALLATION - HANGERS AND SUPPORTS

- A. Anchors and Fasteners:
 - 1. Concrete Structural Elements: Use expansion anchors.
 - 2. Steel Structural Elements: Use beams clamps with seismic safety strap and welded fasteners.
 - 3. Concrete Surfaces: Use expansion anchors.
 - 4. Hollow Masonry, Plaster, and Gypsum Board Partitions: Use toggle bolts and hollow wall fasteners.
 - 5. Solid Masonry Walls: Use expansion anchors and preset inserts.
 - 6. Sheet Metal: Use sheet metal screws.
 - 7. Wood Elements: Use wood screws.
- B. Install conduit and raceway support and spacing in accordance with CEC.
- C. Do not fasten supports to pipes, ducts, mechanical equipment, or conduit.
- D. Install multiple conduit runs on common hangers.
- E. Supports:
 - 1. Fabricate supports from structural steel or formed steel channel. Install hexagon head bolts to present neat appearance with adequate strength and rigidity. Install spring lock washers and flat washers, under nuts.
 - 2. Install surface mounted cabinets and panelboards with minimum of four anchors.

3. In wet and damp locations install steel channel supports to stand cabinets and panelboards 1 inch off wall.
4. Support vertical conduit at every floor, as indicated on structural drawings.
- F. Do not use spring steel clips and clamps.
- G. Fabricate supports from structural steel or steel channel. Rigidly weld members or use hexagon head bolts to present neat appearance with adequate strength and rigidity. Use spring lock washers under all nuts.
- H. Install surface-mounted cabinets and panelboards with minimum of four anchors.
- I. In wet and damp locations uses steel channel supports to stand cabinets and panelboards one inch off wall.
- J. Use sheet metal channel to bridge studs above and below cabinets and panelboards recessed in hollow partitions.

3.4 INSTALLATION - EQUIPMENT BASES AND SUPPORTS

- A. Provide housekeeping pads of concrete, minimum 4 inches thick and extending 6 inches beyond supported equipment. Refer to Division 03.
- B. Using templates furnished with equipment, install anchor bolts, and accessories for mounting and anchoring equipment.
- C. Construct supports of steel members or formed steel channel. Brace and fasten with flanges bolted to structure.
- D. Refer to drawings.

3.5 INSTALLATION - SLEEVES

- A. Exterior watertight entries: Seal with adjustable interlocking rubber links.
- B. Conduit penetrations not required to be watertight: Sleeve and fill with silicon foam.
- C. Set sleeves in position in forms. Provide reinforcing around sleeves.
- D. Size sleeves large enough to allow for movement due to expansion and contraction. Provide for continuous insulation wrapping.
- E. Extend sleeves through floors 2 inches above finished floor level. Caulk sleeves.
- F. Where conduit or raceway penetrates floor, ceiling, or wall, close off space between conduit or raceway and adjacent work with fire stopping insulation and caulk airtight. Provide close fitting metal collar or escutcheon covers at both sides of penetration.
- G. Install stainless steel escutcheons at finished surfaces.

3.6 FIELD QUALITY CONTROL

- A. Division 01 - Quality Requirements and Execution and Closeout Requirements: Field inspecting, testing, adjusting, and balancing.

3.7 CLEANING

- A. Division 01 - Execution and Closeout Requirements: Requirements for cleaning.
- B. Clean adjacent surfaces of firestopping materials.

3.8 PROTECTION OF FINISHED WORK

- A. Division 01 - Execution and Closeout Requirements: Requirements for protecting finished Work.
- B. Protect adjacent surfaces from damage by material installation.

END OF SECTION

SECTION 26 05 33

RACEWAY AND BOXES FOR ELECTRICAL

SYSTEMS PART 1 GENERAL

1.1 SUMMARY

- A. Section includes conduit and tubing, surface raceways, wireways, outlet boxes, pull and junction boxes, and handholes.
- B. Related Sections:
 - 1. Division 26 - Equipment Wiring Connections.
 - 2. Division 26 - Grounding and Bonding for Electrical Systems.
 - 3. Division 26 - Hangers and Supports for Electrical Systems.
 - 4. Division 26 - Boxes for Electrical Systems.
 - 5. Division 26 - Cable Trays for Electrical Systems.
 - 6. Division 26 - Identification for Electrical Systems.
 - 7. Division 26 - Electrical Cabinets and Enclosures.
 - 8. Division 26 - Wiring Devices.
 - 9. Division 33 - Electrical Underground Ducts and Manholes.

1.2 REFERENCES

- A. American National Standards Institute:
 - 1. ANSI C80.1 - Rigid Steel Conduit, Zinc Coated.
 - 2. ANSI C80.3 - Specification for Electrical Metallic Tubing, Zinc Coated.
- B. National Electrical Manufacturers Association:
 - 1. NEMA 250 - Enclosures for Electrical Equipment (1000 Volts Maximum).
 - 2. NEMA FB 1 - Fittings, Cast Metal Boxes, and Conduit Bodies for Conduit and Cable Assemblies.
 - 3. NEMA OS 1 - Sheet Steel Outlet Boxes, Device Boxes, Covers, and Box Supports.
 - 4. NEMA OS 2 - Nonmetallic Outlet Boxes, Device Boxes, Covers, and Box Supports.
 - 5. NEMA RN 1 - Polyvinyl Chloride (PVC) Externally Coated Galvanized Rigid Steel Conduit and Intermediate Metal Conduit.
 - 6. NEMA TC 2 - Electrical Polyvinyl Chloride (PVC) Tubing and Conduit.
 - 7. NEMA TC 3 - PVC Fittings for Use with Rigid PVC Conduit and Tubing.

1.3 SYSTEM DESCRIPTION

- A. Raceway and boxes located as indicated on Drawings, and at other locations required for splices, taps, wire pulling, equipment connections, and compliance with regulatory requirements. Raceway and boxes are shown in approximate locations unless dimensioned. Provide raceway to complete wiring system.
- B. Underground or Under Slab: Use PVC coated rigid steel conduit, or PVC Schedule 40 conduit. Minimum size: 3/4 inch, unless otherwise noted. Transition from underground to above ground shall be rigid conduit wrapped with 20 mil high tack adhesive tape to 6 inches above ground.
- C. Outdoor Locations, Above Grade: Provide rigid steel conduit where exposed accessories to public. Use EMT with compression fittings on rooftop. Provide cast metal outlet, pull, and junction boxes.
- D. Wet and Damp Locations: Provide EMT with compression fittings. Provide cast metal outlet, junction, and pull boxes. Provide flush mounting outlet box in finished areas.
- E. Concealed Dry Locations: Provide electrical metallic tubing not subjected to mechanical stresses for homeruns. Provide sheet-metal boxes. Provide flush mounting outlet box in finished areas. Provide hinged enclosure for large pullboxes.
- F. Exposed Dry Locations: Provide EMT. Provide sheet-metal boxes. Provide flush mounting outlet box in finished areas. Provide hinged enclosure for large pullboxes.
- G. Metallic conduits (feeders) shall be joined with compression type fittings. Set screw type fittings may be used only for branch circuits.

1.4 DESIGN REQUIREMENTS

- A. Minimum Raceway Size: 3/4 inch unless otherwise specified.

1.5 SUBMITTALS

- A. Product Data: Submit for the following:
 - 1. Flexible metal conduit.
 - 2. Liquidtight flexible metal conduit.
 - 3. Nonmetallic conduit.
 - 4. Liquid-tight flexible non-metallic conduit.
 - 5. Raceway fittings.
 - 6. Conduit bodies.
 - 7. Surface raceway.
 - 8. Wireway.
 - 9. Pull and junction boxes.
 - 10. Handholes.

11. Fittings

- B. Manufacturer's Installation Instructions: Submit application conditions and limitations of use stipulated by Product testing agency specified under Regulatory Requirements. Include instructions for storage, handling, protection, examination, preparation, and installation of Product.
- C. Acceptance or no exceptions taken by the engineer on any substitution proposed by the contractor shall not be construed as relieving the contractor from compliance with the project's specifications and performance requirements nor departure there from. The contractor remains responsible for details and accuracy for confirming and correlating quantities and dimensions and for the selection of fabrication processes, techniques and assembly, coordination of his work with that of all other trades and making any needed modifications consequent to the substitution at his own cost and for performing the work in a safe manner.

1.6 CLOSEOUT SUBMITTALS

- A. Project Record Documents:
 - 1. Record actual routing of conduits larger than 2 inch.
 - 2. Record actual locations and mounting heights of outlet, pull, and junction boxes.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Protect conduit from corrosion and entrance of debris by storing above grade. Provide appropriate covering.
- B. Protect PVC conduit from sunlight.

1.8 COORDINATION

- A. Coordinate installation of outlet boxes for equipment connected under Division 26.
- B. Coordinate mounting heights, orientation and locations of outlets mounted above counters, benches, and backsplashes.

PART 2 PRODUCTS

2.1 METAL CONDUIT

- A. Rigid Steel Conduit: ANSI C80.1.
- B. Intermediate Metal Conduit (IMC): Rigid steel.
- C. Fittings and Conduit Bodies: NEMA FB 1; all steel fittings.

2.2 PVC COATED METAL CONDUIT

- A. Product Description: NEMA RN 1; rigid steel conduit with external PVC coating, 20 mil thick.
- B. Fittings and Conduit Bodies: NEMA FB 1; steel fittings with external PVC coating to

match conduit.

2.3 LIQUIDTIGHT FLEXIBLE METAL CONDUIT

- A. Product Description: Interlocked steel construction with PVC jacket.
- B. Fittings: NEMA FB 1.

2.4 ELECTRICAL METALLIC TUBING (EMT)

- A. Product Description: ANSI C80.3; galvanized tubing.
- B. Fittings and Conduit Bodies: NEMA FB 1; steel or malleable iron, set screw type.

2.5 NONMETALLIC CONDUIT

- A. Product Description: NEMA TC 2; Schedule 40 PVC.
- B. Fittings and Conduit Bodies: NEMA TC3.
- C. Liquid-tight flexible non-metallic conduit.
 - 1. Production meets UL standard 514B.
 - 2. Fittings: IP68 and CEC 356.
 - 3. Use at specified audio visual locations, only.

2.6 SURFACE METAL RACEWAY

- A. Product Description: Sheet metal channel with fitted cover, suitable for use as surface metal raceway.
- B. Size: As shown on drawings.
- C. Finish: Buff, or as indicated on drawings.
- D. Fittings, Boxes, and Extension Rings: Furnish manufacturer's standard accessories; match finish on raceway.

2.7 MULTIOUTLET ASSEMBLY

- A. Multioutlet Assembly: Sheet metal channel with fitted cover, with pre-wired receptacles and voice/data outlets, suitable for use as multioutlet assembly.
- B. Size: As indicated on Drawings.
- C. Receptacles: Provide covers and accessories to accept convenience receptacles specified in Division 26.
- D. Receptacle spacing: 12 inches on center or as indicated on drawings.
- E. Receptacle Color: Gray or as indicated on drawings.
- F. Channel Finish: Gray or as indicated on drawings.

- G. Fittings: Furnish manufacturer's standard couplings, elbows, outlet and device boxes, and connectors.

2.8 WIREWAY

- A. Product Description: General purpose, oil-tight and dust-tight and raintight type wireway.
- B. Knockouts: Manufacturer's standard.
- C. Cover: Hinged cover with full gaskets.
- D. Connector: Slip-in or flanged.
- E. Fittings: Lay-in type with removable top, bottom, and side; captive screws, drip shield.
- F. Finish: Rust inhibiting primer coating with gray enamel finish.

2.9 OUTLET BOXES

- A. Sheet Metal Outlet Boxes: NEMA OS 1, galvanized steel.
 - 1. Luminaire and Equipment Supporting Boxes: Rated for weight of equipment supported; furnish 1/2 inch male fixture studs where required.
 - 2. Concrete Ceiling Boxes: Concrete type.
- B. Nonmetallic Outlet Boxes: NEMA OS 2.
- C. Cast Boxes: NEMA FB 1, Type FD, cast ferroalloy. Furnish gasketed cover by box manufacturer. Furnish threaded hubs.
- D. Wall Plates for Finished Areas: As specified in Division 26 Wiring Devices.
- E. Wall Plates for Unfinished Areas: Furnish gasketed cover.

2.10 PULL AND JUNCTION BOXES

- A. Sheet Metal Boxes: NEMA OS 1, galvanized steel.
- B. Hinged Enclosures: As specified in Division 26.
- C. Surface Mounted Cast Metal Box: NEMA 250, Type 4; flat-flanged, surface mounted junction box:
 - 1. Material: Galvanized cast iron.
 - 2. Cover: Furnish with ground flange, neoprene gasket, and stainless steel cover screws.
- D. In-Ground Cast Metal Box: NEMA 250, Type 6, outside and/or inside flanged,

recessed cover box for flush mounting:

1. Material: Galvanized cast iron. Traffic rated where vehicle traffic is possible.
 2. Cover: Nonskid cover with neoprene gasket and stainless steel cover screws.
 3. Cover Legend: "ELECTRIC".
- E. Fiberglass Concrete composite Handholes: Die-molded, glass-fiber concrete composite hand holes:
1. Cable Entrance: Pre-cut 6 inch x 6 inch cable entrance at center bottom of each side.
 2. Cover: Glass-fiber concrete composite, weatherproof cover with nonskid finish.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify outlet locations, mounting heights and routing and termination locations of raceway prior to rough-in.

3.2 INSTALLATION

- A. Ground and bond raceway and boxes in accordance with Division 26.
- B. Fasten raceway and box supports to structure and finishes in accordance with Division 26.
- C. Identify raceway and boxes in accordance with Division 26.
- D. Arrange raceway and boxes to maintain headroom and present neat appearance.

3.3 INSTALLATION - RACEWAY

- A. Raceway routing is shown in approximate locations unless dimensioned. Route to complete wiring system.
- B. Arrange raceway supports to prevent misalignment during wiring installation.
- C. Support raceway using coated steel or malleable iron straps, lay-in adjustable hangers, clevis hangers, and split hangers.
- D. Group related raceway; support using conduit rack. Construct rack using steel channel specified in Division 26; provide space on each for 25 percent additional raceways.
- E. Do not support raceway with wire or perforated pipe straps. Remove wire used for temporary supports
- F. Do not attach raceway to ceiling support wires or other piping systems.
- G. Verify that field measurements are as shown on drawings.
- H. Construct wireway supports from steel channel specified in Division 26.
- I. Verify routing and termination locations of conduit prior to rough-in.

RACEWAY AND BOXES FOR ELECTRICAL SYSTEMS

- J. Route exposed raceway parallel and perpendicular to walls.
 - K. Route raceway installed above accessible ceilings parallel and perpendicular to walls.
 - L. Route concealed raceway parallel and perpendicular to walls, unless otherwise noted.
 - M. Route conduit under slab from point-to-point.
 - N. Maintain clearance between raceway and piping for maintenance purposes.
 - O. Maintain 12 inch clearance between raceway and surfaces with temperatures exceeding 104 degrees F.
 - P. Cut conduit square using saw or pipe cutter; de-burr cut ends.
 - Q. Bring conduit to shoulder of fittings; fasten securely.
 - R. Join nonmetallic conduit using cement as recommended by manufacturer. Wipe nonmetallic conduit dry and clean before joining. Apply full even coat of cement to entire area inserted in fitting. Allow joint to cure for minimum 20 minutes.
 - S. Install conduit hubs or sealing locknuts to fasten conduit to sheet metal boxes in damp and wet locations and to cast boxes.
 - T. Install no more than equivalent of three 90 degree bends between boxes. Install conduit bodies to make sharp changes in direction, as around beams. Install hydraulic one-shot bender to fabricate or factory elbows for bends in metal conduit larger than 2 inch size.
 - U. Avoid moisture traps; install junction box with drain fitting at low points in conduit system.
 - V. Install fittings to accommodate expansion and deflection where raceway crosses seismic, control and expansion joints.
 - W. Install suitable pull string or cord in each empty raceway except sleeves and nipples.
 - X. Install suitable caps to protect installed conduit against entrance of dirt and moisture.
 - Y. Surface Raceway: Install flat-head screws, clips, and straps to fasten raceway channel to surfaces; mount plumb and level. Install insulating bushings and inserts at connections to outlets and corner fittings.
 - Z. Close ends and unused openings in wireway.
- AA. Ground and bond conduit under provisions of Division 26 Grounding and Bonding for Electrical Systems.

- BB. Identify conduit under provisions of Division 26 Identification for Electrical Systems.
- CC. Normal and essential power must be installed in physically separate raceways.
- DD. Install nonmetallic conduit in accordance with manufacturer's instructions.
- EE. Fasten conduit supports to building structure and surfaces.
- FF. Do not attach conduit to ceiling support wires.
- GG. Arrange conduit to maintain headroom and present neat appearance.
- HH. Cut conduit square using saw or pipe cutter; de-burr cut ends.

3.4 INSTALLATION - BOXES

- A. Install wall mounted boxes at elevations to accommodate mounting heights as indicated on Drawings.
- B. Orient boxes to accommodate wiring devices oriented as specified in Division 26.
- C. Install pull boxes and junction boxes above accessible ceilings and in unfinished areas only. All boxes shall be accessible per CEC.
- D. Inaccessible Ceiling Areas: Install outlet and junction boxes no more than 6 inches from ceiling access panel or from removable recessed luminaire.
- E. Locate flush mounting box in masonry wall to require cutting of masonry unit corner only. Coordinate masonry cutting to achieve neat opening.
- F. Do not install flush mounting box back-to-back in walls; install with minimum 6 inches separation. Install with minimum 24 inches separation in acoustic rated walls.
- G. Secure flush mounting box to interior wall and partition studs. Accurately position to allow for surface finish thickness.
- H. Install stamped steel bridges to fasten flush mounting outlet box between studs.
- I. Install flush mounting box without damaging wall insulation or reducing its effectiveness.
- J. Install adjustable steel channel fasteners for hung ceiling outlet box.
- K. Do not fasten boxes to ceiling support wires or other piping systems.
- L. Support boxes independently of conduit, except cast box that is connected to two rigid metal conduits, both supported within 12 inches of box.
- M. Install gang box where more than one device is mounted together. Do not use sectional box.
- N. Install gang box with plaster ring for single device outlets.

- O. Install electrical boxes as shown on drawings, and as required for splices, taps, wire pulling, equipment connections, and compliance with regulatory requirements.
- P. Install electrical boxes to maintain headroom and to present neat mechanical appearance.
- Q. Install pullboxes and junction boxes above accessible ceiling and in unfinished areas only.
- R. Install boxes to preserve fire resistance rating of partitions and other elements, using materials and methods under the provisions of Division 7.
- S. Align adjacent wall-mounted outlet boxes for switches, thermostats, and similar devices with each other.
- T. Use flush mounting outlet boxes in finished area.
- U. Use cast outlet boxes in exterior locations exposed to the weather and wet locations.
- V. Use cast floor boxes for installations in slab on grade; formed steel boxes are acceptable for other installations.
- W. Set floor boxes level.
- X. Large Pullboxes: Boxes larger than 100 cubic inches in volume or 12 inches in any dimension.
 - 1. Interior Dry Locations: Use hinged enclosure under provisions of Division 26.
 - 2. Other Locations: Use surface-mounted cast metal box.

3.5 INTERFACE WITH OTHER PRODUCTS

- A. Install conduit to preserve fire resistance rating of partitions and other elements, using materials and methods in accordance with Division 07.
- B. Route conduit through roof openings for piping and ductwork or through suitable roof jack with pitch pocket. Coordinate location with roofing installation.
- C. Locate outlet boxes to allow luminaires positioned as indicated on Drawings.
- D. Align adjacent wall mounted outlet boxes for switches, thermostats, and similar devices.
- E. Coordinate locations and sizes of required access doors with Division 08.
- F. Locate flush mounting box in masonry wall to require cutting of masonry at corner only. Coordinate masonry cutting to achieve neat opening.
- G. Coordinate mounting heights and locations of outlets mounted above counters, benches and backsplashes.

3.6 ADJUSTING

- A. Adjust flush-mounting outlets to make front flush with finished wall material.
- B. Install knockout closures in unused openings in boxes.

3.7 CLEANING

- A. Clean interior of boxes to remove dust, debris, and other material.
- B. Clean exposed surfaces and restore finish.

END OF SECTION

SECTION 26 05 53

IDENTIFICATION FOR ELECTRICAL SYSTEMS

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Nameplates.
 - 2. Labels.
 - 3. Wire markers.
 - 4. Stencils.
 - 5. Underground Warning Tape.
 - 6. Lockout Devices.
 - 7. Engraved Device Plates
- B. Related Sections:
 - 1. Division 09 - Painting and Coating: Execution requirements for painting specified by this section.

1.2 SUBMITTALS

- A. Division 01 - Submittal Procedures: Submittal procedures.
- B. Equipment Ratings: Submit short circuit, coordination and ARC-flash studies to engineer for review prior to product data submittals.
- C. Product Data:
 - 1. Submit manufacturer's catalog literature for each product required.
 - 2. Submit electrical identification schedule including list of wording, symbols, letter size, color coding, tag number, location, and function.
- D. Manufacturer's Installation Instructions: Indicate installation instructions, special procedures, and installation.
- E. Acceptance or no exceptions taken by the engineer on any substitution proposed by the contractor shall not be construed as relieving the contractor from compliance with the project's specifications and performance requirements nor departure there from. The contractor remains responsible for details and accuracy for confirming and correlating quantities and dimensions and for the selection of fabrication processes, techniques and assembly, coordination of his work with that of all other trades and making any needed modifications consequent to the substitution at his own cost and for performing the work in a safe manner.

1.3 CLOSEOUT SUBMITTALS

- A. Division 01 - Execution and Closeout Requirements: Requirements for submittals.
- B. Project Record Documents: Record actual locations of tagged devices; include tag numbers.

1.4 QUALIFICATIONS

- A. Manufacturer: Company specializing in manufacturing Products specified in this section with minimum five years documented experience.
- B. Installer: Company specializing in performing Work of this section with minimum five years documented experience, approved by manufacturer.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Division 01 - Product Requirements: Requirements for transporting, handling, storing, and protecting products.
- B. Accept identification products on site in original containers. Inspect for damage.
- C. Accept materials on site in original factory packaging, labeled with manufacturer's identification, including product density and thickness.
- D. Protect insulation from weather and construction traffic, dirt, water, chemical, and mechanical damage, by storing in original wrapping.

1.6 ENVIRONMENTAL REQUIREMENTS

- A. Division 01 - Product Requirements: Environmental conditions affecting products on site.
- B. Install labels and nameplates only when ambient temperature and humidity conditions for adhesive are within range recommended by manufacturer.

1.7 EXTRA MATERIALS

- A. Division 01 - Execution and Closeout Requirements: Requirements for extra materials.

PART 2 PRODUCTS

2.1 NAMEPLATES

- A. Product Description (Normal Power): Laminated three-layer plastic with engraved black letters on white background.
- B. Product Description (Emergency Power): Laminated three-layer plastic with engraved white letters on red background.
- C. Provide nameplates of minimum letter height as scheduled below.
 - 1. Unit Substation, Transformer, Switchgear, Panelboards and Switchboard Centers: 1/4 inch; identify equipment designation, voltage rating, and source.
 - 2. Individual Circuit Breakers, Switches, and Motor Starters in Panelboards, Switchboards, and Motor Control Centers: 1/8 inch; identify circuit and load served, including location.
 - 3. Individual Circuit Breakers, Enclosed Switches and Motor Starters: 1/8 inch; identify voltage rating, ampere rating and load served including location.
 - 4. HVAC and Plumbing Control Equipment: 1/8 inch; identify equipment designation and equipment served including location.
- D. Minimum nameplate thickness: 1/8 inch.

2.2 LABELS

- A. Labels (Normal Power): Embossed adhesive tape, with 3/16 inch white letters on black background.

- B. Labels (Emergency Power): Embossed adhesive tape, with 3/16 inch white letters on red background.
- C. Labels (Conductor Color Coding): Embossed adhesive tape, with 3/16 inch white letters on red background.

2.3 WIRE MARKERS

- A. Description: Cloth tape, split sleeve, or tubing type wire markers.
- B. Locations: Each conductor at panelboard gutters, pull boxes, outlet and junction boxes and each load connection.
- C. Legend:
 - 1. Power and Lighting Circuits: Branch circuit or feeder number as indicated on Drawings.
 - 2. Control Circuits: Control wire number as indicated on schematic and interconnection diagrams or shop drawings.

2.4 UNDERGROUND WARNING TAPE

- A. Description: 4 inch wide plastic tape, detectable type, colored red with suitable warning legend describing buried electrical lines.

2.5 LOCKOUT DEVICES

- A. Lockout Hasps: Anodized aluminum hasp with erasable label surface; size minimum 7-1/4 x 3 inches.

2.6 ENGRAVED WALL PLATES

- A. Covered plates for wall switches, dimmers and receptacles specified in Division 26 Wiring Devices.
 - 1. Letter size: 1/8 inch high letters.
 - 2. Color (Normal Circuits): Engraving color shall be black.
 - 3. Color (Emergency Circuits): Engraving color shall be red.

PART 3 EXECUTION

3.1 PREPARATION

- A. Degrease and clean surfaces to receive adhesive for identification materials.
- B. Prepare surfaces in accordance with Division 09 for stencil painting.

3.2 INSTALLATION

- A. Install identifying devices after completion of painting.
- B. Nameplate Installation:
 - 1. Install nameplate parallel to equipment lines.
 - 2. Install nameplate for each electrical distribution and control equipment enclosure with corrosive-resistant mechanical fasteners, or adhesive.
 - 3. Install nameplates for each control panel and major control components located outside panel with corrosive-resistant mechanical fasteners, or adhesive.

4. Secure nameplate to equipment front using screws.
 5. Secure nameplate to inside surface of door on recessed panelboard in finished locations.
 6. Provide nameplates to identify all circuits in the service distribution and power distribution panelboards; motor control centers; branch circuit panelboards; separately mounted starting switches; disconnecting switches; motor control pushbutton stations; selector switches; transformers; terminal cabinets; telephone cabinets, etc. Clearly identify on the nameplate the equipment such as "Air Handling Unit AH-1" and "Hot Water Cir. Pump P-1" in lieu of abbreviated plan references such as "AH-1" or "P-1". Also indicate source of power (panel and circuit number).Switchboards.
- C. Label Installation:
1. Install label parallel to equipment lines.
 2. Install label for identification of individual control device stations.
 3. Install labels for permanent adhesion and seal with clear lacquer.
- D. Wire Marker Installation:
1. Install wire marker for each conductor at panelboard gutters; pull boxes, outlet and junction boxes and each load connection.
 2. Mark data cabling at each end. Install additional marking at accessible locations along the cable run.
- E. Stencil Installation: Apply stencil painting in accordance with Division 09.
- F. Underground Warning Tape Installation: Install underground warning tape along length of each underground conduit, raceway, or cable 6 to 8 inches below finished grade, directly above buried conduit, raceway, or cable.

END OF SECTION

SECTION 26 05 73

SHORT CIRCUIT AND OVERCURRENT PROTECTIVE DEVICE COORDINATION STUDY

PART 1 GENERAL

1.1 SUMMARY

- A. Section includes short circuit, ARC-flash and protective device coordination study encompassing portions of electrical distribution system from normal and emergency power source or sources up to and including utility company overcurrent devices and available fault circuits, breakers in service entrance switchboard, fuses in service entrance switchboard, main breaker in sub-distribution panels, fuses in sub-distribution panels, main breaker and feeder breaker in each panelboard.
- B. Related Sections:
 - 1. Division 26 - Low-Voltage Electrical Power Conductors and Cables.
 - 2. Division 26 - Low-Voltage Transformers.
 - 3. Division 26 - Low-Voltage Transformer Load Centers.
 - 4. Division 26 - Switchboards.
 - 5. Division 26 – Panelboards.
 - 6. Division 26 – Motor-Control Centers.
 - 7. Division 26 – Enclosed Bus Assemblies.
 - 8. Division 26 – Fuses.
 - 9. Division 26 – Enclosed Switches.
 - 10. Division 26 - Enclosed Circuit Breakers.
 - 11. Division 26 – Enclosed Controllers.
 - 12. Division 26 – Enclosed Contractors.
 - 13. Division 26 - Static Uninterruptible Power Supply.
- C. The Contractor shall submit a short circuit, ARC-flash and coordination study prepared for the electrical over-current devices to be installed under this project to assure proper equipment and personnel protection. The study shall be submitted prior to or at the same time with electrical distribution equipment for review and comment.
- D. It is the responsibility of the entity performing the Short Circuit, ARC-flash and Coordination Study to collect all data to fully perform the study, including but not limited to motor data, circuit breakers, utility company short circuit, available new and existing device ratings, conductor data, transformer ratings, etc.
- E. The study shall present an organized time-current analysis of each protective device in series from the individual device back to the source. The study shall reflect the operation of each device during all normal and abnormal current conditions when served from the utility and from the standby electrical system.
 - F. The short circuit, ARC-flash and coordination study shall be submitted prior to or along with the switchgear submittal, and shall include all equipment which has an AIC rating. The short circuit study shall reflect that all equipment with an AIC rating is properly rated for its specific application. The submitted switchgear (including all equipment which has an AIC rating) shall reflect the findings of short circuit study

(i.e., the AIC ratings of the equipment shall exceed the available short circuit current and any required derating factors at each point in the system.)

1.2 REFERENCES

- A. Institute of Electrical and Electronics Engineers:
 - 1. IEEE 242 - Recommended Practice for Protection and Coordination of Industrial and Commercial Power Systems (Buff Book).
- B. National Fire Protection Association:
 - 1. NFPA 70 - National Electrical Code.

1.3 DESIGN REQUIREMENTS

- A. Complete Short Circuit and Protective Device Coordination Study to meet requirements of NFPA 70.
- B. Report Preparation:
 - 1. Prepare study prior to ordering distribution equipment to verify equipment ratings required.
 - 2. Perform study with aid of computer software program.
 - 3. Obtain actual settings for all motors for equipment incorporated into Work.
 - 4. Calculate short circuit interrupting and, when applicable, momentary duties for assumed 3-phase bolted fault short circuit current and phase to ground fault short circuit current at each of the following:
 - a. Utility supply bus.
 - b. Medium voltage air interrupter switchgear.
 - c. Medium voltage circuit breaker switchgear.
 - d. Secondary unit substations.
 - e. Automatic transfer switch.
 - f. Engine generator.
 - g. Medium voltage motor controllers.
 - h. Medium voltage oil switchgear.
 - i. Low-voltage switchgear.
 - j. Switchboards.
 - k. Motor control centers.
 - l. Distribution panelboards.
 - m. Branch circuit panelboards.
 - n. Busway.
 - o. Each other significant equipment location throughout system.

C. Report Contents:

1. Include the following:
 - a. Calculation methods and assumptions.
 - b. Base per unit value selected.
 - c. One-line diagram.
 - d. Source impedance data including power company system available power and characteristics.
 - e. Typical calculations.
 - 1) Fault impedance.
 - 2) X to R ratios.
 - 3) Asymmetry factors.
 - 4) Motor fault contribution.
 - 5) Short circuit kVA.
 - 6) Symmetrical and asymmetrical phase-to-phase and phase-to-ground fault currents.
 - 7) Tabulations of calculation quantities and results.
 - f. One-line diagram revised by adding actual instantaneous short circuits available.
 - g. State conclusions and recommendations.
2. Prepare time-current device coordination curves graphically indicating coordination proposed for system, centered on conventional, full-size, log-log forms.
3. Prepare with each time-curve sheet complete title and one-line diagram with legend identifying specific portion of system covered by that particular curve sheet.
4. Prepare detailed description of each protective device identifying its type, function, manufacturer, and time-current characteristics. Tabulate recommended device tap, time dial, pickup, instantaneous, and time delay settings.
5. Plot device characteristic curves at point reflecting maximum symmetrical fault current to which device is exposed. Include on curve sheets the following:
 - a. Power company relay characteristics.
 - b. Power company fuse characteristics.
 - c. Medium voltage equipment protective relay characteristics.
 - d. Medium voltage equipment protective fuse characteristics.
 - e. Low voltage equipment circuit breaker trip device characteristics.
 - f. Low voltage equipment fuse characteristics.
 - g. Cable damage point characteristics.
 - h. Pertinent transformer characteristics including:
 - 1) Actual transformer full load current.
 - 2) Actual transformer magnetizing inrush.

- 3) ANSI transformer withstand parameters.
- 4) Significant symmetrical fault current.
- 5) Note: Any increase in actual transformer spec to account for temperature rating or any other reason must be accounted for and noted in the study.
- i. Pertinent motor characteristics.
- j. Generator characteristics including:
 - 1) Phase and ground coordination of generator protective devices.
 - 2) Decrement curve and damage curve.
 - 3) Operating characteristic of protective devices.
 - 4) Actual impedance value.
 - 5) Time constants.
 - 6) Current boost data.
 - 7) Do not use typical values for generator.
- k. Transfer switch characteristics.
- l. Other system load protective device characteristics.
6. ARC-flash Values: Provide labeling at all overcurrent protective device locations indicating the CAL/CM2 and the required P.P.E. (Personal Protective Equipment) level.

1.4 SUBMITTALS

- A. Division 01 - Submittal Procedures: Requirements for submittals.
- B. Qualifications Data: Submit the following for review prior to starting study.
 1. Submit qualifications and background of firm.
 2. Submit qualifications of individual or individuals, Professional Engineer performing study or under whose direction the study is performed.
 3. Certification: Two weeks prior to final inspection, deliver to the Owners Representative four copies of the following certifications:
 - a. Certification by the Contractor that the protective devices have been adjusted and set in accordance with the approved protective device study.
- C. Software: Submit for review information on software proposed to be used in performing study.
- D. Product Data: Submit summarized results of study in report format including the following:
 1. Single Diagram:
 - a. Show on the single line diagram all electrical equipment and wiring to be protected by the overcurrent devices installed under this project. Clearly show, on the one line, the schematic wiring of the electrical distribution system.
 - b. Also show on the single line diagram the following specific information:

- 1) Calculated fault impedance, X/R ratios, and short circuit values at each bus.
 - 2) Breaker and fuse ratings.
 - 3) Transformer KVA and voltage ratings, percent impedance, X/R ratios, and wiring connections.
 - 4) Voltage at each bus.
 - 5) Identification of each bus.
 - 6) Conduit material, feeder sizes, length, and X/R ratios.
2. Short Circuit Study:
- a. Systematically calculate the fault impedance to determine the available short circuit and ground fault currents at each bus. Incorporate the motor contribution in determining the momentary and interrupting ratings of the protective devices.
 - b. Entire system shall be modeled under both normal and emergency power. If any closed transition transfer switches are used, normal and emergency power shall be combined.
 - c. The short circuit study shall incorporate the actual feeder types, sizes and lengths proposed to be used by the contractor.
 - d. The calculations may be prepared by means of a digital computer. All pertinent data and the rationale employed in developing the calculations shall be incorporated in the introductory remarks of the study.
 - e. Present the data determined by the short circuit study in a table format. Include the following:
 - 1) Device identification.
 - 2) Operating voltage.
 - 3) Protective device.
 - 4) Device rating.
 - 5) Calculated short circuit current, indicating worst-case fault current incorporating all system models as outlined above.
3. Coordination Curves:
- a. Prepare the coordination curves to determine the required settings of protective devices to assure selective coordination. Graphically illustrate on log-log paper that adequate time separation exists (where possible) between series devices, including the utility company upstream device. Plot the specific time-current characteristics of each protective device in such a manner that all upstream devices will be clearly depicted on one sheet. Where a switchboard or panelboard has multiple devices of different sizes, it is not necessary to plot curves for each device when coordination for one device is demonstrated graphically and it is intuitively obvious that the other devices coordinate as well.
 - b. The following specific information shall also be shown on the coordination curves:
 - 1) Device identification.

- 2) Voltage and current ratio for curves.
 - 3) 3-phase and 1-phase ANSI damage points for each transformer.
 - 4) No-damage, melting, and clearing curves for fuses.
 - 5) Cable damage curves.
 - 6) Transformer inrush points.
 - 7) Maximum short circuit cutoff point.
 - 8) Short-time withstand capability of main 480V circuit breakers.
 - 9) Coordination between the directional overcurrent relays and the main 480V breaker.
- c. Develop a table to summarize the settings selected for the protective devices. Include in the table the following:
- 1) Device identification.
 - 2) Relay CT ratios, tap, time dial, and instantaneous pickup.
 - 3) Circuit breaker sensor rating, long-time, short-time, and instantaneous settings, and time bands.
 - 4) Fuse rating and type.
 - 5) Ground fault pickup and time delay.
- E. ARC-flash Study: Provide values for each location. Label each location.
- F. Submit copies of final report signed by professional engineer under whose direction the study was performed. Make any additions or changes required by review comments.
- G. Acceptance or no exceptions taken by the engineer on any substitution proposed by the contractor shall not be construed as relieving the contractor from compliance with the project's specifications and performance requirements nor departure there from. The contractor remains responsible for details and accuracy for confirming and correlating quantities and dimensions and for the selection of fabrication processes, techniques and assembly, coordination of his work with that of all other trades and making any needed modifications consequent to the substitution at his own cost and for performing the work in a safe manner.

1.5 QUALITY ASSURANCE

- A. Maintain one copy of each document on site.
- B. Use commercially available software, designed specifically for short circuit and protective device coordination studies approved by Architect/Engineer.
- C. Perform study in accordance with IEEE 242.

1.6 QUALIFICATIONS

- A. The short circuit and protective device coordination study shall be signed and stamped by a Professional Engineer (Electrical) licensed in the State of California, under whose direction the study was performed.
- B. The contractor shall have the coordination study prepared by qualified engineers who are employed by the switchgear manufacturer or an approved consultant. The Contractor is responsible for providing all pertinent information (feeder lengths and

existing equipment parameters) as well as utility information (i.e. transformers, impedances, and available short circuit currents), required to complete the study. The engineer(s) or consultant(s) shall meet all state and local requirements with regard to professional registration and standards of practice.

- C. Demonstrate company performing study has capability and experience to provide assistance during system start up.

1.7 SEQUENCING

- A. Division 01 - Summary: Requirements for sequencing.
- B. The short circuit portion of the study shall be submitted prior to or along with the switchgear submittal, and shall include all equipment which has an AIC rating. The short circuit study shall reflect that all equipment with an AIC rating is properly rated for its specific application. The submitted switchgear (including all equipment which has an AIC rating) shall reflect the findings of short circuit study (i.e., the AIC ratings of the equipment shall exceed the available short circuit current and any required derating factors at each point in the system.).
- C. When formal completion of study will cause delay in equipment manufacturing, obtain approval from Architect/Engineer for preliminary submittal of study data sufficient in scope to ensure selection of device ratings and characteristics will be satisfactory.

1.8 SCHEDULING

- A. Division 01 - Administrative Requirements and Construction Progress Schedule: Requirements for scheduling.
- B. Schedule work to expedite collection of data to ensure completion of study for final approval of distribution equipment shop drawings prior to release of equipment for manufacturing.

1.9 COORDINATION

- A. Division 01 - Administrative Requirements: Requirements for coordination.
- B. Coordinate work with local power company.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION

3.1 FIELD QUALITY CONTROL

- A. Division 01 - Quality Requirements and Execution and Closeout Requirements: Field inspecting, testing, adjusting, and balancing.
- B. Provide assistance to electrical distribution system equipment manufacturer during start up of electrical system and equipment.
- C. Select each primary protective device for delta-wye connected transformer so device's characteristic or operating band is within transformer characteristics including point equal to 58 percent of ANSI withstand point to provide secondary line-to-ground fault protection.
- D. Separate transformer primary protective device characteristic curves from associated secondary device characteristics by 16 percent current margin to provide proper coordination and protection in event of secondary line-to-line faults.
- E. Separate medium-voltage relay characteristic curves from curves for other devices by at least 0.4 second time margin.

- F. Analyze the short circuit calculations, and highlight any equipment that is determined to be underrated as specified. Propose approaches to effectively protect the underrated equipment. Proposed major corrective modifications will be taken under advisement by the architect, and the Contractor will be given further instructions. Provide minor modifications to conform with the study (Examples of minor modifications are trip sizes within the same frame, the time curve characteristics of induction relays, CT ranges, etc.).
- G. After developing the coordination curves, highlight areas lacking coordination. Present a technical valuation with a discussion of the logical compromises for best coordination.

3.2 ADJUSTING

- A. Division 01 - Execution and Closeout Requirements: Requirements for starting and adjusting.
- B. The Electrical Contractor shall be responsible for adjusting the trip settings of all breakers and other adjustable over-current devices per the approved coordination study. After the settings have been made, the Electrical Contractor shall apply an owner-furnished seal on the input.
- C. The Electrical Contractor shall provide the breaker testing agency with a copy of the final, approved coordination study and ensure all breaker testing is conducted with breaker settings adjusted per the study.
- D. Accomplish necessary field settings, adjustments, and minor modifications to conform with the study without cost to the owner.

END OF SECTION

SECTION 26 08 01

ELECTRICAL

PART 1 GENERAL

COMMISSIONING

1.1 SUMMARY

- A. This Section describes the requirements for start-up and commissioning for Division 26 installed work, including but not limited to:
 - 1. Low voltage distribution system.
 - 2. Lighting system.
 - 3. Lighting control system.
 - 4. Grounding Equipment and Building Grounding System

1.2 REFERENCES

- A. National Electrical Testing Association (NETA)
- B. American National Standard Institute (ANSI)
- C. Institute of Electrical and Electronic Engineers (IEEE)
- D. National Electrical Code (NEC)
- E. California Electric Code (CEC)

1.3 SUBMITTALS

- A. Provide a complete commissioning and training plan submittal for the electrical work.
- B. Acceptance or no exceptions taken by the engineer on any substitution proposed by the contractor shall not be construed as relieving the contractor from compliance with the project's specifications and performance requirements nor departure there from. The contractor remains responsible for details and accuracy for confirming and correlating quantities and dimensions and for the selection of fabrication processes, techniques and assembly, coordination of his work with that of all other trades and making any needed modifications consequent to the substitution at his own cost and for performing the work in a safe manner.

1.4 QUALITY ASSURANCE

- A. Provide testing equipment and accessories that are free of defects and are certified for use.
- B. Provide testing equipment with current calibration labels.
- C. Comply with commissioning procedures to ANSI and IEEE guidelines. Incorporate manufacturers recommend commission procedures for equipment.

1.5 COORDINATION

- A. Coordinate commissioning work with the requirements of Division 01 - General Commissioning Requirements.

- B. Coordinate commissioning requirements noted in other Division 26 Sections.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify that equipment testing work is complete before starting functional performance of power equipment.
- B. Verify that operational manuals are complete and been approved by the Owner's Representative before starting functional performance testing.
- C. Inspect equipment and confirm that it is clean and ready for operation. All shipping tags removed, nameplates installed and equipment manuals in place.

3.2 PREPARATION

- A. Provide at least 1 journeyman electrician with tools and equipment necessary to perform functional testing.
- B. Provide equipment factory representative for this work when needed.
- C. Provide certified testing agency personnel for this work when needed.
- D. Provide any necessary temporary power provisions, diesel fuel, equipment and sundries to complete this work.

3.3 CHECKLIST - NORMAL POWER DISTRIBUTION

- A. Prior to Functional Performance Test:
 - 1. System in place, including all components indicated, and tested.
 - 2. Connected to utility company power system on a permanent basis.
 - 3. Wiring installed in conduits or other raceways.
 - 4. System checked for unwanted grounds, short circuits or open circuits.
 - 5. Ground installed as indicated, including transformers.
 - 6. Equipment connections properly torqued.
 - 7. Equipment, where indicated, on housekeeping pads.
 - 8. Equipment cleaned and shipping blocks removed.
 - 9. Equipment labeled.
 - 10. Boxes and nameplates meet color coding requirements.
 - 11. Adjustable overcurrent devices shall be set per specification Division Section 26.
- B. Personnel to be present or assist as required to Perform Functional Performance Test:
 - 1. Electrical Contractor, sub-contractors and specialty contractors as required.
 - 2. Owner's Representative's Project Manager/Representative and/or Inspector of Record (IOR).
 - 3. Owner's maintenance staff, as desired.
 - 4. Design Engineer.
- C. Functional Performance Test: Demonstrate operation of normal power distribution system per specifications including the following:

1. Activate system by connection to utility power.
 2. Verify voltages and amperes at meters on switchgear.
 3. Verify voltages and amperes at switchgear, substations, switchboards, motor control centers, panelboards, and transformers, both primary and secondary.
 4. Verify voltages and amperes at mechanical motors and other major pieces of equipment.
- D. Results: If specified equipment performance is not verified, the General Contractor shall have corrections made and reschedule Functional Performance Test as soon as possible after corrective work is completed.
1. Activate system by manual transfer from utility power.
 2. Demonstrate automatic transfer of power.
- E. Results: If specified equipment performance is not verified, the General Contractor shall have corrections made and reschedule Functional Performance Test as soon as possible after corrective work is completed.

3.4 GROUNDING/BUILDING GROUNDING SYSTEM

- A. Starting Procedures: Follow the manufacturer's written procedures and the following as a minimum:
1. Conduct fall of potential ground resistance tests per IEEE Standard 81 at each test well and at service equipment.
 2. Conduct insulation resistance, short circuit, and ground tests of each motor.

3.5 TRAINING

- A. At job completion, allow a period of not less than 24 hours for instruction of building operating and maintenance personnel in the use of all systems. Include high voltage safety training where medium voltage equipment is installed. This instruction time (24 hours) is in addition to any instruction time called out in other Division 26 Sections.
- B. Instruct all personnel at the same time. General Contractor shall be responsible for coordinating factory representative arrangements.
- C. General Contractor shall be responsible for training expenses incurred

END OF SECTION

31 00 00

EARTHWORK AND GRADING

PART 1 - GENERAL

1.1 SUMMARY

- A. This section describes general requirements, products, and methods of execution relating to on-site earthwork. Any work within the public right-of-way shall be constructed to the standards of Solano County, and the State of California Department of Transportation. Earthwork includes, but is not limited to, the following:
 - 1. Grading.
 - 2. Material.
 - 3. Excavation.
 - 4. Filling and backfilling.
 - 5. Soil Sterilant.
 - 6. Termiticide.

- B. Provide labor, material and equipment and services necessary to complete the excavations, recompaction and finish grading as specified and indicated on Plans.
 - 1. Obtain permit from local authorities.
 - 2. Provide surveying for grading operations.
 - 3. Provide shoring design.
 - 4. Provide dewatering operations.
 - 5. Provide Site grading, cut, fill and finish.
 - 6. Provide excavation and backfill for filling construction, including trenches within building lines.
 - 7. Preparation for subgrade for building slabs, walks, pavements, and landscaping.
 - 8. Provide distribution of stockpiled topsoil.
 - 9. Provide sub-base course for walks and pavements.
 - 10. Provide sand and gravel for capillary break/moisture barrier under building slabs.
 - 11. Provide sub-surface drainage backfill for walls and trenches.
 - 12. Provide Engineered fills for building slabs and foundations.

- C. The work includes removal and legal disposal off the site of debris, rubbish and other materials resulting from clearing and grubbing operations.

- D. Work specified in Related Sections:
 - 1. Section 31 10 00 – SITE PREPARATION.
 - 2. Section 31 23 33– TRENCHING, BACKFILLING, & COMPACTING.

1.2 DEFINITIONS

- A. Engineered Fill:
 - 1. Soil or soil-rock material approved by Project Manager and transported to the site by the Contractor in order to raise grades or to backfill excavations.
 - 2. The District's Testing Agency will make sufficient tests and/or observations for the purpose of issuing a written statement that specification requirement.

- B. On-site Material: Soil or earth material obtained from required on-site excavation.

- C. Excavation: Consists of the removal of material encountered to subgrade elevations and the re-use or disposal of materials removed.

- D. Subgrade: The uppermost surface of an excavation or the top surface of a fill or backfill immediately below sub-base, drainage fill, or topsoil materials.

- E. Borrow: Soil material obtained off-site when sufficient approved soil material is not available from excavations.
- F. Base Course: The layer placed between the sub-base and surface pavement in a paving system.
- G. Relative Compaction: In-place dry density of soil expressed as percentage of maximum dry density of same materials, as determined by laboratory test procedure American Society for Testing and Materials (ASTM) D1557.
- H. Subgrade: The uppermost surface of an excavation or the top surface of a fill or backfill immediately below top soil, rock base course, or drainage fill.

1.3 SYSTEM DESCRIPTION

- A. Requirements:
 - 1. Grades and elevations are to be established with reference to bench marks referenced on Plans.
 - 2. Maintain Engineering markers such as monuments, bench marks and location stakes. If disturbed or destroyed, replace.
- B. Criteria:
 - 1. The character of the material to be excavated or used for subgrade is not necessarily as indicated.
 - 2. Ground water elevations indicated are those existing at the time subsurface investigations were made and do not necessarily represent ground water elevation at the time of construction.
 - 3. Blasting will not be permitted.
 - 4. Remove material in an approved manner.
- C. Shoring Design: Where shoring is required by State Law or determined by the Contractor to be necessary, provide proposed excavation shoring method for review prior to commencement of excavation requiring shoring. Include the following information:
 - 1. Basic design assumptions.
 - 2. Design Calculations.
 - 3. Describe materials or shoring system to be used.
 - 4. Indicate whether or not any components will remain after filling or backfilling.
 - 5. The shop plans for the proposed shoring system.
 - 6. Coordinate with the Construction Documents and identify any proposed modifications or deviations.
 - 7. Certification of the above by a registered professional civil or structural Project Manager licensed by the State of California.
- D. Dewatering Plan: Based upon site surface and subsurface conditions, including available geotechnical and hydrological data, provide a system to perform the following:
 - 1. Lower the ground water level two feet below the bottom of excavation.
 - 2. Relieve the hydrostatic pressure below the subgrade to prevent uplift.
 - 3. Prevent surface drainage from accumulating within work area.
 - 4. Legally discharge and dispose of excess water.
 - 5. Submit description of basic components of proposed dewatering system and its planned method of operation.
- E. Safety:
 - 1. The Contractor shall take all necessary precautions to eliminate the exposure of workers, students, staff and the public to asbestos fibers, including but not limited to: dust control measures and measures included in Section 93106 and Section 93105 of California Code of Regulations, Title 17.

1.4 SUBMITTALS

- A. Comply with provisions of Section SUBMITTAL PROCEDURES.
- B. Product Data: Manufacturer's literature and data, including, where applicable, capacity, labels, or other markings on equipment made to the specified standards for materials, for the following:
 - 1. Imported materials.
 - 2. Class II aggregate base (CDT Section 26).
 - 3. Storm Water Pollution Prevention / Erosion Control Plans.
 - 4. Permit/Notice of Intent (N.O.I.), for discharge of storm run-off from the construction site.
 - 5. Soil Sterilant.
 - 6. Termiticide.
- C. Test Reports: Submit following reports for import material directly to Project Manager from the Contractor's testing services:
 - 1. Test reports on borrow material.
 - 2. Density test reports.
 - 3. One optimum moisture-maximum density curve for each type of soil encountered.
 - 4. Report of actual unconfined compressive strength and/or results of bearing test of each strata tested.
 - 5. At least one laboratory optimum moisture - maximum dry density curve for each type of soil encountered.
- D. Shoring Design: Submit 4 copies of shoring design and shop plans; none will be returned unless a concern is observed.
- E. Submit description of dewatering methods proposed for use.
- F. Submit description of vibratory compactors proposed for use when requesting placement of backfill and fill materials in layers greater than 6 inches thick.
- G. Samples:
 - 1. 20-lb. Samples, sealed in air-tight containers, of each proposed fill and backfill soil material from on-site or borrow sources.
 - 2. 12-by-12 inch sample of filter fabric.

1.5 QUALITY ASSURANCE

- A. Requirements of Regulatory Agencies:
 - 1. Comply with State of California Business and Transportation Agency, Department of Transportation (Caltrans) "Standard Specifications."
 - 2. Comply with State of California Code of Regulations (CCR).
 - 3. Comply with State of California Construction Safety Orders, Latest Edition (CAL/OSHA).
 - 4. San Mateo Department of Public Works, Standards and Specifications and Plans.
- B. Soil Testing:
 - 1. District will engage a geotechnical testing agency, to include testing soil materials proposed for use in the work and for quality control testing during excavation and fill operations.
 - 2. Test results will be distributed in compliance with Section TESTING AND INSPECTION.
- C. Codes and Standards:
 - 1. Perform excavation work in compliance with applicable requirements of authorities having jurisdiction.
 - 2. Storm Water Pollution Prevention and Monitoring Plan to be prepared by others.
 - 3. Statewide General Permit to Discharge Storm Water associated with construction activity.

- D. Comply with the latest editions of the following Standards and Regulations:
1. American Society for Testing and Materials (ASTM):
 - a. C33: Concrete Aggregates.
 - b. C125: Standard Terminology Relating to Concrete and Concrete Aggregates.
 - c. C136: Sieve Analysis of Fine and Coarse Aggregates.
 - d. C566: Total Evaporable Moisture Content of Aggregate by Drying.
 - e. D421: Dry Preparation of Soil Samples for Particle-Size Analysis and Determination of Soil Constants.
 - f. D422: Particle Size Analysis of Soil.
 - g. D854: Specific Gravity of Soils.
 - h. D1556: Density of Soil by the Sand Cone Method.
 - i. D1557: Laboratory Compaction Characteristics of Soil Using Modified Effort
 - j. D2216: Determination of Water (Moisture) Content of Soil, Rock, and Soil-Aggregate Mixtures.
 - k. D2487: Classification of Soils for Engineering Purposes.
 - l. D2922: Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth)
 - m. D2937: Density of Soil in Place by Drive Cylinder Method.
 - n. D3017: Water Content of Soil and Rock in Place by Nuclear Methods (Shallow Depth).
 - o. D4318: Liquid Limit, Plastic Limit, and Plasticity Index of Soils.
 2. California Code of Regulations, Title 24, Part 2 - Basic Building Regulations, Chapter 24 - Excavations, Foundations, and Retaining Walls.
 3. California Department of Transportation (CDT) Standard Specifications:
 - a. Section 17:
 - b. Section 18:
 - c. Section 19: Earthwork.
 4. CAL/OSHA, Title 8.
 5. Other authorities having jurisdiction
- E. Geotechnical Engineering Services:
1. Geotechnical Engineer will observe grading observations during preparation onsite, excavation, and compaction of fill materials.
 2. Make visits to site to familiarize himself generally with progress and quality of work.
 3. Make field observations and tests to enable him to form opinions regarding adequacy of site preparation, acceptability of fill materials and extent to which earthwork construction and relative compaction comply with specifications requirements.
 4. Examine conditions exposed in foundation excavations.
- F. Site Information:
1. Soil borings and other exploratory operations may be made by Contractor at no cost to District. Submit proposed boring locations for review prior to performing the work.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Protect materials of this section before, during and after installation; objects designated to be retained; and the installed work of other trades.
- B. In the event of damage to any of these items, immediately make repairs or replacements necessary to the acceptance of the Project Manager and at no additional cost to the District.
- C. Comply with provisions of Section 01500 - TEMPORARY FACILITIES AND CONTROLS where necessary to control dust and noise on and near the work caused by operations during performance of the Work.

1.7 PROJECT CONDITIONS

- A. Environmental Requirements:
 - 1. When unfavorable weather conditions necessitate interrupting filling and grading operations, prepare areas by compaction of surface and grading to avoid collection of water.
 - 2. Provide adequate temporary drainage to prevent erosion.
 - 3. After interruption, reestablish compaction specified in last layer before resuming work.
 - 4. Protect existing storm drainage system from silt and debris resulting from construction activities. If contamination occurs, remove contamination at no cost to District.
 - 5. Protect existing streams, ditches and storm drain inlets from water-borne soil by means of straw bale dikes, filter fiber dams, or other methods as approved by the Project Manager.

- B. Barricade open excavations and post with warning lights.
 - 1. Comply with requirements of Section TEMPORARY FACILITIES AND CONTROLS.
 - 2. Operate warning lights as recommended by authorities having jurisdiction.
 - 3. Protect structures, utilities, sidewalks, pavements, and other facilities immediately adjacent to excavations, from damages caused by settlement, lateral movement, undermining, washout and other hazards.

- C. Protection of Subgrade: Do not allow equipment to pump or rut subgrade, stripped areas, footing excavations, or other areas prepared for project.

- D. At Contractor's option, a working pad of granular material may be laid to protect footing and floor subgrade soils from disruption by traffic during wet conditions.

- E. Transport all excess soils materials by legally approved methods to disposal areas.
 - 1. Coordinate with the Project Manager.
 - 2. Sufficient topsoil and fill material shall be retained from the site to complete project requirements.
 - 3. Any additional topsoil and fill requirements shall be the responsibility of the Contractor.

- F. Use of explosives will not be permitted.

- G. Dust Control Requirements: At all times during earthwork operations and until final completion and acceptance of the earthwork, the Contractor shall prevent the formation of an airborne dust and dirt nuisance from interfering with the surrounding normal operations. The Contractor shall effectively stabilize the site of work in such a manner that it will confine dust particles to the immediate surface of the work and to obtain a minimum of 40 percent emissions reduction by applying a dust palliative. The dust palliative shall be non-petroleum based. Water alone is not considered to be a dust palliative. The dust palliative shall be applied at the rate and method in conformance with Section 18, "Dust Palliative," of the CDT Standard Specifications and as recommended and/or specified by the manufacturer. Contractor shall assume liability for all claims related to dust and dirt nuisances.

1.8 Existing Utilities

- A. The Contractor shall contact local utility agencies prior to construction and arrange for the shut-off of all utilities serving the buildings to be demolished. Coordinate work required to abandon active lines with the Project Manager and the District.

- B. Locate existing underground utilities in the areas of work. If utilities are to remain in place, provide adequate means of protection during excavation operations.

- C. Should uncharted or incorrectly charted piping or other utilities be encountered during excavation, consult utility Project Manager immediately for directions.
 - 1. Cooperate with the District and public and private utility companies in keeping their respective services and facilities in operation.
 - 2. Repair damaged utilities to the satisfaction of the utility District.

- D. Do not interrupt existing utilities serving facilities occupied and used by the District or others, except when permitted in writing by Project Manager and then only after acceptable temporary utility services have been provided.

1.9 SEQUENCING AND SCHEDULING

- A. The sequence of operations shall be reviewed by the Project Manager prior to commencement of any work.
- B. Coordinate operations with relocation of existing utilities.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. General:
 - 1. Fill material will be subject to approval of the Geotechnical Engineer.
 - 2. For approval of imported fill material, notify the Project Manager at least 7 days in advance of intention to import material, designate proposed borrow area, and permit the Geotechnical Engineer to sample as necessary from borrow area for purpose of making acceptance tests to prove quality of material.
 - 3. The Geotechnical Engineer's report on acceptability shall be final and binding.
 - 4. During grading operations, soil types other than those analyzed in the geotechnical report for the project, may be encountered.
 - 5. Consult the Geotechnical Engineer to determine the suitability of these soils.
- B. Engineered Fill Material: Soil excavated from site or imported conforming to requirements for fill material.
 - 1. Imported materials should have a plasticity index not less than 5 nor greater than 15, as determined by ASTM D4318; and expansion index not exceeding 20, as determined by UBC Specification 29-2; and a particle size not exceeding 3 inches as determined by ASTM D422.
- C. Topsoil: Friable clay loam surface soil found in a depth of not less than 10 inches. Satisfactory topsoil is reasonably free of subsoil, clay lumps, stones and other objects over 2 inches in diameter, and without weeds, roots and other objectionable material.
 - 1. Use topsoil for top 2 feet of fill against exterior walls, except at paving, sidewalks, and slabs.
 - 2. Topsoil may also be used beyond the area within 5 feet of building, except under paving and sidewalks.
 - 3. Confirm suitability of stockpiled materials.
- D. Sand: Clean, well-graded fine to coarse sand with not more than 2 percent passing the #200 sieve based on wet sieve analysis.
 - 1. Provide 2-inch layer under building slabs on grade or as specified by the geotechnical report for this project.
 - 2. Provide at other locations indicated.
 - 3. Where coarse sand is required, provide sand no finer than No. 40 sieve.
- E. Graded Rock Base:
 - 1. Bedding for utility piping: Washed, uniformly graded mineral aggregate ASTM D448 with percentage composition of dry weight conforming with following limits:
 - a. Passing 1-inch Sieve: 100 percent.
 - b. Passing 3/4-inch Sieve: 90-100 percent.
 - c. Passing No. 4 Sieve: 0-10 percent.
 - 2. Base at Slab-on-Grade: As specified in the geotechnical report for this project.
 - 3. Absorption of water to saturated-surface dry condition shall not exceed 3 percent of oven-dry weight of a sample.

- F Backfill material for use behind retaining walls shall be a granular material consisting of sand, broken rock, or a mixture of sand and gravel containing no size larger than 2 ½ inches and not more than 15 percent passing the No. 200 sieve.
- G Imported Fill Requirements: Imported fill, where required, shall be non expansive granular soil, free of organic matter and deleterious substances. Imported fill material shall conform to the following requirements:
 - 1. Grading:

<u>U. S. Sieve Size</u>	<u>Percentage Passing Sieve</u>
2 ½ inch	100
No. 8	25-45
No. 200	0-10
 - 2. Be thoroughly compactable without excessive voids.
 - 3. Meet the following plasticity requirements:
 - a. Maximum Plasticity Index of 12, as determined by ASTM D4318.
 - b. Maximum Liquid Limit of 35, as determined by ASTM D4318
- H. Imported Fill for Planting Areas: Imported fill for use in planting areas shall be sandy loam weed free soil. Submit analysis from certified Soil and Plant Lab. Coordinate with Landscape Engineer.
- J. Pea Gravel: 3/8 inch to ½ inch washed, uncrushed gravel. Use at drainage pipe and at other locations indicated.
- K. Filter Fabric: Provide filter fabrics that meet or exceed the listed minimum physical properties determined according to ASTM D4759 and the referenced standard test method in parentheses.
 - 1. Grab Tensile Strength (ASTM D4632): 100 lb.
 - 2. Apparent Opening Size (ASTM D4751): #100 U.S. Standard sieve.
 - 3. Permeability (ASTM D4491): 150 gallons per minute per square foot.
- L. Drainage Pipe:
 - 1. Perforated corrugated plastic drainage tubing meeting ASTM F405, with continuous integral nylon filter screen.
 - 2. Acceptable Manufacturers and Products: Advanced Drainage Systems “DrainGuard,” Hancor “Agri-Flow.”
 - 3. Provide couplings, elbows and other fittings as recommended by pipe manufacturer.
- M. Water: Clean and free from deleterious amounts of acids, alkalis, salts and organic matter.

2.2 SOIL STERILANT

- A. Soil Sterilant shall be Treflan E.C. or approved equivalent.

2.3 TERMITICIDE

- A. Termiticide shall be Permethrin, Denon, or approved equivalent.

PART 3 - EXECUTION

3.1 GENERAL

- A. Prior to commencement of earthwork, become thoroughly familiar with site conditions.
- B. In the event discrepancies are found, immediately notify the Project Manager in writing, indicating

the nature and extent of differing conditions.

- C. No earthwork shall be performed without physical presence or acceptance of the Geotechnical Engineer.
- D. The Geotechnical Engineer's acceptance is required by these specifications; notify the Project Manager at least 48 hours prior to commencing any phase of earthwork.
 - 1. No phase of work shall proceed until prior phase has been accepted by the Geotechnical Engineer.
 - 2. Work shall not be covered up or continued until acceptance of the Geotechnical Engineer shall give written notice of conformance with the specifications upon completion of grading.
- E. Compacting:
 - 1. Compact by power tamping, rolling or combinations thereof as accepted by the Geotechnical Engineer.
 - a. Where impractical to use rollers in close proximity to walls, stairs, etc., compact by mechanical tamping.
 - b. Scarify and recompact any layer not attaining compaction until required density is obtained.
 - 2. Compaction by flooding, ponding or jetting will not be permitted, unless specifically accepted by the Geotechnical Engineer.
- F. Hazardous Materials
 - 1. If any materials are encountered that may be hazardous (as defined in Section 25117 of the California Health and Safety Code), inform the Project Manager verbally within 24 hours and in writing within 2 business days. Upon discovery, material is to remain undisturbed until investigation by Project Manager is complete. The removal and disposal of hazardous materials, if discovered, is not part of the scope of work of this Division for this project.

3.2 SITE PREPARATION

- A. Protect structures, utilities, sidewalks, pavements, and other facilities which are to remain from damage caused by settlement, lateral movement, undermining, washout, and other hazards created by earthwork operations. Set up tree protection measures prior to commencing grading or demolition operations.
- B. Clearing and Grubbing:
 - 1. Remove from area of designated project earthwork all improvements and obstructions, including designated concrete curbs or slabs, asphaltic concrete, all tree and shrub roots, any buried utility and irrigation lines, and other matter determined by the Geotechnical Engineer to be deleterious.
 - a. In all new planting areas, remove existing base material.
 - b. Use only hand methods for grubbing inside the drip line of trees indicated to be left standing.
 - 2. Retain on the site all trees and shrubs, unless otherwise indicated on the plans as existing trees to be removed.
 - 3. Remove or fill existing basements left from removed structures as appropriate to areas. Compact in accordance with requirements of these specifications.
 - 4. Removed material shall become property of the Contractor and shall be removed from site, unless otherwise indicated on the plans or specified herein.
 - 5. Holes resulting from removal of underground obstructions that extend below finish grades shall be cleared and backfilled with Engineered fill.
 - 6. Existing Trees to remain:
 - a. Verify the locations of existing trees to be preserved.
 - b. Replace existing trees to remain that are damaged during construction at no additional

- cost to the District and provide replacement specimens of same species per coordination with the Project Manager.
- c. Carefully make clean cuts at roots and branches of trees indicated to be left standing, where such roots and branches obstruct new construction. Paint cuts over ½ inch in size with tree pruning compound.
7. Contact District Arborist 48 hours prior to cutting any trees
- C. Topsoil:
1. Strip topsoil to whatever depths encountered in manner to prevent intermingling with the underlying subsoil or other objectionable material.
 2. Remove heavy growths of grass from areas before stripping. Where trees are indicated to be left standing, stop topsoil stripping a sufficient distance to prevent damage to the main root system.
 3. Stockpile topsoil in storage piles to freely drain surface water.
 4. Cover storage piles if required to prevent windblown dust.

3.3 EXISTING UTILITIES

- A. Protect existing utilities that are to remain in operation as specified.
- B. Demolish and completely remove from the site existing underground utilities indicated and/or required to be removed in order to complete the work. See Section 02200 – SITE PREPARATION.
- C. Movement of construction machinery and equipment over existing pipes and utilities during construction shall be at contractor's risk.
- D. Excavation made with power-driven equipment is not permitted within 2 feet of any known utility or subsurface structure.
 1. Use hand or light equipment for excavating immediately adjacent to or for excavations exposing a utility or buried structure.
 2. Start hand or light equipment excavation on each side of the indicated obstruction and continue until the obstruction is uncovered or until clearance for the new grade is assured.
 3. Preserve and irrigate removed sections of existing turf for salvage and/or replacement and restoration.
 4. Support uncovered lines or other existing work affected by excavation until approval for backfill is obtained.
 5. Report damage of utility line or subsurface structures immediately to Project Manager

3.4 PREPARATION OF SUBGRADE

- A. Expansive soils are anticipated to basement depth.
 1. Review the necessity for overexcavation of expansive soils.
- B. Scarify building pad, exterior flatwork and pavement subgrade to a depth of at least 8 inches and work until uniform and free from large clods.
 1. Bring expansive subgrades to 2 to 5 percentage points above the optimum moisture content and compact to 90 percent of the maximum laboratory dry density, in accordance with ASTM D1557.
 2. Bring nonexpansive subgrades to or slightly above the optimum moisture content and compact to 90 percent of the maximum laboratory dry density in accordance with ASTM D1557.

3. Increase compaction of the upper 12 - 18 inches of pavement subgrades to 95 percent of the maximum laboratory dry density per ASTM D1557 for nonexpansive subgrades.

3.5 DEWATERING

- A. Do not allow water from surface drainage or underground sources to accumulate in excavations, unfinished fills, or other low areas.
- B. Provide and maintain ample means and devices to remove water promptly and dispose properly of water entering excavations or other parts of the work to prevent softening of exposed surfaces.
- C. Dewater by methods which will ensure dry excavation and preservation of finish lines and grades of excavation bottoms.
- D. Prior to excavating below ground water level, place dewatering system in operation.
 1. Lower the ground water level a minimum of 2 feet below the bottom of the excavation.
 2. Relieve the hydrostatic pressure in pervious zones below the subgrade elevation to prevent uplift.
 3. Use screens and gravel packs as necessary to prevent removal of fines from the soil.
- E. Operate the dewatering system continuously, 24 hours a day, 7 days a week until construction work below existing ground water level is completed.
 1. Measure and record the performance of the dewatering system.
 - a. Perform at the same time each day.
 - b. Use piezometers and observation wells.
 2. After placement of initial slabs and backfill, the ground water level may be allowed to rise.
 3. At no time allow ground water to rise higher than 1 foot below the prevailing level of excavation or backfill.
 4. Have a back-up pump and system available for immediate use.
- F. Dispose of water away from the work in suitable manner without damage to adjacent property or menace to public health.
- G. Do not drain water into work being built or under construction without prior acceptance of the Project Manager.
- H. Protect existing storm drainage system from silt and debris resulting from construction activities. If contamination occurs, remove contamination at no cost to the District.

3.6 SITE EXCAVATION

- A. General
 1. All supports, shoring, and sheet piling required for the sides of excavations or for protection of adjacent existing improvements shall be provided and maintained by the Contractor. The adequacy of such systems shall be the complete responsibility of the Contractor.
 2. Earth and rock, regardless of character and subsurface conditions, shall be excavated to depths shown on plans and to the neat dimensions of the footings wherever practicable, to permit pouring of footings and grade beams without use of side forms, except at slab perimeters.
 3. Large rocks, pieces of concrete or other obstructions, if encountered during the excavation/scarifying operations, shall be removed and disposed of by the Contractor off the site in a legal manner.
 4. Where footing excavation is too deep, backfill shall be concrete. Where footings are overdug laterally, side forms shall be employed for backfill with rock fill or concrete backfill shall be used (Contractor's option).
 5. Where forming is required, only that excavation necessary to permit placing and removal of forms shall be done.

6. Bottoms of all footings and foundations trenches shall be subject to testing by the Geotechnical Engineer. Corrective measures as directed by the Project Manager shall be executed promptly.
- B. Excavate subgrade as required to allow for finish grades shown on plans, as required for structural fill or otherwise required for proper completion of the work.
- C. Remove and replace subgrade materials designated by Geotechnical Engineer as unsuitable.

3.7 FILL AND COMPACTING

- A. See Section 31 23 33 – TRENCHING, BACKFILLING, & COMPACTING for fill and compacting requirements.

3.8 MOISTURE CONTROL

- A. Do not place, spread or roll fill material during unfavorable weather conditions or when fill material is excessively wet.
- B. Do not resume operations until moisture content and fill density are satisfactory to the Geotechnical Engineer.
- C. Provide berms or channels to prevent surface water from flooding excavations. Promptly remove water collecting in depressions.
- D. Where soil has been softened or eroded by flooding or by placement during unfavorable weather, remove damaged areas and recompact as described for fill and compaction.
 1. Where subgrade or layer of soil material must be moisture conditioned before compaction, uniformly apply water to surface of subgrade, or layer of soil material.
 2. Prevent free water appearing on surface during or subsequent to compaction operation.
 3. Remove and replace, or scarify and air dry, soil material too wet to permit compaction to specified density.
 4. Soil material removed because it is too wet to permit compaction may be stockpiled or spread and allowed to dry. Assist drying by discing, harrowing or pulverizing until moisture content is reduced to a satisfactory value.

3.9 GRADING

- A. General: Uniformly grade areas of work including adjacent transition areas. Smooth finished surface within specified tolerances, compact with uniform levels or slopes between points where elevations are shown, or between such points and existing grades.
 1. All areas covered by the project, including excavated and filled areas and adjacent transition areas, shall be uniformly graded so that finished surfaces are at the elevations established by the plans. Planter areas to receive future topsoil shall be graded below finished grade to allow for such material.
 2. Finished surfaces and surfaces to receive paving and aggregate base shall be smooth, compacted, and free from irregular surface drainage.
 3. Ditches, gutters, and swales shall be finished to permit proper surface drainage.
 4. All surface areas, except paved and sloped embankments exceeding 8:1, shall be hydroseeded.
- B. Grading Tolerances:
 1. Excavations shall not exceed 0.10-foot variation from dimensions and elevations shown or noted, unless otherwise approved by Project Manager.
 2. Fill and backfill shall be placed with tolerance of plus or minus 0.10 foot if placed in layers.
 3. Grading shall be done within plus or minus 0.10 foot typically; areas under slabs, walks or pavements shall be graded within tolerance of 0 to 0.10 foot.

4. Lawn or Unpaved Areas: Finish areas to receive topsoil to within not more than 0.10 foot above or below required subgrade elevations.
 5. Walks: Shape surface of areas under walks to line, grade and cross-section, with finish surface not more than 0.10 foot above or below required subgrade elevation.
 6. Pavements: Shape surface of areas under pavement to line, grade and cross-section, with finish surface not more than ½ inch above or below required subgrade elevation.
- C. Compaction: After grading, compact subgrade surfaces to the depth and percentage of maximum density for each area classification.

3.10 SOIL STERILIZATION

- A. General: Soil sterilant shall be applied to prepared subgrade or after installation of rock or aggregate base as recommended by the manufacturer. Sterilant shall be applied uniformly at the rate recommended by the manufacturer to all areas beneath asphalt concrete pavement, brick pavement, concrete pavement, or on-grade concrete slabs including sidewalks, curbs, and gutters and areas between the inner and outer security fences. In addition to ground areas treated, sterilant shall be applied below expansion or control joints, and at all areas where pipe, ducts, or other features penetrate slabs.

3.11 TERMITICIDE

- A. Termiticide shall be applied to soils as recommended by the manufacturer. Termiticide shall be applied uniformly at the rate recommended by the manufacturer to all areas beneath and around wood frame structures.

3.12 DISPOSAL OF EXCESS AND WASTE MATERIALS

- A. Removal of Excess Excavated Material: Excess material shall be removed by the Contractor off the site in a legal manner.
- B. Testing Agency Services: Allow testing agency to inspect and test each subgrade and each fill or backfill layer. Do not proceed until test results for previously completed work verify compliance with requirements.
1. Perform field in-place density tests according to ASTM D1556 (sand cone method), ASTM D2167 (Rubber Balloon Method), or ASTM D2937 (Drive Cylinder Method), as applicable.
 - a. Field in-place density tests may also be performed by the nuclear method according to ASTM D2922, provided that calibration curves are periodically checked and adjusted to correlate to tests performed using ASTM D1556. With each density calibration check, check the calibration curves furnished with the moisture gauges according to ASTM D3017.
 - b. When field in-place density tests are performed using nuclear methods, make calibration checks of both density and moisture gauges at beginning of work on each different type of material encountered, and at intervals as directed by the Project Manager.
 2. Footing Subgrade: At footing subgrades, perform at least one test of each soil stratum to verify design bearing capacities. Subsequent verifications and approval of other footing subgrades may be based on a visual comparison of each subgrade with related tested strata when acceptable to the Project Manager.
 3. Paved and Building Slab Areas; At subgrade and at each compacted fill and backfill layer, perform at least one field in-place density test for every 2,000 square feet or less of paved area or building slab, but in no case fewer than three tests.
 4. Foundation Wall Backfill: In each compacted backfill layer, perform at least one field in-place density test for each 100 feet or less of wall length, but no fewer than two tests along a wall face.

5. Trench Backfill: In each compacted initial and final backfill layer, perform at least one filed in-place density test for each 150 feet or less of trench, but not fewer than two tests.
- C. Number and location of test shall be at option of the Geotechnical Engineer.
 - D. When testing agency reports that subgrades, fills, or backfills are below specified density, scarify and moisten or aerate, or remove and replace soil to the depth required, recompact and retest until required density is obtained.
 - E. After grading is completed and the testing agency has completed observation of the work, permit no further excavation or filling, except as approved by Project Manager.

3.13 PROTECTION

- A. Protect newly graded areas from traffic and erosion. Install erosion control mat and straw wattles as directed by the Project Manager. Keep free of trash and debris.
- B. Repair and re-establish grades in settled, eroded, and rutted areas to specified tolerances.
- C. Where completed compacted areas are disturbed by subsequent construction operation or adverse weather, scarify surface, reshape, compact to required density and provide other corrective work, including retesting, prior to further construction.

3.14 CLEAN-UP

- A. Comply with requirements of Section CLEANING.

End of Document

Section 31 10 00
SITE PREPARATION

PART 1 - GENERAL

1.1 SUMMARY

- A. This section describes general requirements, products, and methods of execution relating to site preparation, unless otherwise noted. This section applies to:
 - 1. Surface and subsurface demolition.
 - 2. Backfilling of excavations and depressions.
 - 3. Coordination, demolition and/or relocation of existing utilities.
 - 4. Prior to start of demolition of facilities, shut-off, disconnect, cut, and cap where required, underground utility services to facilities.
 - 5. Removal of A.C. pavement driveway and concrete pavement, concrete pads, and A.C. curbing.
 - 6. Removal of cyclone wire, wood fences and barricades.
 - 7. Removal of storm drainage piping, catch basins, and manholes.
 - 8. Removal of vegetation and trees as specified herein.

- B. Contractor shall provide labor, material and equipment required for demolishing, cutting, removing and disposing of existing construction as designated and shown on the Plans for the following as required, unless otherwise noted.

- C. Related Sections:
 - 1. Section 31 10 00- EARTHWORK AND GRADING.
 - 2. Section 31 23 33- TRENCHING, BACKFILLING, AND COMPACTING.

1.2 SUBMITTALS

- A. Comply with requirements of Section SUBMITTAL PROCEDURES.

- B. Submit all permits and certificates required for the project, for record purposes.

- C. Demolition schedule and proposed methods and operations.

- D. Permits and notices authorizing demolition.

- E. Letter or certificates of severance of utilities services from the affected agencies or utilities.

- F. Proposed haul route(s) from the demolition worksite to an authorized disposal site.

- G. Permit for transport and disposal of debris.

- H. Make arrangements of disposing of waste and excess materials at a legally licensed landfill/disposal facility outside worksite and pay cost thereof.

- I. Photograph existing conditions of existing structure surfaces, equipments, and adjacent improvements that might be misconstrued as damage related to removal operations. File photographs with Project Manager prior to start of work.
- J. Submit Proposed dust control measures.
- K. Submit Proposed noise control measures.
- L. Work Schedule: Submit a proposed schedule of work items to be performed, and a description of how the work is to be accomplished, for the Project Manager's review.
- M. Report of inspections conducted with the Project Manager before and after performing work.

1.3 QUALITY ASSURANCE

- A. Comply with the following Standards: American National Standards Institute, Inc. "American National Standard Safety Requirements for Demolition" (ANSI A10.6 and A10.8).
- B. Regulatory Agencies:
 - 1. Comply with rules and regulations of State of California, California Code of Regulations, Title 8, Industrial Relations, Chapter 4, Subchapter 4, "Construction Safety Order."
 - 2. Comply with applicable local and state agencies having jurisdiction.
 - 3. Comply with governing EPA notification regulations.
- C. Secure all required Permits or Certificates for demolition or discontinuance of utilities, prior to beginning the work.

1.4 PROJECT CONDITIONS

- A. Disposition of Existing Improvements:
 - 1. All materials indicated to be removed shall become the property of the Contractor; dispose of these outside the project site.
 - a. Do not dispose of removed materials to the general public by sale, gift or in any other manner at the Site.
 - b. These provisions shall not be construed as limiting or prohibiting sale or disposal of such materials at the Site to duly licensed Contractors or material suppliers, provided materials are removed from the construction site by the Contractor.
 - 2. All removal of debris from the site, including removal of inventory to site of storage, is part of this Contract and shall be done by Contractor's employees and no others.
- B. Salvage and Reuse:
 - 1. Where units or items of existing work are designated to be removed and reused in the new work or are to become salvage, remove such units or items

carefully.

- a. Use tools and methods that will not damage such units or items.
- b. Protect underlying or adjoining work from damage.
- c. Salvaged items shall be cleaned by the Contractor.

C. Protection:

1. Erect and maintain temporary bracing, shoring, lights, barricades, except construction barricades for subsequent new construction, warning signs, and guards necessary to protect public, the District's employees, finishes, improvements to remain and adjoining property from damage, all in accordance with applicable regulations.
2. Wet down areas affected by this work as required preventing dust and dirt from rising.

D. Scheduling:

1. Coordinate with the District in scheduling noisy or dirty work.
2. Schedule work at the District's convenience to cause minimal interference with the District's normal operations.
3. Jackhammering shall be coordinated with the District and College to minimize disturbance of classes.

E. Traffic Circulations: Ensure minimum interference with roads, streets, driveways, sidewalks, and adjacent facilities.

1. Do not close or obstruct public thoroughfares without first obtaining the required permit or permission of the responsible jurisdiction.
2. Where closing of a vehicular or pedestrian traffic circulation route is necessary, provide adequate directional signs to minimize the potential for confusion.

PART 2 - PRODUCTS

Not used.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine areas affected by work of this Section and verify following:
1. Disconnection of utilities as required.
 2. That utilities serving occupied portions of buildings on and off the site will not be disturbed or that temporary utility services have been provided.
 3. Removal by the District of the District's personal property, movable furniture and equipment items not designated for relocation.
- B. Where existing conditions conflict with representations of the Construction Documents, notify the Project Manager and obtain clarifications. Do not perform work affecting the conflicting conditions until clarification of the conflict is received.

3.2 PREPARATION

- A. Verify that the area to be demolished or removed has been vacated, or adequate space made available to perform the work.
- B. Arrange for, and verify termination of utility services to include removing meters and capping of lines.
- C. Lay out cutting work at Job Site and coordinate with related work for which cutting is required.

3.3 DEMOLITION

- A. If confirmed or suspected hazardous materials are encountered during operations, stop operations immediately and notify the Project Manager.
- B. Perform work in accordance with ANSI A10.6-1969 unless otherwise noted.
- C. Provide noise and dust abatement as required to prevent contamination of adjacent areas.
 - 1. Remove all materials not designated as salvage, in their entirety.
 - 2. Remove building foundations in their entirety, unless otherwise indicated on the plans.
- D. Fill voids in the land left by the removal of existing structures as follows:
 - 1. In accordance with the requirements of Section 31 00 00 – EARTHWORK AND GRADING. Grade finished remaining surface to the contours shown, or if not shown, to match the existing natural contours.
- E. Lower, or remove, heavy structural framing members by hoist or crane.
- F. Concrete and Masonry:
 - 1. Demolish concrete and masonry in sections, less than 3 feet in any direction.
 - 2. Method of cutting shall be limited to saw cutting and torch.

3.4 CUTTING

- A. Make new openings neat.
- B. Do not cut or alter structural members and any utilities including appurtenances unless indicated to do so in the Construction Documents, or written approval is received from the Project Manager.
- C. Take care not to damage reinforcing or structural steel scheduled to remain in place.
- D. Concrete: Cut new openings in concrete by coring and saw cutting. Saw run-bys will not be permitted.

3.5 PREPARATION FOR NEW FINISH WORK

- A. Where demolished surfaces are scheduled to receive new finishes, Contractor shall restore such substrate to a condition ready to receive the scheduled new finishes, including grinding or leveling.

3.6 DISPOSAL OF DEMOLISHED MATERIALS

- A. Promptly dispose of demolished materials. Do not allow demolished materials to accumulate on-site.
- B. Burning of demolished materials off District's property in a legal manner.

3.7 FIELD QUALITY CONTROL

- A. The Project Manager will accompany the Contractor before and after performance of work to observe physical condition of existing structures or improvements involved.

End of Document

Section 31 23 33

TRENCHING, BACKFILLING AND COMPACTING

PART 1 – GENERAL

1.1 SUMMARY

- A. Provide labor, material, equipment, and services necessary to complete the backfilling and compacting as necessary for this project. Section includes, but is not limited to:
 - 1. Select Backfill Material.
 - 2. Aggregate Base.
 - 3. Detectable Tape.
 - 4. Trench Excavation.
 - 5. Pipe Bedding.
 - 6. Trench Backfill.
 - 7. Trench Surfacing.

- B. Work specified in Related Sections:
 - 1. Section 31 10 00 – SITE PREPARATION
 - 2. Section 31 00 00 – EARTHWORK AND GRADING
 - 3. Section 33 10 00 – WATER SYSTEMS
 - 4. Section 33 30 00 – SANITARY SEWER
 - 5. Section 33 40 00 – STORM DRAINAGE

1.2 DEFINITIONS

- A. Engineered Fill:
 - 1. Soil or soil-rock material approved by the Project Manager and transported to the site by the Contractor in order to raise grades or to backfill excavations.
 - 2. Contractor shall provide sufficient tests, and a written statement that all materials brought onto the project site comply with specification requirements.

- B. Excavation: Consists of the removal of material encountered to subgrade elevations.

- C. Subgrade: The uppermost surface of an excavation or the top surface of a fill or backfill immediately below base.

- D. Base: The layer placed between the subgrade and surface pavement in a paving system.

- E. Relative Compaction: In-place dry density of soil expressed as percentage of maximum dry density of same materials, as determined by laboratory test procedure American Society for Testing and Materials (ASTM) D1557.

1.3 SYSTEM DESCRIPTION

- A. Requirements:
 - 1. Comply with the recommendations of the Geotechnical Engineer .
 - 2. Protect existing trees to remain. No grading is permitted under the drip line of protected trees.
 - 3. Excavations for appurtenant structures, such as, but not limited to, manholes, transition structures, junction structure, vaults, valve boxes, catch basins, thrust blocks, and boring pits, shall be deemed to be in the category of trench excavation.
 - 4. Unless otherwise indicated in the Plans, all excavation for pipelines shall be open cut.

1.4 SUBMITTALS

- A. Comply with provisions of Section 01 32 19 – SUBMITTAL PROCEDURES.
- B. Test Reports: Submit the following report for import material directly to the Project Manager from the Contractor's testing services:
 - 1. Compaction test reports for aggregate base.
- C. Submit description of compactors proposed for use when requesting placement of base material.

1.5 QUALITY ASSURANCE

- A. Requirements of Regulatory Agencies:
 - 1. Comply with State of California Business and Transportation Agency, Department of Transportation (Caltrans) latest edition of "Standard Specifications." (CSS).
 - 2. Comply with State of California Code of Regulations (CCR).
 - 3. Comply with State of California Construction Safety Orders, Latest Edition (CAL/OSHA).
- B. Soil Testing:
 - 1. District to engage a geotechnical testing agency, to include compaction testing and for quality control testing during fill operations.
 - 2. Test results will be submitted to the Project Manager.
- C. Codes and Standards:
 - 1. Perform excavation work in compliance with applicable requirements of authorities having jurisdiction.
 - 2. California Department of Transportation (CDT):
 - a. Section 19: Earthwork.
 - b. Standard Test Methods: No. 202.
 - 3. American Society for Testing and Materials (ASTM):
 - a. D1556: Density of Soil by the Sand Cone Method.
 - b. D1557: Moisture Density Relations of Soils and Soil-Aggregate Mixtures

1.6 DELIVERY, STORAGE AND HANDLING

- A. Protect materials before, during and after installation.
- B. Comply with provisions of Section 01 51 00 - TEMPORARY FACILITIES AND CONTROLS where necessary to control dust and noise on and near the work caused by operations during construction activities.

1.7 PROJECT CONDITIONS

- A. Environmental Requirements:
 - 1. Protect existing storm drainage system from silt and debris resulting from construction activities. If contamination occurs, remove contamination at no cost to the District.
 - 2. Protect existing streams, ditches and storm drain inlets during work on this project.
- B. Barricade open excavations and post with warning lights.
 - 1. Comply with requirements of Section 01 51 00 - TEMPORARY FACILITIES AND CONTROLS.
 - 2. Operate warning lights and barricades as required.
 - 3. Protect structures, utilities, sidewalks, pavements, and other facilities immediately adjacent

to excavations, from damages caused by settlement, lateral movement, undermining, washout, and other hazards.

- C. Protection of Subgrade: Do not allow equipment to pump or rut subgrade, stripped areas, footing excavations, or other areas prepared for project.
- D. Transport all excess soils materials by legally approved methods to disposal areas.
 - 1. Coordinate with the Project Manager.
 - 2. Any additional fill requirements shall be the responsibility of the Contractor.

1.8 EXISTING UTILITIES

- A. Locate existing underground utilities in the areas of work. For utilities that are to remain in place, provide adequate means of protection during excavation operations.
 - 1. Locating of existing underground utilities shall include but not be limited to pot-holing prior to the start of construction.
- B. Should uncharted or incorrectly charted piping or other utilities be encountered during excavation, consult Project Manager, Facilities, and/or utility agency immediately for directions.
 - 1. Cooperate with the Project Manager and public and private utility companies in keeping their respective services and facilities in operation.
 - 2. Repair damaged utilities to the satisfaction of the agency with jurisdiction.
- C. Do not interrupt existing utilities serving facilities occupied and used by the District or others, except when permitted in writing by the Project Manager and then only after acceptable temporary utility services have been provided.

1.9 SEQUENCING AND SCHEDULING

- A. The sequence of operations shall be reviewed by the Project Manager prior to commencement of any work.

PART 2 – PRODUCTS

2.1 MATERIALS

- A. General:
 - 1. Import materials will be subject to approval of the Geotechnical Engineer.
 - 2. For approval of imported fill material, notify the Project Manager at least 7 days in advance of intention to import material.
- B. Select backfill material shall be gravel, free of clay or organic matter and shall conform to the following gradation:

<u>Sieve Size</u>	<u>Percentage Passing</u>
1 inch	100
¾ inch	90 – 100
No. 4	35 – 60
No. 200	2 - 9

- C. For gas pipe and fuel piping select backfill shall be clean, graded building sand conforming to the following gradation:

<u>Sieve Size</u>	<u>Percentage Passing</u>
No. 4	100
No. 200	0 - 5

- D. Water: Clean and free from deleterious amounts of acids, alkalis, salts and organic matter.

2.2 BURIED WARNING AND IDENTIFICATION TAPE

- A. Polyethylene plastic and metallic core or metallic-faced, acid- and alkali-resistant, polyethylene plastic warning tape manufactured specifically for warning and identification of buried utility lines. Provide tape on rolls, 75 mm 3 inch minimum width, color coded as specified below for the intended utility with warning and identification imprinted in bold black letters continuously over the entire tape length. Warning and identification to read, "CAUTION, BURIED (intended service) LINE BELOW" or similar wording. Color and printing shall be permanent, unaffected by moisture or soil.
1. Warning Tape Color Codes.
Red: Electric.
Yellow: Gas, Oil; Dangerous Materials.
Orange: Telephone and Other Communications.
Blue: Water Systems.
Green: Sewer Systems.
White: Steam Systems.
Gray: Compressed Air.
 2. Warning Tape for Metallic Piping: Acid and alkali-resistant polyethylene plastic tape conforming to the width, color, and printing requirements specified above. Minimum thickness of tape shall be 0.003 inch. Tape shall have a minimum strength of 1500 psi lengthwise, and 1250 psi crosswise, with a maximum 350 percent elongation.
 3. Detectable Warning Tape for Non-Metallic Piping: Polyethylene plastic tape conforming to the width, color, and printing requirements specified above. Minimum thickness of the tape shall be 0.004 inch. Tape shall have a minimum strength of 1500 psi lengthwise and 1250 psi crosswise. Tape shall be manufactured with integral wires, foil backing, or other means of enabling detection by a metal detector when tape is buried up to 920 mm 3 feet deep. Encase metallic element of the tape in a protective jacket or provide with other means of corrosion protection.

2.3 DETECTION WIRE FOR NON-METALLIC PIPING

- A. Detection wire shall be insulated single strand, solid copper with a minimum of 12 AWG.

PART 3 – EXECUTION

3.1 GENERAL

- A. Prior to commencement of work, become thoroughly familiar with site conditions.
- B. In the event discrepancies are found, immediately notify the Project Manager in writing, indicating the nature and extent of differing conditions.
- C. Backfill excavations as promptly as work permits.
- D. Do not place Engineered fill or backfill until rubbish and deleterious materials have been removed and areas have been approved by the Project Manager.
- E. Place acceptable soil material in layers to required subgrade elevations, for each area classification listed below.
- F. In excavations, use satisfactory excavated or borrow material.

- G. Under grassed areas, use satisfactory excavated or borrow material.

3.2 COMPACTING

- A. Compact by power tamping, rolling or combinations thereof.
 - 1. Where impractical to use rollers in close proximity to walls, stairs, etc., compact by mechanical tamping.
 - 2. Scarify and recompact any layer not attaining compaction until required density is obtained.

3.3 SITE PREPARATION

- A. Protect structures, utilities, sidewalks, pavements, and other facilities, which are to remain, from damage caused by settlement, lateral movement, undermining, washout, and other hazards created by earthwork operations.
- B. Protect existing storm drainage system from silt and debris resulting from construction activities. If contamination occurs, remove contamination at no cost to the District.

3.4 EXISTING UTILITIES

- A. Identify the location of existing utilities.
 - 1. Prior to trenching, the Contractor shall excavate at locations specifically indicated on the Plans, if any, and where new lines cross other utilities of uncertain depth and determine the elevation of the utility in question to ensure that the new line will clear the potential obstruction.
 - 2. The Contractor shall contact Underground Service Alert (USA) at 1-800-227-2600 for assistance in locating existing utilities.
 - 3. If, after the excavation, a crossing utility does present an obstruction, then the line and grade of the new line will be adjusted as directed by the Project Manager to clear the utility.
- B. Protect all existing utilities to remain in operation.
- C. Movement of construction machinery and equipment over existing pipes and utilities during construction shall be at Contractor's risk.
- E. Excavation made with power-driven equipment is not permitted within 2 feet of any known utility or subsurface structure.
 - 1. Use hand or light equipment for excavating immediately adjacent to known utilities or for excavations exposing a utility or buried structure.
 - 2. Start hand or light equipment excavation on each side of the indicated obstruction and continue until the obstruction is uncovered or until clearance for the new grade is assured.
 - 3. Support uncovered lines or other existing work affected by excavation until approval for backfill is obtained.
 - 4. Report damage of utility line or subsurface structures immediately to the Project Manager.
- F. Backfill trenches resulting from utility removal in lifts of 8 inches maximum.

3.5 TRENCH EXCAVATION

- A. General
 - 1. Excavation shall include removal of all water and materials that interfere with construction. The Contractor shall remove any water which may be encountered in the trench by pumping or other methods during the pipe laying, bedding and backfill operations. Material shall be sufficiently dry to permit approved jointing.
 - 2. Excavation shall include the construction and maintenance of bridges required for vehicular and pedestrian traffic, support for adjoining utilities.

- 3. The Contractor shall be responsible to safely direct vehicular and pedestrian traffic through or around his/her work area at all times.
- 4. The Contractor shall relocate, reconstruct, replace or repair, at his/her own expense, all improvements which are in the line of construction or which may be damaged, removed, disrupted or otherwise disturbed by the Contractor.

B. Existing Paving and Concrete:

- 1. Existing pavement over trench shall be sawcut, removed, and hauled away from the job. Existing pavement shall be neatly sawcut along the limits of excavations.
- 2. Existing concrete over the trench shall be sawcut to a full depth in straight lines either parallel to the curb or at right angles to the alignment of the sidewalk.
- 3. Boards or other suitable material shall be placed under equipment outrigging to prevent damage to paved surfaces.

C. Trench Width:

- 1. The maximum allowable trench widths at the top of the pipe shall be as follows:

<u>Pipe Type</u>	<u>Trench Width (Maximum)</u>
Copper	Outside diameter of barrel plus 18 inches
Plastic	"
Vitrified Clay	"
Ductile-Iron	"
Reinforced Concrete	"

 - a. The maximum trench width shall be inclusive of all shoring.
 - b. If the maximum trench width is exceeded, the State's representative may direct the Contractor to encase or cradle the pipe in concrete at no additional charge.
- 2. For pipes 3 inch diameter and larger, the free working space on each side of the pipe barrel shall not be less than 6 inches.

D. Open Trench:

- 1. The maximum length of open trench shall be 300 feet or the distance necessary to accommodate the amount of pipe installed in a single day, whichever is greater. No trench shall be left open at the end of the day.
- 2. Provisions for trench crossings and free access shall be made at all street crossings, driveways, water gate valves, and fire hydrants.

E. Excavation Bracing:

- 1. The excavation shall be supported and excavation operations shall be conducted in accordance with the California Industrial Accident Commission and CAL/OSHA.
- 2. The Contractor shall, at his/her own expense, furnish, put in place, and maintain such sheeting and bracing as may be required to support the sides of all excavations (whether above or below the pipe grade), and to prevent any movement which could in any way diminish the required trench section or otherwise injure or delay the work. The sheeting and bracing shall be withdrawn in a manner such as to prevent any earth movement that might overload the pipe.

F. Excavated Material:

- 1. All excavated material not required for backfill shall be immediately removed and properly disposed of in a legal manner by the Contractor.
- 2. Material excavated in streets and roadways shall be laid alongside the trench no closer than 2 feet from the trench edge and kept trimmed to minimize inconvenience to public traffic.
- 3. Provisions shall be made whereby all storm and wastewater can flow uninterrupted in gutters or drainage channels.

3.6 PIPE BEDDING

- A. Bedding Excavation: The trench shall be excavated below the grade of the pipe bottom to the following minimum depths:

<u>Pipe Type</u>	<u>Depth</u>
Copper	6 inch
Reinforced Concrete	6 inch
Plastic: 2 inch diameter and smaller	6 inch
Plastic: over 2 inch diameter	6 inch
Ductile Iron	6 inch

1. Stabilization of Trench Bottom: When the trench bottom is unstable due to wet or spongy foundation, trench bottom shall be stabilized with gravel or crushed rock. The State’s inspector will determine the suitability of the trench bottom and the amount of gravel or crushed rock needed to stabilize a soft foundation. Soft material shall be removed and replaced with gravel or crushed rock as necessary.
2. Placement of Bedding Material: The trench bottom shall be cleaned to remove all loose native material prior to placing select backfill material. Sufficient select backfill material shall be placed in trench and tamped to bring trench bottom up to grade of the bottom of pipe. The relative compaction of tamped material shall be not less than 90 percent. It is the intention of these requirements to provide uniform bearing under the full length of pipe to a minimum width of 60 percent of the external diameter.

3.7 TRENCH BACKFILL

A. Initial Backfill:

1. Prior to trench backfill, the condition of the trench and laying of pipe must be inspected and approved by the Inspector of Record.
2. Select backfill material shall be used for initial backfill. After the pipe has been properly laid and inspected, select backfill material shall be placed on both sides of the pipe and compacted to final depth as follows:

<u>Pipe Type</u>	<u>Depth</u>
Copper	12 inches above top of pipe
Plastic: less than 3 inches diameter	12 inches above top of pipe
Plastic: 3 inches diameter and larger	12 inches above top of pipe
Ductile Iron	12 inches above top of pipe
Reinforced Concrete	12 inches above top of pipe

3. Compaction: Initial backfill compaction shall be by mechanical means. The initial backfill material shall be hand tamped in layers not exceeding 4 inches in uncompacted depth and shall be brought up uniformly on both sides of the pipe to avoid bending or distortion stress. After hand tamping, the relative compaction of the initial backfill material shall be not less than 90 percent.
4. Pipe Detection: In trenches containing pressurized plastic pipes, tracer wire shall be placed directly above the pipe and shall be connected to all valves, existing exposed tracer wires, and other appurtenances as appropriate.

B. Subsequent Backfill:

1. Above the level of initial backfill, the trench shall be backfilled with non-expansive native material from trench excavation or with imported select backfill material (Contractor’s option). Subsequent backfill shall be free of vegetable matter, stones or lumps exceeding 3 inches in greatest dimension, and other unsatisfactory material. The Inspector of Record shall approve the backfill material prior to placement.
2. Subsequent backfill compaction shall be by mechanical means with backfill material placed in layers not exceeding 8 inches in loose depth. Each layer shall be thoroughly compacted before succeeding layers are placed. The use of machine tampers, except manually held types, shall not be permitted.

3. Subsequent backfill shall be compacted to a relative compaction of not less than 90 percent except the relative compaction shall not be less than 95 percent within 2-1/2 feet of finished permanent surface grade or 1-1/2 feet below the finished subgrade, whichever is greater.
- C. Jetting and Ponding:
1. Jetting of trench backfill is not permitted.
- D. Compaction Testing:
1. Compaction testing shall be in accordance with California Test Method ASTM D1556 or D1557.

3.8 TRENCH SURFACING

- A. Unpaved Areas:
1. In unimproved areas, the trench surface shall be restored to its original condition. No mounds of earth shall be left along the trench. Repair and re-establish grades in settled, eroded, and rutted areas to specified tolerances.
 2. Where completed compacted areas are disturbed by subsequent construction operation or adverse weather, scarify surface, reshape, compact to required density and provide other corrective work, including retesting, prior to further construction.
- B. Temporary Surfacing:
1. Temporary surfacing shall be a minimum of 2 inches of cutback asphalt on 10 inches of Class 2 aggregate base and shall be placed at all trench locations subject to vehicular or pedestrian traffic.
 2. Temporary surfacing shall be laid within one day after backfilling (except where the Contractor elects to place permanent surfacing within this time period).
 3. Before the trenching area is opened for traffic, all excess dirt, rock, and debris shall be removed, the street surface shall be swept clean and the pavement shall be washed down with a water truck and pressure nozzle.
 4. Temporary surfacing shall be maintained to prevent the occurrence of mudholes and prevent the surface from settling below 1 inch or rising more than 1 inch from the existing pavement grade.

3.9 FILL AND COMPACTING

- A. General Requirements:
1. Backfill excavations as promptly as work permits.
 2. Do not place Engineered fill or backfill until rubbish and deleterious materials have been removed and areas have been approved by the Project Manager.
 3. Place acceptable soil material in layers to required subgrade elevations, for each area classification listed below.
 4. In excavations, use satisfactory excavated or borrow material.
 5. Under grassed areas, use satisfactory excavated or borrow material.
- B. After subgrade compaction has been approved by the Geotechnical Engineer , spread the Engineered fill materials in 6 to 8 inch loose lifts and uniformly mixed during the spreading operation.
1. Bring non-expansive fill materials to or slightly above the optimum moisture content and compacted to at least 85 percent of the maximum laboratory dry density, per ASTM D1557.
 2. Bring non-expansive aggregate fill materials to or slightly above the optimum moisture content and compacted to at least 95 percent of the maximum laboratory dry density, per ASTM D1557.
 3. Do not compact the top 12 inches of soil in the planting areas.
 4. Fill sections greater than 5 feet in depth shall be compacted to at least 95 percent.
- C. Repeat compaction procedure until proper grade is attained.

- D. Rocks generated during site earthwork may be used in fill when conforming to material specifications.

3.10 MOISTURE CONTROL

- A. Do not resume operations until moisture content and fill density are satisfactory to the Inspector.

3.11 DISPOSAL OF EXCESS AND WASTE MATERIALS

- A. Testing Services: Allow testing agency to test each backfill layer. Do not proceed until test results for previously completed work verify compliance with requirements.
- B. When testing agency reports that backfills are below specified density, scarify and moisten or aerate, or remove and replace soil to the depth required, recompact and retest until required density is obtained.

3.12 PROTECTION

- A. Repair and re-establish grades in settled, eroded, and rutted areas to specified tolerances.
- B. Where completed compacted areas are disturbed by subsequent construction operation or adverse weather, scarify surface, reshape, compact to required density and provide other corrective work, including retesting, prior to further construction.

3.13 CLEAN-UP

- A. Remove all debris, equipment, tools and materials upon completion prior to final inspections to the satisfactions of the Project Manager.
- B. In unpaved areas without landscaping, cover with straw erosion control blanket. Follow manufacturer's recommendations for installation. Provide and place straw wattles or biodegradable fiber logs across the slope at the midpoint and along the downhill edge of site. No soil is to be left uncovered at the completion of construction.

End of Document

Section 32 10 00 DEMOLITION

PART 1 – GENERAL

1.1 SUMMARY

- A. Provide labor, material, and equipment required for demolishing, cutting, removing and disposing of existing construction as designated or required to provide for new work.
- B. Coordinate all work with capping or sealing of existing utilities.
- C. Related Sections:
 - 1. Section 31 10 00 - SITE PREPARATION
 - 2. Section 31 00 00 - EARTHWORK AND GRADING
 - 3. Section 31 23 33 - TRENCHING, BACKFILLING, AND COMPACTING

1.2 SUBMITTALS

- A. Comply with requirements of the SUBMITTAL PROCEDURES and GENERAL CONDITIONS.

1.3 QUALITY ASSURANCE

- A. Comply with the following Standards: American National Standards Institute, Inc. “American National Standard Safety Requirements for Demolition” (ANSI A10.6 and A10.8).
- B. Regulatory Agencies:
 - 1. Comply with rules and regulations of State of California, California Code of Regulations, Title 8, Industrial Relations, Chapter 4, Subchapter 4, “Construction Safety Order.”
 - 2. Comply with applicable local and state agencies having jurisdiction.
 - 3. Comply with governing EPA notification regulations.
 - 4. Comply with applicable state and local regulations regarding dust and noise mitigation during construction.
- C. Secure all required Permits or Certificates for demolition prior to beginning the work.

1.4 PROJECT CONDITIONS

- A. District assumes no responsibility for actual condition of the site to be altered.
 - 1. Conditions existing at time of inspection for bidding purpose will be maintained by District as far as practical.
- B. Disposal of Existing Improvements:
 - 1. All materials removed shall become the property of the Contractor; dispose of these materials outside the project site.
 - a. Do not dispose of removed materials to the general public by sale, gift or in any other manner at the project site.
 - b. These provisions shall not be construed as limiting or prohibiting sale or disposal of such materials at the Site to duly licensed Contractors or material suppliers, provided materials are removed from construction site by the Contractor.
 - 2. All removal of debris from the site, including removal of inventory to site of storage, is part of this Contract and shall be done by Contractor’s employees and

no others.

- C. Salvage:
1. Recycle AC pavement and Class II AB where practical.
 2. Recycle concrete where practical.
 3. Items indicated to be salvaged shall be removed carefully, cleaned, and returned to the District. Coordinate with the Project Manager.
- D. Protection:
1. Erect and maintain temporary bracing, shoring, lights, barricades, except construction barricades for subsequent new construction, warning signs, and guards necessary to protect public, the District's employees, adjacent improvements to remain, and adjoining property from damage, all in accordance with applicable regulations.
 2. Wet down areas affected by this work as required to prevent dust and dirt from rising.
- E. Scheduling:
1. Coordinate with the Project Manager in scheduling noisy or dirty work.
 2. The Project Manager will supply a schedule of days on which no construction will be allowed.
 3. Contractor shall take College schedule into consideration during construction.
 4. Coordinate and schedule temporary water shut-downs and temporary water service with the Project Manager, Facilities, and the Water Department, and the Fire Department.
- F. Traffic Circulations: Ensure minimum interference with roads, streets, driveways, sidewalks, and adjacent facilities.
1. Minimize obstruction to thoroughfares by first obtaining the required approval or permission of the responsible jurisdiction.
 2. Where closing of a vehicular traffic circulation route is necessary, provide adequate directional signs to minimize the potential for confusion. Provide access at all times for emergency vehicles.
- G. Safety:
1. The Contractor shall take all necessary precautions to eliminate the exposure of workers, students, staff, and the public to asbestos fibers, including but not limited to: dust control measures and measures included in Sections 93106 and 93105 of California Code of Regulations, Title 17.

PART 2 – PRODUCTS

Not Used

PART 3 – EXECUTION

3.1 EXAMINATION:

- A. Where existing conditions conflict with representations of the Construction Documents, notify the Project Manager and obtain clarifications. Do not perform work affecting the conflicting conditions until clarification of the conflict is received.

3.2 PREPARATION

- A. Verify that the area to be demolished or removed has been vacated, and adequate space has been made available to perform the work.

- B. Lay out saw cutting and coordinate with related work for which saw cutting is required.
- C. Contractor shall coordinate and arrange the shut down of utilities serving the site with Facilities, the Fire Department, and the Project Manager.

3.3 DEMOLITION

- A. If known or suspected hazardous materials are encountered during operations, stop operations immediately and notify the Project Manager.
- B. Perform work in accordance with ANSI A10.6-1969 unless otherwise noted.
- C. Provide noise and dust abatement as required to prevent contamination of adjacent areas.
- D. Remove all materials not designated as salvage, in their entirety.
- E. If unknown items such as human remains are encountered during operations, stop operations immediately and notify the Project Manager.
- F. The Project Manager will provide a list of any items to be stockpiled for future use. Stockpile location will be a site on campus determined by the Project Manager.

3.4 DEMOLITION AND REMOVAL OF AC PAVEMENT:

- A. Sawcut pavement at edge of demolition area.
- B. Break pavement and remove.
- C. Remove any base material, gravel, and/or or any other non-native soil.

3.5 SAW CUTTING:

- A. Make new openings neat.
- B. Take care not to damage existing AC pavement to remain in place.

3.6 UTILITY REMOVAL:

- A. Where utility removal is shown on the plans or required for construction, excavate to expose existing utility, demolish and remove the section of pipe or conduit. Cap section of pipe or conduit to remain. Mark end of utility with 12" piece of #4 rebar.
- B. Included in demolition are any appurtenances, including but not limited to valves, valve boxes, and irrigation system components.
- C. Backfill trench in accordance with requirements of Section 31 23 33 – TRENCHING, BACKFILLING, AND COMPACTING.

3.7 DISPOSAL OF DEMOLISHED MATERIALS:

- A. Promptly dispose of demolished materials. Do not allow demolished materials to accumulate on-site.
- B. Burning of demolished materials is prohibited.

3.8 FIELD QUALITY CONTROL:

- A. The Project Manager will accompany the Contractor before and after performance of work to observe physical condition of existing structures or improvements involved.

End of Document

Section 32 12 33

PAVING AND SURFACING

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes (but is not necessarily limited to):
 - 1. Asphalt Concrete Paving.
 - 2. Concrete Paving.
 - 3. Liquid Asphalt and Asphalt Emulsion.
 - 4. Aggregate Base.

- B. Related work furnished under other sections but conforming to the provisions of this section:
 - 1. Subgrade preparation.
 - 2. Aggregate Base installation.

- C. Related Sections:
 - 1. Section 32 00 00 - DEMOLITION
 - 2. Section 31 17 23 - PAVEMENT MARKING.

1.2 REFERENCES

- A. American Society for Testing and Materials (ASTM):
 - 1. A615: Deformed and Plain Billet-Steel Bars for Concrete Reinforcement.
 - 2. C150: Portland Cement.
 - 3. D1557: Moisture Unit Weight Relations of Soils and Aggregate Mixtures Using a 10 lb (4.5 kg) Rammer and 18 in. (457 mm) Drop.
 - 4. D1682: Breaking Loads and Elongation of Textile Fabrics.

- B. California Code of Regulations (CCR): Title 24, Chapter 2-71, Site development Requirements for Handicapped Accessibility.

- C. California Department of Transportation (C.D.T.):
 - 1. Standard Specifications:
 - a. Section 26 Aggregate Bases.
 - b. Section 37 Bituminous Seals.
 - c. Section 39 Asphalt Concrete.
 - d. Section 51 Concrete Structures.
 - e. Section 52 Reinforcement.
 - f. Section 73 Concrete Curbs and Sidewalks.
 - g. Section 90 Portland Cement Concrete.
 - i. Section 92 Asphalts.
 - j. Section 93 Liquid Asphalts.
 - k. Section 94 Asphaltic Emulsions.
 - 2. Traffic Manual.
 - 3. Highway Design.

- D. Institute of Transportation Engineers: Transportation and Traffic Engineering Handbook.

1.3 SUBMITTALS

- A. Requirements: Refer to Section SUBMITTAL PROCEDURES.

- B. Asphalt Concrete Paving:

1. Provide two copies of material certificates signed by the material producer and the Contractor, certifying that each material item complies with or exceeds specified requirements.
 2. The Contractor shall furnish a certified weight or load slip for each load of material used in the construction of the asphalt concrete pavement.
- C. Concrete Paving: The Contractor shall furnish mill test reports on the cement, reinforcement bars, and aggregates, showing compliance with the respective specifications. The Testing Engineer may make concrete test cylinders and slump tests as deemed necessary to determine compliance with the Specifications.
- D. Liquid Asphalt.
- E. Pavement Reinforcement Fabric.
- F. Tack Coat.
- G. Pavement Reinforcement Mesh.
- H. Structural Geotextile Fabric.

1.4 PROJECT CONDITIONS

- A. Liquid Asphalt and Asphalt Emulsion:
1. Prime coat, seal coat, and paint binder shall be applied only when the ambient temperature is above 50° Fahrenheit and when temperature has not been below 35° Fahrenheit for 12 hours immediately prior to application.
 2. Prime coat, fog coat, seal coat, and paint binder shall not be applied when base or surfaces are wet or contain excess moisture.
- B. Asphalt Concrete Paving: Asphalt concrete surfaces shall be constructed only when ambient temperature is above 50° Fahrenheit and when base is dry.

1.5 GENERAL DESIGN CRITERIA

- A. Services Areas: Approach ramps, driveways, and paved work areas in excess of 4 percent slope shall be provided with a rough texture for non-skid surface.
- B. Walks and Paths: Concrete exterior slabs (walks, terraces, etc.) shall have a pitch of at least 1 percent.
- C. Pavement Markings: All traffic control striping and pavement markings shall conform to the standards illustrated in the C.D.T. Standard Plans Book issued May 2006, General Road Work Section.

PART 2 - PRODUCTS

2.1 PAVING MATERIALS

- A. Aggregate Base: Aggregate base shall conform to Caltrans Class 2 (R value 78 min) aggregate base, 3/4" maximum size, as specified in Section 26 of the C.D.T. Standard Specifications.
- B. Asphalt Concrete Paving:
1. Paving asphalt to be mixed with aggregate shall be steam-refined asphalt, PG 64-10, conforming to Section 92 of the C.D.T. Standard Specifications.

2. Mineral aggregate shall be Type B mineral aggregate as specified in Section 39 of the C.D.T. Standard Specifications.
 3. Maximum aggregate size shall be as follows:

<u>A.C. Thickness</u>	<u>Max. Ag.</u>
a. ¾" - 1½"	1/2"
b. 2 & 2½"	1/2"
c. 3" & 4"	¾"
 4. Liquid asphalt for prime coat shall be Grade SC-70 in conformance with Section 93 of the C.D.T. Standard Specifications.
 5. Asphaltic emulsion for paint binder, fog coat, and seal coat shall be emulsified asphalt, Type SS-1h, conforming to Section 94 of the C.D.T. Standard Specifications.
- C. Portland Cement Concrete:
1. Concrete shall be Class A concrete conforming to Section 90 of the C.D.T. Standard Specifications.
 2. Cement shall be Type II cement conforming to ASTM C150 as modified by Section 90 of the C.D.T. Standard Specifications.
 3. Aggregate shall be ¾-inch maximum size conforming to Section 90 of the C.D.T. Standard Specifications.
 4. Water shall be potable and free of organic matter and injurious amounts of oil, acid, alkali, or other deleterious substances.
 5. Reinforcing bars shall be deformed and shall conform to ASTM A615.
 6. Filled joints, unless noted otherwise on the Drawings, shall be ¼-inch thick, the full depth of the concrete section and conforming to Section 51 of the C.D.T. Standard Specifications.
 7. Joint filler shall conform to Section 51 of the C.D.T. Standard Specifications for pre-molded expansion joint filler and expanded polystyrene joint filler.
 8. No admixtures will be allowed without prior approval of the Project Manager.
- D. Pavement Reinforcement Fabric: Pavement reinforcement fabric shall meet Caltrans Section 88-1.02, BP Petromat or approved equivalent.
- E. Crack Sealant:
1. Crack sealant shall be rubberized hot-pour type and shall meet ASTM D 3405, Husky 1611 or approved equivalent.
 2. Blotting Agent shall be one of: Screened sand, cement, or fly ash.
- F. Tack coat: Tack coat shall meet Caltrans Section 39-4.02.
- G. Pavement reinforcement mesh: Pavement reinforcement mesh for use in Type 2 Overlay shall be Glasgrid Model 8501 or approved equivalent.
- H. Structural geotextile fabric: Structural geotextile fabric shall be Mirafi 500X or approved equivalent.

PART 3 - EXECUTION

3.1 PREPARATION

- A. Subgrade and Aggregate Base:
1. Prepare a subgrade and over excavation paragraph reference 3.4 of Section 31 00 00-EARTHWORK AND GRADING.

2. Aggregate base shall be compacted to 95 percent ASTM D1557. Sections 26-1.04B and 26-1.05 of the C.D.T. Standard Specifications shall apply.
3. Soil sterilant shall be applied to prepared subgrade or after installation of rock or aggregate base uniformly at the rate recommended by the manufacturer.

B. Crack Sealing:

1. Before sealing, cracks shall be cleared of dirt, dust, and all other deleterious materials to a depth of 1/4-inch to 1/2-inch.
2. Cracks 1/8-inch in width and greater shall be sealed.
3. Application of crack sealer shall be in accordance with the manufacturer's recommendations unless otherwise directed.

3.2 ASPHALT CONCRETE PAVING

A. General:

1. Asphalt concrete shall be proportioned, mixed, placed, spread, and compacted in conformance with Section 39 of the C.D.T. Standard Specifications.
2. Before placing asphalt concrete on untreated base, a liquid asphalt prime coat shall be applied to the base course in conformance with Section 39 of the C.D.T. Standard Specifications. Prime coat shall be applied at the rate of 0.25 gallons per square yard.
3. Before placing asphalt concrete, an asphalt emulsion tack coat shall be applied to all vertical surfaces of existing pavement, curbs, gutters, construction joints, and all existing pavement to be surfaced, in conformance with Section 39 of the C.D.T. Standard Specifications.
4. Spreading and compacting asphalt concrete shall be performed in accordance with Section 39 of the C.D.T. Standard Specifications.
5. Fog seal shall be applied to all finished surfaces of asphalt concrete pavement at a rate of 0.05 gallons per square yard, in accordance with Section 37 of the C.D.T. Standard Specifications.
6. After fog seal has been applied, ample time shall be allowed for drying before traffic is allowed on the pavement or paint striping is applied.

3.3 CONCRETE CONSTRUCTION

A. General:

1. All concrete shall be mixed in accordance with applicable provisions of Section 90 of the C.D.T. Standards Specifications.
2. Construction of concrete substructures shall conform to applicable provisions of Section 51 of the C.D.T. Standard Specifications. Unless noted otherwise in the Specifications, all exposed surfaces of structure shall have Class 1 surface finish or finished to match existing adjacent paving.
5. No pigment shall be used in curing compounds for construction of concrete curbs, gutters, and structures.
6. All work shall be subject to field inspection. No concrete shall be placed until the Project Manager has approved the forms and reinforcement.
7. Expansion joints on curbs and gutters shall be placed 20 feet on centers, adjacent to structures, and at all returns, and shall be filled with joint filler. Control joints shall be formed 10 feet on centers. The score shall 1-inch deep minimum.
8. Concrete shall not be dropped freely where reinforcing bars will cause segregation, nor shall it be dropped freely more than 6 feet. Spouts, elephant trunks, or other approved means shall be used to prevent segregation.

3.4 FIELD QUALITY CONTROL

A. Asphalt Concrete Paving:

1. The specified thickness of the finished pavement shall be the minimum acceptable.
2. Conforms shall form a smooth, pond-free transition between existing and new pavement.
3. Depressions in paving between high spots are not to exceed 1/8-inch when measured below a

- 10 feet long straight edged placed anywhere on surface in any direction.
4. The finished asphalt pavement shall have positive drainage without ponding.

3.6 CLEANUP

A. General:

1. Surplus material remaining upon completion of paving operations shall become the property of the Contractor, to be removed from the work site and disposed of in a lawful manner.
2. Surfaces shall be left in a clean, neat, and workmanlike condition, and all construction waste, rubbish, and debris shall be removed from the work site and disposed of in a lawful manner.

End of Document

Section 32 17 23

PAVEMENT MARKING

PART 1 – GENERAL

1.1 SUMMARY:

- A. Provide requirements for materials, fabrications, and installation of traffic control and pavement markings.

1.2 SUBMITTALS:

- A. Submit manufacturer's product data describing application of products and compliance with VOC requirements.
- B. Shop Drawings: Show complete layout and location of pavement markings prior to demolition or obliteration of the existing markings.
- C. Submit samples as follows:
 - 1. Traffic paint.
 - 2. Pavement markers and adhesives.
 - 3. Reflectorized markers and posts.

1.3 DELIVERY, STORAGE AND HANDLING:

- A. Comply with Division 1 requirements, specifications, and the Project Manager.
- B. Deliver and store packaged products in original containers with seals unbroken and labels intact until time of installation.
- C. Provide proper facilities for handling and storage of products to prevent damage. Where necessary, stack products off ground on level platform, fully protected from weather.

PART 2 – PRODUCTS

2.1 MATERIALS:

- A. Traffic Marking and Symbol Paint: Water-Born, Fast-Dry, Traffic Paint distributed by Fuller-O'Brien Corp. D.J. Simpson (#108-273, White); (#108-280, Blue); or approved equivalent.
- B. Handicapped Symbol Background Paint: Blue Color. Glidden Co. "Glid-Guard Lifemaster Finish No. 5200 /series, Color 1/M 79", or approved equivalent.
- C. Thermoplastic Stripes and Markings:
 - 4. Thermoplastic stripes and makings shall be hot applied conforming to CSS Section 84 and shall be Cataphote-Catatherm brand, Pavemark thermoplastic brand, or approved equal.
 - 5. Thermoplastic stripes and markings shall have a minimum skid friction value of BPN 35.
- D. Pavement Markers and Adhesives:
 - 6. Fire hydrant pavement markers shall be two-way retroreflective "Blue" markers and shall conform to the applicable requirements of CSS Section 85.
 - 7. Adhesive for pavement markers shall be standard set epoxy adhesive conforming to the requirements of CSS Section 95-2.05.

PART 3 - EXECUTION

3.1 INSPECTION:

- A. Examine receiving surfaces and verify that surfaces are clean and proper for installation.
- B. Do not start work until unsatisfactory conditions have been corrected.

3.2 APPLICATION:

- A. Preparation:
 - 1. Clean and prepare surfaces to receive traffic paint in accordance with CSS Section 84-3.05 and these special provisions. Where required, remove existing striping and markings by wet blasting or equivalent method. Do not use dry sandblasting or other dust producing methods.
- B. Traffic Paint:
 - 1. Traffic paint shall be machine applied in accordance with CSS Section 84-3.04.
- C. Striping Layout:
 - 1. Traffic stripe shall be single and double, solid and broken, and of the color to match existing conditions.
 - 2. Traffic striping shall be placed in patterns to match existing conditions, contractor shall document.
- D. Thermoplastic Stripes and Markings:
 - 1. Thermoplastic stripes and markings shall be applied hot in conformance with manufacturer's recommended instructions and the applicable requirements of CSS Section 84-2.06.
- E. Pavement Markers:
 - 1. Blue pavement markers shall be installed to delineate the location of fire hydrants along campus roads or as shown on plans. No markers shall be installed until the surface has been approved by the Project Manager and until at least 10 days after the slurry seal on asphalt concrete has been placed. Place markers in accordance with CSS Section 85-1.06.
- F. Apply marking paint in accordance with approved manufacturer's recommendations.
- G. Density of paint coverage shall hide color and texture of substate.
- H. Parking Stripes: Paint four inches wide unless otherwise noted.
- I. Symbol Marking: Paint to match existing conditions.

3.3 CLEANING AND PROTECTION:

- A. Comply with requirements of Section CLEANING.
- B. Upon completion of work, remove surplus materials and rubbish and clean off spilled or splattered paint resulting from this work.
- C. Permit no surface traffic until pavement and symbol marking has dried thoroughly.

End of Document

ACORD™ CERTIFICATE OF LIABILITY INSURANCE DATE (MM/DD/YYYY)

PRODUCER NAME OF AGENT	THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW.	
INSURED CONTRACTOR OR DEVELOPER	INSURERS AFFORDING COVERAGE INSURER A: INSURER B: INSURER C: INSURER D: INSURER E:	NAIC #

COVERAGES

THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. AGGREGATE LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

INSR/ADD'L LTR	INSRD	TYPE OF INSURANCE	POLICY NUMBER	POLICY EFFECTIVE DATE (MM/DD/YY)	POLICY EXPIRATION DATE (MM/DD/YY)	LIMITS
		GENERAL LIABILITY <input type="checkbox"/> COMMERCIAL GENERAL LIABILITY <input type="checkbox"/> CLAIMS MADE <input type="checkbox"/> OCCUR GEN'L AGGREGATE LIMIT APPLIES PER: <input type="checkbox"/> POLICY <input type="checkbox"/> PRO-JECT <input type="checkbox"/> LOC				EACH OCCURRENCE \$ DAMAGE TO RENTED PREMISES (Ea occurrence) \$ MED EXP (Any one person) \$ PERSONAL & ADV INJURY \$ GENERAL AGGREGATE \$ PRODUCTS - COM/OP AGG \$
		AUTOMOBILE LIABILITY <input type="checkbox"/> ANY AUTO <input type="checkbox"/> ALL OWNED AUTOS <input type="checkbox"/> SCHEDULED AUTOS <input type="checkbox"/> HIRED AUTOS <input type="checkbox"/> NON-OWNED AUTOS				COMBINED SINGLE LIMIT (Ea accident) \$ BODILY INJURY (Per person) \$ BODILY INJURY (Per accident) \$ PROPERTY DAMAGE (Per accident) \$
		GARAGE LIABILITY <input type="checkbox"/> ANY AUTO				AUTO ONLY - EA ACCIDENT \$ OTHER THAN AUTO ONLY: EA ACC \$ AGG \$
		EXCESS/UMBRELLA LIABILITY <input type="checkbox"/> OCCUR <input type="checkbox"/> CLAIMS MADE <input type="checkbox"/> DEDUCTIBLE RETENTION \$				EACH OCCURRENCE \$ AGGREGATE \$ \$ \$ \$
		WORKERS COMPENSATION AND EMPLOYERS' LIABILITY ANY PROPRIETOR/PARTNER/EXECUTIVE OFFICER/MEMBER EXCLUDED? If yes, describe under SPECIAL PROVISIONS below OTHER				<input type="checkbox"/> WC STATU-TORY LIMITS <input type="checkbox"/> OTH-ER E.L. EACH ACCIDENT \$ E.L. DISEASE - EA EMPLOYEE \$ DISEASE - POLICY LIMIT \$

DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES / EXCLUSIONS ADDED BY ENDORSEMENT / SPECIAL PROVISIONS
 ADDITIONAL INSURED MUST BE LISTED ON SEPARATE ENDORSEMENT FORM.
 ENDORSEMENT FORMS ARE REQUIRED FOR GENERAL LIABILITY AND AUTOMOBILE LIABILITY.

CERTIFICATE HOLDER CITY OF FAIRFIELD 1000 WEBSTER STREET, 3RD FLOOR FAIRFIELD, CA 94533	CANCELLATION SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, THE ISSUING INSURER WILL ENDEAVOR TO MAIL _____ DAYS WRITTEN NOTICE TO THE CERTIFICATE HOLDER NAMED TO THE LEFT, BUT FAILURE TO DO SO SHALL IMPOSE NO OBLIGATION OR LIABILITY OF ANY KIND UPON THE INSURER, ITS AGENTS OR REPRESENTATIVES. AUTHORIZED REPRESENTATIVE
---	--

IMPORTANT

If the certificate holder is an ADDITIONAL INSURED, the policy(ies) must be endorsed. A statement on this certificate does not confer rights to the certificate holder in lieu of such endorsement(s).

If SUBROGATION IS WAIVED, subject to the terms and conditions of the policy, certain policies may require an endorsement. A statement on this certificate does not confer rights to the certificate holder in lieu of such endorsement(s).

DISCLAIMER

The Certificate of Insurance on the reverse side of this form does not constitute a contract between the issuing insurer(s), authorized representative or producer, and the certificate holder, nor does it affirmatively or negatively amend, extend or alter the coverage afforded by the policies listed thereon.



R. J. Marshburn & Associates

CertifiedRiskManagers.com

3) **VERIFICATION**—It should be **standard practice** (authorized in and required by your Contract) that you require a Certificate of Insurance with the following attached—

- i) **Waiver of subrogation endorsement for Workers' Compensation**

- ii) **Additional Insured Endorsement for “ongoing operations”** (i.e., CG 20 10, CG 20 33, or CG 20 38. Do not use the CG 20 33 if Subs may be involved. Phase out usage of the CG 20 33 as the CG 20 38 becomes available.)

- iii) **Additional Insured Endorsement for “completed operations”** (i.e., CG 20 37 if scope of work makes it applicable due to completed operations exposure.)

- iv) **A copy of the declaration page or endorsement page listing all policy endorsements for the GL policy.** (This will help identify “Restricted Coverage” policies and endorsements to easily verify if limitations or exclusions have been added to the policy.)

A Matrix of various ISO Indemnity and Additional Insured Endorsement forms and their appropriate application follows.



R. J. Marshburn & Associates

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ISO COVERAGES for Parties Other than the Named Insured

INDEMNIFIED PARTY Contractual Liability Coverage for Named Insured (Definition of "Insured Contract")

Ongoing Operations (During Construction)	Completed Operations (After Construction)	REGARDLESS if "caused by" Named Insured Type 1, 2 or 3	REQUIRES "caused by" Named Insured to cover only Type 3 indemnity
Standard ISO "Insured Contract" definition in CG 00 01	Standard ISO "Insured Contract" definition in CG 00 01	Standard ISO "Insured Contract" definition in CG 00 01	CG 24 26 07 04 & 04.13+ AMENDMENT OF INSURED CONTRACT DEFINITION
CG 21 39 deletes "f." NO COVERAGE			

BEWARE of endorsements amending, excluding, or changing the Contractual Liability or the "insured contract" definition that provides the Contractual Liability coverage for Indemnification of others (upstream parties) assumed by Contract by the Named Insured.

ADDITIONAL INSURED ENDORSEMENT Coverage (CG 20 01 adds Primary & Non-Contributory)

Ongoing Operations (During Construction)	Completed Operations (After Construction)	REGARDLESS if "caused by" Named Insured	REQUIRES "caused by" Named Insured to trigger coverage. ALL 07.04 & 04.13
CG 2010—All editions	CG 2010 11.85 Edition only	YES—all except 07.04 & 04.13*+	CG 2010 07.04 & 04.13*+
CG 2033 All editions & 2038 04.13*+	CG 2033 & 2038 04.13*+ = NO Coverage	YES—all except 07.04 & 04.13*+	CG 2033 07.04 & CG 2038 04.13*+
CG 2037 = NO Coverage	CG2037 ALL editions	YES 10.01; NO 07.04 & 04.13*+	CG 2037 07.04 & 04.13*+

EXAMINE CAREFULLY Non-ISO Additional Insured Endorsements to see how they differ from the above for coverage in each of the 4 column and 3 row categories.

CAUTION!!! Non-ISO Manuscript Policies or Modified Definitions or Endorsements differ from the standard ISO coverage above! Be very careful!

+ ALL of the 04 13 Endorsements above apply only to the extent permitted by law

* ALL of the 04.13 Additional Insured Endorsements will NOT (1) **provide broader coverage** or (2) **pay higher limits than required by the written Contract or Agreement!** The Contract must explicitly require the limits and extent of coverage or there is NO coverage even if the policy would otherwise provide the coverage!

No clear Contract requirement = NO COVERAGE!

CITY OF FAIRFIELD
PUBLIC WORKS DEPARTMENT

ENCROACHMENT PERMIT CHECKLIST

An encroachment permit is needed whenever work is done within a public right-of-way or easement, or impacts a public facility. Examples of work requiring an encroachment permit are as follows:

- ✓ Repairing or installing curb, gutter and/or sidewalk adjacent to a City Street.
- ✓ Widening or installing a driveway apron.
- ✓ Installing or extending water, fire, or sewer service between the City's main line and the (water meter, backflow preventer, or sewer cleanout).
- ✓ Installing or relocating a public fire hydrant.
- ✓ Installing a backflow prevention device.
- ✓ Connecting a private on-site storm drain line to a public storm drain system.
- ✓ Widening or striping a public street.
- ✓ Installing landscaping or irrigation within the public right-of-way.
- ✓ Placement of a dumpster within a public street.

The process begins with submitting an encroachment permit package to the Public Works Department in person at the front counter (located at City Hall, 1000 Webster Street, 3rd Floor) or via email at permit@fairfield.ca.gov. The package shall include all of the following items:

- **PERMIT APPLICATION** can be obtained at <http://www.fairfield.ca.gov/depts/pw/eng/permits.asp>. Please be specific on the scope of work and make sure to include contact information.
- **PLANS** showing the proposed work, including enough information to clearly evaluate the impacts of the proposed work. Traffic Control Plan may be required. For additional information, please visit <http://www.fairfield.ca.gov/gov/depts/pw/eng/traffic.asp>. Submit two copies of each set of plans.
- **COST ESTIMATE** for work to be performed within the City property and/or right-of-way. This information is used to establish the bond/deposit amount and inspection fees.
- **FEES** for the permit are calculated as follows:
 - * Encroachments Permit Fee: \$55.00 (\$104 with traffic control review). Additional \$81.29 fine for working without an issued permit.
 - * Inspection Fee: See attached Fee List
 - * Street Trench Cut Fee: See attached Fee List
- **BOND or DEPOSIT**, which is 110% of the value of the work requiring a permit or \$750.00, whichever is greater. Bonds and deposits are returned once the work has been completed, inspected and approved.
- **INSURANCE**. The following contractor information must be submitted with the permit:
 1. **Certificate of Insurance**- summarizing the contractor's insurance coverage for the following policies:
 - Worker's Compensation Insurance
 - General Liability Insurance- work within busy City streets requires \$3,000,000 in Liability Insurance. Work outside of City streets and in less hazardous areas requires \$1,000,000 in Liability Insurance.
 - Automobile Liability Insurance, if autos are to be used on City right-of-way NOTE: *Insurance Company must have a minimum A.M. BEST rating of "A-" and a financial strength of VII.*
 2. **City Standard Insurance Endorsement**- Separate endorsement forms for each of the liability policies which adds the City as an "additional insured" to the contractor's insurance policy. The forms must cover "ongoing operations" (CG 20 10 and 20 38) and "completed operations (CG 20 37).

Once the permit has been issued, the permittee is responsible for contacting the City's Public Works Inspector at (707) 428-7558 **24 hours prior to start of work** to coordinate inspections.

Public Works
Encroachment Permit Fees
(Effective 2/23/2015)

Fee Description	Amount
Application Fees:	
Encroachment Permit Application Fee (no traffic control plan review)	\$55
Encroachment Permit Application Fee with Traffic Control Plan Review	\$104
Field Investigation Fee	\$81.29
Inspection Fees:	
Boring utilities	\$239/day
Installing/destroying monitoring wells	\$133/day
Installation/modification of driveway	\$186/day
Installing/modifying a new utility service	\$239/day
Installing/replacing backflow device	\$133/day
Placing dumpster, storage unit or signs	\$133/day
Placing power, street light or sign poles	\$133/day
Installing/replacing curb, gutter, sidewalk	\$133/day
Installing/replacing curb, gutter, sidewalk	\$133/day
Soil Boring	\$133/day
Installing/replacing pavement striping	\$186/day
Traffic Control (only scope of work)	\$133/day
Traffic Control (part of larger scope of work)	\$103/day
Traffic signal installation/modification	\$239/day
Tree removal/trimming	\$133/day
Trenching	\$133/day
Misc. Items	\$133/day
Street Trench Cut Fees:	
Arterial	\$13/sq ft
Collector	\$11/sq ft
Residential	\$10/sq ft



CITY OF FAIRFIELD ENCROACHMENT PERMIT

(To be completed by Permittee. Please Print)

APPLICANT INFORMATION:

Name: _____

Address: _____

Phone No: _____

Contact Person: _____

Business License No: _____

CSLB No: _____

Location of Work: _____

Description of Work: _____

CONTRACTOR INFORMATION:

Name: _____

Address: _____

Phone No: _____

Business License No: _____

CSLB No: _____

CONSTRUCTION INFORMATION:

Construction Estimate: _____

Street Trench Cut (Sq. ft): _____

Anticipated Start Date: _____

Working Days: _____

GENERAL PERMIT RULES AND REGULATIONS

- 1. Definition:** This permit is issued under **Chapter 16 of the Fairfield City Code.**
- 2. Acceptance of Provisions:** Permittee agrees that the doing of any work under this permit shall constitute an acceptance by the Permittee of provisions hereof.
- 3. Notice Prior to Starting Work:** Prior to starting any work authorized herein, Permittee shall provide at least one working day notice to the City of Fairfield Department of Public Works at (707) 428-7558 for initial inspection.
- 4. Keep Permit on Work Site:** This permit shall be kept at the site of work and upon request must be shown to any representative of the Public Works Director or any law enforcement officer.
- 5. Traffic Control:** Construction barricades are to be in place prior to the start of work and are to remain in place until the work is completed. Barricades must be kept on all trenches, excavations and obstructions. All warning and safety devices shall conform to the current "Manual of Uniform Traffic Control Devices" issued by the State Department of Transportation. The use of flagmen is mandatory where 1) two-way vehicular traffic has less than twenty-four (24) feet in which to pass; or, 2) where vehicular traffic must pass to the left of divided islands in passing the site of the encroachment. Closing of streets requires the approval of the Public Works Director. Prior to the issuance of this permit, a traffic control plan shall be approved by the City Engineer.
- 6. Access to Fire Hydrants and Adjacent Property:** Access to fire hydrants shall be maintained at all times. Access to adjacent property shall be provided as directed by the Public Works Director.
- 7. Permits from Other Agencies:** Permittee must obtain all other permits required by other public or private agencies or individuals necessary in order to perform the intended work. If this provision is not complied with, this permit shall be null and void. It shall be the responsibility of the Permittee to notify the utility and cable TV companies prior to starting any construction that may involve their underground or overhead facilities. It shall also be the responsibility of the Permittee to notify the Fairfield-Suisun Sewer District for any construction that may involve a sewer main 12 inches in diameter or larger.
- 8. Underground Service Alert:** Permittee must notify Underground Service Alert (USA) at 800-227-2600 at least 48 hours in advance of start of work for location of underground utilities.
- 9. Clean-Up Right-of-Way:** Upon completion of work, all brush, timber, scraps and other materials/debris shall be entirely removed and the right-of-way left in a condition satisfactory to the Public Works Director.
- 10. Construction and Repair:** Permittee shall properly construct, maintain and repair any encroachment authorized herein, and shall exercise responsible care in inspecting and immediately repairing any damage to the public right-of-way and underlying utilities which occurs as a result of existence of said encroachment or as the result of any work done hereunder.
- 11. Notification of Property Owners:** If required by the Public Works Director, Permittee shall notify abutting property owners prior to starting of any work hereunder.
- 12. Maintenance and Repair:** Permittee shall promptly make any and all repairs to public right-of-way if required by the Director of Public Works. Time for completion of said repairs shall be as required by the Public Works Director. The Permittee is responsible for the materials and workmanship of this encroachment for a period of one (1) year after acceptance by the City.
- 13. Inspection Prior to Placement:** Permittee shall request inspection of conduit installations, connections and any repairs made to existing underground utilities prior to backfilling. Concrete forms shall be inspected prior to placement of concrete. Permittee must notify the City Engineer of any existing damaged areas prior to the start of work.

14. **Storage of Material:** Absolutely no stockpiling of sand, gravel or soil will be allowed in the street or sidewalk area.
15. **Liability of Damages:** To the fullest extent allowed by law, Permittee will indemnify, hold harmless and assume defense of, in any actions of law or in equity, the City of Fairfield, its officers, employees, agents, and elective and appointive boards from all claims, losses, damage, including property damage, personal injury, including death, and liability of every kind, nature and description arising out of or in any way connected with the performance of this permit by Permittee or any contractor or subcontractor, but not including the sole or active negligence or willful misconduct of the City of Fairfield. This indemnification shall extend to claim losses, damage, injury and liability for injuries occurring after completion of the aforesaid operations, as well as during the work's progress. Permittee's responsibility for such defense and indemnity obligations shall survive the termination or completion of this agreement for the full period of time allowed by law.
16. **Liability Insurance:** Permittee shall obtain at its sole cost and keep in full force and effect during the term of this permit, and for one year thereafter, broad form property damage, completed operations, personal injury, automobile, employer's and comprehensive form liability insurance in the amount of \$3,000,000 per occurrence; provided that the City, its officers, agents and employees shall be named insureds under the policy, and the Additional Insured coverage under the Permittee's policy shall be "primary and non-contributory" and will not seek contribution from the Public Entity's insurance or self-insurance and shall be at least as broad as CG 20 01 04 13. The minimum limits stated above shall not serve to reduce the Permittee's policy limits of coverage; the requirements for coverage and limits shall be (1) the minimum coverage and limits specified in this permit, or (2) the broader coverage and maximum limits of coverage of any insurance policy or proceeds available to the named insured, whichever is greater.

The limits of insurance required in this permit may be satisfied by a combination of primary and umbrella or excess insurance. Any umbrella or excess insurance shall contain or be endorsed to contain a provision that such coverage shall also apply on a primary and noncontributory basis for the benefit of the City, its officers, agents and employees before the City's insurance or self-insurance will be called upon to protect it as a named insured.
17. **Boring Operations:** For all boring operations, the contractor shall pothole, under the supervision of a Public Works Inspector, to verify depth and location of all utilities crossings. This will ensure utilities depth is known and the bore operation will not be in conflict. Prior to acceptance of improvements, the contractor shall video inspect and submit the video to the City Engineer for approval of all gravity lines.
18. **Contractors and Subcontractors:** The Permittee shall require all contractors and subcontractors to meet the requirements of this permit, including the indemnity and insurance requirements, for work performed under this permit.

I have read, understand, and agree to comply with the General Permit Rules and Regulations as stated on the reverse side of this permit. I further agree to comply with the current City of Fairfield Standard Specifications and Details, City Ordinances, and conditional requirements.

PERMITTEE'S SIGNATURE: _____

DATE: _____



City Of Fairfield
Licensed Contractor's Application for eTRAKiT Account
Online Permit & Inspection Access

ATTENTION LICENSED CONTRACTORS

We will be launching online services via



Effective AUGUST 1, 2015

Contractors who would like to utilize this feature may fill out the Licensed Contractor's Application for eTRAKiT Account and submit it in person or mail to:

City of Fairfield
Attn: Michael O'Connell
1000 Webster Street, 3rd Floor
Fairfield, Ca 94533

We are pleased to offer registered licensed contractors access to online services 24 hours a day, 7 days a week:

- Applying for encroachment permit
- Scheduling encroachment permit inspections
- Paying encroachment permit fees
- Searching property information
- Searching licensed contractor information



City Of Fairfield
Licensed Contractor's Application for eTRAKiT Account
Online Permit & Inspection Access

Company Information

CA Contractor's License No: _____

Company Name: _____

Address: _____

City: _____ State: _____ Zip: _____

City of Fairfield Business Lic No: _____

Insurance Information

Worker's Comp Insurance Carrier: _____

Worker's Comp Insurance Policy No: _____

Contact Information

First Name: _____ Last Name: _____

Business Phone: _____ Cell Phone: _____

Fax Number: _____ Email: _____@_____

By signing below, I hereby consent that I am authorized to apply for an eTRAKiT Account from the City of Fairfield. I declare under penalty of perjury under the laws of the State of California that the information provided herein is true and correct. I understand and acknowledge that my use of eTRAKiT is voluntary, and I agree that my use of eTRAKiT shall be indication of my consent to conduct such transactions by electronic means.

Signature _____ Date _____

Please submit in person or mail to:

City of Fairfield
Attn: Michael O'Connell
1000 Webster Street, 3rd Floor
Fairfield, CA 94533

(Office Use Only)

- Verified Contractor's License
Verified Worker's Comp
Verified Business License
Notified Applicant

User ID: _____ (letters/ numbers only)

Password: _____ (6 to 15 letter/ numbers only)



Traffic Control Plan Title Page Sample

Sheets submitted must be on 11" x 17" or 24" x 36" landscape format

Note to Contractor or Consultants

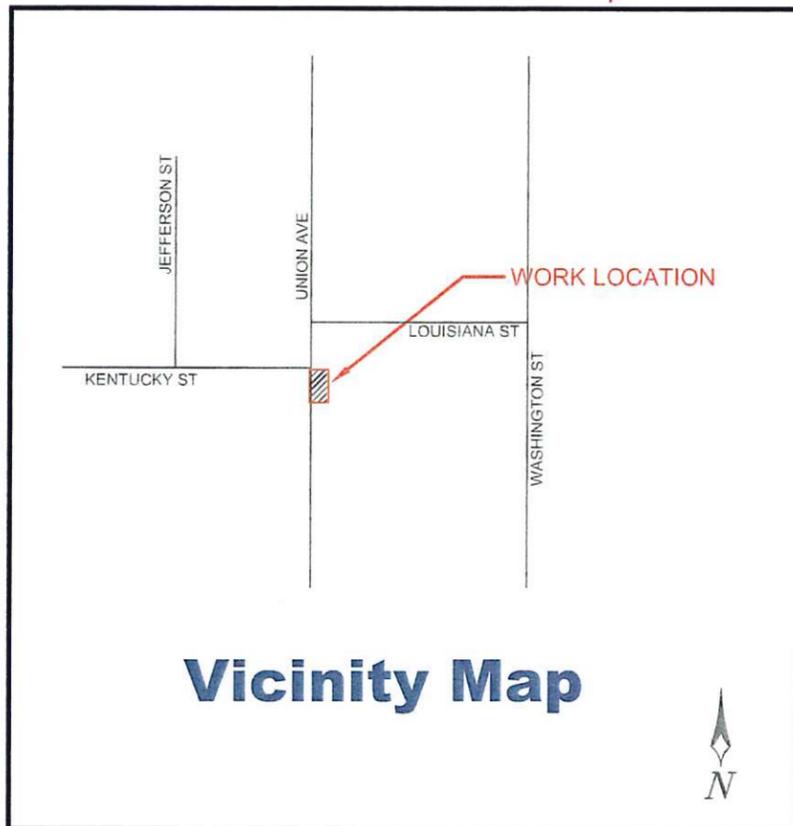
TRAFFIC CONTROL PLAN

STREET NAME

Provide the street name where project will be conducted. Must be site specific and not generic.

CITY OF FAIRFIELD, CALIFORNIA

Provide a Vicinity Map



CONTRACTOR

Provide contractors name and contact number.

CONTACT

Contractor's Name

PHONE#

Contractor's Cell Phone

WORKING HOURS

9 am - 3:00 pm

CONSULTANT

Provide name and contact number of traffic control preparer.

TCP Preparer's Name
Contact Phone Number

IMPORTANT:

48 hours before Implementations of the approved Traffic Control Plan, the Project Manager is responsible for notifying Fairfield/Suisun Transit System at (707) 434-3800. No Exceptions.

Add this notice on all sheets

REVISIONS			
REV	DESCRIPTION	BY	DATE

PROJECT NO.	_____
DRAWN	_____
DESIGNED	_____
CHECKED	_____
DATE	OCTOBER 3, 2012

SHEET **1** COVER

TRAFFIC CONTROL NOTES

1. The first set of traffic control signs W20-1 shall be 48" x 48" when posted speed limit is greater than 35 MPH, high reflective sheeting with 2 minimum flags. All remaining signs can be 36" x 36". Signs CANNOT BE cardboard or any other material other than what the California Manual of Uniform Traffic Control Devices (CA MUTCD) requires. Signs cannot be modified with duct tape or altered in any way that changes its original designation or integrity.
2. The City Inspector or Traffic Engineer shall at any time have the ability to make field adjustments to the traffic control plan including replacement of damaged or signs that appear no longer reflective. In the interest of public and workers safety, City Inspectors or Traffic Engineer can require the contractor to add or subtract signs, cones, delineators, barricades, etc. (in other words modify this traffic control plan in the field if they deemed necessary based on field conditions or visibility) without additional compensation.
3. The responsible contractor shall assure that all City codes, State and Federal standards are met. Any identified conflicts on the plan shall be mediated by the City.
4. This plan is not prepared to scale, therefore exact sign placement depicted here is subject to modification by contractor and further adjusted by the City according to access drives or other potential conflicts.
5. The contractor overseeing the project shall provide on site staff to maintain the traffic control area and assist in directing the public, vehicles, bikes and pedestrians.
6. Travel lanes shall be no less than 11 feet in width on arterial and collector streets and no less than 10 feet on local streets.
7. Signs and cone spacing are identified in each plan sheet where the project is shown and traffic control implemented. Traffic control shall coincide with CA MUTCD. All cones used shall be 28 inches with reflective sheeting. All other dimensions such as merge taper, buffers, etc. shall also be shown on each sheet. NO TABLES and CHART shall be used since project may cover multiple area with different road classifications and posted speed limits.
8. All traffic control devices shall meet the California Department of Transportation, California Manual of Uniform Traffic control Devices. In case of conflicts, the State Manual shall prevail.
9. If sidewalks are closed, a reasonable alternative shall be provided by the contractor, including directing pedestrians to controlled crossings. Pedestrians and bicycle access shall be maintained at all times.
10. Absolutely NO weekend work is permitted unless authorized by the City.
11. Traffic control signs shall be placed on separate post.
12. Contact Underground Service Alert (USA) 48 hours prior to any excavation for potential utility conflicts.
13. Any other potential striping or signing conflicts shall be resolved between City and contractor. The final decision will be made by City.
14. The contractor shall be responsible for notifying public safety agency prior to any road closures.
15. Any damage to existing City facilities will be repaired to the current City Standards at the contractors expense. Absolutely NO substitutions are allowed.
16. All flag persons directing traffic must be qualified per section 6E.01 of the CA MUTCD using proper equipment. Flag persons shall use a 6 foot post to support the STOP/SLOW paddle. Absolutely no exceptions.
17. Work on project shall NOT commence until the approved traffic control plan is in its place.
18. The contractor shall contact Fairfield and Suisun Transit at least 48 hours prior to commence of work. This or similar notice shall be clearly identified on the plans when it is determined that the project will be in designated bus route.
19. Approval of this plan in no way relieve the contractor from liability. It is still the responsibility of the contractor to make sure all the rules, regulations, standards, etc. are met prior, during, and at the completion of the project.

IMPORTANT:

48 hours before Implementations of the approved Traffic Control Plan, the Project Manager is responsible for notifying Fairfield/Suisun Transit System at (707) 434-3800. No Exceptions.

Add this notice on all sheets



Traffic Control Plan General Note Page Sample

Note to Contractor or Consultants

Sheets submitted must be on 11" x 17" or 24" x 36" landscape format

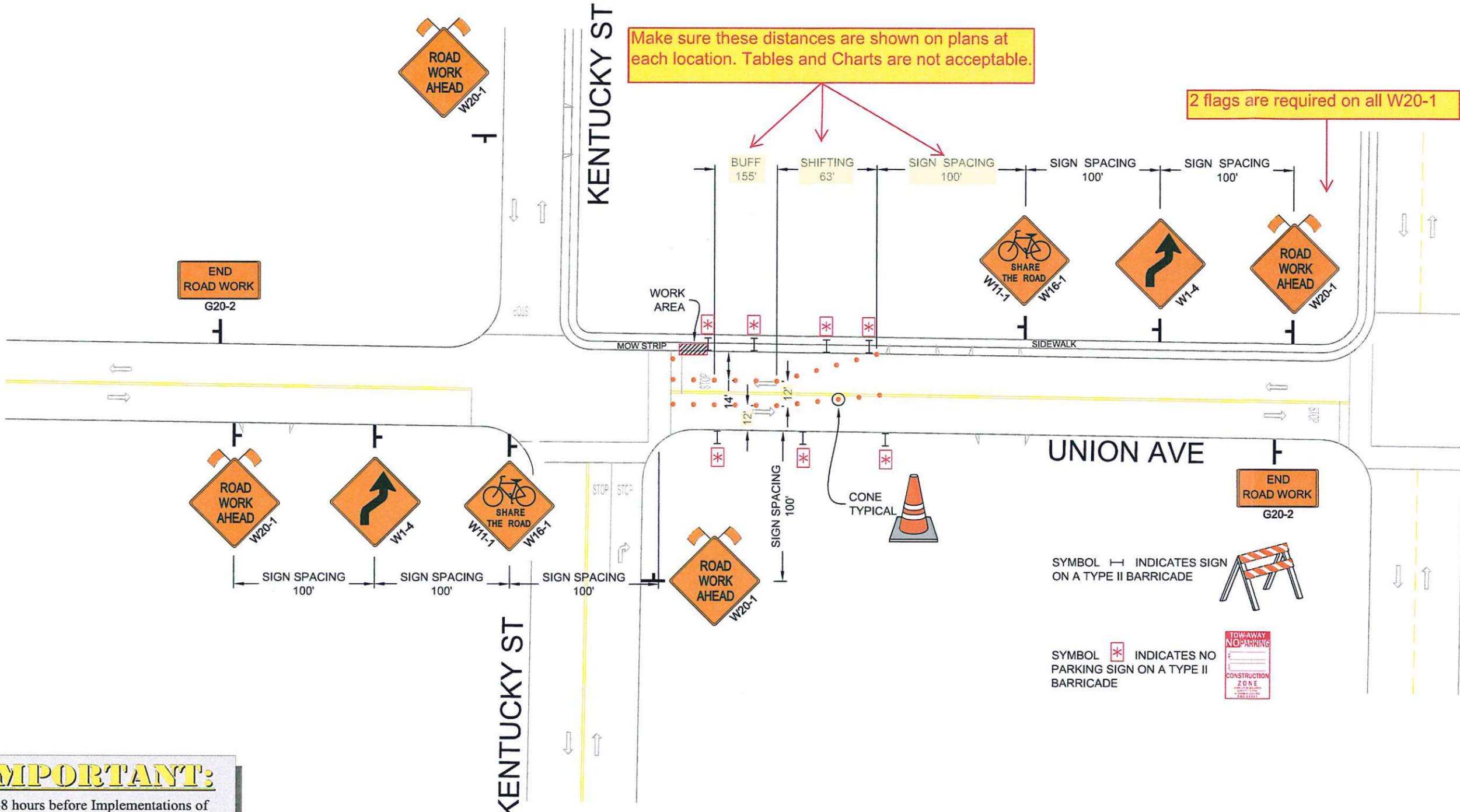
REVISIONS				PROJECT NO. _____
REV.	DESCRIPTION	BY	DATE	DRAWN _____
				DESIGNED _____
				CHECKED _____
				DATE _____



Make sure these distances are shown on plans at each location. Tables and Charts are not acceptable.

2 flags are required on all W20-1

BUFF 155' SHIFTING 63' SIGN SPACING 100'



END ROAD WORK G20-2



SYMBOL — INDICATES SIGN ON A TYPE II BARRICADE

SYMBOL * INDICATES NO PARKING SIGN ON A TYPE II BARRICADE



IMPORTANT:

48 hours before Implementations of the approved Traffic Control Plan, the Project Manager is responsible for notifying Fairfield/Suisun Transit System at (707) 434-3800. No Exceptions.

Add this notice on all sheets



Traffic Control Plan EXAMPLE

Sheets submitted must be on 11" x 17" or 24" x 36" landscape format

Note to Contractor or Consultants

REVISIONS			
REV.	DESCRIPTION	BY	DATE

PM30935057



ROADS < 50 MPH: MINIMUM 36" SIGN PANELS (48" SIGNS MAY BE USED)

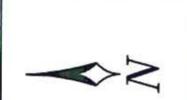
ROADS ≥ 50 MPH: MINIMUM 48" SIGN PANELS

Traffic Control Plan Preparer's name and cell phone number

Contractor's Information

CONTACT PHONE* WORKING HOURS

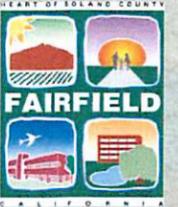
PROJECT NO. DRAWN DESIGNED CHECKED DATE



Traffic Control Example if using Google Earth

Sheet submitted must be on 11"x17" or 24"x36" landscape format.

Note to Contractor or Consultant

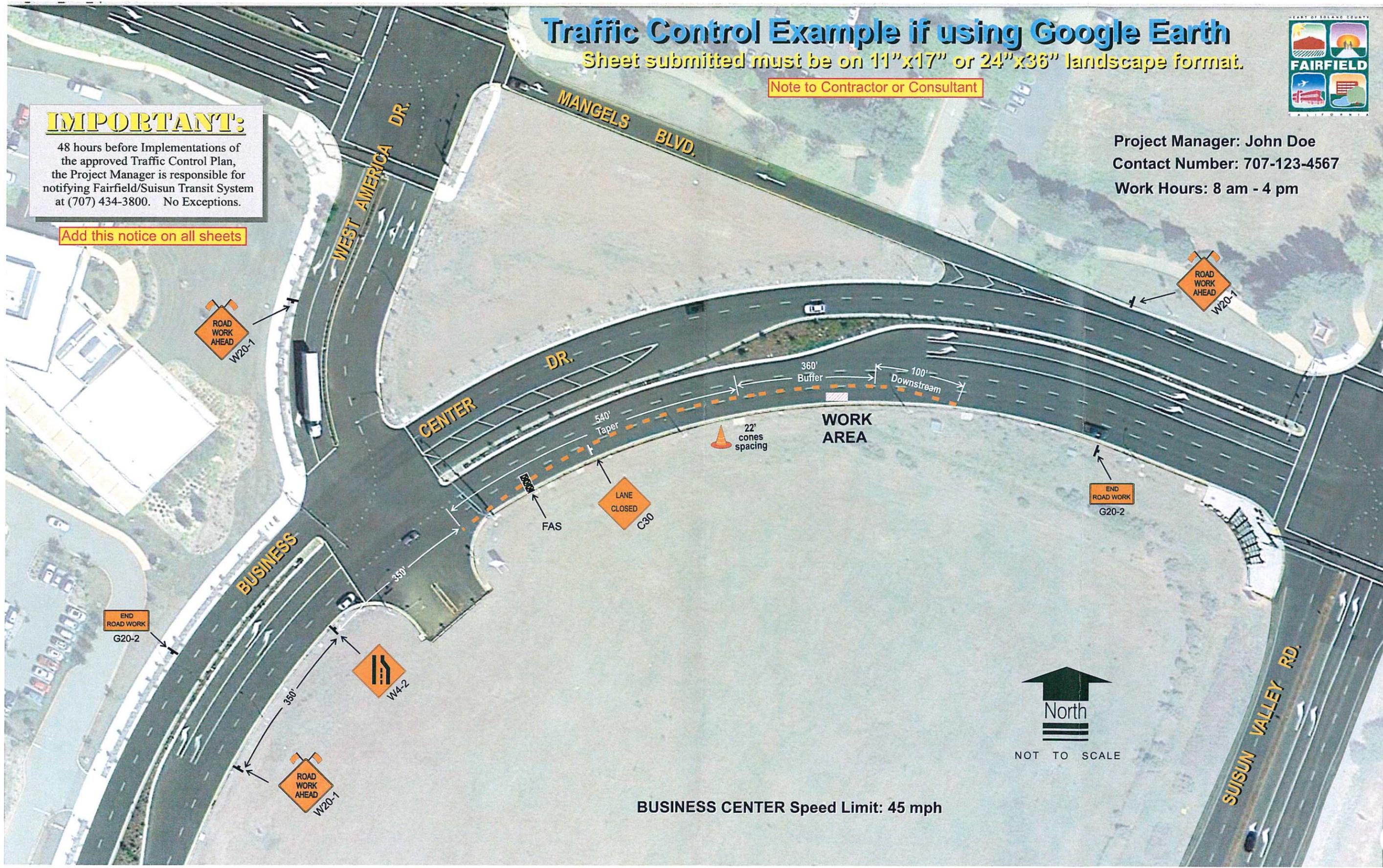


IMPORTANT:

48 hours before Implementations of the approved Traffic Control Plan, the Project Manager is responsible for notifying Fairfield/Suisun Transit System at (707) 434-3800. No Exceptions.

Add this notice on all sheets

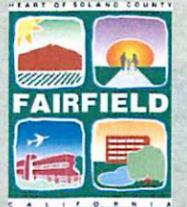
Project Manager: John Doe
Contact Number: 707-123-4567
Work Hours: 8 am - 4 pm



BUSINESS CENTER Speed Limit: 45 mph

Traffic Control Example if using Google Earth

Sheet submitted must be on 11"x17" or 24"x36" landscape format.



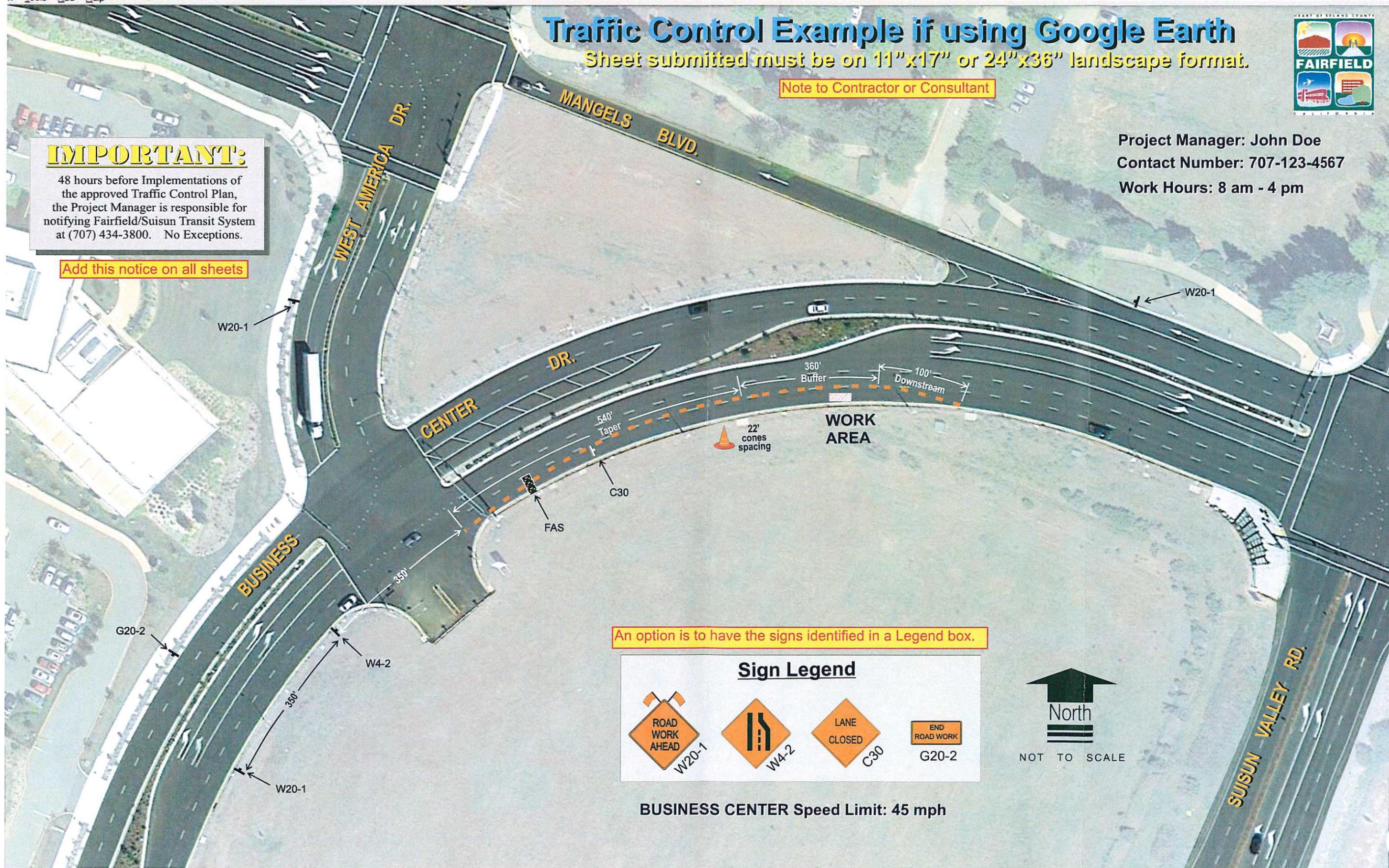
Note to Contractor or Consultant

Project Manager: John Doe
Contact Number: 707-123-4567
Work Hours: 8 am - 4 pm

IMPORTANT:

48 hours before Implementations of the approved Traffic Control Plan, the Project Manager is responsible for notifying Fairfield/Suisun Transit System at (707) 434-3800. No Exceptions.

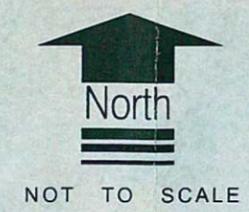
Add this notice on all sheets



An option is to have the signs identified in a Legend box.

Sign Legend

--	--	--	--



BUSINESS CENTER Speed Limit: 45 mph

Preparing Traffic Control Plans

Complete closure of a city street for construction is not allowed, except in special circumstances with the prior expressed consent of the City or representative. Partial closures are acceptable when accompanied by a flag person, or alternative traffic control device that allow traffic to flow on a deviated path. If the Engineering Division has questions, we will direct them to the person listed as the contact. Once the traffic control plan is approved, the City will submit a copy of the approved plan to the contractor as well as the appropriate inspector. (7-12-14V2)

General Requirements

- Paper Size** – The traffic control plans must be SITE SPECIFIC and submitted on 11" x 17" ledger or 24" x 36" full size plan sheet(s). Typical (as shown in CA MUTCD) and hand drawn traffic control plans are unacceptable.
- Scale** – Scale is not necessary as long as dimensions are clearly identified.
- Labels** – Show:
 - 1.) A brief description of the project or work being done.
 - 2.) The anticipated project start date.
 - 3.) North arrow along with the streets names.
 - 4.) Major landmarks shall be clearly identified on each sheet.
- Responsible contractor or other contact information** – The person preparing the traffic control plan must be certified either by International Municipal Signal Association (IMSA), Institute of Transportation Studies (ITS), National Highway Institute, or similar training. The following must be included:
 - 1.) Contractors name, address office and cell phone number.
 - 2.) Preparer's name, address, office and cell phone number (if different).
- Reference Documents** – The standards used to prepare the traffic control plan shall be in accordance with the California Supplement to the Manual of Uniform Traffic Control Devices (CA MUTCD), as well as the Work Area Traffic Control Handbook (WATCH). The CA MUTCD shall take preference if there are any conflicts. The CA MUTCD is available on line at <http://www.dot.ca.gov/hq/traffops/engineering/mutcd/pdf/camutcd2012/Part6.pdf> Chapter 6, Temporary Traffic Control. Please pay special attention to new state policy and directives.
- Dimensions** – Plans shall identify accurate dimensions between all relevant objects, to include, but not limited to: spacing between signs, length of tapers, length/width of work area, as well as any other dimensions likely to be needed to properly direct traffic. These dimensions must be labeled on each sheet where traffic control is depicted. Tables and Charts are no longer acceptable. The traffic control plan should be drawn in such a way that it accurately reflects the location of the fixed objects.
- Access** – Road detours closures are strongly discouraged. Alternative roadwork between lanes to prevent the disruption of traffic flow as much as possible. If closing a road is absolutely necessary and approved by the City, the traffic control plan must show the detour route and signage. Access shall be maintained to all driveways, pedestrian or bicycle facilities. If access cannot be provided, an alternate shall be shown with the proper traffic control. Alternative pedestrian access to back of sidewalk or adjacent to coned taper shall be provided when appropriate.
- Traffic Control Devices** – Plans should identify all traffic control devices, both by name and sign code (CA MUTCD), as well as by location through the proper placement on the traffic control plan. This can be written next to the traffic control device, or through the use of a legend at the right side or bottom of page. See list of commonly used sign codes.
- Dates/Times of Work** – Plans shall note the proposed dates, times, and duration of work; when work will be completed in phases, this should be noted. Special consideration must be made for traffic controls used during hours of darkness. As always, the final approval for all work schedules is at the discretion of



COMPANIES IN ADEA WHO PREPARE TCP's



ADVANTAGE ASPHALT, INC.
 License # 762938
 6496 Florin-Perkins Road
 Sacramento, CA 95828
 916-388-2020 916-388-5542 fax

CONSULTANT



ALMANDARIZ CONSULTING, INC.
 1144 SUNCAST LN STE 1
 EL DORADO HILLS, CA 95762
 (888) 306-1211 OFFICE
 (888) 768-7022 FAX

City of Fairfield has provided this information as sample of four consultants, who have in the past submitted the required Traffic Control Plans in our office. The City does not in anyway endorse any of the consultants shown here; this is provided to you as an information only. For a fee, these consultants can draw the required Traffic Control Plans for you which the staff can review. If you are in need of such services, it is your responsibility to do your own research who you want to hire. There are many available consultants on-line who can provide the same services and they all charge a fee.



STATEWIDE
TRAFFIC SAFETY & SIGNS
 FAIRFIELD BRANCH
 PH: (707) 864-9952
 FAX: (707) 864-9956
 AFREELAND@STATEWIDESAFETY.COM

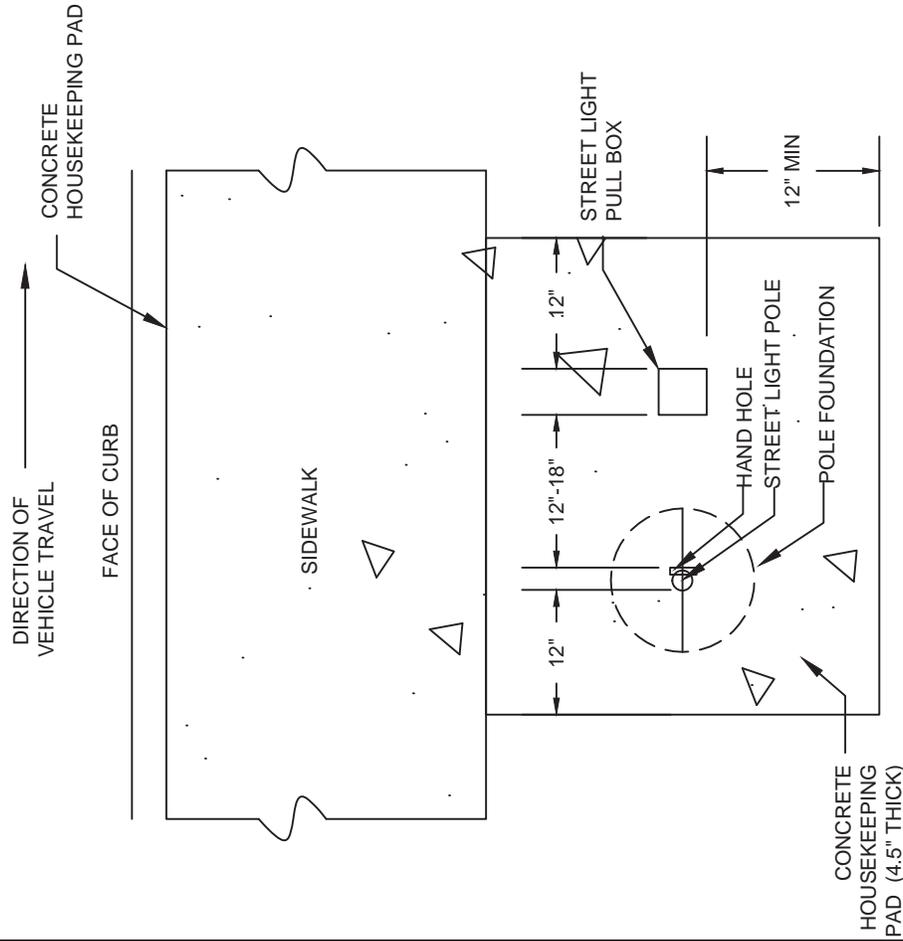


ROAD SAFETY INC.

'FULL SERVICE TRAFFIC CONTROL COMPANY'
.24 HOUR SERVICE 7 DAYS A WEEK • EMERGENCY CONTACT # 916-716-5486

7-12-2012

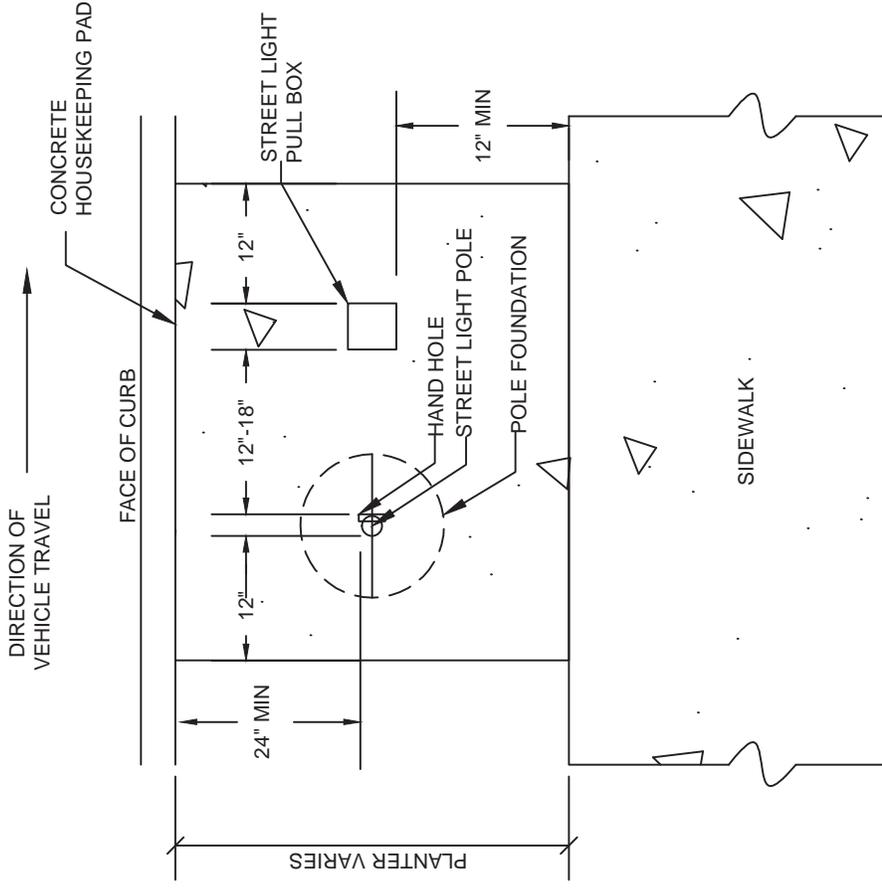
Prepared by:
Road Safety Inc.
4223 Duluth Ave.
Rocklin, CA. 95765
916-543-4600 office
916-914-2213 fax



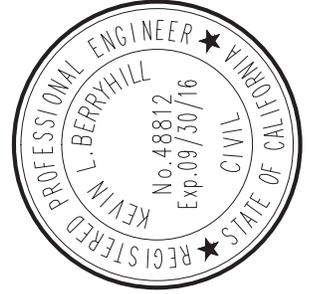
MONOLITHIC SIDEWALK

NOTES:

1. THE HOUSEKEEPING PAD SHALL BE CONSTRUCTED MONOLITHICALLY WITH THE PULL BOX AND STREET LIGHT POLE AS ONE COMPLETE SYSTEM.
2. THE CONCRETE PAD SHALL BE EXTENDED TO FILL ANY GAP OF LESS THAN 12" TO PREVENT VEGETATIVE GROWTH.
3. THE HAND HOLE SHALL BE POSITIONED DOWN STREAM SO THAT BOTH THE PULL BOX AND THE HAND HOLE ARE ACCESSIBLE WHILE MAINTAINING VIEW OF ON-COMING VIEW OF VEHICLE TRAVEL.
4. THERE SHALL BE A MINIMUM OF 12" CLEARANCE BETWEEN POLE OR PULL (JUNCTION) BOX TO NEAR EDGE OF CONCRETE PAD.
5. THE PULL (JUNCTION) BOX SHALL BE SET PERPENDICULAR TO STREET LIGHT POLE HAND HOLE TO FACE PULL BOX.



PLANTER STRIP OR CURVILINEAR SIDEWALK



CITY OF FAIRFIELD

DEPARTMENT OF PUBLIC WORKS

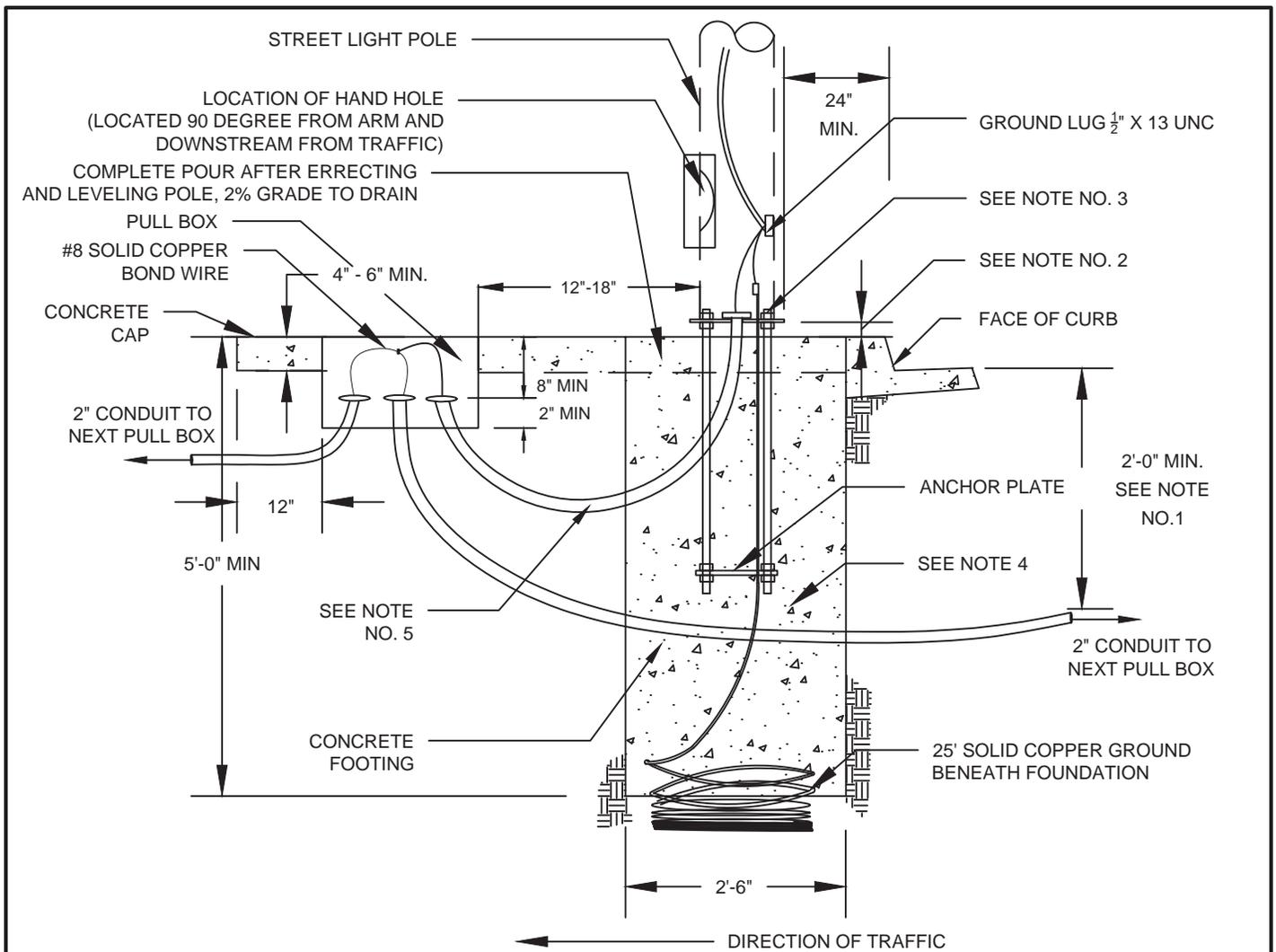
DETAIL NAME: CONCRETE HOUSEKEEPING PAD (STREET LIGHTING)

APPROVED BY: *[Signature]*

CITY ENGINEER R.C.E. 48812

DATE: AUGUST 2015

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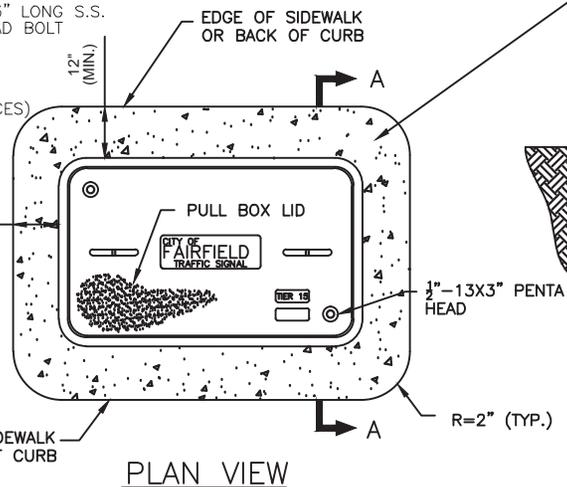
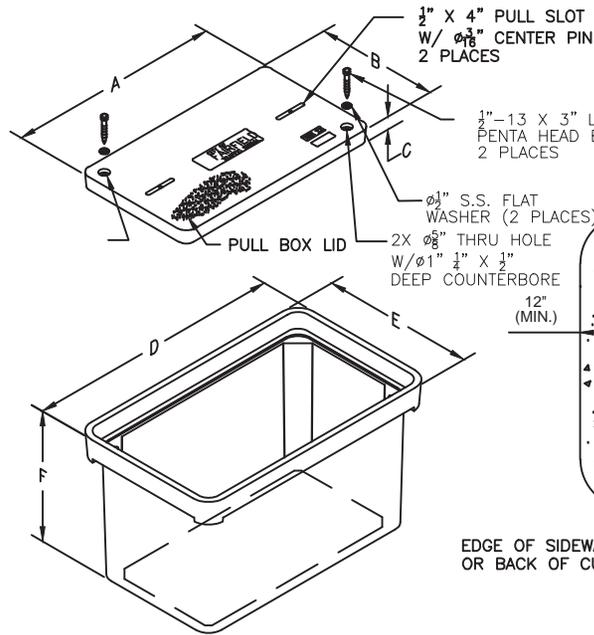
STREET LIGHT CROSS-SECTION

NOTES:

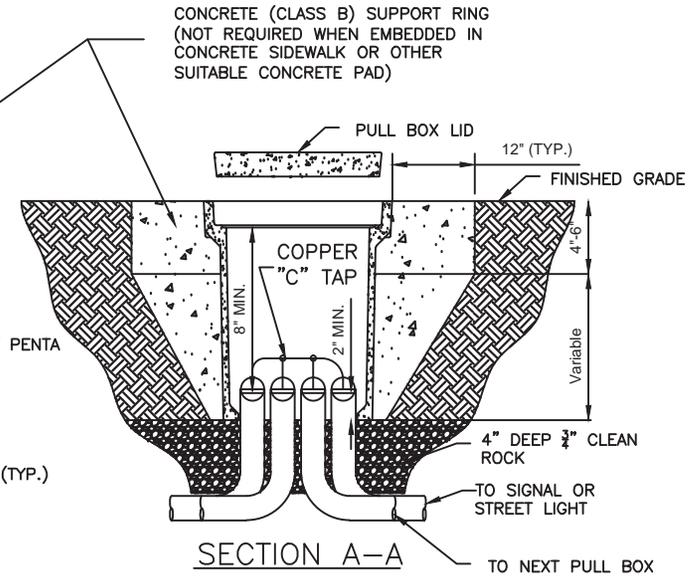
1. SCHEDULE 80 PVC SHALL BE USED FOR ALL STREET LIGHTING, CONDUIT BENDS AND SWEEPS FROM PULL BOX TO STREET LIGHT. ANY CONDUIT IN STREET AREA SHALL BE MIN. OF 2'-0" BELOW THE FLOW LINE OF THE GUTTER AND PLANTER, 36" UNDER THE PAVEMENT, AND 42" UNDER ARTERIAL STREET.
2. DIMENSION FROM GRADE 2" +/- 1/4" TO BOTTOM OF BASE PLATE. AREA SHALL BE FILLED WITH GROUT.
3. ANCHOR BOLTS SHALL BE GALVANIZED. NO MORE THAN 1/2" OF THREAD SHALL SHOW ABOVE EACH HOLD DOWN BOLT. EACH BOLT SHALL BE PROVIDED WITH A LEVELING NUT, TWO WASHERS, AND A HOLD DOWN NUT. MAXIMUM LENGTH OF ANCHOR BOLT ABOVE THE TOP OF THE HOLD DOWN NUT SHALL BE 1" THE ANCHOR BOLTS SHALL BE 1" X 36" X 4, THREADED ON BOTH ENDS OR AS SPECIFIED BY CALTRANS.
4. ALTERNATE FOOTINGS ARE SUBJECT TO SOIL TYPE WITH FINAL DETERMINATION MADE BY THE DESIGNER/ENGINEER.
5. INSTALL TO PULL BOX. 2" DIA. (MIN.) CONDUIT WITH 60 DEGREE BEND. CONDUIT SHALL EXTEND NOT MORE THAN 2" ABOVE THE TOP OF THE BASE PLATE.
6. ALL CONDUITS SHALL INCLUDE BEL END WITH DUCT SEAL.
7. ANCHOR PLATE SHALL BE IN ACCORDANCE TO CALTRANS STANDARD PLANS.



CITY OF FAIRFIELD	
DEPARTMENT OF PUBLIC WORKS	
DETAIL NAME: STREET LIGHT POLE FOUNDATION	
APPROVED BY: <i>[Signature]</i>	72
CITY ENGINEER R.C.E. 48812	
DATE: AUGUST 2015	



PLAN VIEW



SECTION A-A

PULL BOX NOTES:

- PULL BOXES SHALL CONFORM TO THE PROVISIONS IN THE CALTRANS 2010 SECTION ES-8A/86-2.06, "PULL BOXES" OF THE STANDARD SPECIFICATIONS AND THESE SPECIAL PROVISIONS.
- PULL BOXES SHALL BE CONSTRUCTED OF FIBERGLASS REINFORCED PRECAST POLYMER CONCRETE AND SHALL HAVE A MINIMUM OF TWO LAYERS FOR FIBERGLASS CLOTH ON THE INSIDE AND OUTSIDE PERIMETERS AND SHALL BE "PC" STYLE. THE PULL BOX SHALL BE UL 66WF LISTED AND LOADING MUST COMPLY WITH ALL TEST PROVISIONS OF THE ANSI/SCIF 77 MEETING ALL TIER 22 TEST PROVISIONS. THE PULL BOXES SHALL BE INSTALLED IN THE LOCATIONS SHOWN ON PLANS. PULL BOX SIZE SHALL BE NO. 6 UNLESS OTHERWISE NOTED ON THE PLAN.
- ALL PULL BOXES SHALL BE CONSTRUCTED WITH A MINIMUM 12 INCH WIDE X 4-6 INCH THICK CONCRETE COLLAR. IN CASES WHERE PULL BOXES ARE INSTALLED IN A LANDSCAPING MEDIAN OR STRIP ALONG THE PROPERTY FRONTAGE AND THERE IS LESS THAN 12 INCH EXPOSED EARTH AFTER THE 12 INCH WIDE X 4-6 INCH COLLAR IS CONSTRUCTED, THE CONCRETE COLLAR SHALL BE EXTENDED TO THE SIDEWALK OR BACK OF CURB.
- PULL BOXES SHALL HAVE PROPER IDENTIFICATION ON LIDS, I.E. "TRAFFIC SIGNAL", "INTERCONNECT", "SERVICE" AND "LIGHTING" WITH THE CITY OF FAIRFIELD NOTED. ALL PULL BOXES INSTALLED IN THE SIDEWALK AREA MUST HAVE BACK EDGE PARALLEL AND COMMON WITH BACK EDGE OF SIDEWALK.
- PULL BOXES SHALL BE INSTALLED WITH CLEAN 2 INCH GRADED CRUSHED ROCK.
- WHERE PULL BOXES ARE TO BE PLACED IN AREAS SUBJECT TO TRAFFIC LOADS, A NON-SLIP STEEL OR CAST IRON COVER SHALL BE USED IN LIEU OF THE CONCRETE COVER WITH THE APPROPRIATE CONTENTS OF THE PULL BOX NEATLY BEAD WELDED ON THE LID. PULL BOXES OF THIS NATURE SHALL BE DISCOURAGED FROM INSTALLATION. SUCH PULL BOXES SHALL BE INSTALLED ON A MINIMUM 18 INCH CONCRETE FOOTING TO WITHSTAND TRAFFIC LOADS. TOPS OF PULL BOXES SHALL BE FLUSH WITH THE SURROUNDING FINISHED GRADE (I.E. TOP OF CURB OR SIDEWALK).
- A CONCRETE COLLAR SHALL BE CONSTRUCTED FOR ALL STANDALONE PULL BOXES.
- DUCT SEAL AND END BELL SHALL BE USED AT THE ENDS OF ALL CONDUITS
- POLYMER CONCRETE COVER SHALL BE SECURED TO PULL BOX USING (2) 1/2-13 PENTA HEAD BOLTS.
- ALL POLYMER CONCRETE COVERS SHALL BE COMPLETE WITH MOLDED LOGO (NO GLUE IN LOGOS)
- TOP OF PULL BOXES MUST BE FLUSH WITH SURROUNDING GRADE OR TOP OF ADJACENT CURB, EXCEPT THAT IN UNPAVED AREAS WHERE PULL BOX IS NOT IMMEDIATELY ADJACENT TO AND PROTECTED BY CONCRETE FOUNDATION, POLE OR OTHER SURROUNDING GRADE. WHERE PRACTICABLE, PULL BOXES SHOWN IN VICINITY OF CURBS MUST BE PLACED ADJACENT TO STANDARDS MUST BE LACED FACING AWAY FROM TRAFFIC. WHEN A PULL BOX IS INSTALLED IN SIDEWALK AREA, THE DEPTH OF THE PULL BOX MUST BE ADJUSTED SO THAT THE TOP OF PULL BOX IS FLUSH WITH SIDEWALK.
- ALL PULL BOXES AND COVERS THAT ARE EXPOSED TO THE GENERAL PUBLIC SHALL BE MANUFACTURED OF NON-CONDUCTIVE AND HAVE COEFFICIENT OF FRICTION OF 0.5 OR GREATER UTILIZING THE ASTM 1028-06 SECTION 8 TEST METHODS. SPRAY PAINTED NON CONDUCTIVE OR ANTI SLIP MATERIALS WILL NOT BE ACCEPTED.

TYPICAL PULL OR SPLICE BOX

TABLE OF DIMENSIONS (MINIMUM)

TYPE	DESCRIPTION	DIMENSIONS (IN)					
		A	B	C	D	E	F
3 1/2	PULL BOX - (10" X 15" X 12")	15 3/8	10 1/8	2	17 1/16	11 1/8	12
5	PULL BOX - (13" X 24" X 12")	23 1/4	13 3/4	2	25	15 1/2	12
6	PULL BOX - (17" X 30" X 12")	30 1/2	17 1/2	2	32 1/4	19 1/4	12
6(FF)	PULL BOX - (36" X 24" X 24")	35 5/8	24	3	37 5/8	28	24



LOGO DETAIL(TYP.)

LABEL PER CONTENTS OF PULL BOX



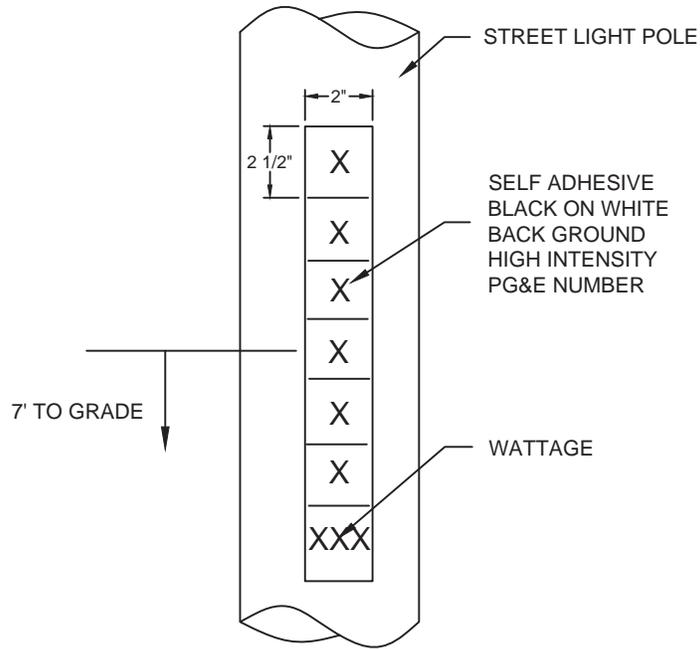
CITY OF FAIRFIELD
DEPARTMENT OF PUBLIC WORKS

DETAIL NAME: PULL BOX

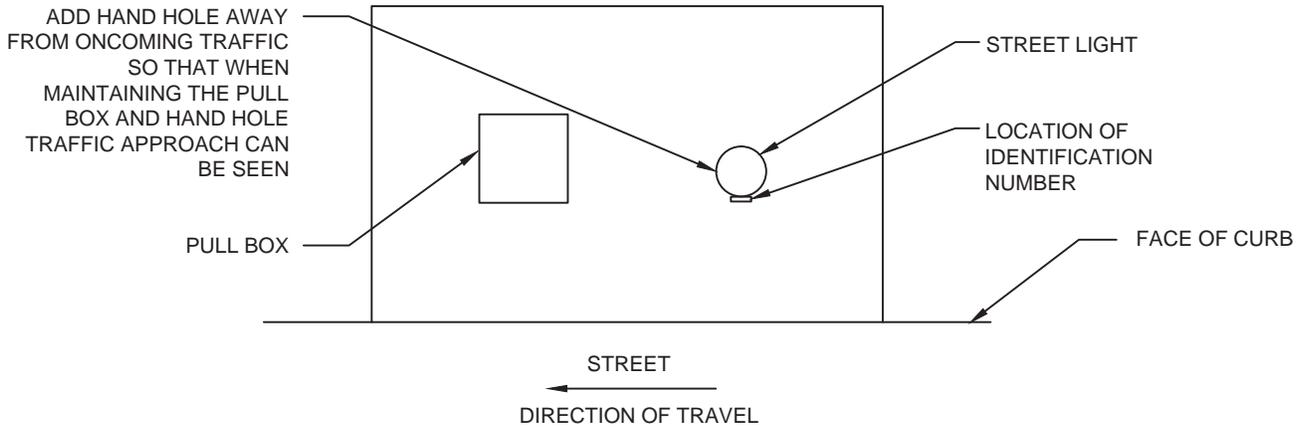
APPROVED BY: *[Signature]*
CITY ENGINEER R.C.E. 48812

DATE: AUGUST 2015

73



STREET LIGHT IDENTIFICATION NUMBER



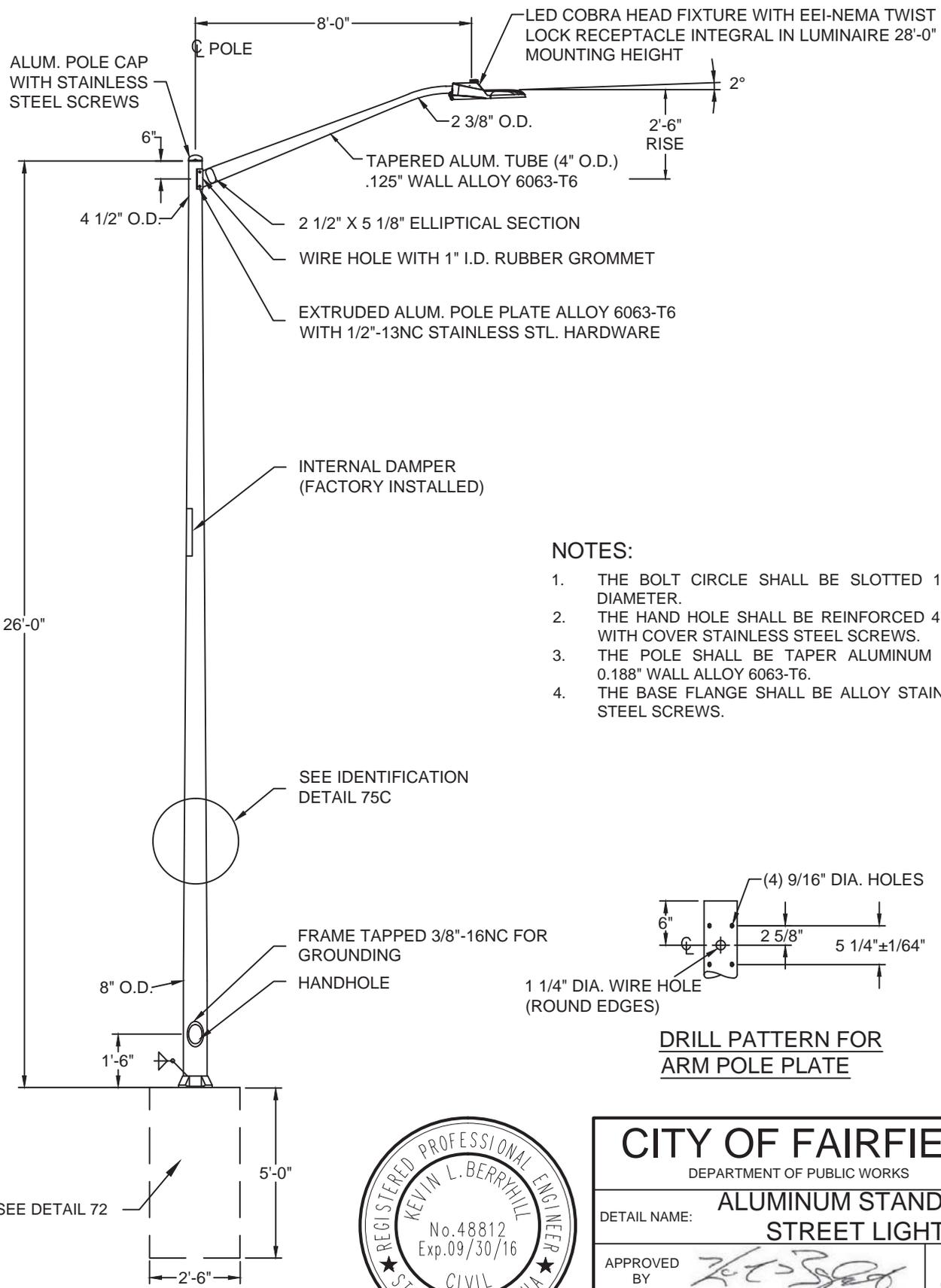
LOCATION OF IDENTIFICATION NUMBER

NOTES:

1. NUMBERS SHALL BE POSITIONED VERTICALLY ON THE POLE AND PERPENDICULAR TO THE STREET.

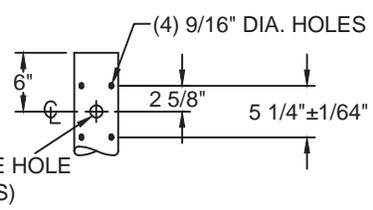


CITY OF FAIRFIELD DEPARTMENT OF PUBLIC WORKS	
DETAIL NAME: STREET LIGHT IDENTIFICATION NUMBER	
APPROVED BY: <i>[Signature]</i> CITY ENGINEER R.C.E. 48812	75C
DATE: AUGUST 2015	



NOTES:

1. THE BOLT CIRCLE SHALL BE SLOTTED 11"-12" DIAMETER.
2. THE HAND HOLE SHALL BE REINFORCED 4" X 6" WITH COVER STAINLESS STEEL SCREWS.
3. THE POLE SHALL BE TAPER ALUMINUM TUBE 0.188" WALL ALLOY 6063-T6.
4. THE BASE FLANGE SHALL BE ALLOY STAINLESS STEEL SCREWS.



**DRILL PATTERN FOR
ARM POLE PLATE**



CITY OF FAIRFIELD	
DEPARTMENT OF PUBLIC WORKS	
DETAIL NAME: ALUMINUM STANDARD STREET LIGHT	
APPROVED BY: <i>[Signature]</i>	75A
CITY ENGINEER R.C.E. 48812	
DATE: AUGUST 2015	

SEE DETAIL 72

SEE IDENTIFICATION
DETAIL 75C

FRAME TAPPED 3/8"-16NC FOR
GROUNDING
HANDHOLE

8" O.D.

1'-6"

5'-0"

2'-6"

26'-0"

4 1/2" O.D.

6"

INTERNAL DAMPER
(FACTORY INSTALLED)

EXTRUDED ALUM. POLE PLATE ALLOY 6063-T6
WITH 1/2"-13NC STAINLESS STL. HARDWARE

WIRE HOLE WITH 1" I.D. RUBBER GROMMET

2 1/2" X 5 1/8" ELLIPTICAL SECTION

TAPERED ALUM. TUBE (4" O.D.)
.125" WALL ALLOY 6063-T6

2 3/8" O.D.

2'-6"
RISE

2°

LED COBRA HEAD FIXTURE WITH EEE-NEMA TWIST
LOCK RECEPTACLE INTEGRAL IN LUMINAIRE 28'-0"
MOUNTING HEIGHT

POLE

8'-0"

ALUM. POLE CAP
WITH STAINLESS
STEEL SCREWS

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SECTION 1: TESTING OF MATERIALS

1.1 DESCRIPTION

Testing of materials will be performed by the City following State of California Test Methods. The statistical testing procedure will not be used. Each material used shall meet the requirements of the moving average.

The City will provide all initial material and compaction tests. Sampling and testing will comply with Chapter 3 of the State Construction Manual and the City Quality Assurance Program. Where conditions vary, the City may require additional testing. The cost of all retests shall be charged to the developer/contractor at \$150.00 each. The cost for testing of materials offered in lieu of the specified materials shall be the responsibility of the contractor/developer. The cost for R-value tests when required by the standard specifications shall be the responsibility of the contractor/developer.

Compaction tests shall be requested by the contractor a minimum of 24 hours in advance of the time desired. A minimum of 24 hours shall be allowed for testing to be performed. The interval for testing shall be determined by the City Engineer. No subsequent layer of material shall be placed until a passing test is obtained.

Current mix designs for asphalt concrete and mix design for all concrete shall be provided to and approved by the City, prior to placement.

The City shall have on file a list of pre-approved suppliers and mix designs for the contractor's review. The contractor shall submit his list of suppliers and mix designs prior to the start of work.

Contractor shall request additional Soil Testing Policy information from the City.

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SECTION 2: EARTHWORK

2.1 DESCRIPTION

Work shall conform with Section 19 of the State Standard Specifications except as noted herein.

2.2 GRADE TOLERANCE

Immediately prior to placing subsequent layers of material, the grading plane of the basement material shall not vary more than 0.05 foot above or below the design grade.

2.3 RELATIVE COMPACTION

Relative compaction of 92 percent shall be used in lieu of 95 percent required in the State Specifications. In excavated areas the top 0.5 foot of undisturbed material shall be compacted to 92 percent. Any fill material shall be considered as embankment construction.

2.4 SUBGRADE STABILITY/DEFLECTION TEST

The contractor shall be required to furnish loaded trucks for the purpose of testing the load bearing capacity of the finished basement material or ditch backfill. Total gross load per rear axle shall be 16,000 pounds. Tire pressure must be over 65 pounds. If the tested surface shows a visible deflection extending more than 6 inches from the wheel track at the time of loading, or a visible crack remains after loading, the contractor shall take corrective measures.

2.5 LIME TREATMENT

Lime Treatment is allowable for the purpose of drying upon obtaining approval from the City Engineer. Under no circumstances will Lime Treatment be allowed to reduce the structural section of a roadway.

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SECTION 3: ENGINEERING FABRICS

3.1 DESCRIPTION

This work shall include furnishing all the labor, materials, tools and equipment necessary to place the engineering fabrics in accordance with the approved plans and these specifications.

Engineering fabrics shall include pavement reinforcing fabric and light duty subgrade stabilization fabrics. A Certificate of Compliance from the product manufacturer for each type of engineering fabric used shall be furnished to the City Engineer. Engineering fabrics shall be furnished in protective covers to shield against ultraviolet rays, abrasion, and water.

3.2 PAVEMENT REINFORCING FABRIC

A. Materials

Pavement reinforcing fabric shall be manufactured from polyester, polypropylene, or polypropylene-nylon material. The fabric shall be nonwoven heat bonded on the top side, and shall conform to the following:

<u>Property</u>	<u>Minimum Requirements</u>	<u>Test Method</u>
Grab Strength (lbs.)	80	ASTM D4632
Elongation at break (%)	50	ASTM D4632
Asphalt Retention (gal/sy)	0.2	TF25 #8
Melting Point (°F)	300	ASTM D276

B. Installation

Pavement reinforcing fabric shall be installed in accordance with Section 39-4.03 of the State Specifications.

3.3 SUBGRADE FABRIC

A. Materials

Subgrade stabilization fabric shall be for light duty applications and shall be manufactured from polyester, nylon, or polypropylene material, or any combination thereof. The fabric shall be nonwoven, permeable, and shall conform to the following:

<u>Property</u>	<u>Minimum Requirements</u>	<u>Test Method</u>
Grab Strength (lbs.)	90	ASTM D4632
Puncture Strength (psi)	30	ASTM D751-69
Trapezoidal Tear (lbs)	30	ASTM D4533
Burst Strength (psi)	145	ASTM D751-68 IST 180, 5-84

B. Installation

Immediately prior to placement of the engineering fabric, the subgrade shall conform to the compaction and grade requirements as specified in the Specific Provisions and as shown on the Plans.

Engineering fabric shall be handled and placed in accordance with the manufacturer's recommendations.

The fabric shall be aligned and placed in a wrinkle-free manner.

Adjacent borders of the fabric shall be overlapped a minimum of 12 inches or stitched. The preceding roll shall overlap the following roll in the direction the material is being spread or shall be stitched. When the fabric is joined by stitching, it shall be stitched with yarn of a contrasting color. The size and composition of the yarn shall be as recommended by the fabric manufacturer. The stitches shall number 5 to 7 per inch of seam.

Within 24 hours after the fabric has been placed, it shall be covered with aggregate base material as shown on the plans.

During spreading and compaction of the aggregate base material, a minimum of 6 inches of such material shall be maintained between the fabric and the Contractor's equipment. Equipment or vehicles shall not be operated or driven directly on the fabric.

3.4 MEASUREMENT AND PAYMENT

Engineering fabrics will be measured by the square foot or square yard of area covered, excluding additional fabric required for overlap.

Payment for engineering fabrics shall be based on the contract unit price and quantity installed as described above. The contract unit price shall include furnishing all labor, materials, tools, equipment, and incidentals and for performing all the work involved in installing the engineering fabric, as specified in these specifications and as directed by the City Engineer.

SECTION 4: AGGREGATE SUBBASE

4.1 DESCRIPTION

Shall conform with Section 25 of the State Specifications and shall be Class 2 ASB. Thickness shown on the plans shall be the minimum section allowed. Under no circumstances will the use of Recycled Aggregate Subbase be allowed.

4.2 MEASUREMENT AND PAYMENT

Aggregate subbase shall be measured by the ton as placed on the street and other areas designated by the City Engineer.

Payment shall be made at the contract price per ton and shall include full compensation for furnishing all labor, materials, tools, equipment, incidentals and for doing all the work in placing aggregate subbase, complete in place as shown on the plans, as specified in these specifications and as directed by the City Engineer

SECTION 5: AGGREGATE BASE

5.1 DESCRIPTION

Shall conform with Section 26 of the State Specifications and shall be 3/4 inch maximum Class 2 AB. Thickness shown on the plans shall be the minimum section allowed. Under no circumstances will the use of Recycled Aggregate Base be allowed.

5.2 MEASUREMENT AND PAYMENT

Aggregate base shall be measured by the ton as placed on the street and other areas designated by the City Engineer.

Payment shall be made at the contract price per ton and shall include full compensation for furnishing all labor, materials, tools, equipment, incidentals and for doing all the work in placing aggregate base, complete in place as shown on the plans, as specified in these specifications and as directed by the City Engineer.

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SECTION 6: ASPHALT CONCRETE

6.1 DESCRIPTION

Shall conform with Section 39 of the State Specifications and shall be Type A Asphalt Concrete using paving asphalt meeting PG70-10.

Asphalt concrete shall be spread according to the following:

Total Thickness Shown On The Plans*	No. Layers	Top Layer 3/4" Max. Medium Grading Thickness		Next Lower Layer 3/4" Max. Medium Grading Thickness		All Other Lower Layers 3/4" Max. Medium Grading Thickness	
		Min.	Max.	Min.	Max.	Min.	Max.
20 or less.....	one	-----	-----	-----	-----	-----	-----
25.....	2	12	13	12	13	-----	-----
30 through 40.....	2	15	20	15	20	-----	-----
45 or more.....	3	15	20	15	25	15	40

*All thicknesses shown are in hundredths of a foot.

6.2 PENETRATION TREATMENT, SEAL, PRIME, AND TACK COATS

<u>Type</u>	<u>Asphalt Grade</u>	<u>Rate Gals./Yd.</u>
Prime	MC-70	0.15 to 0.25
Tack	SS-1	0.02 to 0.10
Fog Seal	SS-1	0.05 to 0.10

Tack coat shall be required between asphalt concrete lifts when traffic has utilized the paving surface.

Where shown on the plans or provided in the special provisions, a fog seal coat shall be applied.

Exact rates of application and asphalt grade will be determined by the City Engineer.

6.3 ADJUSTMENT OF IRON

Manholes, cleanouts, blowoffs, water valve boxes, and survey monument boxes shall be brought to finish grade after the final pavement lift has been installed. All iron shall be lowered prior to any pavement planing.

6.4 STAGE CONSTRUCTION

Asphalt concrete and asphalt concrete base shall be spread and compacted in layers. The top layer of asphalt concrete shall not exceed 0.20-foot in compacted thickness. The next lower layer shall not exceed 0.25-foot in compacted thickness, and any lower layers shall not exceed 0.40-foot in compacted thickness. Each subsequent layer of asphalt concrete base shall not exceed 0.40-foot in compacted thickness. No layer shall be placed over a layer which exceeds 0.25-foot in compacted thickness until the temperature at mid depth, of the layer which exceeds 0.25-foot in compacted thickness, is not more than 160°F.

Refer to Section 3 of these specifications for pavement reinforcing fabrics required for asphalt concrete overlays.

6.5 MIX DESIGN

Contractor shall insure the asphalt concrete suppliers have a current (calendar year) mix design on file with the City of Fairfield prior to any paving.

6.6 SPREADING AND COMPACTING EQUIPMENT

Spreading and compacting equipment shall be as specified in Section 39-5 of the State Specifications. The State Specifications are amended to allow use of a motorized self-propelled layton-type box for projects involving less than 50 tons of asphalt concrete.

6.7 MEASUREMENT AND PAYMENT

Asphalt concrete shall be measured by the ton as placed on the street, driveways, and other areas designated by the City Engineer.

Payment shall be made at the contract price per ton and shall include full compensation for furnishing all labor, materials, tools, equipment, incidentals and for doing all the work in placing asphalt concrete, prime coat, tack coat and fog seal, complete in place as shown on the plans, as specified in these specifications and as directed by the City Engineer.

SECTION 7: ADJUSTMENT OF MANHOLES, WATER VALVE BOXES,
AND SURVEY MONUMENT BOXES

7.1 DESCRIPTION

This work shall consist of adjusting manholes, water valve boxes, and survey monument boxes to conform with the new elevation of the street and in conformance with the Standard Specifications and Details.

7.2 ADJUSTMENT

Manholes, cleanouts, blowoffs, water valve boxes, and survey monument boxes shall be brought to finish grade after the final pavement lift has been installed. All iron shall be lowered prior to any pavement planing. The openings shall be temporarily covered by steel plates (minimum ½ -inch thick for manholes, and ¼ -inch thick for all others).

For street reconstructions or asphalt repairs on existing streets, manholes, water valve boxes, and survey monument boxes shall be raised and asphalt concrete placed within three working days after permanent pavement wearing course has been placed. The necessary portions of the subgrade, base and pavement shall be neatly cut away, the manhole built up, and the frames set to a grade flush with the surface of the adjacent pavement. The surrounding area from which the pavement, base or subgrade has been removed shall be back-filled to within 1-1/2 inches of the surface with Portland Cement Concrete. The remaining 1-1/2 inches shall be backfilled with 1/2-inch maximum asphalt concrete and compacted. The work shall be performed so as to present a neat and thoroughly workmanlike appearance upon completion.

7.3 MEASUREMENT AND PAYMENT

Unless specifically shown as an item of work on the proposal form, the adjustment of manholes, cleanouts, blowoffs, water valve boxes, and survey monument boxes shall be considered included in other items of work and no additional compensation will be made for labor, materials or equipment required in the adjustment of utility appurtenances.

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SECTION 8: CONCRETE CURB, GUTTER, SIDEWALK, AND DRIVEWAYS

8.1 DESCRIPTION

Work shall conform with Section 73 and Section 90 of the State Specifications with the following additions. All curb, gutter and sidewalk shall be placed monolithically unless otherwise specified and shall be constructed of 3000 psi Portland Cement Concrete.

8.2 INSTALLATION

A. Subgrade Preparation

The finished subgrade immediately prior to placement of aggregate base shall be compacted to 92% for a depth of 0.5 feet.

B. Cushion

Shall be Class 2 Aggregate Base mechanically compacted to 95%.

C. Forms

Lumber used for forms must be surfaced on the side placed next to the concrete and shall not be less than 1-1/2 inches thick after being surfaced. Warped forms and forms not having a smooth, straight upper edge shall not be used. Benders or thin planks, rigidly placed, may be used on curves, grade changes, or the curb returns.

All forms shall be clean and coated with a light anti-bonding oil to prevent the concrete from adhering to them. All forms must be carefully set to proper alignment and grade and shall be rigidly held in place by the use of steel or wooden stakes. Clamps, spreaders and braces shall be used where required to insure rigidity in the forms.

Forms shall not vary from vertical grade by more than 0.02 feet and from horizontal alignment by more than 0.05 feet within the distance not to exceed 25 feet at each occurrence. Unnecessary meandering of the alignment shall be sufficient cause for rejection and removal. All forms shall have smooth even lines in both the horizontal and vertical plane. A windrow of earth placed against the forms prior to placing concrete may be required to prevent them from bulging. Except for vertical curb face forms, all forms shall remain in place for at least 12 hours after the concrete is placed.

D. Extruded Sidewalk, Curb and Gutter

Use of an extrusion machine is allowed. A test pour may be required by the City Engineer. All edges shall have smooth even lines in both the horizontal and vertical plane. The grade tolerance is the same as formed concrete.

E. Placing and Finishing

No concrete shall be placed or finished in the rain. It shall be the contractor's responsibility to schedule his operations such that concrete will not be placed or finished in the rain.

Finished concrete shall have a high quality appearance. Defects such as crooked joints, exposed aggregate, surface pitting, or excessively rough finish will be cause for rejection. Removal and replacement will be done at the Contractor's expense.

Placement of driveways and handicap ramps require careful journeyman quality finishing. Through the driveway flowline a tangent line should be projected from full curb to full curb to assure that the 1" driveway lip does not 'encroach' into the flowline. The longitudinal curbline extension score line through the driveway shall be 6" from flowline. To assure positive flow, driveways and handicap ramps will be flow tested during installation.

At the end of each day's pour, when work is terminated, or when a delay of more than 30 minutes occurs, a construction joint, consistent with the jointing pattern, shall be made vertical or square ended and shall end the work. In no case shall the end of a day's pour terminate in a driveway or handicap ramp.

Weakened plane joints and score lines shall be constructed according to the standard details, and at right angles to the curb line.

8.3 DAMAGED OR UNACCEPTABLE CONCRETE

Care shall be taken so as to not damage adjoining concrete areas which are in place. Any damage so caused shall be repaired by the contractor at his expense. Any substandard work shall be replaced by the contractor at his expense and no additional compensation will be allowed thereto. Limits of replacement shall be determined by the City; saw cuts may only be made at score lines or joints. Saw cuts shall be straight, at a right angle to the curb line, and consistent with the jointing pattern.

When concrete is being removed and replaced, dowels will be required. Placement of dowels will be on 2' centers with one #4 rebar running longitudinally. Refer to the Standard Details for further information. Monolithic curb, gutter and sidewalk which is damaged shall be completely removed and replaced as monolithic curb, gutter and sidewalk and removed at expansion joints.

Any work done beyond the limits established by the City or any additional work done without written consent from the City shall be considered completed at the Contractor's expense.

8.4 TESTING

The finished concrete shall be in conformance with the tolerances for forms as stated above and attain a minimum 28-day compressive strength of 3000 psi. Core testing of substandard concrete will not be permitted.

After construction, gutters shall be checked by flowing water. The Engineer or his representative must be present during the flow test. Any high spots or depressions revealed by the flow test (which exceed 0.02 foot) shall be repaired by removing that section of concrete and replacing it to the correct grade.

Finished face of curb shall not vary by more than an aggregate total of 0.05 foot from the design alignment within a distance not to exceed 25 feet at each occurrence. Unnecessary meandering of the alignment shall be sufficient cause for rejection and removal.

8.5 MEASUREMENT AND PAYMENT

Quantities of concrete in curb, gutter, sidewalk, driveways and handicap ramps shall be measured and payment made at the bid price per unit as shown on the bid sheet. Payment shall include full compensation for the furnishing, placing and curing of the concrete together with the excavation, cushion material and all incidentals.

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SECTION 9: UTILITY TRENCHING AND BACKFILL

9.1 DESCRIPTION

A trench is defined as an excavation in which the depth is greater than the width of the bottom of the excavation.

Excavations for appurtenant structures such as but not limited to, manholes, transition except for overlays and existing street structures, junction structures, vaults, valve boxes, catch basins, thrust blocks, and boring pits shall be deemed to be in the category of trench excavation.

Excavation shall include the removal of all water and materials of any nature which interfere with the construction work. Placement of spoil materials on adjacent asphalt pavement shall not be allowed.

Excavation for the installation of conduit shall be by open trench unless otherwise specified or shown on the drawings. However, should the contractor desire to bore and jack any portion not so specified, he shall first obtain written approval from the City Engineer. Arterial streets, streets less than three years old, streets overlaid within the last three years and streets with surface treatments within the last year shall require crossings to be made by bore and jack methods.

9.2 MAXIMUM LENGTH OF OPEN TRENCH

The maximum length of open trench where prefabricated pipe is to be laid shall be the distance necessary to accommodate that amount of pipe which can be installed in a single day. Installed shall be interpreted as pipe laying, appurtenance construction, and backfilling, complete in place. The distance is the collective length at any location, including open excavation, pipe laying and appurtenant construction and backfill which has not been temporarily resurfaced. Use of steel plates as open trench covers shall be allowed only with prior approval of the City Engineer. In no instance shall the length of open trench exceed 200 lineal feet.

9.3 MAXIMUM AND MINIMUM WIDTH OF TRENCH

The maximum clear width of the trench at the top of the pipe shall not be more than the outside diameter of the pipe at any point plus 2 feet. Greater width of trench at the top of the pipe shall be permitted only on written approval by the City Engineer. In no case shall the free working space on each side of the pipe be less than 6 inches.

If the maximum trench width is exceeded, the contractor shall provide additional bedding, another type of bedding, or a higher strength of pipe, as shown on the plans or as approved by the City Engineer, at no additional cost to the City.

9.4 BRACING EXCAVATIONS

The manner of bracing excavations shall be as set forth in the rules, orders, and regulations of the Division of Industrial Safety of the State of California.

9.5 BEDDING

Bedding shall be defined as that material supporting, surrounding and extending to a minimum of six inches and a maximum of one foot above the top of pipe for pipes 24-inches in diameter and less, but not exceeding an overall depth of 36 inches as measured from the bottom of the pipe.

If soft, spongy, unstable, or similar other material is encountered upon which the bedding material or pipe is to be placed, this unsuitable material shall be removed to a depth ordered by the Engineer and replaced with bedding material suitably densified. Additional bedding so ordered, over the amount required by the plans or specifications, shall be paid for as provided in the contract or the Special Provisions. If the necessity for such additional bedding material has been caused by an act or failure to act on the part of the contractor, or is required for the control of ground water, the contractor shall bear the expense of the additional excavation and bedding.

Bedding material shall first be placed so that the pipe is supported for the full length of the barrel with full bearing on the bottom segment of the pipe equal to a minimum of 0.4 of the outside diameter of the barrel except for PVC pipe which requires bedding to the top of the pipe. The remainder of the bedding shall be carefully placed to the proper depth.

Bedding material shall be compacted to a relative density of 90%. Bedding material shall meet the specifications listed under Section 9.09 "Backfill Materials."

Where pipe is to be installed in new embankment, the embankment shall first be constructed to a height of 12 inches above the top of pipe and for a distance on each side of the pipe location of not less than 5 times the diameter of the pipe, after which the trench shall be excavated with sides nearly vertical and the pipe installed.

When water is encountered, the trench shall be kept dry until laying and jointing of the pipe and placing of the bedding material has been completed, inspected, and approved. The contractor shall place a minimum of 6 inches of pervious material or de-water the trench in a manner which has received prior approval of the City Engineer.

9.6 BACKFILL

Backfill shall be defined as that material which lies above the pipe bedding or conduit bedding.

Backfill, for cast-in-place structures such as, but not limited to, manholes, transition structures, junction structures, vaults, valve boxes and reinforced concrete box conduits shall start at the surface upon which the base of the structure rests.

In areas of previously undeveloped land (new construction), backfill shall be "native material" provided all organic material, rubbish, debris, large rocks, clay chunks, and other objectionable materials are first removed. When satisfactory compaction of the native material cannot be obtained, "select backfill" shall be required.

Except where the pipe must remain exposed for force main leakage tests and subject to the provisions herein, the contractor shall proceed as soon as possible with backfilling operations. Care shall be exercised so that the conduit will not be damaged or displaced.

Backfill for cast-in-place concrete pipe shall conform with Section 63 of the State Standard Specifications. The last paragraph of Section 63-1.06 Curing and Protecting Concrete, shall be amended to read as follows:

Except as otherwise provided, the Contractor shall not place or compact backfill against or over to top of any cast-in-place pipe for a period of ten days and until the concrete has developed a compressive strength equal to or greater than 85% of the specified design strength.

If the minimum compressive strength requirement is attained prior to 10 days, the minimum cure time, prior to placing or compacting backfill, shall be 7 days or as directed by the City Engineer.

Where it becomes necessary to excavate beyond the limits of normal excavation lines in order to remove boulders or other interfering objects, the voids remaining after the removal of the boulders shall be backfilled as specified herein, or as otherwise approved by the City Engineer.

Where the void is below the subgrade for bedding conduits or structures, backfill shall be thoroughly densified bedding material.

Where the void is in the side of the trench, it shall be backfilled with suitable material and densified as approved by the City Engineer.

It shall be understood that the removal of all boulders or other interfering objects and the backfilling of voids left by such removals shall be at the expense of the contractor and no direct payment for the cost of such work will be made. The cost of such work shall be included in the prices bid for the various items of work.

After the placing of backfill has been started, the contractor shall proceed as soon as practicable with densification.

9.7 DENSIFICATION METHODS

Backfill shall be mechanically compacted by means of tamping rollers, sheepsfoot rollers, pneumatic tire rollers, vibrating rollers, or other mechanical tampers. All such equipment shall be of a size and type approved by the City Engineer.

Permission to use specific compaction equipment shall not be construed as guaranteeing or implying that the use of such equipment will not result in damage to adjacent ground, existing improvements, or improvements installed under the contract. The contractor shall make his own determination in this regard.

Material for mechanical compacted backfill shall be placed in lifts which, prior to compaction, shall not exceed the depths specified below for the various types of equipment:

1. Impact, free-fall, or "stomping" equipment - maximum lift depth of 3 feet.
2. Vibratory equipment, vibratory smooth-wheel rollers, and vibratory pneumatic-tired rollers - maximum lift depth of 2 feet.
3. Rolling equipment, including sheepsfoot (both vibratory and non-vibratory), grid, smooth-wheel (not vibratory), pneumatic tired (non-vibratory), and segmented wheels - maximum lift depth of 1 foot.
4. Hand directed mechanical tampers, including vibratory plates - maximum lift depth of 8 inches.

Mechanically compacted backfill shall be placed in horizontal layers of such depths (not exceeding those specified above) compatible to the material being placed and the type of equipment being used. Each layer shall be evenly spread, moistened (or dried, if necessary), and then tamped or rolled until the specified relative compaction has been attained.

9.8 BACKFILL PLACEMENT REQUIREMENTS

A. Method "A":

Method "A" is to be used in existing streets. Backfill shall be "select backfill" as specified in these specifications. The area above the pipe zone shall contain Class II Aggregate Base mechanically compacted to a minimum relative compaction of 95% and a temporary layer (2 inch minimum) of asphalt cutback placed to grade. This temporary cutback shall be maintained by the contractor until permanent paving is installed. Permanent asphalt paving shall be 1 inch greater in thickness than the existing pavement, with a minimum thickness of 3 inches.

B. Method "B":

Method "B" is to be used within the public right-of-way in previously undeveloped land (new construction). Backfill shall be as specified in "BACKFILL", Section 9.6.

When native material is used as backfill, the area of the trench between the bedding zone and 18 inches below the bottom of the street section shall be mechanically compacted to a minimum relative compaction of 90%. The minimum relative compaction shall be 92% in the top 18 inches.

C. Method "C":

Method "C" is to be used in unimproved or non-street right-of-way areas. The area of the trench between the bedding zone and the top of trench shall be backfilled with native material. Compaction shall be done mechanically in uniform lifts so as to attain a minimum relative compaction of 90%.

9.9 BACKFILL MATERIALS

Bedding

<u>Sieve Size</u>	<u>PVC and HDPE Pipe % Passing*</u>	<u>All Other Pipe % Passing</u>
3/4"	100	100
3/8"	-	100
#4	35-55	70-100
#30	-	20-100
#200	3-9	0-15
Sand Equivalent	30 min	30 min
Minimum Dry Density	-	80 lb/cu ft
R-value	78 min	-

* Standard bedding material shall be equivalent to 3/4-inch minus angular crushed rock aggregate base.

<u>Select Backfill</u>	<u>Sieve Size</u>	<u>% Passing</u>
	3"	100
	#4	35 - 100
	#30	20 - 100

Sand Equivalent to be 20 Min. Minimum Dry Density 110 lb./cu.ft.

<u>Pervious Material</u>	<u>Sieve Size</u>	<u>% Passing</u>
	2"	100
	#50	0 - 100
	#100	0 - 8
	#200	0 - 4

Drain Rock Washed coarse aggregate conforming to one of the following gradings:

<u>1 1/2" x 3/4"</u>		<u>3/4" x #4</u>	
<u>Sieve Size</u>	<u>% Passing</u>	<u>Sieve Size</u>	<u>% Passing</u>
2"	100%	1"	100%
1 1/2"	90 - 100%	3/4"	90 - 100%
1"	20 - 55%	1/2"	60 - 85%
3/4"	0 - 15%	3/8"	20 - 55%
3/8"	0 - 5%	#4	0 - 15%
		#8	0 - 5%

Alternative Backfill: 1-2 sack sand slurry is an acceptable alternative backfill option for privately owner utilities. This is not an acceptable backfill for water, sewer, or storm drain.

Backfill Native material as specified in "BACKFILL" Section 9.06.

The percentage composition by weight in place shall conform to the gradings previously mentioned as determined by Test Method No. California 202. Materials as delivered shall be of uniform mixture and shall be free of vegetable matter and refuse.

9.10 MEASUREMENT AND PAYMENT

Payment for utility trenching and backfill shall be included in the contract price for the utility being installed and no additional payment shall be made for excavation, bracing and shoring, dewatering, backfilling or compaction.

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SECTION 10: STORM DRAINAGE

10.1 DESCRIPTION

This work shall include the furnishing of all labor, materials, tools and equipment to construct and complete in an efficient and workmanlike manner the installation of the storm drainage system in accordance with the approved plans, these specifications and the City Standard Details.

10.2 MATERIALS

A. Pipe

1. Reinforced Concrete Pipe shall conform to the specifications of A.S.T.M. Designation C76 and shall be Class IV unless otherwise specified on the plans. Reinforcing shall be as specified in A.S.T.M. Designation C76. Portland Cement used in the manufacture of reinforced concrete pipe shall conform to the requirements of the specifications for Type II Portland Cement, A.S.T.M. Designation C150.

Tests on reinforced concrete pipe shall be required to determine conformance with "D" load and reinforcing requirements of these specifications.

Pipe samples for testing shall be furnished, without charge, by the Contractor one week in advance of construction. The cost of testing the pipe shall be borne by the Contractor. One section of pipe from each lot to be used shall be tested in accordance with the procedures outlined in A.S.T.M. C76. Lots tested shall be marked with the date made as well as by lot number for shipment to the specific project for which that lot has been tested. Any pipe arriving on the job without the appropriate markings shall be rejected and sent back to the supplier until such lot or lots can be tested and accepted for use.

In lieu of the above testing of reinforced concrete pipe, the Contractor may submit to the City Engineer the manufacturer's "Certificate of Compliance" guaranteeing the requirements of A.S.T.M. C76.

2. Cast-In-Place Concrete Pipe shall require prior approval of the City Engineer and shall conform to the requirements of Section 63 of the State Specifications except that the concrete shall be placed around the full circumference in one operation. Concrete shall be a minimum of 4000 psi.

3. Non-Reinforced Concrete Pipe shall not be allowed.
4. Polyvinyl Chloride (PVC) Pipe and Fittings shall at a minimum conform to the requirements of A.S.T.M. Designation D3034 as they apply to SDR 26 PVC pipe using an elastomeric gasket joint in a bell and spigot assembly system. The use of PVC pipe for storm drain mains shall be restricted to 12-inch through 24-inch diameters in areas of landscaping, parks, and non-traffic areas under the face of curb. PVC pipe shall not be used for street crossings. Trench depths shall not exceed 15 feet and pipe shall have a minimum cover of 2 feet.
5. High Density Polyethylene (HDPE) Pipe and Fittings shall be type S and conform to the requirements of AASHTO M294 and Section 64 of the State Specifications except as noted herein. Joints shall be integral bell and spigot or bell/bell coupler with water tight gaskets conforming to ASTM F-477. The use of HDPE pipe for storm drain mains shall be restricted to diameters 12-inch through 24-inch in areas of landscaping, and parks. HDPE pipe shall not be used for street crossings. Trench depths shall not exceed 15 feet and pipe shall have a minimum cover of 2 feet.
6. Roadway Edge Drain and associated fittings and connections shall be pre-fabricated Multi-Flow drainage pipe manufactured by Varicore Technologies® or an approved equal.

B. Manhole and Junction Boxes

For storm drains of less than 48 inches in diameter, precast reinforced concrete manholes shall be used. Manholes shall conform to the specifications of sanitary sewer manholes.

For storm drains of 48 inches and greater diameter, junction boxes shall be cast-in-place conforming to the Standard Details. Concrete shall be furnished, mixed, placed, and cured in accordance with the provisions of Section 90 of the State Specifications and shall be 4000 psi with 1-1/2 inch maximum aggregate size. The inside dimension of manholes and junction boxes shall be such as to provide a minimum of 3 inches clearance on the outside diameter of the outfall pipe and the minimum wall thickness shall be 6 inches.

All solid concrete manhole lids shall have openings for lifting hooks.

C. Catch Basins

1. Storm drain catch basins shall be pre-cast or cast-in-place conforming to the Standard Details. Concrete shall be 3000 psi with 1-1/2 inch maximum aggregate size.
2. Curb inlet shall be precast equal to Santa Rosa Model 4A or 4AC with fiberglass throat form attached or cast-in-place using the Pelican series form liner with fiberglass throat form attached.

D. Headwalls, Wingwalls, Endwalls, and Railings

All headwalls, wingwalls, and endwalls shall be of 3000 psi reinforced Portland Cement Concrete constructed in accordance with the plans and Section 51 of the State Specifications. Temporary bank protection may be provided by sack concrete rip-rap in accordance with Section 72 of the State Specifications.

E. Drainage Pump Stations

Drainage pump stations shall be allowed on an individual basis with the specific approval of the City Engineer.

10.3 INSTALLATION, GROUTING, AND BANDING

All pipe installation and pipeline construction shall be in accordance with the manufacturer's specification for the particular pipe and fitting material, unless modified by these Standard Specifications and Details.

Roadway edge drains shall be installed along all new arterial and collector roadways, and in other locations as directed by the City Engineer.

10.4 MEASUREMENT AND PAYMENT

A. Pipe

Payment for storm drain pipe complete in place shall be per lineal foot measured from center of manhole to center of manhole or catch basin, or from center of manhole to wall of outlet structure as the case may be. Measurement shall be along a line parallel to the grade of the storm drain.

Payment shall include the furnishing of all labor, materials, water, tools, and equipment required to construct and complete in an efficient and workmanlike manner the installation of storm drain pipe in accordance with the plans and these specifications.

Full compensation for all incidentals arising from this work shall be considered as included in the price paid per lineal foot measure and no further compensation shall be allowed.

B. Structures, Manholes and Catch Basins

The unit of measure for payment shall be per each unit. Payment shall be made at the bid price per item for each structure complete in place and shall include the cost of excavation, backfill, frames, covers, plates or reinforcing steel where required.

Full compensation for all incidentals, arising from this work shall be considered as included in the price paid per each unit and no further compensation shall be allowed.

SECTION 11: SANITARY SEWERS

11.1 DESCRIPTION

This work shall include the furnishing of all the labor, materials, tools and equipment to construct and complete in an efficient and workmanlike manner the installation of the sanitary sewer mains and laterals in accordance with the approved plans, standard details and these specifications.

11.2 MATERIALS

A. General

The source and supply of materials shall be approved by the City Engineer.

B. Gravity Sewer Pipe

1. Vitrified Clay Pipe shall be extra strength, bell and spigot, conforming to A.S.T.M. Designation C700 as it applies to unglazed vitrified clay pipe.
2. Polyvinyl Chloride (PVC) Pipe and fittings shall, at a minimum, conform to the requirements of A.S.T.M. Designation D3034 as they apply to SDR 35 PVC sewer pipe using an elastomeric gasket joint in a bell and spigot assembly system. The use of this pipe for sanitary sewer mains shall be restricted to 8- and 10-inch diameters and shall be used within residential areas only where there is no possibility of commercial or industrial waste flowing through the pipe. Trench depths shall not exceed 15 feet and shall be a minimum of 6 feet.
3. Ductile Iron Pipe and fittings shall conform with the requirements of ANSI/AWWA C151/A21.51 and shall have a minimum 35 mil polyethylene lining in conformance with A.S.T.M. Designation D1248. Class of pipe shall be as required for design loads.
4. Other Pipe shall be as specified by the City Engineer.

C. Pressure Sewer Pipe

Whenever the design of a sanitary sewer system includes the necessity of a sewage lift station and pressure mains, types of pipe shall be approved by the City Engineer and Sewer District for each specific case.

D. Joints and Couplings

1. Vitrified Clay Joints shall be resilient material conforming to the requirements of A.S.T.M. Designation C425.
2. Polyvinyl Chloride joints shall be bell and spigot using an elastomeric gasket which meets the requirements of A.S.T.M. Designation D3212. No solvent weld joints will be allowed.
3. Banded Rubber Couplings shall conform to the requirements of A.S.T.M. Designation C425 and shall be shear banded.

E. Fittings

All fittings shall be manufactured of the same materials as the pipe and installed in accordance with City Standard Details.

F. Laterals

1. Pipe shall be of the same type and class as that used for the main or SDR 35 PVC which will require the approval of the City Engineer.
2. Joints and Couplings for laterals shall be the same type and specifications as those used for the main.

G. Manholes

Sanitary sewer manholes shall be of precast reinforced concrete conforming to A.S.T.M. Designation C478 except that the Portland Cement shall be Type II modified cement. The manhole base, riser and cone shall have a minimum compressive strength of 4,000 psi at 28 days. Manholes shall be constructed in accordance with the Standard Details.

Iron castings for manhole covers and frames shall conform to A.S.T.M. Designation A48, Class 25 and be of the dimensions shown on the Standard Details.

All castings shall be sound and free from shrinkage cracks, blow holes, and other defects. All fins and burnt sand must be removed. Excessive porosity and spongy surfaces will constitute causes for rejection. The City Engineer shall be the judge as to whether the defects are sufficient to cause rejection.

The manhole cover shall seat evenly and firmly in the frame. Cast iron frames and covers shall be dipped or painted with asphalt which will form a tough, tenacious, non-scaling coating which does not have a tendency to become brittle when cold or sticky when hot.

H. Cleanouts

Back of sidewalk cleanouts shall be constructed in accordance with the Standard Details.

I. Conductor Pipe

Pipe used as a conductor pipe under a highway or railroad shall be welded steel pipe. Any protective lining and coating, shall be as shown on the plans or specified in the Special Provisions.

Welded steel pipe shall be manufactured of steel meeting the requirements of A.S.T.M. Designation A570, Commercial Grade. The method by which the pipe is manufactured shall comply with one or more of A.S.T.M. Specifications: A-134, A-135, or A-139. The pipe shall be welded by either the electric-resistance or electric-fusion process, with either spiral seam welded joint or straight seam welded joint. All joints shall be butt welded.

When the conductor pipe is to be installed by boring and jacking, the wall thickness shall be 1/4 inch for sizes up to and including 24 inches in diameter, and 5/16 inch for sizes 27 inches to 36 inches in diameter, unless otherwise specified.

11.3 INSTALLATION

A. Sanitary Sewer Installations

All sanitary sewer pipe installations shall be accomplished as specified herein except where modified by the requirements specific to the various types of pipeline materials specified under Section 11.02. PVC pipe shall be installed per manufacturer's recommendation or as otherwise directed by the City Engineer.

All sewer pipe shall be laid with a minimum of 12 inches vertical clearance from water and 6 inches clearance from all other improvements and utilities, unless otherwise approved by the City Engineer. Refer to the pipe cover requirements in Section 5 of the Design Standards for minimum cover requirements. Water and sewer lines shall meet minimum vertical and horizontal separation requirements as stipulated by the California Department of Public Health under Section 64572, Title 22, of the California Administrative Code. Where the horizontal separation between sewer and water lines is less than 10 feet or where a sewer line crosses over the top of a water line, special requirements shall apply for the type of pipe used and the location of joints. All pipe shall be laid to conform to the prescribed line and grade as shown on the plans and each pipe length checked to the grade line which the Contractor establishes from the grade stakes.

The grade line shall be established before any pipe is laid in the trench. For pipes with slopes greater than 1%, the string line set for trenching purposes may be used as the grade line. For pipes with slopes less than 1%, either: (1) a grade line shall be established in the bottom of the trench such that the top of each bell will touch the line when the pipe has been properly positioned or, (2) a grade line shall be established above the trench on firmly secured batter boards from which the grade of each pipe can be checked by using a grade pole.

Alternate use of commercial LASER grade setting systems in lieu of string lines specified herein are acceptable when the following requirements and conditions are met:

1. The Contractor shall have the responsibility of providing an instrument operator who is qualified and trained in the operation of the LASER and said operator must adhere to the provisions of the State of California Construction Safety Orders issued by the Division of Industrial Safety. Attention is particularly directed to Sections 1516, 1800, and 1801 of said Orders for applicable requirements.
2. All LASER control points shall be established bench marks or construction off-set stakes identified on cut sheets and set in the field for the work. LASER set up points shall be these control points or points set directly from them by instrument.

Each length of pipe shall be laid on compacted, approved bedding material as specified and shall have full bearing for its entire length between bell holes excavated in said bedding material to allow for unobstructed assembly of all bell and spigot joints. "Stabbing", "Swinging In", or "Popping On" spigot ends of pipe into bell ends will not be permitted. After jointing is accomplished, all annular spaces between pipe and bell holes shall be packed with bedding material, taking care not to damage, move or lift the pipe from its bedding support.

Adjustments of pipe to line and grade shall be made by scraping away or filling in and tamping approved material under the body of the pipe. No wedging or blocking to support the pipe will be permitted.

A sewer line, unless otherwise approved by the City Engineer, shall be laid, without break, upgrade from point of connection to existing sewer and with the bell end forward or upgrade. Pipe shall not be laid when the City Engineer determines that the condition of the trench or the weather is unsuitable. When pipe laying is not in progress, the forward end of the pipe shall be kept effectively closed with an approved temporary plug or cap.

Sewer pipes, branches, stubs, or other open ends which are not to be immediately connected, shall be plugged or capped with a standard watertight plug or cap, as approved by the City Engineer for use in the particular installation. The plug or cap shall be placed on a standard end.

Pipe, entering or leaving manholes or other structures shall have joints within 2-1/2 feet of the manhole base.

In all cases, flexibility of joints in or at the manhole base shall be preserved to prevent damage to the pipe by differential settlement.

All sewer line connections to manholes, trunk sewers, main sewers, or side sewers shall be left uncovered until after the inspection has been made. After approval of the connection, the trench shall be backfilled as specified. The City Engineer may, at his discretion, require special pipe to be laid in areas that are potentially unstable or subject to settlement.

If the sewer is to be laid in an area that is to be filled, and the cover prior to filling is less than 5 feet, the pipe shall not be laid until the area has been filled to a level 5 feet above the proposed pipe and compacted to 90% relative compaction, unless otherwise authorized by the Engineer.

When a new sewer is extended from other than an existing manhole and the first new manhole upstream of the connection establishes conditions prescribed in Section 5.01 of the Design Standards, the Contractor installing such new facilities shall also be responsible for installing backwater prevention devices in conformance with said section on existing side sewers so affected.

B. Laterals

Attention is directed to the Standard Details for additional details and requirements pertinent to lateral installations.

Whenever lateral lines are to be installed as part of the contract for the construction of the sewer main, the use of saddles will not be permitted.

That portion of any lateral line to be placed under an existing curb and gutter and/or sidewalk shall be done by boring or cutting and replacing the existing curb and gutter and/or sidewalk.

The lateral line shall have a clean-out at back edge of sidewalk as shown on the Standard Details. A cover box shall be installed. Laterals and cleanouts shall **not** be located in the driveway.

When a backwater prevention device is required under Section 5 of the Engineering Design Standards, such installations shall be made after final grading around the building has been completed and at a location where sewage can overflow without serious property damage on adjacent areas. It shall be the responsibility of the Contractor installing backwater prevention devices to see that informational notices, for present and future owners, regarding the importance of such devices are conspicuously posted upon the device and on the structure by said device.

C. Locating Wire

All sewer mains, laterals, and appurtenances shall have a direct burial wire laid above the top of pipe before backfilling. The wire shall be installed and spliced in accordance with the Standard Drawings to form a set of continuous electrical conductors throughout the pipe system.

D. Manholes

Precast Manhole Construction

All precast manholes shall be excavated and backfilled in conformance with the requirements of Section 19-3 of the State Specifications and installed as specified herein. All embedment materials under, around and at least 3 inches over all pipelines located within five feet of structure bases shall be compacted without jetting prior to barrel section placements. All precast manholes shall be constructed to subgrade prior to jetting adjoining sewer pipeline trench and/or structure backfill where such method of compaction is permitted and used.

All joint surfaces of precast sections and face of manhole base shall be thoroughly cleaned prior to setting precast sections. The various sections shall be set in preformed plastic sealing gaskets of material conforming to the requirements of FEDERAL SPECIFICATION SS-S-00210.

1. Installation of gaskets - Apply one coat of primer to clean, dry joint surface (both tongue and groove) and allow to dry. Remove the paper wrapper from one side only of the two-piece wrapper on the gasket. The outside paper will protect the gasket and assure against stretching. Before setting the manhole section in the trench, attach the plastic gasket strips end-to-end to the tongue or groove of each joint, forming a continuous gasket around the entire circumference of the manhole joint.
2. Handling of barrel sections after the plastic gasket has been affixed shall be carefully controlled to avoid bumping the gasket and thus displacing it or contaminating it with dirt or other foreign material. Any gaskets so disturbed shall be removed and replaced if damaged and repositioned if displaced.
3. Care shall be taken to properly align the manhole section with the previously set section before it is lowered into position.
4. During cold or wet weather, pass direct heat over the concrete joint surface lightly until ice, frost and moisture are removed and surface to be primed is dry and warm immediately before application of primer. Direct heat shall also be passed over plastic gasket strips immediately prior to attaching them to joint surfaces and immediately prior to insertion of tongue into groove.

The cast-in-place concrete base shall be 4,000 psi, 28 day concrete with 1-1/2 inch maximum size aggregate. It shall rest on firm, undisturbed soil, and shall be of the dimensions shown on the Standard Details.

Where sewer lines pass through manholes, the pipe shall be laid continuously as a whole pipe. After the manhole base and precast sections have been placed and sufficient time has elapsed to allow all concrete and grout to set, the top half of the pipe within the manhole shall be carefully cut off and the sides mortared. All channels so formed shall be checked with a template and shall form a smooth flowing channel at all flow depths.

Temporary covers of 3/8 inch steel plate of sufficient size to adequately cover the opening shall be placed on the cone until the base is complete and the manhole casting shall then be installed. Suitably located ribs shall be welded to the underside of the cover to hold it in place during any grading operations.

The throat of the manhole shall be made of precast concrete rings of the proper inside diameter. The minimum depth of throat permitted shall be one 3 inch ring between the cone and the frame. The maximum depth permitted shall be 18 inches of rings between the cone and frame.

When adjusting the manhole frame and cover to grade, the frame shall be wired to a 2" x 4" of sufficient length to span the excavation, and the throat completed to the right level. Whenever the space between the bottom of the frame and the top of a ring is less than three inches, the void may be filled with concrete, poured against a suitable form on the inside of the structure.

When adjusting an existing manhole to grade and the total depth of the throat from the top of the frame to the bottom of the throat exceeds 24 inches, the upper portion of the manhole shall be removed to the first full-size manhole section. The upper portion shall then be reconstructed as outlined above.

Connections to existing manholes shall be made by carefully breaking out an opening in the wall of the manhole, inserting the end of the pipe through the opening, and packing the opening around the pipe with a stiff mix of cement mortar thoroughly compacted. The mortar shall be composed of one part Type II Portland Cement and three parts clean sand. All connections shall be watertight.

Before any work is started on adjusting or repairing a manhole, the channels in the base shall be covered with strips of wood and the entire base covered with a heavy piece of canvas. This cover shall be kept in place during all work. Upon completion of the work the wood strips and the canvas shall be removed from the manhole allowing no debris to fall or remain in the manhole.

E. Inspection

The City Engineer shall at all times have access to the work during its construction, and the Contractor shall provide proper and safe facilities for such access and inspection. The City Engineer shall be furnished with every reasonable facility for ascertaining that the materials and the workmanship are in accordance with the requirements and intentions of these specifications. All work done and all materials furnished shall be subject to his inspection and approval.

The work shall be done under the supervision and to the complete satisfaction of the City and in accordance with the laws of the State of California.

The inspection of the work shall not relieve the Contractor of any of his obligations to fulfill his contract as prescribed, and defective work shall be made good and unsuitable materials may be rejected, notwithstanding that such defective work and materials have been previously overlooked by the City Engineer and accepted or estimated for payment. See Section 3.07 of the General Provisions.

The Contractor, shall, at any time when requested, submit to the City Engineer properly authenticated documents or other satisfactory proof as to his compliance with the requirements of these Specifications.

F. Testing of Sewer Lines and Manholes

All leakage tests for sewer lines shall be completed and approved after backfilling and prior to placing of permanent surfacing. All manhole testing shall conform to ASTM C1244-05a Standard Test Methods prior to backfill.

1. Cleaning and Flushing

Prior to performing a leakage test, the pipe installation shall be thoroughly cleaned. Cleaning shall be performed by the Contractor by means of an inflatable rubber ball. The ball shall be of a size that will fit snugly into the pipe to be flushed. The ball shall be placed in the last cleanout or manhole on the pipe to be cleaned, and water introduced behind it. The ball shall pass through the pipe with only the pressure of the water impelling it. All debris flushed out ahead of the ball shall be removed at the first manhole where its presence is noted. If any wedged debris or damaged pipe shall stop the ball, the Contractor shall remove the obstruction. When a new sewer is connected to an existing line, cleaning and flushing shall be carried out to the first existing manhole downstream from the point of connection.

2. PVC Deflection Test

After the PVC pipe is installed, cleaned, and ready to be air tested, according to our specifications, the pipe deflection shall be checked by means of a deflection mandrel, in the presence of the City Engineer. A rigid mandrel, with a circular cross section having a diameter, as indicated by the following table, shall be pulled through the pipe by hand. The minimum length of the circular portion of the mandrel shall be equal to the nominal inside diameter of the pipe.

Nominal Average Diameter Inches	Average Inside Diameter Inches	Base Inside Diameter Inches	7.5% Deflec. Mandrel Diameter Inches
8	7.891	7.665	7.09
10	9.864	9.563	8.84

* From the Uni-Bell Plastic Pipe Association Handbook of P.V.C. Pipe, Third Printing - May 1979.

Any section of PVC pipe that does not permit passage of the deflection mandrel will not be accepted, and said section shall be properly repaired or replaced, and remandrelled, as directed by the City Engineer. All other testing shall be performed as required in these specifications for sanitary sewer pipe. If, because of the additional required testing, any section of PVC pipe has to be repaired or replaced, that section shall be remandrelled again as directed by the City Engineer.

3. Low-Pressure Air Test

After completing backfill of a section of sewer line, the Contractor shall at his expense, conduct a Line Acceptance Test using low pressure air. The test shall be performed using the equipment listed below, according to stated procedures and under the supervision of the City Engineer.

EQUIPMENT: Equipment used shall meet the following minimum requirements:

- a. Pneumatic plugs shall have a sealing length equal to or greater than the diameter of the pipe to be inspected.
- b. Pneumatic plugs shall resist internal test pressures without requiring external bracing or blocking.
- c. All air used shall pass through a single control panel.

- d. Three individual hoses shall be used for the following connections.
- 1) From control panel to pneumatic plugs for inflation.
 - 2) From control panel to sealed line for introducing the low pressure air.
 - 3) From sealed line to control panel for continually monitoring the air pressure rise in the sealed line.

PROCEDURE: At least two minutes shall be allowed for the air pressure to stabilize.

After the stabilization period (3.5 psig minimum pressure in the pipe), the air hose from the control panel to the air supply shall be disconnected. The portion of line being tested shall be termed "Acceptable" if the time required in minutes for the pressure to decrease from 3.5 to 2.5 psig is not less than the time shown for the given diameters in the following table:

<u>Pipe Diameter in Inches</u>	<u>Minutes</u>
4	2.0
6	3.0
8	4.0
10	5.0

If the installation fails to meet this requirement, the Contractor shall, at his own expense, determine the source of leakage. He shall then repair or replace all defective materials and/or workmanship and perform the air test as many times as necessary to achieve an acceptable test.

SAFETY: The air test may be dangerous if, because of ignorance or carelessness, a line is improperly prepared. It is extremely important that the various plugs be installed and braced in such a way as to prevent blowouts. Since a force of 250 lbs. is exerted on an 8 inch plug by an internal pipe pressure of 5 psi, it should be realized that sudden expulsion of a poorly installed plug or of a plug that is partially deflated before the pipe pressure is released can be dangerous.

As a safety precaution, pressurizing equipment should include a regulator set at 10 psi to avoid over-pressurizing and damaging an otherwise acceptable line. No one shall be allowed in the manholes during testing. If the test is not passed in two trials, the leak shall be located and repaired to the satisfaction of the City Engineer and the line shall be retested at the Contractor's expense.

The pressure gage used shall be supplied by the Contractor and shall have minimum divisions of 0.10 psi, and shall have an accuracy of 0.04 psi. Accuracy and calibration of the gage shall be certified by a reliable testing firm.

4. T.V. Inspection

Prior to acceptance of any sanitary sewer line by the City, said line shall be inspected internally by television as outlined below at the contractor's expense.

Defects such as high and low spots, joint separations, offset joints, chipped ends, cracked or damaged pipe, infiltration points and debris in lines shall be corrected by the contractor at his expense. For joint separations, low spots and chipped ends, the following maximum acceptable limits will apply for eight and ten inch pipes:

Joint separations - 1/2 inch

Low spots - 1 inch maximum depth

Chipped ends - 1/4 inch

For pipe larger than 10 inches specific maximum limits will be specified by the City and Sewer District for each project.

- a. The complete job is ready for television inspection when the following work has been completed:
 - 1) All sewer pipelines are installed and backfilled.
 - 2) All structures are in place, all channeling is complete and pipelines are accessible from structures.
 - 3) All other underground facilities, utility piping and conduits are installed.
 - 4) Final street subgrading is complete and ready for asphaltic concrete surfacing.
 - 5) Pipelines to be inspected have been preliminarily balled and flushed or cleaned with a high pressure cleaner.
 - 6) Final air test has been completed and approved.
- b. When the above work is complete, the Contractor shall arrange for the television inspection.
- c. The Contractor of the project will notify the City in writing as to the scheduled date of the television inspection.
- d. After conditions 1 through 6 as outlined above are met, the entire job will be initially televised and recorded in digital format. The digital copies and reports shall be delivered to the City.

- e. Video inspection shall be in digital format that is compatible with Wincann America, and the audio and video portions shall be free of electrical interference and excessive background noise.
- f. The audio report shall be recorded by the operating technician in digital format as they are being produced and shall include the location of the sewer, the names or numbers of the manholes involved, the direction of travel and a description of all lateral locations and conditions in the sewerline as they are encountered and their locations.
- g. In addition to the audio report, a written report shall be required listing all the information required in the audio report.
- h. The Contractor will be notified in writing of any deficiencies revealed by the television inspection that will require repair. If corrective work is indicated and the Contractor wishes to view the digital copy, he shall contact the City to set a time for viewing with the City Engineer.
- i. Corrective work shall be done. The cost shall be borne by the Contractor.
- j. Those portions of the pipeline system that have been corrected must be retelevised and recorded and the digital copy and reports delivered to the City.
- k. The procedure outlined in conditions "A" through "G" above will be repeated until all deficiencies observed by television inspection have been corrected to the complete satisfaction of the City.
- l. All digital copies and reports become the property of the City to be used as "As Built" for future reference.

5. Sewer Manhole Testing

- a. Testing procedures shall be specified in ASTM C1244 (latest revision)-Standard Test Method for Concrete Sewer Manholes by Negative Air Pressure (Vacuum) Test.
- b. The test head shall be placed at the top of the manufactures' recommendations.
- c. A vacuum of 10 inches of mercury shall be drawn on the manhole, the valve on the vacuum line of the test head closed, and the vacuum pump shut off.
- d. The manhole shall pass if the time for the vacuum reading to drop from 10 inches of 9 inches does not exceed the allotted time per ASTM C1244.

11.4 MEASUREMENT AND PAYMENT

A. Pipe

Payment for sanitary sewer pipe complete in place shall be per lineal foot measured from center of manhole to center of manhole following a line parallel to the grade of the sewer. Payment shall include the furnishing of all labor, materials, water, tools, and equipment required to construct and complete in an efficient and workmanlike manner the installation of the sewer pipe in accordance with the plans and these specifications.

Full compensation for all incidentals arising from this work shall be considered as included in the price paid per unit of measure and no further compensation shall be allowed.

B. Structures & Manholes

The unit of measure for payment shall be per each unit. Payment shall be made at the bid price per item for each structure complete in place and shall include the cost of excavation, backfill, frames, covers, plates, or reinforcing steel where required.

Full compensation for all incidentals arising from this work shall be considered as included in the price paid per unit of measure and no further compensation shall be allowed.

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SECTION 12: WATER DISTRIBUTION

12.1 DESCRIPTION

This work shall include the furnishing of all the labor, materials, tools and equipment to construct and complete, in an efficient and workmanlike manner, the installation of the water lines in accordance with the approved plans, these specifications, and the Standard Details.

12.2 MATERIALS

A. Mains

1. Pipe

- a. Polyvinyl Chloride (PVC) Pipe shall be manufactured in accordance with AWWA C900 (4 in. through 12 in.) or AWWA C905 (14 in.). All PVC pressure pipe shall have a cast-iron pipe equivalent outside diameter unless noted otherwise. C900 PVC pressure pipe shall have a pressure class rating of 200 PSI and a dimension ratio of 14. C905 PVC pressure pipe shall have a pressure class rating of 235 PSI and a dimension ratio of 18. PVC pressure pipe shall have gasketed joints with an integral bell end. Gaskets shall be part of a complete pipe section and purchased as such. Maximum pipe length not to exceed 20 feet.
- b. Ductile Iron Pipe (DIP) shall be manufactured in accordance with AWWA C151 unless otherwise specified. The weight, class or nominal thickness, and casting period shall be shown on each pipe. Laying length shall be the manufacturer's standard length. The exterior surface shall be polyethylene wrapped in accordance with AWWA C105.
- c. Other pipe shall not be allowed except as specified by the City Engineer and shall conform to applicable specifications for the specific pipe.

2. Fittings

Fittings shall be flanged, mechanical joint, or push-on, as designated by the City Engineer. Mega-lug type fittings may be allowed by the City Engineer. Fittings are acceptable as manufactured by American Cast Iron Pipe Company, Griffin Pipe Products Company, Tyler Pipe Utilities Division, Union Foundry, or U.S. Pipe and Foundry. Flange bolts and nuts to be ASTM A-276 Type 304 stainless steel. All nuts and bolts to be ASTM A-276 Type 316 stainless steel.

a. PVC

Fittings for PVC pipe shall be ductile iron rated for 250 PSI working pressure minimum, and conforming to ANSI/AWWA Specification C-153 and its latest revisions. Fittings shall have a bituminous outside coating as specified above and shall be cement lined and sealed in accordance with ANSI/AWWA C-104 utilizing NSF-61 approved materials. PVC push-on fitting will not be allowed except for the rubber-gasket PVC coupler meeting the pressure class ratings.

b. DIP

Fittings for DIP pipe shall conform to AWWA C110 or AWWA C153, and have the same outside polyethylene wrapping specified for ductile iron pipe.

3. Valves and Valve Boxes

a. All distribution valves in sizes 4 inch through 12 inch shall be of the iron body, non-rising stem, resilient-wedge type as per AWWA Standard C509 and the specific requirements outlined in these specifications:

- 1) Valves shall open left and be provided with 2-inch square wrench nuts.
- 2) Valves shall have full opening flow-way of equal diameter as the nominal size of connecting pipe.
- 3) All internal and external ferrous metal surfaces shall be fully coated with epoxy as per AWWA C550, to protect all seating and adjacent surfaces from corrosion and prevent build-up of scale or tuberculation.
- 4) All valves adjacent to tees and crosses shall have a flanged connection to the tee or cross. Flange bolts and nuts to be ASTM A-276 Type 304 stainless steel.
- 5) Valves shall have two O-ring stem seals.
- 6) Valves shall be so designed that complete ZERO leakage may be effected with flow in either direction at pressures up to 200 psi, which shall be the working water pressure rating of the valves, and they shall be suitable for throttling if required.

- b. All valves in sizes larger than 12 inches shall be butterfly valves (unless otherwise stated in the plans and specifications) and shall meet the following requirements:
 - 1) AWWA C504.
 - 2) 150 psi (Class 150 B) flow 16 fps.
 - 3) Shaft seal "O" rings.
 - 4) Body and disc to be ductile-iron suitable for buried installation.
 - 5) All internal and external ferrous metal surfaces shall be fully coated with epoxy as per AWWA C550.
 - 6) Key operated clockwise to close, having two inch square operating nut. Locate valve stem on side of main nearest curb.
 - c. Valves currently approved by the City Engineer are:
 - 1) American Flow Control
 - 2) Clow
 - 3) Mueller
 - d. Valves boxes shall be Christy Concrete Products No. G-5, or equal.
 - e. If distance from top of valve to finish grade is more than 8 feet, extension of valve riser shall be required to meet a minimum distance of 4 feet.
4. Fire Hydrants

Fire hydrant outlets shall include one 4-1/2 inch pumper nozzle and one or two 2-1/2 inch hose nozzles (depending on location), all with "National Standard" threads.

Fire hydrants shall be as follows:

- a. Residential
Clow 850 or 950, Long Beach 610 or 425 or Mueller A-481-F.
- b. Commercial/Industrial
Clow 860 or 960, Long Beach 615 or 430 or Mueller A-481-H.

Hydrant risers shall be Clow/Rich No. 100 with localized break-off scoring on the exterior near each flanged end. Even though not indicated on the plans, every fire hydrant installation shall have a six inch resilient-wedge gate valve, as described in paragraph 3A, installed on the lateral from the main. Refer to Standard Details for installation. Top hydrant riser shall be installed with breakaway-style bolts at connection to hydrant.

B. Services

Services shall be installed in conformance with the Standard Details. All fittings shall comply with Section 116875 of the California Health and Safety Code.

1. Pipe - Service lines between the water main and the property line shall be soft-rolled tube-type K copper meeting the requirements of A.S.T.M. Designation B88.
2. Corporation Stops
 - a. PVC water mains - Corporation stops for 1 inch copper services shall be I.P. Threaded by compression connection threaded into a service saddle. Direct service tap will not be allowed into a PVC water main. Corporation stops shall be Jones J-1935, Mueller B-25028, Ford FB-1100 or approved equal.
 - b. Existing ACP water mains - Corporation stops for 1 inch copper services shall be I.P. Threaded by compression connection threaded into a service saddle or approved equivalent for compression connection.
 - d. Corporation stops for 1 1/2 and 2 inch services on PVC and existing ACP shall be Ford FB-500, Jones J-1943, Mueller H-10012, or approved equivalent for compression connection threaded into a service saddle.
3. Service Saddles
 - a. PVC water mains - Service saddles for 3/4, 1, 1-1/2, or 2 inch services shall be I.P. Threaded Ford 202 BS, Jones J-969, Mueller BR2S Series or approved equivalent. Saddles shall be I.P. Threaded, and shall be two strap stainless steel bands.
 - b. Existing ACP water mains - Service saddles for 1-1/2 or 2 inch services shall be Ford 202 B, Jones J-979, Mueller BR2S series or approved equivalent. Straps shall be I.P. Threaded, and shall be two strap bronze bands.
4. Angle Meter Stops

- a. 3/4 and 1 inch: Ford BA43-332W (3/4"), Ford BA43-444W (1"), Jones J-1963W, Mueller B-24258 with lock wings, or approved equivalent.
- b. 1-1/2 and 2 inch: Ford BFA13-666W (1-1/2"), Ford BFA13-777W (2"), Jones J-1974W, Mueller B-24286 with lock wings, or approved equivalent.

5. Unions

No union or splice shall be allowed for each 1 inch service installation 60 feet or less. Unions shall be Ford C44-33 (3/4"), Ford C44-44 (1"), Jones J-2609, Mueller H-15403, three piece union or approved equivalent. Services of 1-1/2 and 2 inch shall be Ford C44-66 (1-1/2"), Ford C44-77 (2"), Jones J-2609, Mueller H-15403, three piece union or approved equivalent.

C. Backflow Prevention Devices

All backflow prevention devices shall be approved by the California Department of Public Health and the USC Foundation for Cross Connection Control.

Backflow prevention devices shall be delivered to the project site as a unit assembled by the manufacturer.

Backflow prevention devices for lines larger than 2" shall be painted black. Devices for lines 3" and smaller shall be enclosed using a steel hinging cage that allows unobstructed access to the backflow device. All devices shall be covered with a thermal blanket. Enclosures shall be approved by the City Engineer prior to installation.

All backflow prevention devices shall be tested and certified by an AWWA certified technician. The certification shall be submitted to the Public Works Inspector prior to the Building Department final inspection for project acceptances or issuance of Certificate of Occupancy. No service shall be provided until this certification is submitted.

INSTALLATION

A. Handling of Materials

Water pipe, fittings, hydrants and valves must be carefully handled at all times. Only safe, suitable and proper equipment and appliances shall be used for the loading, hauling, unloading, handling and placing of materials. Special care shall be exercised so that the coating on pipe, valves and fittings will not be damaged. If such damage should occur, the coating shall be repaired to the satisfaction of the Engineer. Chain slings will not be permitted. Pipe loaded on trucks or stacked one upon another shall be supported on wooden blocking. Pipe handled on skidways shall not be skidded or rolled against pipe already on the ground.

B. Laying Pipe

Water and sewer lines shall be installed so as to meet minimum horizontal and vertical separation standards stipulated by the California Department of Public Health under Section 64572, Title 22, of the California Administrative Code. Where the horizontal separation between sewer and water lines is less than 10 feet or where a sewer line crosses over a water line special requirements shall apply for the type of pipe used and the location of joints.

Each section of pipe and each fitting shall be thoroughly cleaned out before it is installed. All pipe, fittings, valves, etc., shall be carefully lowered into the trench by suitable tools or equipment, in such a manner as to prevent damage to the pipe, lining, coating, fitting or other appurtenances. Under no circumstances shall pipe accessories be dropped into the trench.

C. Installation

When joining PVC pressure pipe to fittings and accessories, pipe ends shall be cut square, deburred, beveled and cleaned in accordance with pipe manufacturer's recommendation. Bevel requirements for PVC pipe bells are the same as a factory bevel. If mechanical joint fittings are used, PVC pipe ends shall be square cut. A short section of PVC pipe (3' to 6' long) shall be installed leading into and out of all fittings or valves. Joint restraint devices for PVC pipe will not be allowed in lieu of cast-in-place thrust blocks as per the standard detail. Weight of metallic fittings and valves shall not be carried by the PVC pipe. For pipe sizes 4" through 12", the weight of the metallic fittings and valves shall be supported by either redwood blocks, precast concrete slab or blocks, or by a cast-in-place concrete cradle. For pipe sizes larger than 12", the weight of the metallic fittings and valves shall be supported by a cast-in-place concrete cradle with 3/4" stainless steel anchor rods as per the standard detail.

The pipe shall be laid true to line, with no visible change in alignment at any joint, unless curved alignment is shown on the plans.

When curved alignment is shown on the plans the maximum deflection at any joint shall not exceed the manufacturer's recommendation for the type of pipe and joint being used.

Thrust blocks of 3000 psi concrete shall be cast-in-place at all bends of 22-1/2° or more, behind each tee, or each cross which is valved in such a manner that it can act as a tee, and at the back of fire hydrants. The thrust block shall extend from the fitting to undisturbed soil, shall be kept clear of the joints, and shall be of such bearing area as to assure adequate resistance to the force to be encountered. In lieu of the above, movement may be prevented by the use of pipe collars and stainless steel rods. Thrust blocks will be installed in conformance with the Standard Details. When straps are used to secure thrust blocks, they shall be stainless steel.

Whenever pipe laying is discontinued for short periods, or when work is stopped at the end of the day, the open ends of all mains shall be closed with

water-tight plugs. The plug shall not be removed unless or until the trench is dry.

Valves shall be set plumb and properly fitted to the adjacent sections of the main. A valve box shall be installed over each valve as per standard detail.

D. Locating Wire

All water mains, services, and appurtenances shall have a direct burial #10 wire laid above the top of pipe before backfilling. The wire shall be installed and spliced in accordance with the Standard Drawings to form a set of continuous electrical conductors throughout the pipe system.

E. Bedding Material for PVC Pressure Pipe

Bedding material for PVC shall be sand or 3/4 - inch minus angular crushed rock aggregate base around the pipe with a minimum of 12" above the pipe.

F. Installation of Service Lines

The location of water service lines shall be on the center line of the lot and not within the driveway area. Refer to Standard Details for installation.

The water service line shall be considered as a part of the main for the purpose of hydrostatic test.

G. Connection to Existing Mains

The Contractor shall make connections to existing mains where indicated on the plans. The City shall make all wet taps. The newly installed facilities are to be kept isolated from the City system until bacteriologically acceptable. If isolation is provided by a closed valve, pressure testing for leakage in the new facilities shall be conducted only after bacteriological acceptance.

The City Engineer shall designate method and sequence of connecting to existing mains to minimize contamination danger. Connections to existing valves prior to obtaining satisfactory leakage and pressure tests of the new facilities shall be at the Contractor's risk. The City will assume no responsibility for the water tightness of existing valves.

Service in existing mains can be interrupted only upon authorization of the City Engineer who will specify time and duration of the outage. The Contractor shall notify all affected users in writing at least 48 hours in advance of service interruption, using printed forms provided by the City Engineer. The Contractor shall also request the City Engineer to notify the City Water Division personnel at least 48 hours in advance to schedule valve closing for service interruption.

Manipulation of existing valves shall only be done by or under the direction of City Water Division personnel.

H. Air Reliefs and Blowoffs

Air relief and blowoff assemblies shall be located as shown on the plans and installed in accordance with the Standard Details.

I. Testing of Water Mains

After the pipe has been backfilled to 12 inches over the top, each section of the pipe to be tested shall be slowly filled with water and all air shall be expelled from the pipe. The release of the air can be accomplished by opening hydrants and service line cocks at the high points of the system and the blowoffs at the dead ends. The valves controlling the admission of water into the section of pipe to be tested should be opened wide before shutting the hydrants or blowoffs. After the system has been filled with water and all air expelled, all valves controlling the section to be tested shall be closed and the line be allowed to set for a period of not less than 24 hours.

A pressure test is required by the contractor so all exposed pipe, fittings, valves, hydrants, and joints can be carefully examined. Any defective pipe, fittings, valves, or hydrants discovered during the test shall be removed and replaced with sound material and the test repeated until the system is proved satisfactory. Test duration shall be 2 hours. The test water shall be left in the main until backfilling operations are completed.

After backfilling is completed and just prior to the acceptance of the street aggregate base grade, a hydrostatic and leakage test shall be performed on the water main for acceptance.

For ACP water main a 4 hour hydrostatic test is performed and the allowable leakage in gallons is equal to: Diameter (inches) x Length (feet) X 0.00158. (Example: 400 feet of 8" line = 5.06 gallons allowable leakage.) For PVC water main a 2 hour hydrostatic test is performed and the allowable leakage in gallons is equal to: Diameter (inches) X length (feet) X 0.00158 / 8. (Example: 1000 feet of 8" line - 1.58 gallons allowable leakage.) The testing pressure for the pressure and leakage test shall be 150 pounds per square inch or the service pressure plus 50 pounds per square inch, whichever is greater. The testing pressure for the section being tested at the highest elevation shall not be less than 25 pounds per square inch below the testing pressure.

City will assume no responsibility for the water tightness of any water valves during the pressure and leakage test.

J. Sanitizing

All lines, mains, and branches shall be disinfected by chlorination in accordance with AWWA Standard C651- 05 "Disinfecting Water Mains" and as herein specified. Chlorine may be a one percent solution (containing 10,000 parts per million available chlorine) or may be obtained by use of dry chlorine in tablet form firmly attached to interior walls of the pipe.

The weight of chlorine or chlorine compound required to make a 1 percent chlorine solution is as follows:

<u>Product</u>	<u>Compound</u>	<u>Water</u> (in gals.)
High-Test Calcium hypochlorite (65-70% Cl)	1 lb.	7.50
Chlorinated Lime (32-35% Cl)	2 lb.	7.50
Liquid Laundry Bleach (5.25% Cl)	1 gal.	4.25
Liquid Chlorine (100% available Chlorine)	0.62 lb.	7.50

The required concentration of chlorine in the pipe is 25 parts per million. This concentration may be attained by adding 2-1/2 gallons of the chlorine solution to 1,000 gallons of water.

The required concentration of chlorine in the mains may be obtained by the use of HTH tablets as produced by Olin Mathieson in the following quantities:

HTH TABLET - (70%) DOSAGE
Number of tablets per length of pipe

<u>Length of Section</u>	<u>Diameter of Pipe</u>					
	6"	8"	10"	12"	16"	20"
13'	1	2	3	3	6	9
18'	2	2	3	5	8	13
20'	2	3	4	5	9	14
30'	2	4	5	7	13	14
36'	3	5	6	9	16	25
40'	3	5	7	10	18	28
100'	7	13	17	25	45	70

1. Liquid Chlorine Solution Method

Flush all foreign matter from mains, branch runs, hydrant runs and installed services. Introduce liquid chlorine solution at appropriate locations to assure uniform distribution through the facilities at the proper concentration. Installed copper service lines shall not be used to convey the concentrated solution to the mains. The sanitizing solution shall be retained in the facilities for a period of 24 hours after which each service, hydrant run, branch run and dead end shall be flushed until the residual chlorine is less than 0.2 of one part per million.

2. HTH Tablet Method

Tablets are to be fastened to the inside top surface of each length of pipe using hot tar or "Permatex No. 2" at time of pipe laying. Tablets shall not be available at any time for casual pilferage by the general public or by children. The new facilities are to be slowly filled with water. Air is to be exhausted from each dead end, branch run, hydrant run and installed service. Retain water for a period of 24 hours after which each service, hydrant branch run and dead end shall be thoroughly flushed to clear foreign matter and until the residual chlorine concentration is less than 0.2 of one part per million.

12.3 MEASUREMENT AND PAYMENT

Water main shall be measured horizontally by the linear foot through valves and fittings. Valves shall each be measured as one completed installed unit in operable condition including valve, anchor block, valve box and riser. Fire hydrants shall each be measured as one complete installed unit in operable condition including hydrant, break-off riser, bury, thrust block, 6 inch valve, and piping from main to bury. Air relief and blowoff assemblies shall each be measured as one complete unit in operable condition including valve, valve box, curb stop, corporation stop, service clamp and any other necessary fittings. Fittings, anchors, and thrust blocks shall not be measured for payment.

The contract price for water main and appurtenances shall constitute full compensation for all labor, materials, and tests necessary to furnish and install the main and appurtenances in accordance with the drawings and specification.

SECTION 13: PLANTING

13.1 DESCRIPTION

This work shall consist of furnishing all labor, materials, and equipment required to grade, prepare soil, fertilize, plant, and complete the landscape as shown on the approved plans, specifications and the Standard Details.

13.2 PRESERVATION OF PROPERTY

The planting operations shall result in no damage to existing site improvements and plantings. The Contractor shall be responsible for any damage resulting from his operations, and shall repair or replace such damage at his own expense. Vehicles of any kind shall not be allowed to pass over curbs, sidewalk, planting areas, etc., unless proper protection is provided.

13.3 SOILS TESTING

The Contractor shall obtain soils tests for all planting areas after completion of finish grading and prior to the start of soil preparation work. Tests shall be performed by an approved soils testing laboratory and include a fertility and suitability analysis with written recommendations for pre and post landscape installation. The soils report recommendations supersede minimum requirements of plans and specifications.

13.4 PERSONNEL

Planting and seeding operations shall be performed by personnel familiar with planting procedures and under supervision of a qualified contractor's representative.

13.5 WEATHER

No planting shall occur during weather conditions which will adversely affect materials or when soil is in a muddy condition.

13.6 INSPECTIONS

Inspections of planting operations will be required. The Contractor shall contact the City of Fairfield at least 48 hours (two working days) in advance of an anticipated inspection. An inspection will be required at each of the stages below:

- A. Upon completion of finish grade and prior to commencement of soil preparation, for acceptance of finish grades and taking of soils samples.
- B. Reinspection of finish grade following soil amendment work.
- C. When plants are spotted for planting before holes are dug.

- D. When planting and all other specified work has been completed.
- E. During application of pre-emergent herbicides.
- F. At start of 90-day maintenance period.
- G. At the end of 90-day maintenance, prior to acceptance of the project for maintenance by the City. This acceptance for maintenance will be confirmed in writing by the City of Fairfield Public Works Department.

Note: 90-day maintenance is separate from the overall Project Final.

13.7 SUBMITTALS

The following written certifications are required to be submitted to the Inspector upon delivery of the respective materials to the job site:

Total quantity of commercial fertilizer by type

Total quantity of soil amendments and conditioners by type

Total quantity of seed

Total quantity of mulch

13.8 MATERIALS

A. Imported Topsoil

Topsoil shall be of loamy character containing a normal amount of organic matter. It shall be free of refuse, roots, heavy and stiff clay and stones larger than one inch in size. Soil shall consist of the following: Sand - between 45 and 52 percent, Silt - between 26 and 50 percent, Clay - between 6 and 26 percent. Sand shall be defined as ranging in size from 2 to 0.05 mm in diameter; silt from 0.05 to 0.002 mm; and clay less than 0.002 millimeters.

B. Soil Amendment

1. Soil amendment shall be delivered to the job site bearing the warranty of the producer for the grade furnished and shall be uniform in composition and free flowing. Grade of particles shall be 0 to 1/4 inch with 15% maximum proportion of 1/4 inch particles.
2. Soil amendment shall be nitrogen stabilized (1-0-0) and shall be Nursery Mix, as distributed by Sun-up Forest Products Inc., Sacramento, CA or City approved equal. Supply sample of proposed substitutes to the City Engineer within two weeks of award of contract with laboratory organic amendment analysis.

3. Soil conditioners shall be agricultural grade gypsum, soil sulfur, and iron sulfate.

C. Fertilizer

Fertilizer shall be a commercial inorganic fertilizer in the granular or pellet form. Fertilizer shall be delivered to the site in containers labeled in accordance with the applicable State of California regulations, bearing the warranty of the producer for the grade furnished, and shall be uniform in composition, dry and free-flowing. Material which is caked or otherwise damaged shall not be used.

1. Turf areas and Planting Areas

Prill type with analysis of 6-20-20 (6% Nitrogen, 20% Phosphorus, and 20% Potassium) for soil preparation and/or 16-6-8 for plant maintenance.

2. Planting Tablets

21 gram size, tightly compressed, long lasting, slow release fertilizer tablets with a potential acidity of not more than 5% and with an analysis of 20-10-5.

Any substitutions shall be submitted to the City Engineer for approval within two weeks of award of contract. Include a complete analysis.

D. Herbicide

Submit written chemical weed control advisory recommendation by a licensed Pest Control advisor within two weeks of the award of the contract for approval by the City Engineer.

E. Seed

Seed mixture shall be 98 percent pure and noxious weed free, with a minimum of 88 percent germination. All turf seed shall be re-cleaned Grade A "new crop" seed, delivered in the original unopened containers, and shall bear a guaranteed analysis and dealer's label. The dealer may mix the seed provided a guaranteed statement of composition of mixture and percentages of purity and germination of each variety is attached to the sealed container. The seed shall be pre-treated with a pre-emergent fungus preventative such as "Thiram", or other City approved equal, in accordance with manufacturer's specifications. The seed containers shall be stored immediately in a dry, weather and damp proof structure. Any seed which has become wet, moldy or is otherwise damaged in transit or storage will not be acceptable. Supplier shall be approved by the City Engineer prior to delivery.

F. Hydroseeding Materials

1. Seed - as specified on the plans or in the Special Conditions.

2. Fertilizer - use 16-6-8, 400 lbs per acre.
3. Cellulose - Cellulose shall be certified to indicate that laboratory and field testing of the product has been accomplished and that it meets all of the requirements below. The mulch shall be fibrous wood cellulose containing no growth or germination inhibiting factors. It shall be manufactured so that after agitation in the slurry tanks with fertilizer, seed, water and other additives, the fibers in the material will become uniformly suspended to form a homogeneous slurry. When hydraulically sprayed on the ground the material will form a blotter-like ground cover. After application the mulch will allow the absorption of moisture and allow rainfall to percolate to the underlying soil without causing erosion. Weight specifications of this material from suppliers and for all applications shall refer only to air dry weight on the fiber material. Each package of the cellulose fiber shall be marked by the manufacturer to show the air dry weight content. Mulch shall be applied at 1800 lbs per acre.
4. Binding Agent - Dry powder organic concentrate, such as Ecology Controls M-binder or City approved equal.
5. Water - Water for hydromulching shall be clean potable water added to the slurry mixture in sufficient amount to spread uniformly the required quantity of hydromulch solids (approximately 3,000 gallons per acre).
6. Equipment - Hydromulching equipment used for the application of the seed, fertilizer and slurry of prepared wood pulp shall be of the type normally used in such operations and shall be approved by the City Engineer.

G. Plant Stock

Plants shall be the variety, quantity, and size indicated on the drawings. Quality and size shall conform to the State of California Grading Code of nursery stock, No. 1 grade. Nursery grown stock only shall be used unless otherwise specified, and it shall be free from insect pests and diseases.

All plants shall be true to species and size indicated, and shall be tagged in accordance with the standard practice recommended by the American Association of Nurserymen; however, determination of plant species or variety will be made by the City Engineer and his decision shall be final.

Plants shall be healthy, shapely, and well rooted, and roots shall show no evidence of having been rootbound, restricted or deformed. Root condition of plants in containers will be inspected by the City Engineer and condition determined by removal of earth from the roots of not less than two plants of each species or variety from each source. If the sample plants are found to be defective, the City Engineer reserves the right to reject the entire lot or lots of plants represented by the defective samples. All plants rendered unsuitable for planting because of this inspection shall be immediately removed from the site.

Each plant shall be handled and packed in the approved manner for that species or variety, and all necessary precautions shall be taken to ensure that the plants will arrive at the work site in proper condition for successful growth without scarred or broken branches. Trucks used for transporting plants shall be equipped with covers to protect plants from windburn.

Substitutions will not be permitted, unless proof is submitted to the City Engineer that any plant specified is not available. The City will then consider the use of the nearest equivalent variety. Such proof shall be substantiated and submitted in writing by the Contractor within 35 days after the effective date of the Notice to Proceed.

Plants shall have straight trunks with the leader intact, undamaged and uncut. At no time shall the Contractor prune the leader without the prior written approval of the Public Works landscape inspector. Trees shall be well tapered in the trunk so that they will stand alone without the support of the nursery stake. Branching on the main leader shall be in alternate locations and well spaced apart with no severe crossing of the branches. All old abrasions and cuts shall be completely calloused over. All plants shall be measured when their branches are in their normal position. Height and spread dimensions indicated refer to the main body of the plant and not from branch to branch or root tip to top. Sizes shown are before pruning. Plants shall not be pruned prior to delivery except upon approval of the City Engineer.

Groundcover shall be rooted plants from flats unless otherwise approved by the City Engineer.

H. Mulch

Mulch shall be Walk-On Bark as distributed by Cement Hill Ready-Mix or Idaho walk-on bark as distributed by Sun-up. Submit a sample to the City for approval.

I. Backfill

Soil used for backfill of plant pits shall be enriched using the following blend:

- 1 CY on-site soil
- 2 lbs 16-6-8 commercial fertilizer
- 3 lbs Gypsum
- 2 lbs Iron Sulfate

J. Tree Stakes and Ties

Tree stakes shall be 2" by 10' straight, close grained lodgepole pine, pointed at one end. Stakes shall be free from knots, checks, splits or disfigurements. Paint the stakes prior to treatment with Copper Napthanate which shall penetrate stake surfaces to a minimum depth of 1/4 inch.

Tree ties shall be "Gro-strait" or City approved equal.

Earth anchors for specimen trees shall be equal to the "Duckbill" as supplied by Landscape Supply, Inc., Santa Clara, CA. The size of the trees to be supported shall determine the necessary holding capacity of the anchors used. The anchor holding capacity shall be approved by the City Engineer.

K. Deep Rooting Containers

All trees planted within 8' of pavement or of a shallow rooting variety within 10' of pavement shall be provided with a root barrier. The barrier shall be placed along the curb, sidewalk and/or other pavement and shall extend 6' along each face of pavement. When the area where the tree is to be planted is less than 6' square, a box type barrier may be used. This barrier shall have a minimum bottom opening of 30". If panels are used there shall be a minimum of four 24" panels for a 15 gallon tree and they shall extend a minimum of 23" into the ground. Panels shall not surround the tree if there is sufficient room to extend the panels along the edge of the pavement.

L. Deep Root Water Tubes

All trees shall be provided with two 24" long by 4" diameter perforated pipe deep root under tubes. They shall be wrapped with a fabric to prevent soil intrusion while allowing passage of water and filled with 1/2" to 1" drain rock.

13.9 PLANTING

A. Soil Preparation and Fine Grading

Prior to any planting bed preparation or planting, finish grade all planting areas, fill as needed or remove excess dirt. Install all irrigation. Float all areas to a smooth uniform grade as indicated on the Grading plans. Slope all planting areas to drain. Roll, scarify, rake and level as necessary to obtain true, even planting surfaces. Finish grades shall be approved by the City Engineer and all soils testing completed prior to any planting work. All planting areas shall be thoroughly wet down and sprinkler/emitter coverage and operation inspected and approved. Allow soil to dry so as to be workable. Finish grades shown on the plans are given in feet and decimals of feet. Slope uniformly between given spot elevations. Grades not otherwise indicated shall be uniform levels or slopes between points established by pavings, curbs or catch basins. Minor adjustments of finish grade shall be made at the direction of the City Engineer if required. All grades shall provide for natural runoff of water without low spots or pockets. Flow line grades shall be accurately set and shall not be less than 2 percent gradient unless otherwise indicated. Tops and toes of all slopes shall be rounded to produce a natural appearing transition between various levels.

After approval of finish grade but before the installation of irrigation, thoroughly cultivate the soil to a depth of 12 inches. This shall be done in two lifts adding half of the amendments and fertilizer outlined below to each lift. Soil amendment and fertilizers shall be spread at the rates designated by the soils lab but at no less than the following rates:

1. Soil Amendment - 10 cubic yards per 1,000 square feet.

2. Fertilizer - 30 lbs per 1,000 s.f. of 6-20-20.

After approval of amendment and fertilizer applications by the City Engineer, thoroughly incorporate into the top 12 inches of soil by repeated rototilling. Finish grade of all shrub, annual and groundcover areas shall be 1/2 inch below the top of adjacent pavement, headers, curbs or walls before the installation of the mulch, unless otherwise indicated on the drawings. Finish grade of turf areas shall be 1/2 inch below top of adjacent pavement, sidewalks, curbs, and headers.

B. Tree, Shrub, and Groundcover Planting

Mark tree and shrub locations on site using stakes or similar means. Locations shall be approved in the field by the City Engineer before plant holes are dug. Adjustments shall be made as required.

Dig pits circular in outline with vertical sides as shown on the Standard Detail. After pits are dug, roughen sides of the pit and loosen soil in the bottom of the pit to a depth of 3". Construct foot-tamped mound in the bottom of the pit to support the plant at the proper level.

Do not handle container plants by the tops, stems or trunks at any time, lift all plants so that the rootball is supported from the underside. Plants that do not have a satisfactory root system will be rejected. If plants do not have young feeder roots showing at the edge of the container, loosen their roots and score the rootball with 1/2 inch deep vertical lines to encourage new feeder root development.

Bare root stock backfill shall consist of 90% onsite soil and 10% organic amendment with fertilizer and soil conditioners as listed above. All soil backfill shall be bulk mixed, not individually mixed at each plant pit.

Place plant in hole in an upright position. Crown of tree should be 1 1/2 inch above finish grade. Crown of shrubs shall be 1 inch above finish grade. Backfill using the specified soil mix to within 18" of finish grade. At this depth, place the plant fertilizer tablets, Agriform 20-10-5 21 gram, or City approved equal, at the following rates: 1 tablet per one gallon plant, 3 tablets per 5 gallon plant, 5 tablets per 15 gallon plant, 8 tablets per 24 inch box, 12 tablets per 36 inch box. Thoroughly water and complete the backfill. Place a 3 inch high berm outside the excavated area to create a watering basin and fill the watering basin with water. The crown of the plant after settlement shall be 1/2 to 1 inch above finish grade and all roots shall be covered by soil. Remove the berm before installing the bark.

After any pruning that has been approved by the Public Works landscape inspector, place the tree stakes along side but not piercing the rootball. Stakes shall extend a minimum of 1 foot into undisturbed soil. Attach trees to the stakes with tree ties as shown on the standard detail. Mulch the inside of each watering basin with 3 inches of bark mulch. Mulch shall not touch the crown of the plant.

Specimen trees shall be staked or guyed as shown on the Standard Details. When trees are planted in public areas, install a 24" by 1/2" piece of white PVC pipe on each guy wire for visibility as directed by the City Engineer. Staking exceptions may be allowed on a case-by-case basis for evergreen Conifers.

All plants shall be planted immediately after the containers are cut or broken. Containers shall be immediately removed from the site to prevent a hazard to persons using the area. No containers shall be left on site overnight.

In groundcover areas, apply fertilizer (16-6-8) at a rate of 6 lbs./1000 square feet with a uniform spread. Groundcover shall be installed at spacings indicated on the drawings, evenly spaced and in staggered rows. Place each plant in its pit so that the root system lies freely without doubling and so that the plant is vertical to the ground. Firm the soil around each plant making sure that the crown is 1/2 to 1 inch above finish grade. All roots shall be below the soil. Provide a small watering basin as shown on the Standard Details and water the plant in thoroughly.

After all plants are installed, pre-emergent herbicide shall be applied to all groundcover and shrub areas after removing plant basins. Also apply pre-emergent in the tree basins. Chemicals used are to be as shown on the written recommendations prepared by a licensed Pest Control Advisor and approved by the City Engineer.

After the application of the pre-emergent, all groundcover, shrub, and tree areas shall be mulched. All groundcover and shrub areas shall receive a two inch layer of the approved mulch, taking care not to cover the crown of any plant. Mulch shall not be installed under low growing groundcover but shall be placed up to the edges, and not covering the newly installed plants. All tree basins shall receive a 3 inch layer of mulch.

C. Hydromulch Seeding

All areas to receive hydromulch shall be sprayed with a uniform visible coat using the green color of the mulch as a guide. The slurry shall be applied in a sweeping motion, in an arching stream, so as to fall like rain allowing the fibers to build on each other until a good coat is achieved and the specified amount of materials are applied. The nozzle shall not be pointed at the ground nor shall the pressure be allowed to roll the mulch, forming ridges along the ground. Such areas shall be immediately re-sprayed.

Any slurry mixture which has not been applied to the designated areas within four hours of mixing shall be rejected by the City Engineer and shall be removed from the project at the Contractor's expense.

The slurry shall not be sprayed on undesignated areas. It shall not be allowed to fall onto groundcover or shrub areas nor onto trees that are within the designated areas. Any slurry spilled or sprayed into areas other than those designated to receive spray or onto objects such as trees, posts, fences, poles,

vaults, walks, etc. shall be cleaned up to the satisfaction of the City at the Contractor's expense.

All bare spots shall be reseeded by the Contractor at 10 day intervals at the Contractor's expense. The Contractor shall be responsible for all seeded or reseeded areas until acceptable germination and establishment is realized and approved by the City.

D. Seeding

Installation of plants shall have been completed before seeding operations are begun. Just prior to sowing, the areas to be seeded shall be made sufficiently loose and friable to receive the seed.

The seed shall be sown evenly using a mechanical spreader at the rates specified on the plans or in the Special Provisions. One-half of the seed shall be sown in one direction and the second half sown at 90 degrees to the first during a time when weather will not disturb the seeding process. Apply fertilizer (16-6-8) at a rate of 6 lbs/1000 sq ft uniformly over the seeded areas. Lightly rake the surface to cover the seed and to mix with the fertilizer, then compact the surface with a 200 lb. roller. Soil shall be kept moist but not saturated until the seed is germinated.

Protect the grass areas with temporary fencing as necessary. Barriers shall be maintained by the Contractor and kept in orderly condition at all times until the work has been accepted by the City. Any damage to the turf shall be repaired by the Contractor at his own expense. If for some reason the maintenance period does not start immediately, refer to Section 13.12B following for the care and maintenance of seeded areas.

E. Installation of Sod

Sod area should be prepared by stripping all plant material from the area. If there is existing turf to match, the edge shall be lowered approximately one inch so that the new turf will meet existing grade. All rocks and uneven areas shall be removed and the area rolled smooth. Sod area shall then be dampened to a depth of a minimum of one inch to ensure a tight contact with the new sod. Care should be given to prevent heel or footprints in the grade as the sod is installed. Unroll the sod, fitting each strip tightly on all sides to the preceding strips or the existing turf. Do not stretch or deform the sod. Force each strip together as tightly as possible. Stagger the strips of sod like a bricklayer places bricks to prevent the seams from matching.

As soon as the sod is placed, water lightly and roll it in, making certain that no airspace is left under the sod. Care should be taken to leave no footprints in the sod. Upon completion of the rolling, apply sufficient water to wet the sod and soil to a depth of six inches. At the end of 10 days, mow to a height of 2½ inches.

13.10 CLEANING UP

The Contractor shall at all times keep the premises free from the accumulation of waste material or rubbish. At the completion of the work, he shall remove all rubbish from the site and all of his and his sub-contractors tools, scaffolding, and surplus materials.

13.11 WATERING

It shall be the Contractor's responsibility to maintain a balanced watering program to ensure proper growth until final acceptance of the work. Apply water in sufficient quantities and as often as seasonal conditions require to keep the planted area moist at all time, well below the root system of the plants. The Contractor shall not, however, water so much that the area floods or that insufficient oxygen is allowed to the plant roots. Remove basins from around trees as necessary to prevent flooding the crown of the trees.

13.12 MAINTENANCE PERIOD

A. Preliminary Inspection

Upon completion of all construction and planting work, the Contractor shall notify the City by phone or fax that the landscape work is ready for preliminary inspection for start of maintenance. The approval of the completed work will establish the beginning of the maintenance period.

B. Maintenance

The Maintenance Period shall be 90 calendar days after the acceptance of the landscape for Start of Maintenance. A longer period may be required if the plant maintenance is not acceptable during the 90 day maintenance period. The maintenance period may be suspended at any time upon written notice to the Contractor/Developer that the Landscape is not being acceptably maintained, and the day count suspended until the landscape is brought up to City standards.

Permanent electrical power connections to remote controller shall be provided prior to the Start of Maintenance. All valves must be operated from the controller and the controller shall be connected to permanent power. Valves shall operate in sequence down the street and shall not jump from side to side or around the site.

Maintenance shall include, but is not limited to all watering, weeding, fertilizing, cultivation, spraying, and pruning necessary to keep the plant material in a healthy growing condition and to keep the area neat throughout the maintenance period. However, the Contractor shall not prune any trees without the express written consent of the City. Watering shall be of sufficient quantity as to provide optimum growth conditions. The Contractor shall provide the equipment and means for its proper application. During the maintenance period, should the appearance of any plant indicate weakness and the

probability of dying in the opinion of the City Engineer, that plant shall be replaced immediately by the Contractor at his own expense. Replacements shall be made in the same manner as specified for the original planting. At the end of the maintenance period, all plant material shall be in a healthy growing condition and free of physical injury of any kind.

Lawn shall be mowed as specified herein. Clippings and debris shall be removed from the site. Lawn shall be trimmed at the edges of curbs, paving, drains, and headers. Lawn areas which fail to germinate shall be re-seeded at maximum 10 day intervals until a vigorous, even stand of turf is established. Lawn areas shall be kept free from weeds by hand pulling or by spraying with the approved selective chemical herbicide before they exceed 2 inches in height. Lawn shall be mowed for the first time after the turf has reached a uniform height of 3 inches. Turf shall be mowed for the second time when it again reaches a height of 3 inches. This second mowing shall be no sooner than 10 days after the first mowing. Mowing thereafter shall take place at 7 day intervals until final acceptance.

After the second mowing of the turf, apply a second application of (16-6-8) fertilizer at a rate of 6 lbs. per 1000 square feet. Fertilizer shall be spread uniformly over the turf area. Apply fertilizer at the same rates at 30 day intervals thereafter until final acceptance of the project.

The final application of pre-emergent in shrub and groundcover areas and fertilizer in all areas shall take place immediately preceding the final inspection. The pre-emergent shall be a mix of Surflan and Ronstar or equal. A minimum of 3 applications of fertilizer shall have been applied prior to acceptance by the City. All applications of pre-emergent or fertilizer shall take place in the presence of the City.

The Contractor shall apply (16-6-8) commercial fertilizer to all groundcover areas at a rate of 5 lbs per 1000 square feet at 30 day intervals for 3 applications as a minimum during the 90 day maintenance period above and beyond the original soils preparation application. After planting and during the maintenance period, in the event that any plants or turf areas exhibit iron chlorosis symptoms, apply FE 138 Geigy or City approved equal at the manufacturer's recommended rates.

Any plantings that do not show a prompt establishment of plant material shall have defective plant material replaced at 10 day intervals until accepted by the Department Representative. If a good rate of growth has not been demonstrated within 30 days of the first planting/hydroseeding, the Contractor shall be responsible for determining the appropriate horticultural practices necessary to obtain good growth. The Contractor shall obtain agronomic soils testing and/or plant pathology reports for all areas not showing good growth and shall provide copies of the test results to the City to verify the appropriateness of all plant establishment work performed. If additional soils amendments are needed, such amendments shall be provided by the Contractor at no additional cost to the City. The Contractor is also responsible for providing the appropriate fungicides or other chemical control to provide healthy plants at the end of the Maintenance period.

During the maintenance period, all flow lines shall be maintained to allow for free flow of surface water without causing erosion. Displaced materials which interfere with drainage shall be removed and relocated as directed. Low spots and pockets shall be regraded to drain properly and plant material replaced. Jute netting shall be installed at flow lines and other locations where erosion is evident as directed by the inspector. Work under this Section shall include complete responsibility for maintaining adequate protection for all areas. Any damaged areas shall be repaired at no additional cost to the City.

During the Maintenance Period, any turf areas or plants which are vandalized, diseased, dead, or in an unhealthy condition, shall be replaced by the Contractor at his expense within two weeks after notification from the City Engineer or his inspectors. Any plant damaged by herbicide shall be replaced by the Contractor at his expense. Maintenance shall also include treatments for fungus, diseases, rodents and insects with requirements for approvals of chemicals being the same as for herbicides. Weed all areas at no less than 7 day intervals. Maintenance is to include all items installed under the contract. All mechanical items shall be maintained in optimum working condition. The site shall be kept free of trash and debris by means of a general clean-up once a week.

13.13 FINAL INSPECTION AND ACCEPTANCE

Final inspection will be conducted at the end of the Maintenance Period. Notice requesting final inspection shall be submitted by the Contractor to the City Engineer at least 7 days prior to the anticipated date. Acceptance by the City will be contingent upon proper maintenance and the establishment of a vigorous, uniform stand of turf over all areas seeded. Any portion thereof which does not show a vigorous, uniform stand shall make all areas subject to continued maintenance at the Contractor's expense.

Just prior to the final inspection, the Contractor shall have performed weeding, repair or touch-up of pavement, repair of equipment and structures, and a thorough cleaning of the site. Apply Ronstar pre-emergent to all tree basins, shrub and groundcover areas and apply a 16-6-8 granular form commercial fertilizer as follows:

Specimen Tree	1 pint
15 gal. plants	1 cup
5 gal. plants	1/2 cup
1 gal. plants	1/4 cup
Groundcover	10 lbs per 1,000 s.f.
Turf Areas	6 lbs. per 1,000 s.f.

Fertilizer shall be spread around the base of the plants and thoroughly watered.

At the final inspection, the City Engineer will determine the condition of improvements, planting and turf. Plants which are missing, vandalized, dead or unhealthy shall be replaced by the Contractor at his expense with the same species and sizes originally specified. The Contractor shall make such replacements within two weeks after the final inspection and maintain the areas for an additional 30 days before calling for

another Final Inspection. If project improvements, corrective work, and maintenance have not been performed as specified to the satisfaction of the City Engineer, the maintenance period shall continue at the Contractor's expense until such time as the work has been successfully completed. When the work has been performed as specified to the satisfaction of the City Engineer, the City will assume maintenance responsibilities following the final inspection. End of the maintenance period shall occur only upon acceptance of the project by City Council.

13.14 GUARANTEE

- A. All plant materials installed under the contract shall be guaranteed against any and all poor, inadequate or inferior materials and/or workmanship for a period of one year following final acceptance.
- B. Any trees or other plant material that die back and lose the form and size originally specified shall be replaced, even if they have taken root and are growing after the dieback.
- C. During the guarantee period, any material found to be dead, missing or in poor condition by the City shall be replaced by the Contractor within 10 (ten) working days of written notification. The City of Fairfield Public Works Department shall be the sole judge as to the condition of the material.
- D. Replacement shall be made in accordance with City of Fairfield Standards. Material and Labor involved in replacing the plant material shall be provided by the Contractor at no additional cost to the City.
- E. Replacement material shall be installed to the same specifications as required for the original installation and shall carry the same guarantee from the time they are replaced.

13.15 MEASUREMENT AND PAYMENT

The landscaping shall be measured and payment made at the contract lump sum or unit price and shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals for doing all landscape installation and maintenance work as shown on the plans and as specified in these specifications under the direction of the City Engineer or his representative. Payment shall only be made for installed materials as approved by the City Engineer.

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SECTION 14: IRRIGATION SYSTEM

14.1 DESCRIPTION

This work shall consist of furnishing all the labor, materials, tools, and equipment necessary to construct and complete in an efficient and workmanlike manner the installation of an irrigation system in accordance with the approved plans and these specifications.

14.2 GENERAL

A. Purpose

It is the intention of these Specifications to accomplish the work of installing a sprinkler system which will operate in an efficient manner and provide adequate coverage. The Plans indicate the general arrangement of piping and equipment, and do not necessarily indicate all offsets, fittings and accessories that may be required. The Contractor shall furnish incidental materials and labor not specifically called for but required to complete work as intended.

B. Type of Irrigation

Because of the high wind conditions typical to the Fairfield area and the problems with run off onto paved areas, irrigation for median islands and parkway strips shall be either 1) drip, 2) low angle, low pop-up spray, or 3) low volume stream rotor pop-ups. The system shall be designed in such a way as to prevent runoff onto sidewalks, streets, curbs and gutters. Overhead spray systems shall be used for large turf or groundcover areas.

C. Details

The Irrigation plan and the piping details are diagrammatic. Pipe lines shown parallel on the drawing may be placed in a common trench, providing that a minimum horizontal and/or vertical distance of 6 inches is maintained between buried lines. Sprinkler heads and quick-coupler valves are schematic. Discrepancies in dimensions or sizes of areas to be irrigated shall be brought to the attention of the City, prior to submission of bid. After such time, intent of City will govern all discrepancies.

D. Damage by Leaks

The Contractor shall be responsible for damages to any property or work caused by leaks in the piping systems being installed. The contractor shall repair, at no cost to the City, all damages so caused. All repair work shall be done as directed, and in a manner satisfactory to the City.

E. Protection

The Contractor shall be responsible for any damage to this work which occurs before final acceptance. He shall securely cover all openings into the systems and protect all apparatus, equipment and appliances, both before and after being set in place, to prevent obstructions in the pipes and breakage, misuse or disfigurement of the apparatus, equipment of appliance. Contractor shall be responsible for damage to all existing utilities and existing facilities (buildings, turf, and landscape areas, paving, etc.), whether or not they are indicated on drawings.

F. Equipment List and Drawings

Within 15 days following notification of award of the contract, the Contractor shall submit to the City Engineer for approval a list of equipment and material which he proposes to furnish and install. The list shall be complete as to name of manufacturer, size and catalog number of unit, and shall be supplemented by such other data as may be required, including detailed scale drawings, plumbing, and writing diagrams. All of the above data shall be submitted in duplicate for checking. Following checking, correcting and approval, three complete sets shall be submitted to the City Engineer.

Materials list shall be submitted using the following format:

<u>Item</u>	<u>Description</u>	<u>Manufacturer</u>	<u>Model No.</u>
1	Pressure Supply Line	Lasco	Sch.40
2	Lawn Head	Rainbird	2400
etc.	etc.	etc.	etc.

G. "Record" Prints

1. Record accurately on one set of blue-line prints all changes in the work constituting departures from the original contract drawings, including changes in pressure and non-pressure line locations, and a complete schematic circuit diagram.
2. The changes and dimensions shall be recorded in a legible and workmanlike manner to the satisfaction of the City. Prior to final inspection of work, and prior to transferring the information to mylars, submit record prints to the City Inspector for approval.
3. Dimension from two permanent points of reference (buildings, monuments, sidewalks, curbs, pavement, etc.). Data to be shown on record prints shall be recorded day-to-day as the project is being installed.
4. Show locations and depths of the following items:

- a. Point of connection.
 - b. Routing of sprinkler pressure lines (dimension maximum 100 feet along routing).
 - c. Gate valves.
 - d. Sprinkler control valves.
 - e. Quick coupling valves.
 - f. Routing of control wires.
 - g. Sleeves
 - h. Related equipment (as may be directed by the City Engineer).
- 5. Maintain record prints onsite at all times.
 - 6. Upon completion of work, transfer all as-built information and dimensions to reproducible sepia mylars. The changes and dimensions shall be recorded in a legible and workmanlike manner, to the satisfaction of the City of Fairfield Public Works Department.

H. Standard of Installation

Material and workmanship shall be in accordance with local codes and ordinances of legally constituted authorities, except where provisions of these Specifications exceed such requirements, these Specifications shall govern.

I. Personnel

All layout, installation, and work relating to the irrigation system shall be performed by personnel experienced in the trade and under the supervision of a qualified contractor's representative.

14.3 MATERIALS

A. Pipe and Fittings

1. Mains

- a. PVC - Polyvinyl Chloride for 2 inch up to 6 inch shall be 1120-200 PSI (SDR 21) rubber gasket type PVC. Pipe shall be marked continuously and permanently with manufacturer's quality control identification.
- b. Copper shall be soft rolled tube Type K conforming to A.S.T.M. Designation B88.

2. Main or Sub-Main

- a. PVC - Polyvinyl Chloride for all pipe 1 1/2 inch or under shall be Schedule 40 - A.S.T.M. 1785 - Type I PVC 1120. Fittings shall be Type I/II, Schedule 40 NSF PVC, Solvent Weld.
- b. Copper shall be soft rolled tube Type K conforming to A.S.T.M. Designation B88.

3. Sleeves

Separate sleeving shall be installed to carry mains, laterals, and control wires under all paved surfaces. Sleeves shall be Schedule 40 (PVC) pipe - size as required. Sleeves shall be bored under existing paving and shall extend 12 inches beyond paving edge. A separate sleeve shall be provided for each water line and one for the electrical control wires. Two empty 4" sleeves shall be installed from island nose to island nose and stubbed into a pull box with an end bell. Duct seal shall be used at each conduit stub. A 5/8" flat woven traceable pull tape with footage markings shall be installed into the sleeve.

4. Laterals

Lateral lines on the discharge side of valves shall be Schedule 40 PVC. Fittings shall be Schedule 40, Solvent Weld.

5. Drip Lines

Above ground spaghetti type tubing shall not be used. Subterranean drip lines shall be 1/2" or 3/4", .96 GPH Netafim or city-approved equivalent. Subterranean drip lines shall be installed in 12" spacing grids with a PVC Schedule 40 manifold at both ends. There shall be a filter at the beginning of each run and a popup pressure indicator and flush valve at the end of each run. Compression fittings shall be used at all joints.

Where flex hose is used it shall be Agrifim 1/2" or 3/4" flex PVC IP tubing or city-approved equivalent. The distance from lateral line to plant shall not exceed five (5) feet.

B. PVC Pipe Cements

1. Primer shall be IPS P-70 PVC, or equal, for all sizes of PVC pipe and fittings.
2. Cement shall be IPS 721 medium bond blue cement or equal for all sizes of PVC pipe and fittings up to 1 1/2".
3. Cement shall be IPS 2711 heavy bond grey cement or equal for all sizes of PVC pipe and fittings larger than 1 1/2".

4. Cement for flexible PVC connections shall be IPS 2795 Clear or equal.

C. Sprinkler Heads

Sprinkler heads shall be of the types and sizes with the radius of throw, pressure, discharge and any other designations necessary to determine the types and sizes, as indicated on the Plans.

All heads of a particular type of function in the system shall be of the same manufacture 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. Any substitutions for items specified on the Plans must be submitted for approval in writing. Subsequent approval or rejection will be given in writing.

The following sprinklers are approved for installation in city landscapes.

Rainbird: 8005 Rotors; 1800 series popups; 1800 sams will be used on slopes; All sprinklers will use appropriate nozzles for head-to-head coverage. Rainbird R-Van series variable arc nozzles are acceptable for rotary streamers.

Hunter: I-20; PGJ; PGP-12 series rotors. All sprinklers use appropriate nozzle for head-to-head coverage.

D. Sprinkler Risers

All riser nipples shall be threaded Schedule 80 PVC and swing joints shall be Schedule 40 threaded street ells wrapped with Teflon tape or prefabricated swing joints, such as Rainbird TSJ/TSJ-PRS series or city approved equivalent.

All 1 inch riser assemblies shall consist of swing joints rated at 200 psi and two Class 200 PVC nipples and one Schedule 80 nipple. See Standard Details.

E. Check Valves

In line check valves shall be installed in the risers of all heads that are 12 inch or more below the grade of the valve.

F. Emitters and Bubblers

Emitters shall be of the types and sizes as indicated on the Plans. They shall be constructed of plastic.

Spaghetti tube emitters shall not be used.

Bubblers shall be fixed amount .25 GPM or .50 GPM Rainbird 1401/1402 or city approved equivalent.

All emitters of a particular type of function in the system shall be of the same manufacture 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. Any substitutions for items specified on the Plans must be submitted for approval in writing. Subsequent approval or rejection will be given in writing.

G. Underground Drip Line

Underground drip lines shall be of a type that will provide an even coverage of water over the entire area where they are used. All lines within a system shall be the product of one manufacturer and shall be installed as specified on the plans and as approved by the manufacturer. System shall be as manufactured by Netafim, Agrifim or a City approved equal.

H. Flush End

All emitter and drip systems shall be provided with a ball type, faucet handle flush valve at the end of each emitter line. It shall be installed in a round valve box at the end of 5 feet of flexible PVC.

I. Fertilizer Injector Kit

All underground and drip emitter systems shall be provided with a fertilizer injector kit to allow for the use of water soluble fertilizers on the site. Install in a plastic or concrete valve box.

J. Pressure Gauge

Underground and drip emitter systems shall be provided with pressure gauges as necessary to ensure the proper operation of the system. Pressure gauge as manufactured by Irrometer or City approved equal. Install in a plastic valve box.

K. Screen Filter

A screen filter such as that manufactured by Amaid or City approved equal shall be provided after the fertilize injector kit for each underground or drip emitter system. Install in a plastic valve box.

L. Valves

1. Remote Control Valves (R.C.V.), Electric Solenoid Type For Uses Other Than Drip Systems

The remote control valve shall be 24 volts, 0.3 amp in rush, .02 amp holding, normally closed, spring loaded and diaphragm actuated. It shall be self-cleaning, self-purging. It will have adjustable closing speed with no chatter or hammer. It shall have self-cleaning main seat and will operate under extreme low flow conditions. It will be capable of self-bleeding trapped air in the cover chamber. It will be capable of angle or globe installation. It should be easily flushed if a foreign object becomes lodged in the internal control mechanism. It should have no screens, filters, or small orifices in the control mechanism which are subject to clogging. It will have a manual bleed system. It shall be completely serviceable in the field without removing the valve body from the system. Valve rating shall be 220 PSI. The valve shall be ICV series as manufactured by Hunter Industries. Valve boxes shall be plastic with snap cover, green, with the word "Irrigation" embossed on the cover, Ametec 10-170-001, or equal. Stencil valve station number on the cover using a contrasting epoxy resin paint in 2 inch numbers.

2. Remote Control Valves (R.C.V.), Electric Solenoid Type For Use With Drip Irrigation Systems

The remote control valve shall be 24 volts, 0.3 amp in rush, 0.2 amp holding, normally closed, spring loaded and diaphragm actuated. It will have a regulating range of 5 to 100 PSI. Upstream pressure can vary from 5 to 200 psi, while controlling a steady downstream pressure. Downstream pressure can be regulated when manually opened. It shall be capable of operating under any dirty water conditions - sand, silt, algae, chemicals, fertilizers, slime, or other particulate. It shall have no screens or filters to clog. It must work well under low flow - low pressure conditions. It shall be capable of downstream pressure measurement and shall be 220 psi rated. The valve shall be an ICV series, as manufactured by Hunter Industries or city approved equivalent. The valve boxes shall be plastic with snap covers, green, with the word "Irrigation" embossed on the cover, Ametec 10-170-001 or equal. Valve station number shall be stenciled in 2 inch numerals on the cover using epoxy resin based paint of a contrasting color.

3. Gate Valves

Gate valves shall be iron body, bronze mounted, double disc, parallel seat with non-rising stem and with a 2 inch square operating nut, opening counterclockwise. Valves shall have "O" ring seals and have hubs suitable for use with the main distribution pipe furnished for the sprinkler system. All internal ferrous metal surfaces shall be fully coated with epoxy as per AWWAC 550 to protect all seating and adjacent surfaces from corrosion and prevent build-up of scale or tuberculation. Size shall be as indicated on the drawings. Valve boxes shall be plastic

with lock bolt cover, green, with the word "Irrigation" embossed on the cover, Carson Model 910-12B or equal.

4. Ball Valves

Ball valves shall be bronze body, two-piece, full port, threaded with brass, chrome-plated ball. The valve boxes shall be plastic with snap covers, green, with the word "IRRIGATION" embossed on the cover.

5. Quick Coupling Valves

Quick coupling valves shall be two piece, single slot, 1 inch diameter Buckner No. 14 or approved equal. Quick coupling valves to be installed in plastic box with green lock bolt cover marked "Irrigation", Carson Model 910-12B or equal. Location as shown on the plans.

M. Backflow Prevention Device

A Reduce Pressure Principle Backflow Prevention assembly device shall be used. The device shall be U.S.C. approved and shall be installed at the locations indicated on the plans. It shall be installed above grade and covered in an insulated backflow blanket and housed in a Guard Shack backflow enclosure or City approved equal. After the device is installed, it shall be tested by a certified Backflow Assembly Tester and the test report given to the City.

All backflow prevention devices serving drinking fountains shall be lead-free.

Reduced pressure device shall be in accordance with the Standard Details.

N. Irrigation Controller

The irrigation system controller shall be a U.L. approved, micro-processor based, solid state unit capable of fully automatic or manual operation of the system. It shall be housed in an exterior (16 gauge) weatherproof pedestal mounted locking case. It shall operate on 117 volts AC, 50/60 Hz power input and be capable of operating 24 volt AC electric control valves. In addition, the controller shall be equipped with or shall be capable of the following:

1. Each station shall have the capability of being individually programmed to operate from one minute to nine hours and 59 minutes in one minute increments.
2. It shall have a quick stations function which allows for rapid programming of a block of stations with the same watering period.
3. It shall have three independent programs with four automatic starts per day per program.
4. Each program shall have its own percentage function which allows the watering length of all stations in the program to be changed from 0% to

300% in 1% increments and at all times be able to display the original watering length of each station.

5. Each program shall be capable of being set on either a seven day weekly repeat cycle where the active days are displayed all at once or on a skip day basis where the user may select the number of days skipped, from one to thirty, between waterings with the starting day selectable.
6. The controller shall have a review program function which, with one button, will sequentially bring all its programmed information to the displays at a readable rate. The recall display shall be interruptible at any time for changing the program. Each program shall provide a total duration watering time in hours and minutes.
7. The controller shall allow for setting in a "rain mode" for up to seven days after which, it will revert to the "automatic mode."
8. Program may be protected by use of an access code.
9. Controller shall be capable of being operated manually at any time without affecting the original program.
10. The controller shall have a rechargeable battery back-up to maintain time and the user's program.
11. The controller shall have the capability of responding to external remote control signals when coupled to a master remote control system.
12. The controller shall have a built-in self test which allows the user to check each of the following:
 - a. LEDs for lighting and shorts,
 - b. the digital display for lighting and shorts,
 - c. each key of the keyboard for integrity and proper function, and
 - d. all station outputs.
13. Output power capacity shall be 24 VAC, 1 amp maximum, equivalent to 24 VA.
14. Acceptable controllers are as follows; substitutions shall require prior approval of city staff.

Controllers of ten stations or more shall be Rainmaster Smart Controller Evolution DX2 with radio communications and antenna. If controller is located in an area where the signal cannot reach a repeater antenna then a high gain antenna will be used. A site assessment by John Deere Greentech will be required and a phone/modem setup will be installed, if needed.

Controllers with fewer than ten stations shall be Rainmaster Sentar II with non-volatile memory to hold programming indefinitely in case of power outages.

The controller shall be housed in a DX2-SPED stainless steel box with 120 volt/20 amp GFCI plug., or City approved equal, installed on a Class B Portland Cement Concrete foundation as recommended by the manufacturer of the controller. A 6 foot copper grounding rod shall be provided inside of the controller enclosure. Enclosure shall be a weatherproof, 3/16-inch plate, metal locking case to which two keys shall be provided. The enclosure and accessories shall be installed in conformance with the manufacturer's instructions and recommendations. Foundation to be a minimum of 4 inches deep and sufficient width to prevent tipping.

Controllers with 1-2 stations shall be Hunter Pro-C outdoor model. The controller will be housed in a wall-mounted or pedestal box of 14 gauge metal to be approved by city staff. The controller shall have a 120 volt/20 amp power supply.

Each park or maintenance district shall provide with the controller a master remote control unit compatible with the controller. If the project is completed in phases, the remote control unit shall be provided with the acceptance of the first phase.

O. Electrical

1. 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, 14 gauge solid copper, PVC insulation, single conductor, UL approved underground feeder cable. All pilot or "hot" wires are to be of one color and all "common" wires are to be white. Connecting and splicing of wire at the valves or in the field shall be made as follows: The wire shall be connected by twist connectors applied per City Detail #34. The splice shall then be insulated with a Spears pre-filled dri-spliced connector with crimp sleeves Splice Kit or equal. Field splices between the controller and valves will not be allowed without special written permission from the landscape inspector/City Engineer.

2. Pull Boxes

Pull boxes shall be installed at the locations shown on the plans or at locations designated by the City Engineer at site of work. Contractor may, at his own expense, install such additional pull boxes as may be desired to facilitate the work.

Reinforced concrete covers shall be inscribed "Irrigation 24 Volt." Covers shall be provided with two 3/8 inch brass hold down bolts with brass washers and nuts. Nuts shall be recessed below the surface of

the cover. If pull boxes are set in an area subject to vehicle traffic load, they shall have a steel cover of suitable design to withstand such loads.

Pull boxes shall be installed on a base of bricks to prevent settling and will be flush with the ground at the top surface.

3. Service

Service shall be provided to the controller from a street light pull box. A fused connection line shall be provided. The connection shall be made by the General Contractor.

4. PVC Conduit

All conductors shall be placed into a 1" minimum schedule 80 heavy walled poly-vinyl-chloride (coded "PVC" on the Drawings) conduit with factory made bends, couplings, and fittings; where permitted by NEC. The conduit shall not exceed 180 degree in bends per run. Each conduit shall include an end bell and duct seal. All conduits shall include a 5/8" nylon traceable flat woven pull tape with footage markings rated at 2,400 lb.

14.4 INSTALLATION

A. General

Prior to all work of 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. 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.

In the event any equipment or methods indicated on the drawings or in specifications is in conflict with local codes, immediately notify the inspector prior to installing. If this notification is not provided, the Contractor shall assume full responsibility for the cost of all revisions necessary to comply with code.

Grades: Before starting work, carefully check grades to determine that work may safely proceed, keeping within the specified material depths with respect to finish grade.

Coordination with work of other trades: Make all necessary measurements in the field to ensure precise fit of items in accordance with the approved design. Contractor shall coordinate the installation of all irrigation materials with all other work. Special attention shall be given to coordination of piping locations and tree locations to avoid conflicts.

B. Water Supply

Connections to or the installation of the water supply shall be at the locations shown on the drawings. Minor changes caused by actual site conditions shall be made at no additional cost to the City.

C. Electrical Service

For new connections, the Contractor is responsible for coordinating meter installation and connection with PG&E. The Contractor shall terminate all 120V connections to irrigation controllers. Any existing services and their disposition will be addressed per plan.

D. Trenching

No trenching shall commence until rough grading work has been completed and accepted by the inspector. Excavation 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. Trenches for pipe shall be cut to required grade lines, and trench bottom shall be compacted to provide an accurate grade and uniform bearing for the full length of the line. When two pipes are to be placed in the same trench, it is required that a minimum of 6 inches be maintained between the pipes.

The excavation required for the installation of conduit, foundations, and other appurtenances shall be performed in such a manner as to cause the least possible injury to the streets, sidewalks and other improvements. All lawns or improvements disturbed in excavating shall be replaced or reconstructed with the same kind of material as that damaged or with materials of equal quality. The material from the excavation shall be placed in a position that will not cause damage or obstruction to vehicular and pedestrian traffic nor interfere with surface drainage.

The depth of trench shall provide a minimum cover above the conduit or wiring as follows:

1. 18 inches over non-pressure lateral lines.
2. 24 inches over mainline under pressure.
3. 36 inches over pipe crossing under paving, or 12 inches below aggregate base section of the street paving, whichever is greater.

E. Control Wiring

1. Connections between the automatic controllers and the electric control valves shall be made with direct burial copper wire AWG-U.F. 600 volt. Pilot wires shall be a different color wire for each automatic controller. Common wires shall be white with a different color stripe for each automatic controller. Install in accordance with valve manufacturer's specifications and wire chart. In no case shall wire size be less than #14.
2. Conductors shall occupy the same trench and shall be installed along the same route as pressure supply or lateral lines wherever possible and be installed in 1" PVC schedule 80 conduit.
3. Where more than one wire is placed in a trench, the wiring shall be taped together at intervals of 10 feet.
4. Wires installed in conduits shall not be taped together to facilitate replacement of individual wires.
5. An expansion curl should be provided within 3 feet of each wire connection and at least every 100 feet of wire length on runs more than 100 feet in length. Expansion curls shall be formed by wrapping at least 5 turns of wire around a 1 inch in diameter pipe, then withdrawing the pipe.
6. Field splices between the automatic controller and electric control valves will not be allowed without prior approval of the City Engineer.

F. Backfilling

Backfill material shall be of native material free from lumps or stones and placed in 4 inch layers thoroughly compacted by mechanical tamping until the relative compaction is not less than 92 percent except under pavement. Provide sand backfill a minimum of 6 inches over and under all piping under paved areas. Flooding in lieu of tamping is not allowed.

G. Water Service and Meter

The water service and meter shall be installed by the City of Fairfield Water Division at the location shown on the plans.

H. PVC Pipe

Pipe shall be cut with a fine tooth hacksaw or approved PVC cutting tool and any burrs shall be removed. The outside surface of the pipe and the inside surface of the fittings shall be wiped with a clean cloth saturated with methyl isobutyl ketone (MIBK) to remove all dirt and moisture before the cement

solution is applied. The cement solution shall be applied to the pipe and fitting socket with a brush having a width approximately one-half the diameter of pipe. The cement solution shall be applied freely with a light wiping action to spread the cement uniformly over the surfaces. The pipe surface or fitting socket shall not be rubbed with a brush any more than is necessary to spread the cement. If the cement thickens, it shall be discarded.

Immediately after the cement has been applied to the surface to be joined, the pipe shall be inserted into the fitting with a twisting motion to the full depth of the fitting socket. Immediately after joining is completed, any excess cement shall be thoroughly wiped from the pipe and fitting. The joined members shall be allowed to cure for at least 5 minutes before they are handled. In cold or damp weather, the curing period shall be increased due to slower evaporation of the solvent. An additional fitting or pipe section may be added to the completed joint within 3 minutes if care is exercised in handling so that a strain is not placed on the previous joint. The male and female pipe threads of all threaded connections on PVC pipe shall be coated with Permatex #51, or equal, pipe joint compound. Tighten fittings finger tight plus no more than one or two turns.

For plastic to metal connections, work the metal connections first. Use a non-hardening pipe dope on all threaded plastic to metal connections, except where noted otherwise.

Except as shown on the plans, PVC pipe placed in a trench shall be laid on level, undisturbed, or well-compacted earth and solvent-weld pipe shall be snaked from side to side in the trench at intervals of approximately 50 feet. Pipe shall be held down between joints with small mounds of earth to prevent movement. After completing the pressure tests on the pipelines and before any backfill is placed, water shall be run through the entire line until the pipe has been cooled to the supply water temperature. The trench shall be immediately backfilled, covering the pipe with soft earth to prevent damage to the pipe from rocks or clods.

I. Emitters

Spaghetti tubing shall be installed after emitters are in place. Spaghetti tubing shall extend no more than 5' from any emitter. Run minimum of four (4) tubes to each tree, spacing them equally around the tree. Run four tubes to each shrub. Tubing shall be attached to the ground with plastic coated stakes and each tube shall have a bug cap. All emitter openings not used shall be capped.

Emitters shall be set perpendicular to finished grade and shall be installed as indicated on the Plans and shown in the details. Tubing or emitter lines shall be stapled/staked as necessary to hold the lines in place under the bark. Single outlet emitters such as the Salco emitter shall be installed on the uphill side of the plant and shall be sized to allow a minimum of 50% of the rootball to receive water.

J. Sprinkler Heads

Nozzles on stationary sprinklers shall be tightened after installation and sprinklers having an adjustment stem shall be adjusted on a lateral line for the proper radius, diameter, and/or gallonage. They shall be set perpendicular to finished grade and shall be installed as indicated on the Plans and shown in the details.

K. Valves

Provide each assembly with its own outlet; no multiple assemblies will be allowed. Each valve is to be housed in its own valve box. Quick couplers and valves shall not be installed in the same boxes. There shall be a minimum three foot clear distance between valves.

Remote control valves shall be adjusted so the most remote sprinkler heads operate at the pressure recommended by the head manufacturer and so a uniform distribution of water is applied by the sprinkler heads to the planting areas for each individual valve system.

All valves shall be installed as shown in the details and in accordance with manufacturer's recommendations.

L. Valve Boxes

All remote control valves, gage valves, and manual angle, or globe valves shall be installed in a plastic valve box as shown in details, or stated in Section 14.03 G complete with cover, unless otherwise specified on the plans. All plastic valve boxes shall be Ametec or Carson with locking lid installed as shown in the Standard Details.

All valve boxes shall be set to finish grade in lawn areas and 1 inch above finish grade in ground cover areas. Under no circumstances shall more than one remote control valve be installed in one valve box. Valve boxes shall not rest on lines. A minimum of 2 inches clear distance shall be left between the box wall.

Valve boxes located near walks, curbs, headerboards, and paving shall be installed in such a way as to allow for valve boxes to abut those items with top surface matching plane of items listed above.

M. Irrigation Controller

All controller locations are essentially diagrammatic, and shall be specifically located by the Designated Authority.

All local and applicable codes shall take precedence in connecting of 120 volt electrical service to the controller. This service will be provided by others. The Contractor shall provide and install the service unit and meter socket or splice box and make the connection between the service unit or splice box and the controller.

Adequate coverage and protection of the 24 volt service wire leading from the controller shall be maintained from the bottom of the controller.

14.5 TESTING

A. Record Prints

No inspection will commence without "record" prints. In the event the Contractor calls for an inspection without up to date "record" prints, without completing previously noted corrections, or without preparing the system for inspection, the inspection will be canceled and the Contractor back charged for the direct costs of all City personnel's time and consultant's time lost. Inspection will be required for:

1. Pressure test of irrigation main line.
2. Coverage test.
3. Final inspection/start of maintenance.
4. Final acceptance.

B. Testing of Service Lines and Irrigation Main

Service lines and irrigation main shall be tested in accordance with applicable provisions of the Water Distribution Specifications.

C. Hydrostatic Test

1. Prior to the installation of any valves, all pressure lines shall be tested under a hydrostatic pressure of 150 psi for a period of not less than 2 hours, with all ends of lines capped and the line fully charged with water after all air has been expelled from the line.
2. All hydrostatic tests shall be made in the presence of the City. No pressure line shall be backfilled until it has been inspected, tested, and approved in writing.
3. Contractor shall furnish necessary forces and all other test equipment.

D. Flushing Plastic Pipe

After all new sprinkler piping and risers are in place and connected, and all necessary division work has been completed and prior to the installation of sprinkler heads, control valves shall be opened and a full head of water used to flush out the system.

E. Closing in Un-inspected Work

Do not allow any of the work of this section to be covered up or enclosed until it has been inspected, tested, and approved by the City.

F. Coverage Test

When the irrigation system is completed, Contractor shall perform a coverage test in the presence of the Landscape Projects Inspector to determine if the water coverage for planting areas is complete and adequate. Overhead systems shall provide complete head-to-head coverage with no dry spots under normal Fairfield wind conditions. This test shall be accomplished before any planting. Any exceptions shall be approved by the Landscape Inspector.

G. Testing of Electrical System

Prior to acceptance of the work the Contractor shall cause the following tests to be made:

1. For continuity of each circuit.
2. For grounds in each circuit.
3. A functional test in which it is demonstrated that each and every part of the system functions as specified or intended herein.

14.6 COMPLETION CLEANING

Upon completion of the work, Contractor shall smooth all ground surfaces; remove excess materials, rubbish, debris, etc.; sweep adjacent streets, curbs, gutters and trails and remove construction equipment from the premises.

14.7 MAINTENANCE

Contractor shall properly and complete maintain the irrigation system. A balanced water program shall be maintained to ensure proper germination and growth until final acceptance of the work. Plants which cannot be watered sufficiently with the irrigation system shall be watered by means of a hose.

All valves must operate from the controller and the controller shall be connected to and run by permanent power prior to the Start of Maintenance. Valves shall operate in sequence down the street or walk and shall not jump from side to side or around the site. After the Start of Maintenance, all valve and quick coupler boxes shall be bolted or locked closed. Any boxes that have been damaged during the maintenance period shall be replaced before the final walk through.

All controllers are to have each station individually adjusted on a weekly basis. System shall be set considering the application rate each area is capable of receiving. The system shall operate on short intervals, with the cycle repeating at a later time to reduce runoff.

14.8 GUARANTEE

- A. The entire sprinkler system shall be unconditionally guaranteed by the Contractor as to material and workmanship, including settling of backfilled

areas below grade for a minimum period of one year following the date of final acceptance of the work.

B. Guarantee shall be submitted on Contractor's own letterhead as follows:

We hereby guarantee that the sprinkler irrigation system we have furnished and installed is free from defects in materials and workmanship, and the work as been completed in accordance with the drawings and specifications, ordinary wear and tear and unusual abuse, or neglect excepted, and that the work, materials, and equipment as installed will fulfill the requirements of the guarantee included in the specifications. We agree to repair or replace any or all of our work, together with any other adjacent work which may be displaced by so doing, that may prove to be defective in its workmanship or materials within a period of one (1) year from date of acceptance of the below named project by the City of Fairfield, California, at no additional cost to the City. We shall make such repairs or replacement of the work within seven (7) calendar days of written notification by the City. When the immediate repair or replacement of the work is necessary to ensure the public safety and welfare, which would be endangered by continued usage of the facility, such circumstance will be deemed an operational emergency. In the event of such an emergency after the City contacts our firm and after authorizing 24 hours to initiate repairs, if we fail to initiate and diligently complete such repairs in a timely manner, the City Engineer may direct City forces to perform such functions as he may deem necessary to correct the work and immediately place the facility back in operations condition. If such procedure is implemented, we shall bear all expenses incurred by the City. In all cases, the judgment of the City Engineer shall be final in determining whether an operational emergency exists. In the event of our failure to make such repairs or replacements within the time specified after receipt of written notice from the City (other than an operational emergency), we authorize the City to proceed to have said repairs or replacements made at our expense and we will pay the costs and charges therefore upon demand.

PROJECT: _____
LOCATION _____

SIGNED: _____
ADDRESS: _____
PHONE: _____

C. If, within one year following acceptance of the work, settlement occurs and adjustments in pipes, valves and sprinkler heads, sod or paving is necessary to bring the system, sod or paving to the proper level of the permanent grades, the Contractor, as part of the work under this Contract, shall make all adjustments without extra cost to the City, including the complete restoration of all damaged planting, paving or other improvements of any kind.

- D. Should any operational difficulties in connection with the sprinkler system develop within the specified guarantee period which in the opinion of the City may be due to inferior material and/or workmanship, said difficulties shall be immediately corrected by the Contractor to the satisfaction of the City at no additional cost to the City, including any and all other damage caused by such defects.
- E. After work has been completed, the Contractor shall instruct the City in the operation and maintenance of the system and shall furnish a complete set of operating instructions.

14.9 TURNOVER ITEMS

A. Controller Charts

1. Record prints must be approved by City before charts are prepared.
2. Provide one controller chart (of the maximum size controller door will allow) for each automatic controller. Chart shall show the area covered by controller.
3. The chart is to be a reduced copy of the actual "record" print. In the event the controller sequence is not legible when the print is reduced, it shall be enlarged to a readable size.
4. Chart shall be marked with a different color to show the area of coverage for each station.
5. When completed and approved, the chart shall be hermetically sealed between two pieces of plastic, each piece being minimum 20 mils in thickness. Chart shall be installed in the controller enclosure using velcro fasteners.
6. Controller charts shall be completed prior to final inspection.

B. Operation and Maintenance Manuals

Within 10 calendar days prior to acceptance of construction, prepare and deliver to the City all required descriptive materials, properly prepared in two individually bound copies of the operation and maintenance manual. The manual shall describe the material installed and shall be in sufficient detail to permit operating personnel to understand, operate, and maintain all equipment. Spare parts list and related manufacturer's information shall be included for each equipment item installed. Each complete, bound manual shall include the following information:

1. Index sheet stating Contractor's address and telephone, including names and addresses of local manufacturer's representatives.
2. Complete operating and maintenance instructions on all major equipment.

C. Materials to be furnished:

1. Supply as part of the contract the following spare parts:
 - a. 4% additional sprinkler heads of each type and spray pattern shown and/or 4% additional emitters and/or tubing of each type shown.
 - b. Two (2) wrenches for disassembly and adjustment of each type sprinkler head installed.
 - c. Two (2) keys for each automatic controller.
 - d. Two (2) couplers with a 3/4 inch bronze hose bib, bent nose type with hand wheel and two coupler keys.
 - e. One valve box cover key.
 - f. "As-built" sepia mylars from "record" prints.
 - g. Backflow device valve handles and Water Department inspection documentation.
 - h. Test reports on Reduced Pressure Backflow Prevention Device.
 - i. Gate valve key
2. The above spare parts shall be turned over to the City at the final inspection.

14.10 MEASUREMENT

The work performed under these specifications will be measured by the unit or lump sum as designated in the contract item for constructing an irrigation system.

If measured by unit, quantities of sprinkler heads, quick coupling valves, backflow preventers, etc. will be determined from actual count of the items in place in the completed work. Quantities of conduit and the various sizes of pipe will be measured by the linear foot in place in the completed work.

14.11 PAYMENT

Payment will be made at the lump sum or unit price for sprinklers, sprinkler heads, bubblers, emitters, quick coupling valves, backflow preventers, control valves, control assemblies, turning unions, or garden valves; and the contract prices per linear foot for the various sizes and types of pipe. Full compensation for furnishing and installing swing joints and pipe used for risers shall be considered as included in the price paid for the contract item requiring the riser or swing joint and riser and no separate payment will be made therefore.

When there are no separate contract items for spray nozzles, valve protectors, valve boxes or any other materials necessary to complete the irrigation system, such materials shall be furnished and installed. Full compensation for this work and materials shall be considered as included in the prices paid for the various contract items of the irrigation system and no separate payment will be made therefore.

The above prices and payments shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals; and for doing all the work involved in installing the irrigation systems, complete in place, as shown on the plans, and specified in these specifications and the special provisions, and as directed by the City Engineer, including any structure excavation, structure backfill and water involved.

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SECTION 15: NONPOTABLE WATER DISTRIBUTION

15.1 DESCRIPTION

This work shall include the furnishing of all labor, materials, tools and equipment necessary to complete the construction of the Nonpotable Water Distribution facilities in an efficient and workmanlike manner in accordance with the approved plans, these specifications, and the Standard Details.

15.2 GENERAL

All nonpotable water distribution facilities shall conform to the requirements of Section 12, Water Distribution, of the Specific Provisions and the AWWA Guidelines for Distribution of Nonpotable Water except as modified or expanded upon in this section.

15.3 MATERIALS

A. Pipe Identification

1. General

All buried nonpotable water piping, including service lines and risers, shall be installed with identification tape and stenciled pipe identifying it as nonpotable water.

2. Identification Tape

Identification tape shall be of an inert material such as polyethylene plastic with a red field having the words, "CAUTION: NONPOTABLE WATERLINE," "CAUTION: RECLAIMED WATERLINE," or similar wording as approved by the City in black printing, repeating continuously the full length of the tape. Tape width shall be 3-inches.

3. Pipe Identification

Pipe shall have the words "NONPOTABLE WATER" stenciled in 2-inch high green letters on both sides of the pipe in at least three places in a 13-foot length of pipe for a total of 6 places per section of pipe.

B. Valve Identification

Valve Boxes

Valve boxes shall be provided with the designation "NPW" cast thereon. Valve boxes and covers shall be Christy G-5 or approved equal.

15.4 INSTALLATION

A. Identification Tape

Identification tape shall be installed 12-inches above the top of the pipe longitudinally and centered. The identification tape shall be installed continuously for the entire length of the pipe.

B. Sanitizing

Sanitizing is not required for nonpotable water lines.

15.5 MEASUREMENT AND PAYMENT

Nonpotable water distribution facilities shall be measured for payment in the same manner as potable water distribution facilities, see Section 12.04 of these specifications.

The contract price for nonpotable water lines and appurtenances shall constitute full compensation for all labor, materials and tests necessary to furnish and install the lines and appurtenances in accordance with the drawings and specifications.

SECTION 16: IRRIGATION SYSTEM - NONPOTABLE WATER

16.1 DESCRIPTION

This work shall include the furnishing of all labor, materials, tools and equipment necessary to complete the construction of an irrigation system to be supplied with nonpotable water in an efficient and workmanlike manner in accordance with the approved plans, these specifications, and the Standard Details.

16.2 GENERAL

All nonpotable water irrigation system facilities shall conform to the requirements of Section 14, Irrigation System, of the Specific Provisions except as modified or expanded upon in this section.

In general, nonpotable water facilities and potable water facilities at the same site should be constructed of different materials or difference colors of the same materials. In addition, all nonpotable water facilities shall be provided with warning tapes, marking or signs as specified in this section.

16.3 MATERIALS

A. Pipe Identification

1. General

All buried nonpotable water piping, with the exception of intermittent pressure lines, shall be installed with identification tape and stenciled pipe identifying them as nonpotable water lines.

2. Identification Tape

Identification tape shall be of an inert material such as polyethylene plastic with a red field having the words, "CAUTION: NONPOTABLE WATERLINE," "CAUTION: RECLAIMED WATERLINE," or similar wording as approved by the City in black printing, repeating continuously the full length of the tape. Tape width shall be 3-inches.

3. Stenciled Pipe

Asbestos-cement pipe shall have the words "NONPOTABLE WATER" stenciled in 2-inch high green letters on both sides of the pipe in at least three places in a 13-foot length of pipe for a total of 6 places per section of pipe.

PVC pipe stenciling shall appear on both sides of the pipe with the marking "NONPOTABLE WATER" in 5/8-inch letters repeated ever 12 inches.

B. Controller Identification

Controllers shall be labeled inside and outside identifying the system as using nonpotable water. Labeling may be by painted on, use of decals, or permanently affixed engraved plastic signs with the wording "CAUTION: NONPOTABLE WATER - DO NOT DRINK".

C. Riser and Valve Identification

Risers, valves, and other above-grade facilities shall be painted green. Valves shall be identified with a stamped brass or engraved plastic disk not less than 1/2-inch in diameter with the marking "NPW" in letters at least 1/4-inch high permanently affixed to the valve.

D. Strainers and Filters

Strainers shall be of a wye or basket type with stainless-steel or Monel screen. Strainer discharge or filter backwash water may not cause runoff or standing water.

E. Quick Coupling Valves

Quick coupling valves shall be installed in a plastic box with green lock bolt cover marked "NONPOTABLE," Carson Model 910-12B or equal.

Quick coupling valves shall be of two piece, single slot, 1-inch diameter Buckner No. 14 or approved equal. Two each, Couple Keys (single lug Buckner No. 14CS or approved equal) shall be supplied to the City prior to final inspection. In order to prevent unauthorized use, the valve shall be operated only with a special coupler key with an acme tread for opening and closing the valve. The cover shall be permanently attached to the valve and shall be green rubber or vinyl.

16.4 INSTALLATION

A. Identification Tape

Identification tape shall be installed 12-inches above the top of the pipe longitudinally and centered. The identification tape shall be installed continuously for the entire length of the pipe.

B. Warning Signs and Labels

The water requires warning labels to be installed on designated facilities, such as but not limited to, controller panels, blowoffs, and temporary construction water services. The labels will notify that the system contains nonpotable water that is unsafe to drink.

Where nonpotable water is used for recreational or decorative impoundments, warning signs shall be installed to notify that the impoundment is unsafe for body contact. A detailed plan must be submitted showing placement and spacing of the proposed signs.

In all cases the warning labels or signs must be approved by the City Engineer prior to installation. A detailed signing plan shall be prepared and submitted with the construction plans showing placement, wording, and size of all signs.

16.5 TESTING

In addition to the testing called for in SECTION 14.05 of these specifications, a Coverage Test will be required. This test shall consist of operation of the system and observation for overspray or runoff and shall be continued for a period suitable to ensure that runoff or overspray will not occur during normal operation.

When the irrigation system is complete and at least 72 hours in advance of testing, the Contractor shall notify the City and request the presence of a representative of the City Engineer for the Coverage Test. During the test the Contractor shall have personnel available who are capable of making adjustments to the system if required.

If system modifications other than minor adjustments are required, the Contractor will be notified in writing of the changes required. All modifications are the responsibility of the Contractor and said Contractor shall pay all costs associated with such modifications. Retesting shall be required following any system modifications.

16.6 MEASUREMENT AND PAYMENT

Nonpotable irrigation system work shall be measured for payment in the same manner as potable water irrigation systems, see Section 14.11 of these specifications.

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SECTION 17: LIGHTING

17.1 DESCRIPTION

This work shall include the furnishing of all labor, materials, tools and equipment to construct and complete in an efficient and workmanlike manner the installation of the lighting system in accordance with the approved plans, these specifications, the City Standard Details, the State Standard Specifications and Standard Plans, and the National Electric Code (NEC).

17.2 MATERIALS

The Contractor shall submit to the Engineer within 10 days after receiving the fully executed contract a complete list of equipment and materials proposed for installation in accordance with Section 86-1.04, "Equipment List and Drawings," of the Standard Specifications. All equipment to the installation of the lighting shall be included and approved by the engineer prior to placement of the order and commencement of the work. Equipment such as, pull boxes, street light fixtures, pull tape, photo control fuses, connectors, conduit, pull boxes, pull box wire theft enclosure, conductors, poles, service enclosure (if any) shall be submitted as one complete package at time of submittal. If long lead times in excess of 6 weeks are anticipated for poles ore fixtures, they may be submitted separately. A checklist can be obtained from the Public Works Department website to assist in gathering equipment. This list is not all encompassing but includes the major components of the materials to be submitted.

A. Poles and Arms

Cobrahead style (signalized and un-signalized) light poles and arms for major/minor arterials and major collectors shall be spun aluminum (no painting of poles is authorized except in already designated areas to match the surroundings unless approved by the City Engineer).

If approved, powder coating is an approved method to apply color to the pole. If a color is used, powder coating material shall be a thermosetting polyester powder coating and follow these conditions.

1. A minimum coating thickness of 2.0 mils shall be maintained.
2. The application powder shall be electrostatically applied by a closed loop automated powder coating system featuring twelve automatic spray guns with computerized controls and positioners to assure mil thickness conformance
3. The powder coating system shall employ a powder recovery system utilizing closed loop quick-change technology to achieve efficient and contamination free color changes.
4. The powder shall be applied only when both the ambient and part temperatures are 50 degrees F. or above.
5. The product shall proceed through a curing oven operating at 400 degrees F. that has been surveyed and certified for temperature uniformity.

6. The product shall move continuously through the oven from beginning to end and shall attain the time at temperature in accordance with the paint manufacturer's recommendations.
7. Once oven cured, the product shall move immediately to and continuously through a forced air cooling tunnel designed to restore the product to acceptable packaging temperature prior to inspection and packaging.
8. Upon exiting the cooling tunnel the product shall be immediately inspected and packaged.

All light poles shall match to existing field conditions:

The pole shall be as listed below:

1. Aluminum 28' Mounting Height, Davet Style with 5'0" internal Radius, 8'0" arm.
2. Aluminum 28' Mounting Height, Davet Style with 3'0" internal Radius, 8'0" arm.
3. Aluminum 28' Mounting Height, Standard 8'0" Arm.

Each tapered aluminum pole shall be constructed with these specifications:

1. Wall thickness of 0.188" alloy 6063-T6.
2. The internal frame of the hand hole shall be tapped 3/8" – 16NC for grounding.
3. Reinforced aluminum oval 4" x 6" hand hole with cover and Stain-less steel hex head screws at 1'6" from base flange.
4. The base shall be cast aluminum 44207 with bolt covers and Stain-less steel hex head screws.
5. The bolt circle shall be 11" to 12" slotted to fit either option.
6. Each pole shall include an internal damper.
7. The end of each pole where the fixture is to be installed shall be 2-3/8" outside diameter.

As approved by the City Engineer, themed, architectural style light poles and arms shall be constructed of steel. Each light pole shall have a welded plate flat surface for the sole purpose of placing 2" numbers (black on white high intensity) with enough room for the Letter "C", at least six (6) 2" height numerals, and the light wattage. The bolt circle at the base of the pole shall be 11"-12" with the center of the slot at 11-1/2". The height of the themed light pole shall be 19' +/- 6" from grade. Steel poles shall be neatly stamped or bead welded at the base if the identification tag indicating the year and type of pole standard is missing.

Concrete themed (for parks, pathways only) light poles shall be polished to a smooth finish and treated with an anti-graffiti coating with a minimum 5 year warranty on seal protection. The concrete shall be octagonal or round shaped with an 11" bolt circle for 1" diameter bolts. Slotted holes are acceptable as long as the center cut diameter remains at least 11" bolt circle. The concrete pole shall be high strength centrifugally cast concrete with high-tensile, solid steel pre-stressing wires, uniformly wrapped with spiral welded wire cage at a controlled pitch for torsion reinforcement conforming to American Standards Testing Materials (ASTM). Each pole shall come with a rectilinear 1/4" – 3/8" inset specifically for the purpose of pole numbering. The rectangular cut out

shall be large enough to install 6 numerals 2" tall. The pole should have an embedded insert 1 3/4" wide and 12" tall minimum and should be painted dark bronze to match hand-hole frame and cover. This insert should be centered at 7 1/2' above finished grade

The height of the themed concrete light shall be 19 feet +/- 6" from grade. There shall be a 1 inch hole with rounded edges cast into the pole located at 10 feet from above grade. Each of these holes will be fitted with a rubberized or knockout insert resembling the same color of the pole.

One spare pole and arm shall be supplied for the first five (5) installed. One (1) spare pole and arm shall be supplied for each subsequent ten (10).

B. Lighting Fixtures

All lighting fixtures shall be light emitting diode (LED) and meet all the conditions as set forth in Section 7, Lighting Specifications. The LED, fixture, and its associated and solid state electronics shall have a minimum warranty period of 10 years. Illumination Engineering Society of North America (IESNA) LM 79 and LM 80 testing shall be provided. The TM-21 showing projected LED life shall have been performed and submitted. Individual LEDs shall be at a minimum of 120-200 lumens per watt. The light distribution shall be Type II, III, or IV depending on the application and design as per plan. Type IV may be considered in unique cases based on photometric study and the uniformity. All lenses shall be polycarbonate.

With each light fixture installed up to 5, 1 additional fixture shall be supplied for maintenance. Each subsequent 10 fixtures will require one additional fixture to be supplied to operations for future maintenance.

C. Foundations

Lighting foundations shall be bolted pre-cast or cast-in-place concrete. The reinforced concrete foundation shall have a minimum 28 day compressive strength of 4,000 psi meeting conditions in the Department of Transportation State Standard Specifications. Themed concrete lights in park pathways shall be direct burial.

D. Conductors

All lighting service runs shall be wired with minimum No. 8 AWG stranded UL listed rated up to 600 Volts. Poles shall be wired internally with No. 10 AWG stranded, as a minimum. All wire shall be stranded copper with THWN-2 insulation, resistant to water and heat.

E. Conduit

All lighting conduit shall be 2" schedule 80 polyvinyl chloride conduit, as a minimum. Larger sizes shall be dictated by the State of California Standard Specifications or National Electric Code, whichever is more conservative. The conduit shall be constructed of Type 1, Grade 1 polyvinyl chloride (PVC) compound with Cell Classification of 12454 per ASTM D1784.

F. Circuit

Multiple circuits shall be used in accordance with the National Electric Code (N.E.C.).

G. I.D. Number

All lights shall have a Type III high intensity prismatic reflective black on white 2 inch minimum height light identification number vertically affixed onto the pole. A companion label shall be placed horizontally identifying the LED wattage.

For concrete poles, each pole shall come with a rectilinear inset specifically for the purpose of pole numbering as identified in section 17.02 (A). The rectangular cut out should be large enough to install 6 numerals 2" tall. The pole should have an embedded insert 1 ¾" wide and 12" tall minimum and should be painted dark bronze to match hand-hole frame and cover. This insert should be centered at 7 ½' above finished grade. Just beneath the light identification number shall be a ¾" wide 2 to 3 digit number specifying the wattage of the fixture placed horizontally.

Identification numbers are assigned by PG&E and furnished and installed by the contractor. The City will be responsible for coordinating efforts with PG&E to energize the street lights so that proper billing takes place.

H. Pull Boxes

All lighting pull boxes shall be a, minimum No. 3 ½ or 5 per the California Standard Detail Caltrans 2010 ES-8A and specification 86-2.06 or more current. The cover shall be marked "Streetlighting" or "Service" and shall include "City of Fairfield" as the owner. Each light shall have an adjacent pull box on the downstream side of the light. All pull boxes whether with the pole and fixture or intermediate stand alone shall include a concrete housekeeping pad 4" to 6" thick x 12" wide with concrete flow around the sidewalls along the perimeter of the pull box.

Pull boxes shall be of the "PG" style, UL 66WF listed and meet all test provisions of the ANSI/SCTE 77 Tier 22 or approved equivalent. Pull boxes shall be constructed of light weight precast polymer concrete and shall have a minimum of two layers for fiberglass cloth on the inside and outside perimeters. Covers for pull-boxes shall be composolite materials. Covers shall be rated for no less than 15,000 Lbs. over a 10" x 10" area and tested to 22,568 lbs at temperatures of – 50 deg F. Material compressive strength should be no less than 11,000 PSI.

Covers shall have a minimum coefficient of friction of 0.5'.

Covers shall be concrete gray in color.

Bolts shall be penta head.

I. Pull Box Anti-Theft Wire Enclosure System

The contractor shall supply a City approved theft proof deterrent system in each pull box. Pull boxes shall include a pad lockable galvanized steel incasing theft resistant system. The theft deterrent system shall include a galvanized sheet metal pull box insert that can be accepted by all sizes of pull boxes, but allow the conductors to be neatly protected. The padlock shall be protected from bolt cutters. The contractor shall supply either Quazite (by Strongwell) pull box assembly, McCain insert(Anaheim Hills, Ca) or Madruga insert (Tracy, Ca) brand inserts or approved equal.

The contractor will provide the interim pad locks in accordance to the City requirements until such time the project is accepted by City council.

J. Trenching

Trenching for street lights may be in the joint utility trench or in a separate trench. Depth of trenching shall be per Standard Details.

K. Photoelectric Control

Fixtures with externally installed photoelectric control shall be multi volt photoelectric relay on twist lock receptacles. Themed lighting without externally installed twist lock receptacle shall include a button type photo electric control. The externally mounted twist lock photoelectric control shall be multi voltage 120, 208, 240, 277 on a photoelectric relay with a 1.5 footcandle turn on with twist lock receptacles with a 105 degree rating at a minimum 20,000 hour warranty life at maximum voltage, current, and temperature. The receptacles shall meet the 3 prong NEMA ANSI C136.10 standard. The photocell shall also be instant on with non-delay. Photo control shall be installed on all the fixtures not centrally controlled.

K. Fused Splice Connectors

The in-line fused splice connectors shall be installed in the light hand hole, fusing only the hot leg with an in-line fuse connector. The non-breakway in line fuses holders shall be water resistant, single-pole breakway in-line fuse holders for 13/32" x 1.5" midget fuses. The rating shall be 600V (or less).

L. Fuses

All lights shall have a five (5) amp fuse installed. Fuse shall be the slow blow and located in the hand hole. The following specifications shall apply:

- Dimensions shall be 0.41" +/-0.004 x 1.5" +/-0.031
- FNM dual element, time delay
- Voltage of 250 VAC or less
- Amps of 1/10-30amp
- Interrupting Ratings; 35A (1/10-1A@250VAC), 100A (1 [1/8-3.5amp@250VAC](#)), [200A\(4-10A@250VAC\)](#), 10,000kA(1/10-10A@125VAC), and 10,000A(12-30A@250VAC).

M. Splices

1. All lighting splices shall be performed in the pull box made using Burndy "C" taps after stripping. 3M Scotchkote, electrical coating, 3M 130C splicing tape, and 3M 88 polyvinyl tape or equal shall be used.

N. Grounding Rod

The grounding electrodes shall be UL listed and manufactured to meet the minimum requirements of Article 250-52 of the most recent edition of the National Electric Code. At the very minimum, the grounding circuit will include a copper clad steel ground rod, a solid copper ground plate 5/8" x 10'.

O. Pull Tape

Pull tape shall be a minimum of 5/8" – 2,400 lb flat woven detectable pull tape constructed of polyester and prelubricated with footage markings.

P. Duct Seal

The duct seal shall be permanently pliable, non-cracking, caulking formulated for sealing conduit entries, around junction boxes, service masts, etc. The material shall meet the following specifications:

Dielectric strength approximately 110V/mil using ASTM D149-64.

100% non-volatile solids including non-drying synthetic polymers with inert mineral fibers.

Asbestos free, non-toxic and non-irritating.

Recommended working range when applying is 25°F to 120°F (–4°C to 49°C), tolerance range is –30°F to 175°F, (–34°C to 79°C). Will not sag at 275°F (135°C) when under such exposure for brief periods.

Permanently pliable and non-cracking. May be painted immediately.

17.3 INSTALLATION

A. Foundations

Foundations shall be constructed of Portland Cement concrete (PCC) per California State Standard Specifications. Foundations shall rest on firm ground. The area around each foundation shall be backfilled and compacted per Standard Details.

Plumbing of light standards shall be accomplished by adjusting the leveling nuts. Shims or other devices shall not be used. There shall be no more than a maximum of 2 +/- 1/4" between the bottom of the base plate and grade. After each standard is in position, non-shrink mortar shall be packed under the base plate. Foundations shall be installed a minimum of 6 feet from any fire hydrant and 40 feet from any anticipated street tree.

B. Conduit

Conduit shall be installed as shown on the plans. There shall be no more than 360 degrees in bends between each run. An intermediate pull box maybe installed to provide bend relief with 12" x 4" - 6" thick wide flowing concrete cap. Non-metallic conduit connections shall be of the solvent weld type. Depth of conduit and backfill requirements shall be as shown in the State Standard Details. Where conduit enters a pull box, the exposed end shall be installed with an end bell and treated with duct seal. Each conduit shall include the flat traceable pull tape with footage markings.

No conduit splices are permitted. Any existing conduits being re-used in an existing conduit system or as a part of a new system shall be mandreled prior to use to confirm all debris is removed and the conduits are clear to accept new conductors.

C. Pull Boxes

Pull boxes shall be installed adjacent, approximately 2'-4' from each light. The maximum spacing between intermediate pull boxes shall not exceed 200' spacing. The Contractor may install additional intermediate pull boxes depending on terrain, bend radius (max 360 degrees), or other conditions at no cost to the City.

Pull boxes shall be installed flush with the surrounding grade, sidewalk, or top of curb with a 12" wide tolerance for concrete cap. The bottom of all pull boxes shall be bedded with crushed rock, unless indicated otherwise. The cover shall be marked "Streetlighting" or "Service", depending on the appropriate contents of the pull box. All pull boxes (whether separate or in conjunction with a light) shall include a concrete collar constructed around either just the pull box or both the pull box and lighting system to provide additional support. The collar shall be constructed so that at least 12" of clearance is achieved from any near edge of pole or pull box. The concrete cap shall be at least 4.5" thick concrete

along the side walls. If the collar is constructed in the planting strip, the concrete collar shall extend from the sidewalk to the back of curb.

D. Pull Box Anti-Theft Wire Enclosure

The contractor shall provide an interim padlock during construction. Upon completion of the project and council approval, the contractor shall replace all interim padlocks with City padlocks.

D. Conductors

Conductors shall be of the American Wire Gauge (AWG) shown on the plans. A waterbase U.L. listed lubricant shall be used when pulling conductors through conduit.

Conductors shall be identified with street light pole number in PG&E service box. Identification shall be by direct labeling, tags, or bands and shall be weatherproof. A minimum three feet of slack shall be left in each hand-hole and pull box. Absolutely no mechanical devices shall be used to pull conductors.

The contractor shall label all lighting conductors and wiring with $\frac{3}{4}$ " black on white nylon cloth resistant to conditions that naturally occur in underground pull boxes.

E. Splicing

All lighting splices shall be performed in the pull box made using Burndy "C" taps after stripping. The methodology shall follow the steps below:

1. The splice shall be completely covered with 3M Scotchkote electrical coating rated at 450 volts/mil .
2. Apply minimum 2 layers, $\frac{1}{2}$ lapped, electrical liner-less rubberized splicing tape 3M 130C or equal.
3. Apply minimum 3 layers, $\frac{1}{2}$ lapped polyvinyl tape, 3M 88 or equal.
4. Cover entire splice with 3M electrical coating and allow to dry, see above.

F. Labeling

The 2" PG&E light numbers shall be centered at 7 $\frac{1}{2}$ ' from the sidewalk or street level grade and aimed perpendicular towards the street with one numeral on top of the other in a vertical manner. The numbers shall be black on white background, high intensity or diamond grade sheeting. Smaller numerals representing the wattages shall be installed on the poles in a horizontal manner directly beneath the PG&E number. Fixtures shall be clearly labeled beneath the fixture with the same size labels. All high intensity or diamond grade sheeting shall be used.

G. Bonding and Grounding

See Section 18.15 of the traffic signal section which follows.

17.4 ACCEPTANCE TEST

After completion of the installation of the street lights, the Contractor shall test all street lights in the presence of the Inspector. The street light system from the service point to the luminaire shall be tested for the following items:

- A. Identification of light distribution patterns.
- B. Acceptability of electrical and noise standards.
- C. Verification that all connections are electrically and mechanically sufficient.
- D. Conductors shall move, with minimal effort, within the conduit.

17.5 MEASUREMENT AND PAYMENT

A. Lights

Each light shall each be measured and paid for as one complete installed unit in operable condition including concrete foundation, pole with arm(s), luminaire fixture complete LEDs and driver, photoelectric control, grounding, and conductors.

B. Conduit

Conduit shall be paid for by the linear foot as measured horizontally through all phases of the electrical underground street lighting system.

C. Pull Boxes

Pull boxes shall be measured and paid for as one complete installed unit, housekeeping pad including the base and lid.

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SECTION 18: TRAFFIC SIGNALS

18.1 DESCRIPTION

This work shall consist of furnishing all the labor, materials, tools, and equipment necessary to construct and complete in an efficient, operative, and workmanlike manner the installation of a traffic signal system.

Installation of a traffic signal system shall conform with Section 86, "Signals and Lighting," of the State Specifications, Standard Plans, these Special Provisions, and the most current version of the City of Fairfield Standard Specifications and Standard Details.

Special care shall be exercised so that the Contractor's operations do not disturb any landscaping or irrigation. The Contractor shall replace in kind any landscaping disturbed by his operations. The Contractor shall reroute or install new irrigation systems along with other frontage improvements disturbed by operations in kind and conduct proper flow testing with the method approved by the city to confirm no blockage exists. No additional cost will be associated with the repair or landscaping and irrigation disturbed/damaged by the contractor.

Improvements such as sidewalks, curbs, gutters, Portland cement concrete, and asphalt concrete pavement, underlying material, lawns and plants, and any other improvements removed, broken or damaged by the Contractor's operations, shall be replaced or reconstructed with the same kind of material as found on the work or with materials of equal quality at no extra cost to the City. The new work shall be left in a serviceable condition upon inspection of the City.

Whenever a part of a square or slab of existing concrete sidewalk, curb, gutter, or driveway is broken or damaged, the entire section or slab to the expansion joint shall or score line shall be removed and the concrete reconstructed to meet the City's specifications as specified in these documents.

The Contractor shall submit two copies of photos of the jobsite prior to the start of construction, for the purpose of providing a record of existing conditions. These photos shall provide a view encompassing the entire project with sufficient clarity and scope that will satisfy the Engineer. The photos should include and confirm utility markings prior to excavation. The Contractor shall submit these photos with a written log stating any defects or irregularities in the existing improvements along the proposed improvements. The log shall also state the location, date, and time the photos were made. Upon acceptance by the Engineer, the photos and logs shall become the property of the City. The photos shall include existing landscaping to be removed and reinstalled during construction. Payment for work under this section shall be included in "Mobilization."

18.2 WARRANTIES, GUARANTEES, AND INSTRUCTION SHEETS

Warranties, guarantees, and instruction sheets shall conform to Section 86-1.05, "Warranties, Guarantees, and Instruction Sheets" of the Standard Specifications and these special provisions.

The traffic signal and lighting system installed under these special provisions, including all equipment, workmanship, and appurtenances furnished or performed in connection therewith shall be guaranteed to the City by the Contractor for a period of not less than one (1) year following the date of City Council acceptance thereof except for street light fixtures which require 10 year or any other identified traffic signal equipment identified in these documents. Any parts found to be defective in materials or workmanship within the one (1) year period which cannot be repaired satisfactorily on the site shall be immediately replaced by Contractor in kind and/or type during the repair period. Once the part is repaired or replaced an additional year shall be added to the part. Contractor shall be responsible for the removal, handling, repair, or replacement, and reinstallation of the part or parts until such time as the traffic signal or lighting system is functioning as specified or intended herein; the repair period shall in no event exceed 72 hours including acquisition of parts.

The one (1) year guarantee on the repaired or replaced parts shall commence with the date of reassembly of the system unless otherwise noted in these special provisions. The one (1) year guarantee period is not applicable to equipment supplied by the City for use on the project.

18.3 PRE-CONSTRUCTION MEETING

Prior to the actual beginning of work on the traffic signal and/or lighting system, a pre-construction meeting will be held to familiarize all parties with the work to be done and the City's inspection procedures. The inspector will determine if a field meeting is necessary. Contractor shall contact the engineer 48 hours in advance of the proposed meeting date, time (between 8:30 a.m. and 3:00 p.m.) and location.

18.4 SCHEDULING OF WORK

Scheduling of work shall conform to Section 86-1.07, "Scheduling of Work" of the Standard Specifications and these special provisions. Unless otherwise arranged in advance, working hours shall be from 7:30 a.m. to 5:00 p.m., Monday through Friday, except that lane closures on major arterials and in downtown areas shall be limited to 9:00 a.m. to 11:30 and 1:00 to 3:30 p.m. Contractors are required to notify the local transit system at (707)434-3800 24 to 48 hours prior to any lane closures. Work outside of these hours, or on weekends or observed City holidays shall not be allowed except by special written permission of the Engineer. Special considerations like work around schools or special events should be considered and noted.

18.5 MAINTAINING EXISTING AND TEMPORARY ELECTRICAL SYSTEMS

Traffic signal system shutdowns shall be limited to periods between the hours of 9:00a.m. and 3:30p.m. Turn on of traffic signals are only allowed after all the detectors are functionally tested and operational, signal flashed out, communications functional,

striping and signing modified or installed matching the signal intended phasing operations. The intersections **shall** not be placed on detector recall to simulate fixed timing. The intersection must be fully actuated at the time of the turn on. The signal shall only be turned on or switched over Monday through Thursday on a non-holiday work week between the hours of 9:00a.m. to Noon allowing ample time to for any issues to arise.

Traffic signal system shutdowns shall be limited to periods allowed for lane closures listed or specified in "Maintaining Traffic" of these special provisions.

Prior to turn on and once the signal heads are installed, all signal indications must be covered with material designed for that purpose that specifically indicates "Out of Service". The material shall be fabricated using cloth and be of contrasting color to the signal head. An approved equal is Traffic Signal Cover (Mission Viejo, CA).

Cardboard, plastic, wood, burlap, or other field fabricated temporary cover shall not be used. Adhesive tape such as duct tape shall not be used to attach any of the covers. No holes shall be drilled or louvers used to secure the cover. The material used shall provide a central mesh of contrasting color, so that each indication can be tested from the ground. Upon acceptance of the project, the approved covers shall become property of the City.

18.6 UTILITY/AGENCY COORDINATION AND ORDER OF WORK

The Contractor shall coordinate efforts with and abide by the requirements of all agencies with facilities in the vicinity of the project. Existing facilities shall be identified by potholing prior to installation of conduits and foundation. These agencies include, but are not limited, to the following:

- Solano Irrigation District (SID): The Contractor shall arrange for and coordinate with SID regarding inspection personnel. An SID inspector is required where work is shown in the location of SID facilities and within SID right-of-way.
- Pacific Gas & Electric (PG&E): The Contractor shall coordinate with PG&E regarding connection to existing service points. The Contractor shall not work in a PG&E pull box or splice box without the presence of a PG&E employee.

AT&T: The Contractor shall coordinate with AT&T regarding connection to existing service points. The Contractor shall not work in a AT&T pull box or splice box without the presence of a AT&T employee.

- City of Fairfield (Water): The Contractor shall arrange for and coordinate with the City regarding inspection requirements and inspection personnel. A City inspector is required where work is shown in the location of City facilities and within City right-of-way.
- City of Fairfield / Suisun Sewer District (Sanitary Sewer and Storm Sewer): The Contractor shall arrange for and coordinate with the City regarding inspection requirements and inspection personnel. A City inspector is required where work is shown in the location of City facilities and within City right-of-way.

Traffic signal equipment shall not be ordered until underground service alert (USA) has been completed and location of poles staked and approved by the engineer. If conflicts arise with the existing utilities, the contractor shall pot hole to determine the exact location of the utilities at the location of the conflicting signal pole standard. The consultant overseeing the design shall be involved in the pole location and identified on the as-built plans. Special consideration shall be made that includes access to pedestrian push button distance to the proposed extended crosswalk line. Cost of this work shall be included in the "lump sum price paid for "Signals and Lighting".

MATERIALS AND INSTALLATION

18.7 MATERIALS, EQUIPMENT LIST AND DRAWINGS

The controller cabinet schematic wiring diagram and intersection sketch showing the phasing and detector loops shall be combined into one (1) drawing, so that when the cabinet door is fully open, the drawing is oriented with the intersection.

The Contractor shall furnish a maintenance manual for the controller unit, auxiliary equipment, and vehicle detectors sensor units, control units and amplifiers and communication equipment. The maintenance manual and operation manual may be combined into one (1) manual. Copies of the traffic signal plans, traffic signal specifications, and the maintenance manual or combined maintenance and operation manual for the controller shall be submitted at the time the controller assembly is delivered for testing. The maintenance manual shall include, but need not be limited to, the following items:

1. Specifications
2. Design characteristics
3. General operation theory
4. Function of all controls
5. Troubleshooting procedure (diagnostic routine)
6. Block circuit diagram
7. Geographical layout of components
8. Schematic diagrams (3 minimum)
9. List of replaceable component parts with stock numbers

The Contractor shall submit to the Engineer within 10 days after receiving the fully executed contract a complete list of equipment and materials proposed for installation in accordance with Section 86-1.04, "Equipment List and Drawings," of the Standard Specifications. All equipment and traffic signal appurtenances related to the installation of the traffic signal shall be included and approved by the engineer prior to placement of the order and commencement of the work. If long lead times in excess of 6 weeks are anticipated for poles or fixtures, they may be submitted separately. Equipment such as, pull boxes, wire, poles, battery back-up, service enclosure, controller and controller assembly, detector amplifiers, push button, push button housing, framework plumbing, signal and pedestrian heads, signal and pedestrian modules, etc shall be included in the submittal. A checklist can be obtained from the Public Works Department website to assist in gathering equipment. This list is not all encompassing but includes the major components of the materials to be submitted.

The Contractor upon completion of the project shall furnish one (1) "As-Built" drawing showing in detail all modifications or changes to the project plans. The "As-Built" plan shall be scanned and submitted in electronic format in addition to the hardcopy.

18.8 EXCAVATING AND BACKFILLING

Excavating and backfilling shall conform to the provisions in Section 86-2.01 "Excavating and Backfilling" of the Standard Specifications.

Excavation of any sidewalk or roadway structural section material shall be replaced in kind unless otherwise indicated on the plans.

No separate payment will be made for structure excavation and backfill or disposal of materials.

18.9 FOUNDATIONS

Portland Cement Concrete shall conform to Section 90-10, "Minor Concrete," of the Standard Specifications and shall contain not less than 517 pounds of cement per cubic yard for 3,000 psi, and 611 pounds of cement per cubic yard for 4,000 psi.

18.10 STANDARDS, STEEL PEDESTALS, AND POSTS

Standards, steel pedestals, and posts shall conform to the provisions in Section 86-2.04, "Standards, Steel Pedestals, and Posts," of the California State Specifications and these Special Provisions.

Traffic signal pole standards shall not be installed until the Contractor furnished controller assembly location is identified at each intersection. The Engineer shall notify the Contractor when traffic signal pole standards may be installed. Any construction within ten (10) radial feet or in accordance to PG&E standards of an overhead line must not commence until PG&E is notified and the lines are de-energized and their requirements met. All Standards and posts shall be galvanized. The Engineer shall approve the locations of standards and posts.

Mast arm mounted street name signs shall be installed on signal mast arm and pole at the locations shown on the plans. Refer to signing section in these provisions for further details.

The base of the pole shall be installed a minimum of 2" and maximum of 3" from sidewalk grade. To maintain the elevation of the base plate of the pole at sidewalk grade, it may be necessary to construct a concrete block wall. The concrete block wall shall have a minimum clearance of 48" around the pole flange.

The base plate of the mast arm pole shall be neatly stamped or bead welded with the pole standard and the specification year upon completion of the project.

Portland Cement Concrete shall conform to Section 90-10, "Minor Concrete," of the Standard Specifications.

18.11 CONDUIT

Conduit shall conform to the provisions in Section 86 2.05 A (1), "Conduit," of the State of California Standard Specifications and the following.

All conduit and fittings to be installed shall be continuous rigid nonmetallic type, polyvinyl chloride (PVC) Schedule 80 and manufactured in strict accordance to American Standards Testing and Materials (ASTM) D1735.

All conduits shall enter a pull box with a minimum 60 degree sweep unless otherwise permitted by the Engineer. Bends of 90 degrees are not permitted. Each terminated conduit shall include an end bell bushing to protect the conductors and duct sealed to prevent debris. The ends of the conduit shall be exposed a minimum of 2 inches above the $\frac{3}{4}$ inch clean rock. There shall be a minimum of 6-12 inch space between the bottom of the lid to the top of the conduits for adequate conductor clearance.

Conduit runs from pull box to pull box in excess of 360 degree in bends shall not be permitted. A pull box may be installed to provide intermediate relief of the bends.

All conduits shall have a $\frac{3}{4}$ ", 2,400 lb flat polyester woven traceable tape with footage markings installed. In addition, each empty conduit shall include a #8 solid bond wire.

All conduits placed under the street section, sidewalks, or driveways, shall be installed by boring and jacking unless otherwise specified in the plans or by the Engineer. No trenching in pavement is permitted unless directed by the Engineer in writing.

Conduit shall be placed a minimum of 48 inches under the finished grade of the street, 12" under sidewalks, and 24 inches under landscaping or at back of sidewalk.

The schedule 80 conduits to be installed shall not be used as a drilling or jacking rod.

In addition to the requirements of Section 86-2.05 of the Standard Specifications, conduit shall be installed in accordance with State of California Electrical Safety Orders (ESO).

The size of conduit used shall be as shown on the plan, but in no case shall it be less than 2 inches in diameter. The size of conduit for street crossings shall be a minimum of 3 inches in diameter unless otherwise specified in the plan. Interconnect shall have a separate conduit, pull box, and shall not mix with the existing signal conductors. Each interconnect conduit run shall have a minimum of 1- two (2)-inch conduit between each pull box. The signal interconnect conduit shall be entirely separate from all other conduit, including the conduit entering the controller cabinet.

Absolutely, no high density polyethylene (HDPE) can be used.

At the cost of the Contractor, conduit of larger size may be used than that shown or specified in the plan, provided the larger size is used for the entire length of the run from terminus to terminus. Reducing couplings will not be permitted.

In cases where conduit is allowed to be placed in a trench (not under Portland cement concrete sidewalk), the trench shall be backfilled with sand followed by commercial quality concrete, containing not less than 376 pounds of cement per cubic yard, to not less than 4 inches above the conduit before additional backfill material is placed after the bedding material is placed and conduit installed.

Under certain circumstances, conductors may be pulled into existing occupied conduits provided an approved water based lubricant is used and the conductors in the conduit do not exceed the available capacity as identified by California Department of Transportation. Mechanical pulling devices shall not be used to pull any conductors.

All existing conduits to be used or reused shall be cleaned out by pulling a minimum 6" length mandrel of appropriate size through the conduit run and any remaining debris shall be blown out using compressed air.

18.12 PULL BOXES

Pull boxes shall conform to the provisions in 2010 Caltrans Standard Plan ES-8A and Section 86-2.06, "Pull Boxes," or current Standard Specifications and these Special Provisions except as follows:

Pull boxes shall "PG" style and be constructed of fiberglass reinforced precast polymer concrete with a minimum of two layers for fiberglass cloth on the inside and outside perimeters. The pull box shall be UL 66WF listed and comply with all the test provisions of the American National Standards Institute /Society of Telecommunications Engineers (ANSI/SCTE) 77 with a design load of 22,500 lbs and a test load of 33,750 lbs meeting Tier 22 test provisions or equal. The pull boxes shall be installed in the locations shown on plans. Pull box size shall be No. 6 unless otherwise noted on the plan.

All pull boxes shall be constructed with a minimum 12 inch wide x 4 - 6 inch thick concrete collar. In cases where pull boxes are installed in a landscaping median or strip along the property frontage and there is less than 12 inch exposed earth after the 12 inch wide x 4 inch collar is constructed, the concrete collar shall be extended to the sidewalk or back of curb.

Pull boxes shall have proper identification lids, i.e. "Traffic Signal", "Interconnect", "Service" or "Street Lighting" With the "City of Fairfield" as owner. All pull boxes installed in sidewalk area must have back edge parallel and common with back edge of sidewalk.

The pull boxes shall be protected during construction. Any damage, chips, or dried cement debris located on the top surface of the pull box lid shall be replaced with the proper labels.

PG&E power and traffic signal conductors shall not share a pull box.

Pull boxes shall be installed with clean ¾ inch graded crushed rock.

Existing and new conductors in the pull box shall be neatly wrapped and coiled on the interior wall of the pull box.

Where pull boxes are to be placed in areas subject to traffic loads, a non slip steel or cast iron cover shall be used in lieu of the concrete cover with the appropriate contents of the pull box neatly bead welded on the lid. Pull boxes of this nature shall be discouraged from installation. Such pull boxes shall be installed on a minimum 18" concrete footing to withstand traffic loads. Tops of pull boxes shall be flush with the surrounding finished grade (i.e., top of curb or sidewalk).

18.13 PULL BOX ANTI-THEFT WIRE ENCLOSURE

The contractor shall install and supply a City approved theft proof deterrent system in each pull box. The theft deterrent system shall include a galvanized sheet metal pull box insert that can be accepted by all sizes of pull boxes, but allow the conductors to be neatly protected. The padlock shall be protected from bolt cutters. The contractor shall supply either Quazite by Strongwell complete pull box anti-theft assembly, McCain (Anaheim Hills, Ca) or Madruga (Tracy, Ca) brand inserts or approved equal. The contractor shall provide an interim padlock during construction. Upon completion of the project, the contractor shall replace all interim padlocks with City padlocks.

18.14 CONDUCTORS AND WIRING

Conductors and wiring shall conform to the provisions in Sections 86-2.08, "Conductors," and 86-2.09, "Wiring," of the State Standard Specifications and these Special Provisions. The conductors shall be THWN-2.

Conductors shall be pulled into conduits by hand. The use of winches or other power actuated pulling equipment will not be permitted.

At least five (5) feet of slack shall be left for each conductor at each signal standard and at least five (5) feet of slack at each pull box.

Aluminum conductors shall not be allowed.

Conductors shall be spliced by the use of "C" shaped compression connectors.

Special attention is directed to the requirement that all traffic signal conductors be run continuously without splices except branch neutrals which may be spliced in pull boxes. Junction boxes on the standards maybe used to combine like phases prior to entering the pull box.

Neutral and luminare conductors shall not be spliced in the pull box nearest the controller but shall be continued to terminals in the service enclosure or cabinet.

All field connections to controller cabinets shall be made using approved CNMP Type Y connectors.

All conductors shall be clearly labeled, identification shall be by direct labeling, tags, or bands fastened to the conductors in such a manner that they will be permanent and not move along the conductors. Identification bands shall be constructed from nylon cable tie with 3/8 inch by 3/4 inch label flag. The indelible marking pen shall be one recommended by the manufacturer of the cable tie or it shall be indelible marking pen

compatible with the writing on the nylon material approved by the engineer. No other method of labeling will be acceptable. All phase conductors and detector cables shall be labeled by phase designations in the pull box nearest their termination, and in the controller cabinet. Detector cables shall be labeled with phase and loop number. Lighting conductors shall be labeled. Spare conductors do not require any labeling. All conductors in the cabinet shall be neatly coiled, secured, and tie wrapped to the edges or corners of the cabinet. Conductors shall not be draped from one end of the cabinet to the other.

The preemption cable shall be Opticom™ Model 138 cable or equal.

18.15 FUSED SPLICE CONNECTORS

All splices shall be performed in the pull box made using Burndy™ "C" taps after stripping as outlined below:

1. The splice shall be completely covered with 3M™ Scotchkote electrical coating rated at 450 volts/mil,
2. Apply minimum 2 layers, ½ lapped, electrical liner-less rubberized splicing tape 3M 130C or equal
3. Apply minimum 3 layers, ½ lapped polyvinyl tape, 3M 88 or equal.
4. Cover entire splice with 3M™ Scotchkote electrical coating and allow to dry, (see above)

18.16 BONDING AND GROUNDING

Bonding and grounding shall conform to provisions in Section 86-2.10, "Bonding and Grounding," of the Standard Specifications and these Special Provisions. Grounding shall occur at the controller cabinet, service enclosure, and pole foundations.

Grounding jumper shall be attached by 3/8 inch or larger galvanized bolt in the signal standard or controller pedestal and shall be run to the conduit, ground rod or bonding wire in adjacent pull box. Grounding jumper shall be visible after cap has been placed on foundation. All ground connections shall be water tight. Grounding electrodes shall be of copper clad steel rod, not less than 5/8 of an inch in diameter x 10 feet in length. Grounding rods shall be copper bonded steel core with a minimum of 10 mils, a minimum compressive strength of 90,000 psi and UL listed, A grounding electrode shall be installed in all electrical services and controller foundations. They shall be spaced a minimum of 6 feet apart. See NEC 2011 Part III 250.53(A)(3)

The grounding electrode rod in the Controller Assembly shall be paralleled with the grounding electrode rod in the Service. This connection shall consist of a continuous stranded #6 green insulated copper conductor. The ground connection shall be on the line side of the electrical entrance terminal block.

A continuous stranded # 6 green insulated copper conductor shall connect the ground bus in the electrical service, grounding electrode in service, grounding electrode in controller foundation. The equipment-bonding conductor for all standards shall be visible and accessible after completion of work.

Where the installation of a ground rod is not possible, an alternative method of grounding will be permitted as follows. Per the 2011 NEC Part III 250.52(3)(2), an electrode encased in at least 2 inches of concrete and located within and the bottom of a concrete foundation or footing that is in direct contact with the earth is acceptable. The electrode used for grounding must be at least 25 feet long and must be made of electrically conductive coated steel reinforcing bars or rods of not less than 1/2" (# 4) diameter, or consisting of at least 25 feet of bare solid copper conductor not smaller than # 4 AWG wire size.

Grounding jumper shall be attached by a 3/16 inch or larger brass bolt in the signal mast arm standard and proceed to the controller pedestal where a 5/8 inch x 10 foot ground electrode is installed and shall run to each conduit and pull box. The grounding jumper shall be visible after cap has been poured on foundation.

Equipment grounding conductors will not be required in conduit containing loop lead-in cables only.

TESTING

18.17 FUNCTIONAL TESTING

Testing shall conform to the provisions in Section 86-2.14, "Testing," of the Standard Specifications and these special provisions.

18.18 CONTROLLER ASSEMBLY TESTING

The Contractor shall arrange with the City to deliver a fully-wired controller assembly to the corporation yard a 2070L traffic signal controller, including detector cards, flash transfer relays, load switches, racks and all other traffic signal appurtenances relative to the proper operation prior to field installation.

Contractor shall coordinate with the City regarding availability of testing equipment and City Corporation Yard staff prior to delivery of equipment to schedule an appropriate time for testing. A minimum of 10 working days notice of delivery is recommended but not less than 48 hours.

Testing shall be for 14 calendar days of continuous, uninterrupted operation (burn-in period). The testing period shall begin when the equipment has been hooked-up to the testing bay and may not necessarily be the same day that the equipment is delivered to the City.

In the event that the traffic signal equipment submitted for testing does not comply with the City specifications or fails during the testing period, the Contractor shall remove said equipment for repair or replacement within five working days after notification that the equipment is rejected. In the event the equipment is not removed within five days, it may be shipped to Contractor at his/her expense. After replacement of equipment, Contractor shall deliver equipment back to the Corporation Yard for re-start of testing period.

Upon notification that the equipment has passed the testing phase and has been accepted by the City of Fairfield, the Contractor shall pick-up equipment from Corporation Yard and shall deliver it to the work site.

18.19 SYSTEM TESTING

The functional test for the traffic signal system shall consist of not less than five (5) days of continuous satisfactory service. The functional test shall not begin until the entire installation is complete and in place, to include leveling the signal indications and full operation of the detector loops in accordance with all requirements of the plans, these special provisions, Standard Plans, and Standard Specifications, to the satisfaction of the Engineer. The Contractor shall arrange to have a signal technician, qualified to work on the controller unit and employed by the controller unit manufacturer (or representative) present at the time signal controller is turned on and traffic signal energized.

SERVICE ENCLOSURE

18.20 SERVICE

Service shall conform to the provisions in Section 86-2.11, "Service," of the Standard Specifications and these Special Provisions.

The Contractor shall furnish **Two (2)** Type III-AF service equipment enclosures per project location as indicated on the Project Plans. The Contractor shall install one service equipment enclosures at the project site and the second service enclosure shall be delivered to the City of Fairfield Corporation Yard as a spare.

- The service enclosure shall be 12 inch wide X 63 inch high X 7 ¼ inch deep, Tesco.
Tesco Class 26-100-M-A or City approved equivalent.
- The service enclosure shall meet EUSERC requirements.
- The service enclosure shall be fabricated from " anodized aluminum" and conform to Caltrans Standard Plan ES-2D (2002).
- The interior of service enclosure shall be fabricated from 14 gauge cold rolled steel and painted white.
- The service enclosure shall have continuous welded seams and have full length dead front with stainless steel hinge.
- The service enclosure shall be a UL 508 industrial control panel label for service entrance equipment.
- The service enclosure shall have pull section with removable step and have fully framed side hinged outer door with swaged close tolerance sides for flush fit with top drip lip & closed cell neoprene flange compressed gaskets.
- The service enclosure shall have hinged dead front with ¼ turn latch & knurled knobs.
- The dead front door shall be hinged on the same side as exterior door & open a minimum of 100°. The removable back pan shall be mounted on 4 welded ¼ inch studs.

- All circuit breakers shall be mounted in a vertical position, handle up for “On” handle down for “Off”. The lowest circuit breaker shall be 24 inches minimum above the bottom of the service equipment enclosure. The circuit breakers shall be of cable-in cable-out type.
- Service enclosure shall consist of absolutely no “Bolt-On” or “Plug-In” circuit breakers.
- Service enclosure shall be completely prewired in the factory and shall have a generator receptacle.
- Wiring will be to NEMA IIB standards showing external connections & external equipment. The neutral conductor shall run from the service equipment enclosure to the controller cabinet without splicing to any other neutral conductor. All bussing shall be UL approved copper THHN cable bussing, fully rated. The function of all circuit breakers, switches & other components as required shall be identified by laminated engraved plastic nameplates with minimum ¼” letters fastened with minimum of two #4-40 stainless steel machine screws.
- Wiring schematics will be Computer Aided Drafting & include all external equipment & connections per NEMA IIB.
- As built factory drawings shall be enclosed in clear plastic & held inside the outer door by welded hooks.

The Contractor shall coordinate with PG&E any necessary service connection. The Contractor shall pay any fees and costs required by the utility company. The Contractor shall contact all serving utilities prior to performing any service work and shall do all work and furnish all materials necessary to conform to the requirements of the utility companies. The Contractor shall comply with PG&E requirement for connection to service point, including attached PG&E requirement, to the satisfaction of the Engineer.

CONTROLLER ASSEMBLY

18.21 CONTROLLER AND CABINET

Controller assemblies shall conform to Section 86-3 “Controller Assemblies” of the Standard Specification and these special provisions. The police panel shall include a ¼ inch RCA phone plug clearly labeled “Stop Time” and wired to the stop timer for all pre-programmed standard ring structures. The cabinet shall also include a stop timer switch fully insulated ergonomic push button with 6-foot coiled extension. The pushbutton shall be supplied to traffic engineering or signal operation staff.

The Contractor shall furnish one (1) complete traffic signal controller assembly fully loaded with detector amplifiers, relays, load switches, flasher unit, conflict monitor unit, and preemption cards per project location as indicated on the plans. The contractor shall install the traffic signal controller assembly at the project site once properly tested. Attention is directed to Section 18.17 of these special provisions. The contractor shall furnish spare modules for each unit as described below unless otherwise noted, compatible with the City’s traffic management and controller assembly.

Controller Assembly (Spares) for each New Intersection	
Quantity	Description
1	2070 1B CPU with Ethernet Port
1	2070 2A 332 Cabinet I/O
1	2070 4C Power Supply
2	764 Phase selector cards
5	Dual Channel Detector Amplifier Cards

The controller cabinet shall be a Model 332 cabinet wired for 8 vehicle phases, 4 pedestrian phases, 24 overlaps, and 24 channels of detection constructed with anodized aluminum.

There shall be a minimum of 8" clearance from the bottom of the auxiliary load bay to the top of the conduits. The cabinet base shall have a separate 3-inch conduit and pull box for signal interconnect cable. The controller cabinet shall have florescent lighting inside which automatically turn on when the cabinet doors are opened. Two (2) fans will be installed. The cabinet shall also have a 1 sliding pull out tray that can be used as a shelf for laptops including a plexiglass lid.

The Contractor shall construct the controller cabinet foundation, including furnishing and installing anchor bolts, install the controller cabinet on said foundation, and shall make all field wiring connections to the terminal blocks in the controller cabinet. The foundation shall be as specified in State Standards Section 86-2.03 Foundations. The controller assembly shall be properly sealed with weather proof sealant at the base of the cabinet. The pad shall large enough to allow a person to stand comfortably to open any doors and include the controller assembly, battery back-up cabinet assembly, and the service enclosure with adequate door swing clearance.

A 4 foot wide x 4 inch thick pathway shall be constructed providing access to the sidewalk from any curb. When installed on the foundation, the door of the cabinet shall face away from traffic so that a technician servicing the cabinet is able to simultaneously observe the operation of the intersection.

The controller shall be the "lite" version, Model 2070L ATC NAZTEC traffic controller per California Department of Transportation (Caltrans) specifications, dated November 2002 Transportation Electrical Equipment Specifications (TEES) and loaded with the operating system and traffic controller software compatible with the City's current system. The controller shall be equipped with the following modules and software preinstalled and configured:

- 2070-1B CPU with Ethernet port
- 2070-2A 332 Cabinet I/O
- 2070-3B 8x40 line display
- 2070-4C power supply
- 2070-7A dual serial port card

Ethernet Port: The 2070-1B shall be equipped with a working and operational Ethernet port. The Apogee controller software operating on the 2070-1B shall capable of utilizing the Ethernet port for data transfers. The operating system shall allow the user FTP and Telnet access via the Ethernet port.

2070-7A: The 2070-7A shall conform to the latest TEES specification, and shall be optically isolated.

Operating System: The 2070 controller software shall operate on the 2070-1B using Microware OS9 v3.2 or current version.

Software: The controller software shall be the most current version of the Patriot Version 76.0 with Transit Signal Priority (TSP) functionality NTCIP-based Naztec™ brand NTCIP-based Intersection Control Software.

Detector Cards: The detector amplifier cards shall be solid state 2-channel Model C-1103 SS (Reno A&E, Oracle, or approved equivalent) with backlit LCD and built-in tester for each channel.

Phase Selector Cards: The controller shall be prewired, preinstalled and shall include the proper number of cards according operational requirements identified on the plan plus one additional for spare. The card shall be GTT Opticom 764 series phase selector.

ADAPTIVE SIGNAL CONTROL

18.22 Description

This work shall consist of furnishing, configuring and placing into operation an adaptive traffic signal control system, which detects and collects vehicle data by processing video images and automatically optimizes the changing of traffic signals in response to real-time traffic demands. The system should have remote monitoring and configuring capability using IEEE 802.3 standards. The equipment shall meet the NEMA environmental, power and surge ratings according to the latest NEMA Specifications. The system shall include all equipment listed as shown on the plans and described in this special provision and shall include any incidental items necessary for the satisfactory operation of the system. This special provision shall be in addition to the standard specifications.

Adaptive signal control systems shall be utilized where there are at least two intersections within 1,500' apart. The chart below identifies the minimum equipment necessary to functionally operate an adaptive control system.

Adaptive Signal Control (Equipment) - (For 2 Intersections less 1500' apart)		
Quantity(Spare)	Description	Model
2 (1)	INSYNC Processor	Rhythm Engineering Product
8 (1)	Samsung Ethernet Cameras and Enclosures	SNZ5200N/ACH15HB-TR
8 (1)	R/G Cable	Rhythm Engineering Product
	InSync Detector Cards (4 Channel Capable)	Rhythm Engineering Product (detector call input)
2	DIN Relay II	DIN Relay II
2 (1)	Equipment Panel, Ethernet Switch, and Lightning Arrestor	HRP-600-24/LNX-800A-T
2 (1)	Auxilliary Cable	Rhythm Engineering Product (detector call input cable)
2 (1)	Ethernet Patch Cable (7')	Beldon (570-100-007)
8 (12)	Ethernet Patch Cable (3')	Beldon (570-100-003)
8 (2)	Ethernet Patch Cable (1')	Beldon (570-100-001)
2	Surge Protector Power Strip	812-7839
1	7" Monitor/USB Keyboard	619GL-70NP/ACK-5010UB
2	Pedestrian Module	Rhythm Engineering Product
8 (1)	Camera Mounting Brackets (Attach to camera enclosure)	Pelco Astrobrac Clamp p/n: AB-3009 (cable length: 62") Pelco Astrobrac Poles p/n: AB-2003 (pole length: 58" or 74") Pelco Camera Bracket p/n: SH-0514

18.23 Materials

Equipment and material shall be of new stock unless the contract provides for relocation of existing units or use of units furnished by others. New equipment and material shall be the product of reputable manufacturers, conform to requirements of CALTRANS 170 Specifications, ICEA, IMSA, ITE, MUTCD, NEMA, RETMA, NEX and regulations of the National Board of Fire Underwriters, as applicable, and meet the approval of the engineer. The contractor shall provide the following components with identified spares as provided by the manufacturer for a fully functional adaptive control system with pedestrian module.

System Components

A. General

The adaptive traffic control system shall consist of color video camera(s) enclosed in secure housing; a shelf/rack mounted processing unit, software and license for system control via a web browser such as Microsoft Internet Explorer on any authorized computer, and a switch with the capability of independently networking a minimum of 4 video cameras and the processor. The video cameras shall be digital cameras and their video feeds shall be available over standard Internet Protocol (IP) connection in Motion JPEG and MPEG 4 formats using the latest IP technology. All camera views shall be obtainable simultaneously without cable swaps. The system shall be capable of displaying post-processed video on a web browser such as Microsoft Internet Explorer. The engineer shall have the option to view one camera at a time, all cameras at an intersection, or some or all of the cameras along an arterial on a single browser window.

B. Detection System Data Access

The video detection system shall be programmable via a web browser using the same IP network connection that delivers the video camera output and thus allowing the engineer to have complete control of the system without being physically present at the intersection. It shall provide still image and real time detection displays in color video to a remote computer using a web browser such as Microsoft Internet Explorer. The system shall collect real-time traffic data such as vehicle counts, stop delay and level of service. Real-time and historical statistical information should be available to the engineer in graphical and/or tabular form as and when required.

C. **System Software**

The system shall include software that detects vehicles in multiple lanes using only the video image. The software should automatically account for changes in scene including but not limited to lighting conditions or adverse weather. The engineer would have the dual benefit of defining detection zones via a web interface accessible from any regular computer with an IP network connection or using a computer physically connected to the network (which may include a laptop computer). A minimum of 12 detection zones per camera shall be available. The detection zones should be capable of counting multiple vehicles within a single detection zone. The system software should communicate to an existing signal controller passively, allowing the signal controller to still handle emergency pre-empts. The software shall determine and display real-time queue lengths along each approach.

Processing Unit

A. **General**

The PU may be rack or shelf mounted and shall be modular in design. It shall support on-site configuration using a USB keyboard and VGA monitor, or remote configuration over an IP Network. It shall support on-site backup to/restore from a USB Memory Stick for rapid replacement. The PU shall contain at least 4 USB ports to allow simultaneous connection of keyboard/mouse and storage devices.

B. **Communications**

Communications from the PU to any computer shall be through RJ45 (8P8C) connector over a regular IP network connection at the installation location or over a network. The computer shall have the capability to download detection data as well as the real-time detection information needed to show detector actuations. The user shall also have the capability of connecting directly to the detection cameras over the IP network and display post-processed and pre-processed color video in the MPEG 4 and MJPEG format.

C. **Compatibility with NEMA Standards**

The PU shall be available with NEMA TS1/TS2 detector interface. Output levels shall be compatible with the NEMA TS1 and NEMA TS2 Type 2 standards.

D. Historical Split Information

The PU shall store historical split information and shall compute and deploy optimized signal splits based on historical split information when the system goes into fog mode or emergency mode.

E. Free Mode Controller Operations

The PU shall input optimized detector calls into a controller that is running in free mode.

F. Suspension of Inputs When Needed

The PU shall suspend, for the necessary time, its inputs to a controller when calls of a higher priority are put in to the controller by pedestrians, preemption vehicles or the pre-determined parameters set by traffic officials.

G. Transmission of Information to other Intersections

The PU shall automatically send all necessary information to processors at adjacent upstream and downstream intersections in order to facilitate the optimization of traffic flow along an arterial.

H. Optimization of Traffic Flow

The PU shall optimize the flow of traffic at both intersections and arterials based on the possible states of traffic rather than required splits, cycles and offsets.

I. Pedestrian Calls

The PU shall incorporate the optional capability to include pedestrian calls in the optimization algorithms.

J. Time Clock Synchronization

The PU shall keep accurate time using a mechanism that synchronizes the clocks at least weekly.

K. Time of Day Operation

The PU shall be capable of functioning in a detector mode or adaptive mode selectable by time of day and day of week.

Video Detection (for Adaptive Control)

A. Video Detection General

The video detection system shall provide flexible detection zone and/or count sensor placement anywhere and at any orientation within the combined field of

view of the image processors. Preferred presence detector zone configurations shall be a box or polygons across lanes of traffic placed parallel with lanes of traffic. A single detector zone shall be able to replace multiple conventional detector loops. Detection zones shall be capable of overlapping. Detection zones shall detect multiple vehicles within a single detection zone.

B. Detection Zones

The detection zones shall be created by using a pointing device and a graphical user interface (GUI) displayed on any computer connected directly to the PU or a GUI available to any authorized remote terminal over IP network connection. It shall be possible to add, edit or remove previously defined detector configurations to fine-tune detection zone placement.

C. Detection System Outputs

When a vehicle is detected by crossing a detection zone, there shall be a visual change on the video display, such as a change in color or intensity, thereby verifying proper operation of the detection system. The system shall compute and display real-time queue information per lane. The system shall compute and store traffic volumes, stopped time delay, and Level of Service per phase and display such information on demand over an Internet Browser.

D. Detection System Performance Standards

Overall performance of the video detection system shall be comparable to inductive loops. Using camera, optics and in the absence of occlusion, the system shall be able to detect vehicle presence with 95% accuracy under normal (day and night) conditions and with only a slight deterioration in performance under adverse (fog, snow, rain) conditions. During extremely adverse conditions or camera failures the system shall default to emergency mode or fog mode. The processor shall store historical split information and shall compute and deploy optimized signal splits based on historical split information when the system goes into fog mode or emergency mode.

E. Cameral Operation

The camera shall automatically function in a special mode at night and the processor shall utilize such images and conduct image processing after filtering out a high degree of reflected and ambient lighting. The PU shall change image parameters such as sharpness and contrast based on the lighting conditions.

F. Cameral Notification

The system shall be able to automatically generate notifications to one or more email addresses when a camera has failed or the view is obstructed (e.g. fog or ice).

Video Camera and Housing (For Adaptive Control)

A. Video Camera

The PU supplier shall furnish the video camera for traffic detection. The camera shall produce a usable color video image of vehicles under normal roadway lighting conditions regardless of time of day. Usable video in color shall be produced for scenes with a minimum luminance of 0.65 lux at aperture f-value 1.0.

B. Camera System Sensing and Video Stream

The camera system shall use a CCD sensing element and shall deliver MJPEG and MPEG 4 video streams simultaneously.

C. Camera Lens and Control

The camera shall include an electronic shutter or auto iris control based upon average scene luminance and shall be equipped with an auto iris lens.

D. Camera Focal Length

The camera shall have a variable focal length. The maximum aperture of the lens shall not be smaller than f1.8 and the minimum aperture shall not be larger than f360.

E. Camera Environmental Parameters

The camera shall be able to operate under harsh environmental conditions, including temperatures -30F (-34C) to 165F (74C), heavy rain, and ice. The enclosure shall allow the camera to be adjusted in the field during installation.

F. Camera Enclosure

The enclosure shall be equipped with a sun shield that prevents sunlight from directly entering the lens. The sun shield shall include a provision for water diversion to prevent water from flowing in the camera field of view.

G. Camera System Access

The camera system shall be Ethernet-centric. The system shall be capable of delivering MPEG-4 and MJPEG video to the switch in the cabinet. The user shall be able to access the camera directly over the network and configure the camera parameters using a standard Internet Browser.

Cable

A. Ethernet Cable

Any Ethernet cable run outside of the traffic cabinet shall be environmentally hardened, shielded, outdoor rated 350 MHz Category 6 cable. The cable shall be riser rated, 24 AWG solid copper, have Polyolefin insulation, UV and oil resistant PVC jacket. Pair 1 shall be Blue, White/Blue, Pair 2 shall be Orange, White/Orange, Pair 3 shall be Green, White/Green and Pair 4 shall be Brown,

White/Brown. The operating temperature shall be from -40° C to +70° C. The cable shall conform to the following standards: ISO/IEC 11801 Category 5e, NEMA WC 63, and ANSI/TIA/EIA 568-B.2 Category 5e. The cable shall be without splicing or joints for any single run. The contractor shall obtain instructions from the manufacturer about alternate architecture when length of a single run of CAT 5e cable exceeds 320 feet.

B. RJ-45

The RJ-45 plug connectors shall be used at both the camera and cabinet ends. The supplier of the video detection systems shall approve the Category 5 cable, RJ-45 connector and crimping tool and the manufacturer's instructions must be followed to insure proper connection.

C. Power Cable

Power cable shall be 14 AWG three-conductor cable. This cable shall comply with the requirements of IMSA Specification 19-1.

Adaptive Traffic Signal Control

A. Adaptive Control General

The adaptive traffic control module shall be contained within the PU. The PU shall communicate with neighboring PUs over an IP network. The PUs shall communicate information such as the green and red status of signal, queue lengths, and traffic volumes in real time. Based on such information received from adjacent signals and local traffic data, the PU shall optimize the phasing sequence, duration, and initiation of movements in order to optimize traffic flow on arterials as well as arterial networks.

B. Optimization of Green Time Allocation

The adaptive traffic control shall not use common cycle lengths but use principles of robotics and artificial intelligence to optimize traffic flow. The optimization shall be real time using principles of finite state changing machine and shall not involve switching between cycle lengths. The system shall not be in transition at any time but shall respond to real-time inputs with changing of states. Guaranteed arterial progression shall be created using dynamic green bands. Non-arterial traffic at each intersection shall be served adequately without interfering with the green bands.

C. Configuration of Signal Control

The supplier's engineers shall configure the adaptive traffic signal control system for optimal operation of the arterial or arterial network. Traffic flow and anomalous traffic conditions shall be programmed into the adaptive traffic signal control system.

D. Configuration via IP Network

The parameters for the adaptive traffic signal control shall be capable of being configured remotely over the IP network. Parameters are adjustable via a web browser capable of running Java, such as Internet Explorer. The software shall also display traffic signal green status and up to 48 camera views. All configuration information shall be stored in easily backed-up and humanly readable XML files.

E. Monitoring of Arterial

The system shall allow monitoring via a web browser such as Microsoft Internet Explorer on any authorized computer. Custom authorization levels must be supported, allowing users to view pre- or post-processed video, traffic counts and statistics, and to remotely control the intersection. Each authorization level will allow access to one or more of these capabilities.

It shall be possible to view a single camera, multiple cameras from a single intersection, or multiple cameras from multiple intersections. This system must be capable of displaying these views even under limited network bandwidth. It must be possible to format these views to support different size viewing screens.

It shall also be possible to use the web browser to view the status of the system over a geographic map of the area. The user must be able to pan and zoom around the map display, and it must allow access to the intersection configuration, camera views, the real-time green/amber/red status of the signals, and information about the historical performance of each phase at each intersection.

F. Self Monitoring of Arterial

The system shall be able to automatically generate notifications to one or more email addresses when it detects disruption of the communications network, failure of PUs, intersections going into flash, or other such events that would impact the operation of the arterial.

18.24 INSTALLATION

The adaptive traffic control system shall be installed as recommended by the manufacturer and as documented in the installation materials provided by the supplier. A factory certified representative from the supplier shall be on-site at the beginning of installation.

18.25 WARRANTY (ADAPTIVE SIGNAL CONTROL)

- A. Warranty Time Frame: -- The adaptive traffic control system software shall be warranted to be free of defects in material workmanship for a minimum of three years, and hardware for a minimum of two years.
- B. Support: -- During the warranty period, technical support shall be available from the supplier via telephone within 4 hours of the time a call is made by the user.

This support shall be available from factory certified personnel or factory certified installers.

CLOSED CIRCUIT TELEVISION CAMERAS (CCTV) AND BACKHAUL COMMUNICATIONS

18.25 The contractor is responsible for furnishing and installing the CCTV equipment and back haul communications as identified on the plans and per these specifications at the following intersections. The equipment will be delivered to the City's corporation yard. At that time, the City will be provided 2-4 weeks to assemble the parts. Once completed, the contractor shall be responsible to pick up and install the equipment on the traffic signal poles. City will perform all connections between the camera and the interface equipment.

CCTV Camera Equipment for (Fill In Intersection Here)			
	Equipment Description	Model Number	Quantity (Ea)
Camera Equipment			
	Camera	Sony SNC-WR630	1
	Camera Housing	DotWorkz D2-HB-MVP	1
	Camera Mounting	DotWorkz BR-MPM1	1
Camera Enclosure Equipment			
	Network Switch	KTI KGS-1060-HP	1
	Network Power Supply	Meanwell SDR-240-48	1
	Circuit Breaker	Eaton FAZ-C5/NA-SP	1
	Distribution Block	Eaton CH16220-3	1
	Distribution Block Cover	Eaton CHCPB162-3	1
	Water Tight Fitting	Halex 27693	25
	NEMA 4 Enclosure	Hoffman A1212CHFL	1
	12" x 12" Enclosure Panel	Hoffman A12P12	1
CCTV Software Licensing			
	Camera License	OnSSI OC-ES-1C	1
	Camera Support (5-Year)	OnSSI SUP-OC-ES-1C-5Y	1
	Video Wall License	OnSSI OC-VWM-1C	1
	Video Wall License Support (5-Year)	OnSSI SUP-OC-VWM-5Y	1
CCTV and Traffic Data Wireless Communications			
	Equipment Description	Model Number	Quantity (Ea)
	Bridge	Bridgewave AR80X-AES	2
	Bridge	RADWIN RW-2050-0100	2
	Bridge	RADWIN RW-9921-1012	2
	Switch	HP 2920-24G-PoE+	1
	Switch	HP X121 1G SFP(J4858C)	2

(Communications Backhaul equipment will be location specific)

The intersection at (fill in intersection name here) will include back haul communication equipment that will enable communication to the City network.

SIGNAL AND VIDEO INTERCONNECTION

18.26 WIRELESS (SPREAD SPECTRUM RADIO AND YAGI ATENNA)

Radio Transceiver Kit: -- The contractor shall supply and install one (1) complete kit consisting of Spread-spectrum Radio Modem with Ground Isolation Interface Module, Yagi Directional Antenna with Helix Coax Cable (Andrew brand or equivalent) Olson Sky Bracket cable clamp kit SBC64-CCK, or approved equivalent, is used to mount antenna to pole or mast arm.

The Spread-spectrum radio "Microwave Data System" MDS Model iNet 900, or approved equivalent, with Ground Isolation Interface Module is to be mounted inside the 332 Cabinet. The radio modem shall be installed on the 19" rack 2" from the top of the rack and on the left side rear of the controller assembly (see figure 2). All remaining cabling and connections shall be mounted directly beneath the radio modem.

The sky bracket antenna for wireless interconnection shall be mounted just below the street light luminaire arm. See figure 2 for mounting detail.

The contractor shall assure that all conductors or cables used to install the antenna are protected and free of kinks that would result in signal loss.

(Delete this section if Spread Spectrum Radio not used on project)

18.27 MANAGED SWITCHES (FIBER/COPPER)

Description

The contractor shall provide/install and test all managed switches the ethernet over copper and fiber switch as one complete system. Any system support and setup will be provided by the contractor. The contractor shall provide classroom and field training sufficient for City staff to operate and maintain over the life of the equipment. All testing and connections will be performed for each of the managed switches. The contractor shall provide Ruggedcom as specified in these documents.

The locations and equipment quantities with spares are identified in this chart below.

Inter	Location (Inter.Name)	Equip Description	Model	Qty (Spare)
1	(Fill In - Primary Intersection Here)			
		VDSL Ethernet over Copper Switch with 18 Gauge Power with lugs 6' Long	RG900G-HI-D-2LC10-XX	1(1)
		Fiber Switch with 18 gauge power cable, 6' long	RX1500-L2-RM-HI-HI-L2SE-FG02-FG02-6TX0-1-TC2-XX	1(1)
2	(Fill In - Additional Intersection Here. Same equipment for additional intersections)			
		VDSL Ethernet over Copper Switch with 18 Gauge Power with lugs 6' Long	RG900G-HI-D-2LC10-XX	1
		Gigabit Fiber Switch with 18 gauge power cable, 6' long	RS940G-HI-D-V1-XX	1(1)

18.27A ETHERNET OVER COPPER WIRED INTERFACE (SWITCH)

Description

This device **Ruggedcom** Model RS930L shall be an 8 port industrially hardened, fully managed Ethernet switch supporting Ethernet over VDSL (EoVDSL) allowing up to 5km LAN segments over telephone grade cable (or other legacy twisted pair copper serial cabling) at up to 35Mbps symmetric data rates. The device shall allow aggregation of Ethernet enabled devices at a remote location back to the central control room with EoVDSL using existing telephone grade cable (or other legacy twisted pair copper serial cabling). The device shall be configured with two EoVDSL interfaces, for ring and loop network architecture and include an 18 gauge 6' power cable. The unit shall be capable of fastening to a din rail. The following characteristics and features shall be available on these units.

- A. Ethernet over VDSL port shall require/support:
 - a.) Up to 5km LAN segments
 - b.) Symmetric data rates up to 35Mbps
 - c.) Asymmetric data rates up to 40Mbps
 - d.) Automatically selects fastest data rate based on distance and quality of cable
 - e.) Software selectable to be master or slave (symmetric version)
 - f.) Frequency Division Multiplexing (FDM)

- B. Security shall include/support:
 - a.) Multi-level user passwords
 - b.) SSH/SSL encryption
 - c.) Enable/disable ports, MAC based port security
 - d.) Port based network access control (802.1x)
 - e.) VLAN (802.1q) to segregate and secure network traffic
 - f.) Radius centralized password management
 - g.) SNMPv3 encrypted authentication and access security

- C. Required features for harsh environments:
 - a.) Immunity to EMI and heavy electrical surges
 - i. Meets IEEE 1613, exceeds IEEE 61850-3 & 61800-3 (electrical utility substations)
 - ii. Exceeds IEC 61000-6-2 (generic industrial)
 - iii. Exceeds NEMA TS-2 (traffic control equipment)
 - b.) -40 to +85°C operating temperature (no fans)
 - c.) The unit shall contain no fans or moving parts
 - d.) The enclosure shall be constructed of 20 AWG galvanized steel
 - e.) DIN rail mountable

- D. Operating system required items:
 - a.) The plug and play operation shall include automatic learning, negotiation, and crossover detection
 - b.) RSTP (802.1D-2004) and Enhanced Rapid Spanning Tree (eRSTP) network fault recovery (<5ms)
 - c.) Quality of Service (802.1p) for real-time traffic
 - d.) VLAN (802.1q) with double tagging and GVRP support
 - e.) Link aggregation (802.3ad)

- f.) IGMP Snooping for multicast filtering
 - g.) Port Rate Limiting and Broadcast Storm Limiting
 - h.) Port configuration, status, statistics, mirroring, security
 - i.) Loss of link management on fiber ports
 - j.) SNTP time synchronization (client and server)
- E. Power supply requirements: The unit shall contain a fully integrated power supply, with no external adaptor and these parameters
- a.) Power Consumption: 10W MAX
 - a. Voltage shall be HI Voltage AC/DC: 88-300VDC, 85-264VAC, 0.1A
 - b.) Include terminal blocks
 - c.) CSA/UL 60950 safety approved to +85°C
- F. Physical required features:
The width x height x depth shall be 7.3" x 2.6" x 5.0" with a weight of 2.7 pounds, IP 40 ingress protection, an enclosure made up of a minimum of 20AWG steel enclosure and installation through the use of din rail.
- G. Switch required properties:
- a.) Switching method: Store & Forward
 - b.) Switching latency: 8 us (100Mbps)
 - c.) Switching bandwidth: 1.8Gbps
 - d.) MAC address table size: 16kbytes
 - e.) Priority Queues: 4
 - f.) Frame buffer memory: 1 Mbit
 - g.) VLANs: 64
 - h.) IGMP and static multicast groups: 256
 - i.) Port rate limiting: 128kbps, 256, 512, 4, 8Mbps
 - j.) No head of line blocking
- H. Industry required approvals:
- a.) ISO: Designed and manufactured using a ISO9001: 2000 certified quality program
 - b.) CE Marking
 - c.) Emissions: FCC Part 15 (Class A), EN55022 (CISPR22 Class A)
 - d.) Safety: cCSAus (Compliant with CSA C22.2 No. 60950, UL 60950, EN60950)
 - e.) Laser Eye Safety (FDA/CDRH): Complies with 21 CFR Chapter1, Subchapter J.
- I. Required technical specifications:
- a.) Network Management must include ROSVue HTTP graphical web-based, SNMP v1, v2c (v3), Telnet (VT100) and Command Line Interface (CLI)
 - b.) IEEE Compliance shall include 802.3-10BaseT, 802.3u-100BaseTX, 100BaseFX, 802.3x-Flow Control, 802.3z-1000BaseLX, 802.3ab-1000BaseTX, 802.3ad-Link Aggregation, 802.1D-MAC Bridges, 802.1D-Spanning Tree Protocol, 802.1p-Class of Service, 802.1q-VLAN Tagging, 802.1D-2004 -Rapid Spanning Tree Protocol, and 802.1x-Port Based Network Access Control
 - c.) IETF RFC Compliance shall include RFC768-UDP, RFC783-TFTP, RFC791-IP, RFC792-ICMP, RFC793-TCP, RFC826-ARP, RFC854-Telnet, RFC894-IP over Ethernet, RFC1112-IGMP (v1), RFC1519-CIDR, RFC1541-DHCP (client), RFC2030-SNTP, RFC2068-HTTP, RFC2236-IGMP (v2), RFC2284-EAP,

RFC2475-Differentiated Services, RFC2865-Radius, RFC3414-SNMPv3-USM, and RFC3415-SNMPv3-VACM

IETF SNMP MIBS shall include RFC1493-BRIDGE-MIB, RFC1907-SNMPv2-MIB, RFC2012-TCP-MIB, RFC2013-UDP-MIB, RFC2578-SNMPv2-SMI, RFC2579-SNMPv2-TC, RFC2819-RMON-MIB, RFC2863-IF-MIB, draft-ietf-bridge-rstpmib-03-BRIDGE-MIB, draft-ietf-bridge-bridgemib-smiv2-03-RSTP-MIB, and IANAifType-MIB

- J. Required warranty:
5 Years - Applicable to design or manufacturing related product defects

Installation

The contractor shall be responsible for installing the equipment on the din rail to the back of the cabinet with connections facing the back door. City staff will provide location guidance within the cabinet. The contractor shall also terminate all the copper pairs neatly to the switch to the back of the 332 cabinet. The contractor will then adjust settings and perform any setup routine necessary for the operation of the switch.

18.28 FIBER (SWITCH)

Description

The fiber Ethernet switch, Ruggedcom Model RS900G shall include two fiber optic gigabit Ethernet ports (1000BaseLX) and 8 fast Ethernet ports (10/100BaseTX). The fiber ports shall be supplied with square/subscriber connector (SC) types. The managed Ethernet Switch with fiber optic uplinks and environmentally hardened Ethernet switch, herein referred to as a 'switch' shall be compliant with IEEE 802.3 (10Mbps) and IEEE 802.3u (100Mbps).

- A. Required operating environment shall consist of an ambient temperature range of -40°C to +85°C without the use of internal or external cooling fans in accordance with IEC 60068-2-1 and 60068-2-2. The switch shall be capable of operating properly in relative humidity conditions of 95% non-condensing at 55°C in accordance with IEC 60068-2-30. The switch shall meet the environmental requirements of traffic control equipment in accordance with NEMA TS 2 (1998), Section 2: Environmental Requirements. The manufacturer shall provide evidence of independent testing verifying that performance. In general, the switch shall comply with the environmental requirements outlined in Environmental Requirements – Table in this section. The switch shall be capable of operating properly when exposed to radiated electric fields of up to 10V/m continuously and magnetic fields of up to 40A/m continuously. In general, the switch shall comply with the EMI Immunity requirements given in IEC 61850-3 and IEEE P1613 (draft standard).

Environmental Type Tests				
TEST	Description		Test Levels	Severity Levels
IEC 60068-2-1	Cold Temperature	Test Ad	-40 deg. C, 16 Hours	N/A
IEC 60068-2-2	Dry Heat	Test Bd	+85 deg. C, 16 Hours	N/A
IEC 60068-2-30	Humidity (Damp Heat, Cyclic)	Test Db	95% (non-condensing), 55 deg C, 6 cycles	N/A
IEC 60255-21-1	Vibration	Tests Fc		Class 1
IEC 60255-21-2	Shock	Tests Ea		Class 1
IEC 60255-21-2	Bump	Tests Eb		Class 1

B. Port Requirements for the fiber switch shall have Up to 10 ports (8- 10/100BaseTX ports with 2 Fiber SC ports). The switch shall support the following requirements:

10/100BaseTX ports:

- RJ45 connectors
- Cable type: Category 5e, unshielded twisted pair (CAT 5e UTP)
- Segment Length: 100m
- Auto-negotiation support (10/100Mbps)
- Auto MDIX crossover capability
- Full Duplex operation (IEEE 802.3x)

1000BaseLX fiber optical ports:

- The connector receptacle shall be manufactured for a single mode SC connectors
- Optical Characteristics: 1310 nm single-mode
- Supports Fiber Type: 9/125 um single-mode fiber
- Optical Budget single-mode fiber: minimum 14 dB @ 1310 nm
- Full Duplex operation (IEEE 802.3x)

C. Networking Requirements - The switch shall support automatic address learning of up to 8192 MAC addresses.

The switch shall support the following advanced layer 2 functions:

- IEEE 802.1Q VLAN, with support for up to 4096 VLANs
- IEEE 802.1p priority queuing
- IEEE 802.1w rapid spanning tree.
- IEEE 802.3x flow control

D. Network Management Functionality Requirements

The switch shall provide the following network management functions:

- SNMPv2
- RMON
- Port Mirroring
- Spanning Tree
- Rapid Spanning Tree (IEEE 802.1w)

- Enhanced Rapid Spanning Tree (eRSTP™) network fault recovery (<5ms)
- E. Required security functions
- The switch shall provide the following security features:
- Multi-level user passwords
 - SSH/SSL (128-bit encryption)
 - Enable/disable ports, MAC based port security
 - Port based network access control (802.1x)
 - VLAN (802.1Q) to segregate and secure network traffic
 - RADIUS centralized password management
 - SNMPv3 authentication and 56-bit encryption
- F. Requirements for harsh environments
- The switch shall provide the features for the outdoor/harsh environment:
- Immunity to EMI and heavy electrical surges
 - Meets IEEE 1613 class 1 (electric utility substations)
 - Exceeds IEC 61850-3 (electric utility substations)
 - Exceeds IEC 61800-3 (variable speed drive systems)
 - Exceeds IEC 61000-6-2 (generic industrial)
 - Exceeds NEMA TS-2 (traffic control equipment)
 - Hazardous Location Certification: Class 1 Division 2
 - -40°C to +85°C operating temperature (no fans or moving parts)
 - Conformal coated printed circuit boards (optional)
- G. Required programmable critical failure relay - The switch shall provide a programmable critical failure out relay that may be configured to activate upon critical error detection such as loss of link or detection of critical system errors. This function shall be user enabled and programmable. The output contacts shall be available in a Form-C configuration and be capable of switching at least 30Vdc @ 2A.
- H. Required power supply requirements
- The switch shall provide the following power supply requirements and options
- Fully integrated power supply
 - Universal high-voltage range: 88-300VDC or 85-264VAC
 - Dual low-voltage DC inputs: 24VDC (10-36VDC) or 48VDC (36-72VDC)
 - Terminal blocks for reliable maintenance free connections
 - CSA/UL 60950 safety approved to +85°C
- The switch shall require no more than 10W of power.
- I. Mounting Requirements
- The switch shall provide options for DIN Rail mounting or panel mounting via brackets
- J. Safety Requirements - The switch shall comply with the following electrical safety requirements or equivalents: UL60950 or CSA C22.2 No. 60950 (safety requirements for IT equipment). The switch shall also have CE (Europe)

qualification. The switch shall also comply with FCC Part15 Class A for EMI emissions.

K. Warranty:

The Switch shall be warranted for defects in material and workmanship for five (5) years

Installation

The contractor shall be responsible for installing the equipment on din rail to the back of the cabinet with fiber modules on the switch facing the back door. City staff will provide location guidance within the cabinet. The contractor shall also terminate all the fibers neatly to the switch to the back of the 332 cabinet only after end to end fiber testing has been accomplished. The contractor will then adjust settings and perform any setup routine necessary for the operation of the switch.

18.28.1 FIBER SWITCH (MODULAR AND FIELD REPLACEABLE PORTS)

General

The contractor shall supply **Ruggedcom model RX1500** (1U) 19" rack mounted industrially hardened, fully managed, modular layer 2 gigabit ethernet switch. It shall operate in electrically harsh and climatically demanding utility substation and industrial environments as demonstrated below. The unit shall be available in WAN, serial, and ethernet. The unit shall be immune to electromagnetic interference (EMI) and heavy electrical surges often demonstrated in harsh environments. The unit shall operate at a temperature range of -40 to +85 degree centigrade. The unit shall be for single mode fiber optic. The unit shall adhere to the requirements below:

G. Required Security functions:

- a.) Multi-level passwords
- b.) SSH/SSL encryption capability
- c.) Prt based network access control (802.1x)
- d.) VLAN (802.1Q) allowing segregation and securing network traffic.
- e.) RADIUS centralize password management
- f.) SNMPv3 encrypted authentication and access security

H. Requirement for harsh environments

- a.) Immune to EMI and high voltage electrical transient voltages
 - a. Meets IEEE 1613 (electrical utility substations)
 - b. Exceeds IEC 61850-3 (electrical utility substations)
 - c. Exceeds IEC 61800-3 (variable speed drive systems)
 - d. Exceeds IEC 61000-6-2 (generic industrial environment)
 - e. Exceeds NEMA TS-2 (traffic control equipment)
- b.) Operating temperature between -40 degrees Celsius to +80 degree Celsius
- c.) Failsafe Output Relay for critical failure or error alarming

I. Physical Port Requirements

- a.) Four hot swappable field replaceable modules
- b.) Two redundant hot swappable power supplies
- c.) Four 1000LX Singlemode, 1310nm, SC Connector, 10km ports
- d.) Six 10/100TX RJ45 Ethernet ports

- e.) Two T1/E1 WAN Ports, Channelized via RJ-48
- J. WAN Port **optional** module requirements (when specified on plans)
 - a.) T1/E1 (channelized/unchannelized)
 - b.) E1 75 ohm via BNC connector
 - c.) Cellular (HSPA/EVDO)
 - d.) DDS
- K. Required serial ports (when used)
 - a.) Fully compliant EIA/TIA RS485, RS422, RS232 serial ports that is software selectable)-RJ45 connectors – DNP, MODBUS
 - b.) Raw socket mode support conversion of serial port
- L. Required supported protocols
 - a.) WAN
 - a. Frame Relay RFC, 1490 or RFC 1294
 - b. PPP RFC 1661, 1332, 1321, 1334, PAP, CHAP authentication
 - b.) IP
 - a. Routing OSPF, BGP, RIPv1 and 2
 - b. VRRP
 - c. Traffic control, NTP server, IP multicast routing
 - d. DHCP agent (Option 82 capable)
- M. Frame Relay Supported requirements
 - a.) ISO and ITU compliant, network certified
 - b.) ANSI T1.617 annex D, Q.933 or LMI local signaling
- N. Required management tools
 - a.) Web based, SSH, CLI management interfaces
 - b.) SNMP v1/v2/v3
 - c.) Remote syslog
 - d.) Rich set of diagnostic including alarms and logging
 - e.) Loopback diagnostic tests
 - f.) Raw and interpreted real time line traces
- O. Power supply requirements
 - a.) Modular
 - b.) Hot swappable
 - c.) The unit shall include a fully integrated power supply.
 - d.) Input voltage shall be of 15-72VDC, 88-300VDC, and 85-264VAC.
 - e.) CSA/UL 60950 safety approved to +85 degrees centigrade
- P. Warranty – 5 years

Installation

The contractor shall be responsible for installing the equipment on the back of the cabinet with fiber modules on the switch facing the back door. City staff will provide location guidance within the cabinet. The contractor shall also terminate all the fibers neatly to the switch to the back of the 332 cabinet only after end to end fiber testing has been accomplished. The contractor will then adjust settings and perform any setup routine necessary for the operation of the switch.

18.29 COPPER TWISTED PAIR INTERCONNECT

Materials

The contractor shall furnish and install 1-12 or 25 (per plan) pair, 19 gauge, air core copper inter-connect between each traffic signal in a separate conduit or as shown on the plans. The copper interconnect shall be ANSI/ICEA S-85-625-1996 (Formerly REA PE-22) specification. The insulation shall be polyolefin. The shielding shall be corrugated, copolymer coated 8 mil aluminum tape longitudinally applied with overlap.

Installation

The contractor shall provide a minimum of 5’ of slack in each of the pull boxes and 20’ of slack in the controller cabinet.

The contractor shall supply all support needed for end to end termination and testing.

18.30 FIBER INTERCONNECT

General

The contractor shall furnish and install 1-12 strand single mode or as shown on the plans.

Examples of System Components



Harness Assembly



Panel Assembly



Integrated 1U Housing



Direct Trunk

Product Specifications

General

All distribution cables shall be factory terminated and tested cable with pre-installed tether attachment points (TAPs) at customer specified location along the length of the distribution trunk cable for quick and reliable installation.

Standard optical fiber cable will pre-installed with tether attachment points at locations specified by the system design. The system trunk cable shall have the flexibility to be

configured in various network topologies for both outside plant (OSP) and inside plant (ISP) environment. The system shall consist of:

- Distribution Thru cable.
- Tether attachment Point (TAP) which includes a factory installed molded preformed system closure (access splice) at specified length of the distribution trunk cable.
- Tether assembly with pinned HMFOC connector.
- Point-to-point trunk with pinned or non-pinned HMFOC Connector for network extension based on application
- Harness, terminated on one end with a non-pinned HMFOC Connector and terminated on the other end, with one of the following: SC, LC, ST® Compatible, MTP® Connectors or factory terminated and sealed panel assembly

HMFOC (Hardened Mult Fiber Optic Connector)

The HMFOC shall be available in fiber count of 12. The HMFOC will have an 8° angled end face for single-mode and no angle for multi-mode and shall always mate “key up” to “key down.” The connector housings shall be keyed to ensure proper connector mating relative to the end face angle.

Direct Trunk & Harness

The direct trunk and harness cable assembly shall be robust in design with factory terminated connectors for superior optical performance and durability and ease of installation in all indoor or outdoor applications. These advantages directly translate into cost savings via a reduced installation time and a longer life-span (20 years) resulting in less repairs. The direct trunk shall be made with a non-pinned, MT-style, environmentally-hardened connector on both ends of the assembly. The direct harness shall be made with a non-pinned/pinned MT-style, environmentally-hardened connector on one end of the assembly, and either another non-pinned/pinned MT hardened connector, MTP, or the assembly is furcated up to 12 single-fiber connectors SC.

Prior to the cable assembly being made, individual tests shall be done on both the cable and the connectors. The cable itself shall be designed to and undergo Telcordia GR-20 testing, and the environmentally hardened connector shall be designed to and undergo Telcordia GR-3152 testing. The completed cable assembly shall be designed to and undergo Telcordia GR-326 testing.

Distribution Cable

The Distribution cable shall be made of standard loose tube cable design with 12 fibers to 144 fibers. The distribution cable shall consist of either Single mode fiber, Multimode — Standard 50/125 µm Fiber or Multimode — Laser-optimized 50/125 µm Fiber.

The Tether Attachment Point (TAP) “Access Splice “shall be a factory assembly that has a 5-ft tether spliced at pre-determined location. The TAP includes the Plug & Play AnyLAN System closure, where the cable is accessed and spliced to an environmentally-hardened OptiTip MT Connector tether assembly. The tether shall be a short cable section emerging from the TAP, terminated with a pinned OptiTip MT connector. Each Tether Attachment Point Shall allow up to two tethers per location and a maximum of 24 fibers.

Panel Housing (no pre-attached drop cable)

The housing shall be configured to accept one or two pin-less HMFOCs. The housing shall be configurable with SC connectivity. The housing shall have available configurations, a 12-fiber configuration. The 12-fiber configuration is for SC connectivity. The housing shall be configurable with 50um, and single-mode fiber and connector types. The housing shall be wall-mountable using a set of mounting ears and screws that comes with the hardware. The housing shall be compact so that it easily installed inside NEMA rated and IP-rated enclosures and other environments where space is a premium. The housing shall have nominal dimensions of 16.5cm x 15.2cm x 3.8cm (6.5in x 6.0in x 1.5in). The housing shall have a nominal weight of 0.7kg (1.5lb). The module shall satisfy various wiring standards including but not limited ISO/IEC 11801 and TIA 568. The insertion loss for ISPH connectors is 0.5dB max with a reflectance of < -55 dB and <-20dB max for single-mode and multimode respectively. The insertion loss for OptiTip MT connectors is 0.62dB and 0.75dB max with a reflectance of < -65

Panel Assembly (pre-attached drop cable)

The panel assembly shall be a rugged, modular patch panel assembly with drop cable length, an ideal solution for industrial control networks. It shall be deployed at drop locations from the distribution trunk access point or used as a pre-installed patch panel at each end of direct link cable. The drop cable and panel shall be available in single tube drop outdoor cable and an indoor/outdoor drop cable.

The panel shall be mountable onto a variety of hardware devices, including swing-out mounting brackets and wall-mount boxes and shall not require any rack space. The maximum length of the drop cable shall be 500ft and shall be a factory-terminated hardened multi-fiber optic connector (pinned or non-pinned) or a pigtail. The panel shall be 12-fiber configurations and SC® Compatible Connectors Single-Mode fiber.

Manufacturer Requirements

The manufacturer shall have an in-depth knowledge, and more than 10-year history, of manufacturing and supporting pre-determined direct trunk cable and measured optical fiber cabling technology. Manufacturer shall be ISO 9001 and TL 9000 registered. Due to the custom nature of the pre-engineered, pre-measured distribution cable, a single part number is incapable of capturing all of the information required to produce the cable to the specific design requirements.

Fiber Installation

The contractor shall pull the 1-12 fiber (or as identified on plans), direct trunk harness into each pull box with a minimum of 12 feet of slack with connections (most commonly at the pull box adjacent to the controller cabinet) as identified on the plans. The fiber will then be routed to each controller cabinet with a minimum of 20 feet of slack. The pre-determined cable shall be tested panel to panel after installation.

Contractor shall leave 20 feet of fiber optic cable slack each fiber optic pull box for each cable entering the splice enclosure (60 feet for three cables).

Pull boxes shall not be installed in paved roadway surfaces. Conduits terminating in fiber optic vaults shall be brought into the box on a gradual upward sweep of up to 45 degrees. Fiber optic cable shall not be subject to any sharp bends – the cable shall never be bent to a radius smaller that 20 times the diameter of the cable or 9.5 inches.

Contractor shall tag and label each fiber optic cable with City of Fairfield and location (street name) for trunkline cables and (intersection name) for drop cables.

The Contractor shall make a physical survey of the project site for the purpose of establishing the exact cable routing and direct trunk/distribution cable lengths prior to the commencement of any fiber optic work or committing any fiber optic materials. The Contractor shall submit a cable routing plan that shows the locations of all HFOC joints. The fiber will not be spliced unless shown on the plans or otherwise approved by the Engineer.

The Contractor shall obtain manufacturer's handling and installation recommendation instructions. Instructions shall be provided with each reel in a weatherproof envelope attached to the reel.

The Contractor shall use a 3/4" pull 2,400 lb traceable pull tape with footage markings to pull the fiber optic cable into the conduit, or approved equal. coordinated to pull simultaneously in continuous pulling operation.

The fiber optic cable pull rope shall be adequately attached to the fiber optic cable using Cable Manufacture approved pulling end, Kellems Grip connector and a one hundred pound (100lb) breakaway swivel. The pulling force from the pull rope to fiber optic cable shall be transferred directly to the integrated pulling eye on the HMFOC. This assembly shall be wrapped with black electrician's tape or equivalent to reduce the pulling friction of the pulling rope and fiber optic cable connection.

Splicing and Connectorizing: Will not be necessary with the predetermined fiber connections.

To log the fiber routes, terminations, the Contractor shall use a series of numbers and letters to describe the cable, tube, fiber and location of the termination or splice. The following naming convention shall be used as a guide to developing your documentation:

Intersection Name - Sequential #
Segment Name-# Strands
Buffer Tube Color-Strand Color

Fiber Testing

The fiber optic cable shall be meet the maximum acceptable loss in accordance to the TIA-standards. For this cable a maximum 1.5 dB of connection loss (0.75 dB for each connection) plus 0.3 dB of splice loss and 0.1 dB of fiber loss (1 dB / km).

Test results shall be furnished to the City in a neatly bound, printed format. Electronic submittal to the Engineer on floppy disk or compact disc (CD) shall also be required. The results shall include the software for the City to review and work with the traces.

The Contractor shall be responsible for formulating and developing test procedures and forms for approval by the City in conformance with ANSI/TIA/EIA 526-7 "Measurement of Optical Power Loss of Installed Single-mode Fiber Cable Plant." All tests shall be performed with light wavelengths at 1310 nm and 1550 nm. Test_forms shall contain at least the following basic information: type of test performed, type of

equipment used (including name and model number), results of calibration check, location of test equipment used, technician(s) performing the test, date of tests, wavelength(s) tested, cable ID reference, buffer tube color, reference reading, fiber number, direction of reading/attenuation, and any general notes or remarks the technician(s) determine to be pertinent to this process. The test forms shall include the required power level reading required in each strand of cable, based on the following equations:

For 1310 nm: Max loss = $0.35L + 0.08N + 0.5C + K$

For 1550 nm: Max loss = $0.25L + 0.08N + 0.5C + K$; where:

L = actual optical path length in km

N = number of splices in optical path

C = number of connectors

K = 3 dB (a constant for optical point discontinuities)

Contractor shall be responsible for installing a working cable, and providing written certification that each strand (even those that are unused or "dark") meet specifications, prior to the project being considered complete. It is at the contractor's discretion if pre-testing is needed. It is recommended that the Contractor consider testing the cable at three stages of the cable installation:

- Once the cable has been delivered but before it has been installed
- Once the trunk cable has been installed in the conduit, but before it has been spliced
- A final test once all splices and connectorizations are complete.

All results shall be submitted in printed form on 8 1/2 x11 paper in a suitable binder organized by cable and strand number. Each binder shall have a cover sheet indicating which cable(s) were tested, the operator's name, the reviewer's name, the type of test performed, and the date(s) of the test. Cover sheets for the final test results shall bear the reviewer's signature, the date, and a statement indicating that the installation complies with the requirements of this section.

All OTDR traces shall bear the signature or initials of the Contractor's representative who has reviewed the traces. The Contractor shall place a check mark on all traces that satisfy the requirements identified herein. For intermediate test results, the Contractor shall highlight any discrepancies that may exist and place a post-it flag on the subject page. The page shall bear a short description of the proposed corrective action (e.g., re-splice).

The final 'As-Built' testing results shall be prepared by the Contractor and submitted to the City for its maintenance and troubleshooting activities. Three copies of the as-built data sheets shall be provided to the Engineer and shall also include the following information:

Insertion loss measurements

OTDR measurements

Wavelength

Spectral width

Equipment used (manufacturer, model number, and serial number)

Direction of test

Final test: The Contractor shall connect the light source to the connectorized fiber and shall connect a power meter to the other end of the fiber. The Contractor shall turn the light source on and off at a rate of approximately once per second for three cycles. The individual observing the power meter shall record the response of the meter. The response shall be "OK" if the Contractor's individual notes the meter responding to each of the three cycles. Any other responses, such as no cycles, less than three cycles, or more than three cycles shall require a "BAD" response. For each "BAD" response, the Contractor shall submit to the City a statement summarizing the response noted on the power meter and shall correct all "BAD" responses. After making corrections to the cable, the strobe test shall be re-conducted. A tone modulated light source may also be used, in place of the three-cycle method, to conduct this test. Continuity tests shall be performed in both directions for all fibers terminated on both ends.

BATTERY BACK-UP

18.31 BATTERY BACK-UP SYSTEM ASSEMBLY

- A. The Contractor shall furnish two (2) S6 56 inch x26 inch x12 inch BBS Assemblies (by Alpha Technologies or City approved equivalent) complete with Novus FXM 1100 inverter, 106 Ah batteries, and all cabling for a fully operational unit as indicated in Section 10-3.18. The unit shall be provided on a separate pedestal. The Contractor shall install one complete BBS Assembly on the same concrete pad as the controller assembly, including furnishing and installing anchor bolts and terminated. The second complete BBS Assembly shall be delivered to the City of Fairfield Corporation Yard as a spare. The BBS cabinet shall be positioned on the concrete pad so that when all three cabinet doors (controller assembly, Type III AF Service enclosure and BBS assembly door) are opened simultaneously, there is ample space for the signal technician to perform maintenance.

Each BBS assembly shall include one (1) battery charging management system. The battery management system shall be capable of identifying failures resulting in ability to replace one battery at a time. The unit shall be capable of spreading charge voltage equally across batteries to maximize battery life and to compensate for battery differences as they age.

The BBS Cabinet shall be constructed of 0.125 inch aluminum, (painted to match the 332 cabinet) with stainless steel exterior hardware. The doors shall have neoprene gaskets and aluminum continuous hinge with stainless steel pin and bolts. The door shall have three-point locking system, which secures the top, center and bottom with aluminum bar door rods. It shall have a steel brush zinc plated door handle with a Corbin #2 key lock. The BBS cabinet shall have 100 CFM thermostat controlled fan inside and air vent with filter. It shall also have four adjustable shelves.

Battery Power Backup System: -- The Battery Backup System shall be Novus FXM model #1100 (by Alpha Technologies or approved equivalent). The contractor shall supply a Novus FXM model #1100 battery backup unit with the following minimum components:

-Inverter #1100

- Cable Assembly
- (4) 105 AH batteries

A. GENERAL

This specification establishes the minimum requirements for a complete emergency battery backup system for use with Light Emitting Diode (LED) Traffic Signal Modules. The Battery Backup System (BBS) shall include, but not be contain the following nominal requirements:

1. Input/Output Voltage: 120/230VAC
2. Input/Output Frequency: 60Hz/50Hz
3. Input Current: 12.6A/6.5A
4. Output Current: 9.2A/4.8A
5. Output Power to 55 degrees F: 1100W/VA
6. Output Power to 55 to 74 degrees F: 850W/VA
7. Battery String Voltage: 48VDC

- B. The BBS shall be capable of providing power for full run-time operation for an “LED-only” intersection (all colors: red, yellow, green and pedestrian heads) for up to 6 hours.

The BBS shall be designed for outdoor applications, in accordance with the Caltrans Transportation Electrical Equipment Specifications (TEES), dated August 16, 2002, Chapter 1, Section 8 requirements. The BBS system shall be UL listed for use with traffic signal equipment.

C. BBS Requirements

The BBS shall provide a minimum six (6) hours of full run time operation for an “LED-only” intersection in addition to what is shown below:

1. Automatic Voltage Regulation
2. Automatic Frequency Sensing
3. Remote Monitor and control communication with standard RS232
4. Emergency power off
5. Temperature compensating battery charging
6. Variable speed fan
7. Circuit breaker protection on the input and external battery input
8. Generator ready for extended run time applications
9. Selectable battery charging temperature compensation

The general specifications shall include:

1. Input Voltage Range (120VAC) – 85-175 VAC
2. Input Voltage Range (230VAVC) – 150 to 328 VAC
3. Output Voltage Regulation – +/- 10%
4. Waveform – Pure sine wave
5. Typical Efficiency – >98%
6. Inverter Output Voltage Regulation – +/-2%
7. Typical Output Voltage – <3%

8. Transfer Time – <5ms
9. Operating Temperature – -40 to 55 degrees Celsius
10. AC Input and Output – Terminal Block with maximum 10 AWG
11. Dry Contacts – Terminal Block with maximum 16 AWG
12. RS-232 Interface – DE9/DB-9 Female
13. Ethernet Interface – Factory installed RJ-45

D. Battery Testing Equipment

Each project shall include one (1) battery testing device suitable for accurately testing the load of the batteries. It shall be capable of testing the status of standby batteries. The unit shall test for proper conductance coupled with a utility load test. The unit shall be insulated crimps with a digital readout.

E. Warranty

Manufacturers shall provide a two (2) year factory-repair warranty for parts and labor on the BBS from date of acceptance.

Batteries shall be warranted for full replacement for two (2) years from date of purchase.

The warranty shall be included in the total bid price of the BBS.

TRAFFIC SIGNAL EQUIPMENT

18.32 TRAFFIC SIGNAL FACES AND HEADS

General: Traffic signal faces and signal heads as shown on the plans, and the installation thereof shall be 12 inch round and conform to the provisions in Section 86-4, "Traffic Signal Faces and Fittings," of the Standard Specifications and these Special Provisions. Eight (8) inch circular or arrow signal indications shall not be used.

18.33 VEHIVLE SIGNALS

A. General: Signal heads shall be die-cast or permanent mold-cast aluminum conforming to the most current ANSI Standards. Structural plastic or any other type of signal head material shall not be used.

1. Signal indications shall be furnished and installed by the Contractor.
2. Signal indications shall be die cast aluminum conforming to ANSI standards. Structural plastic signal indications are prohibited from use.
3. Signal head nipples shall be of adequate length to accommodate back plates. Signal head covers shall lock and secure, closed by means of a wing nut and thread stock fastener.
4. All red circular "BALL", red "ARROW", yellow circular "BALL", yellow "ARROW", green circular "BALL", and green "ARROW" indications shall consist of Light Emitting Diodes (LED). The arrow and circular indications shall meet Institute of Transportation Engineers (ITE) Vehicle

Traffic Control Signal Heads (VTCSH) LED Circular Signal Supplement and provide an incandescent look.

5. The LED signal modules shall have prominent and permanent directional marking(s) that have an "up arrow", for correct indexing and orientation within the signal housing. The manufacturer's name, trademark, serial number and other necessary identification shall be permanently marked on the backside of the LED signal module. A label shall be placed on the LED signal module certifying compliance to this specification. The LED signal module shall be a single, self-contained device, not requiring on-site assembly for installation into an existing traffic signal housing.
6. The minimum luminous intensity values and light output distribution shall be as shown in Section 11.04 and Table 1 of the ITE VTCSH) Standard in Equipment and Materials Standards of the ITE
7. The maximum wattage for twelve-inch "BALL" indications shall not be more than 22 watts and 10 watts for twelve-inch "ARROW" indications.
8. The LED signal modules shall be operationally compatible with currently used controllers and conflict monitors.
9. The LED signal modules shall be rated for use in the ambient operating temperature range of -40C to 74C.
10. The LED signal modules shall be dust and moisture tight to protect all internal LED and electrical components.
11. The LED signal module will be replaced or repaired by the manufacturer if it exhibits a failure due to workmanship or material defects within the first 60 months of operation.
12. All signal heads, hardware, and back plates shall be factory powder coated method using industry standards and shall be black. Signal hardware shall be black or hunter green.
13. Signal head mounting bracket arms shall be long enough to permit proper alignment of signals and back-plate installation.

18.34 EMERGENCY VEHICLE PREEMPTION (OPTICAL DETECTORS)

The optical detector typically mounted on poles or mast arms shall be installed per plan and compatible with existing City system. The optical detectors shall be GTT dual channel Opticom 722. The optical detectors shall be drilled out as recommended by the manufacturer to allow for moisture release.

18.35 BACK-PLATES

- A. General: Back-plates shall be provided on all vehicle indications. All back-plates shall be factory powder coated black louvered one-piece.

18.36 PEDESTRIAN SIGNALS AND PUSH BUTTONS

General: Pedestrian signals shall conform to the provisions of Section 86-4.06, "Pedestrian Signal Faces," of the State Standard Specifications, all applicable ITE specifications Pedestrian Traffic Control Signal Indications (PTCSI) and these Special Provisions. All pedestrian indications shall be countdown type.

- A. Pedestrian signal face modules shall be designed to mount behind or replace the *existing faceplate of Type "A" housing as specified by the requirements of the ITE Standards*, "Pedestrian Traffic Control Signal Indications", and the CA MUTCD.
- B. The design of the modules shall require a specific mounting orientation.
- C. Each module shall provide an average luminous intensity of at least 3,750 candela/m² for Upraised hand and 5,300 candela/m² for the walking person symbol throughout the useful life over the operating temperature range.
- D. The uniformity ratio of an illuminated symbol shall not exceed 4:1 between the highest luminance area and the lowest luminance area in the module.
- E. The color output of the module shall conform to the requirements of the ITE: "Pedestrian Traffic Control Signal Indications" and the CA MUTCD. The measured chromaticity coordinates of the modules shall conform to the chromaticity requirements of section 5.3.2.1 and Figure C of the VTCSH standard.

Raised Hand shall be Portland orange and shall be filled.

Walking figure shall be lunar white and shall be filled.

- F. The module shall not require special tools for installation.
- G. The module shall fit securely into existing pedestrian signal section housings built to the PTCSH specifications without modification to the housing.
- H. The pedestrian signal face shall be no less than 16" high.
- I. The modules shall be self-contained device not requiring on-site assembly for installation into a Type "A" pedestrian push button housing.
- J. The pedestrian signal shall be capable of displaying the LED "Raised Hand" legend and two (2) seven segment digits, constructed of dual row of LED's, simultaneously. Four (4) additional units shall be supplied per each intersection.
- K. The signal shall be configured, such that the countdown timer can start at the end of the "Walk" portion of the pedestrian phase.

- L. A 1 ½ inch deep z-create type visor of 0.030 inch minimum thickness shall be installed on all the pedestrian signal face. The visor shall be installed parallel to the face of the pedestrian message and shall be held in place with the use of stainless steel screws

Pedestrian signals shall be Type A. The assembly shall be mounted in a frame constructed of 0.04-inch minimum thickness aluminum alloy.

Pedestrian signals shall be installed watertight by means of appropriate washers.

The pedestrian indication shall utilize a standard egg crate type visor using stainless steel screws. The pedestrian head door shall be attached by means of hinges on the bottom and wing nuts on the top.

The screen and frame shall be anodized flat black.

18.37 AUDIBLE PEDESTRIAN SYSTEM (APS) - PEDESTRIAN PUSH BUTTONS (POPB)

General: Consistent with the CA MUTCD, the contractor shall furnish and install audible-tactile signal system consisting of electronic control equipment, mounting hardware, push buttons and signs, which are designed to provide both push buttons with raised vibrating tactile arrow on the button, along with a variety of audible sounds for different pedestrian functions. Each intersection shall include the following or equal:

2-Wire Accessible Pedestrian Signal (APS) per intersection		
Quantity(Spare)	Description	Model
1 (1)	2-Wire navigator	P/N#EN25ANO-G
1 (1)	2-Wire Central Control Unit	P/N#CCU2EN
1	Custom Voice message for navigator	P/N#Nav-VOL
1	Handheld Configurator	P/N#Econfig

The system shall consist of a central control unit and pedestrian push button stations, and hand-held infrared programming device for adjusting the system options and volume levels.

- A. Design – The system shall meet functionality of CA MUTCD requirements in addition to NEMSA TS2 2.1, temperature and humidity requirements, transient voltage protection requirements, mechanical shock and vibration requirements, IEC 61000-4-4/5 transient suppression requirements, FCC Title 47 electronic noise requirements. The pedestrian push button station and enclosure, central control unit (CCU) and pedestrian monitor station shall meet NEMA 250 TS1 requirements. In addition to these requirements the following must be met:
 - 1. The APS system shall be a 2 wire system, able to be used with standard pedestrian push button cabling, one pair of wires plus a common. No special cabling shall be needed.

2. The system shall include a central control unit, which can be configured for 12 push button stations.
 - a. Is installed in controller cabinet
 - b. Provides a confirming button push via LED latching, sound, and vibra-tactile bounce
 - c. Cuckoo, chirp or standard voice message during walk can be set up
 - d. A vibrating walk is provided
 - e. Shall have options for a standard locating tone, custom sound, or verbal countdown during pedestrian clearance
 - f. Sounds shall have the ability to adjust at 60dB range
 - g. The system shall have the ability to set minimum and maximum sound ranges
 - h. All sounds shall be synchronized
 - i. An extended button push can turn on, boost volumes, and/or mute all sounds except those on the activated crosswalk
 - j. Special messages can be made available to the agency
 - i. Custom locating tone
 - ii. Informational message
 - iii. Custom walk sounds/message
 - iv. Custom clearance sound
 - v. Multiple languages
 - vi. Street name in Braille on the sign.
 - k. The system shall be able to provide both vibrating arrow button and audible sounds.
 - l. The speaker shall be weather proof.
 - m. A sunlight visible red LED shall latch "ON" to confirm the button has been pushed
 - n. The push button station shall include the entire housing, frame, sign, ADA compliant push button, and mounting hardware.
 - o. The housing shall be black

DETECTION

18.38 DETECTORS

Loop detectors for inductive detector loop installation shall conform to the provisions in Section 86-5, "Detectors," of the Standard Specifications and these Special Provisions.

- A. *Slots in asphalt concrete pavement surface shall be filled with "Hot-Melt Rubberized Asphalt Sealant" sealant per Section 86-5.01A(5), "Installation Details."*
- B. If an asphalt overlay is anticipated, an emulsified asphalt sealant shall be used. In no case shall the emulsified asphalt sealant be used on the surface of the final lift of asphalt.
- C. Detector loop configuration and location shall be as shown on the plans. The front loop shall be a Type D, capable of detecting bikes.
- D. Loop wire shall be IMSA Type 2 and loop detector lead-in cable shall be Type B

1. The traffic loop homeruns shall be twisted then spliced to the lead in cable in the pull boxes. All Splices shall be performed in the pull box made using Burndy "C" taps after striping. The methodology shall follow the steps below:
 - a. Solder using rosin core 60/40(tin to lead ratio) solder. The heat source shall be without flame
 - b. The splice shall be completely covered with Performix brand or equal "Liquid Tape", dielectric brush on liquid electrical tape rated at 1200volts/mil per coat, rubberized that will not harden or unravel,
 - c. Apply minimum 2 layers, ½ lapped, electrical liner-less rubberized splicing tape 3M 130C or equal
 - d. Apply minimum 4 layers, ½ lapped polyvinyl tape, 3M 33+ or equal.
 - e. Cover entire splice with electrical insulating coating and allow to dry, see above.

- E. Where loops are installed partially in rigid pavement, the installation of the detector shall be installed in such a manner as to provide a coupled schedule 80 PVC expansion fitting to allow flexing and differential settlement of two pavement types.

- F. The third paragraph of Section 86-5.01A(5), "Installation Detail," of the Standard Specifications is amended to read:
 1. Slots cut in the pavement shall be washed clean, blown out and thoroughly dried before installing conductors. Residue resulting from slot cutting operations shall not be permitted to flow across shoulders or lanes occupied by public traffic and shall be removed from the pavement surface before any such material flows off of the pavement surface. Residue from slot cutting operations shall be disposed of outside the roadway right of way in accordance with Section 7-1.13.

 2. No splices are permitted in detector lead-in cables.

- G. Loop lead-in cable from the first pull box to the controller cabinet shall be tagged with the identity of all conductor loops connected to the circuit.

- H. Each loop shall megger 2000 mega-ohms or greater.

18.39 DETECTOR HAND HOLE (DH)

Detector Hand holes for inductive detector loop installation shall conform to the provisions in Section 86-2.06, "Pull Boxes," of the Standard Specifications and these Special Provisions. DH shall be generally positioned along the lane lines. DH shall be Type A unless otherwise shown on the plans (see Caltrans standard plans detail ES-5E). Cast iron lid shall be marked "detector". DH conduit shall be placed using the detail for conduit in street as shown in the signal plans.

18.40 LIGHTING (INTERSECTION)

All new intersection and non-intersection cobra head style and theme lighting shall be Light Emitting Diode (LED). Refer to City Lighting standards 7.02 (A) 1.

18.41 MEASUREMENT AND PAYMENT

Traffic signal systems shall be measured and paid for as one complete installed system in operable condition including foundations, poles, mast arms, signals (traffic and pedestrian), lighting, wiring, detector loops, cabinets, controller and associated equipment, complete in place.

SECTION 19: TRAFFIC STRIPING AND PAVEMENT MARKINGS

19.1 DESCRIPTION

Work shall conform to Section 84 and 85 of the State Standard Specifications, State Standard Details, and CA MUTCD except as noted herein.

19.2 MATERIALS AND INSTALLATION

A. Thermoplastic

Materials shall conform to Section 84 and 85 of the State Standard Specifications except that thermoplastic material shall be required on all arterials, collectors, residential streets, and off site city facilities unless otherwise directed by the City Engineer.

All thermoplastic shall be alkyd thermoplastic.

Thermoplastic material for traffic stripes shall be applied at a minimum thickness of 0.100 inches. For legend and markings the minimum thickness shall be 0.125 inches. Thermoplastic traffic stripes and pavement markings shall consist of a single uniform layer of thermoplastic and a layer of bonded core elements and a layer of glass beads. The applicator for the bonded core elements and glass beads shall be capable of delivering a uniform drop rate at required application speeds.

The 1st layer of bonded core elements shall be 3M Bonded Core All Weather Reflective Elements for use in thermoplastic traffic stripes and pavement markings. The color of the bonded core elements shall match the color of the stripe or marking to which they are being applied. Application rate shall be 6.6 pounds per 100 sq. ft.

The 2nd layer of glass beads shall comply with AASHTO M247 Type 2. Application rate shall be 14.4 pounds per sq. ft.

Minimum Initial Retroreflectivity Values

	White	Yellow
Dry (ASTM E1710)	700	500
Wet recovery (ASTM E2177)	280	250
Wet continuous (ASTM E2176)	90	75

B. Pavement Markers

Pavement markers shall not be placed in pavement recesses.

Hot melt bitumen adhesive shall be used to cement the pavement markers to the surface. Rapid set type epoxy adhesive shall not be used without prior written approval from the City Engineer.

Only ceramic markers shall be used.

19.3 REMOVAL OF STRIPING, LEGENDS AND MARKINGS

- A. All traffic striping, legend and markings shall be removed completely by grinding or sandblasting. The maximum pavement scoring depth shall be 1/8". Final area of removal shall be in the shape of a square or rectangle. The removal marks shall not be the same shape as the legend or the marking being removed.
- B. All areas of the street that have been damaged by grinding or sandblasting as a result of striping, legend or marking removal, shall receive a minimum of one (1) coat of asphalt or seal coat. The asphalt coat shall be in a rectangular or square shape.

19.4 MEASUREMENT AND PAYMENT

Thermoplastic traffic stripes will be measured by the linear foot along the line of the traffic stripes without deduction for gaps and broken traffic stripes. Double traffic stripes consisting of two four-inch wide yellow stripes will be measured as two traffic stripes. Thermoplastic pavement markings will be measured by the square foot for the actual area covered.

Payment shall be made at the contract price per linear foot for traffic strips of the widths and patterns designated on the plans and per square foot for pavement markings as designated on the plans. The contract price shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals and for doing all the work involved in applying traffic stripes and pavement markings complete in place, including establishing alignment for stripes and layout work as shown on the plans, as specified in these specifications, and as directed by the City Engineer.

SECTION 20: SIGNS

20.1 DESCRIPTION

Work shall conform to Section 56 of the State Standard Specifications, details in the State Standard Plans, and CA MUTCD except as noted herein.

20.2 MATERIALS

- A. Sign Blanks – All signs shall have thickness of 0.080 gauge, except for ground mounted street name signs which shall be 0.125 gauge, non-recycled aluminum.
- B. Mounting Hardware – All brackets, banding, buckles, nuts, washers and bolts must be stainless steel unless otherwise noted herein. (When fastening signs to brackets, use plastic or fiber washers in between the flat washer and sign face to prevent damage to sign sheeting). Damaged sheeting due to improper installation is not acceptable and will be rejected.
- C. Sign Poles and bases – A break-away system using Western Highway Ultimate with soil stabilizer as appropriate or equal. Sign poles shall be perforated 12 gauge, 1-3/4" x 1-3/4".
- D. Street Name Signs (Corner) – Shall have a 9" vertical dimension, length will vary based upon the street name; minimum 24" length to maximum 48" length in 6" increments. The legend shall be white Series "C" with minimum 1/2" spacing. If the street name sign exceeds the 48" maximum length, Series B lettering maybe used. Street name lettering shall be 6" upper case and 4-1/2" lower case and street suffix lettering shall be 3" uppercase. In cases where the length of the street name is too long for a 48" sign plate, lettering may be narrowed to fit with prior City approval. There shall be a 1/4" white border.
- E. Cross Bracing – All 36" or larger ground mounted signs and larger shall be cross braced.
 - 1. The cross bracing shall be a flat 3/16" x 1" galvanized formed steel.
- F. Sign Reflectivity – All signs must comply with the following standards
 - 1. The sign face shall have white 3M diamond grade (or equal) reflective sheeting (ASTM Type XI) applied as a background. The legend, arrow, and border shall be cut out.
 - 2. Lettering/graphics shall be one of the following:
 - a. 3M Scotchlite Electrocut (letter cutting) or equal transparent cuttable film (1170 series) inverse cut to allow white reflective background to show through lettering.

- b. Screen printed using 3M 8801 series color translucent ink.
 - c. Both processes (a or b) will accomplish a color field with white copy.
 - d. The sign shall include a 3M series 1160 graffiti guard.

- G. Sign Color – All new warning signs in school areas shall be fluorescent yellow green.

- H. Street Name Signs on Signal Mast Arms or any aerially mounted signs.
 - 1. All sign hardware shall be aluminum and any moving parts shall be stainless steel.

 - 3. Various streets in the City change names at major intersections. Mast Arm Signs that designate different names shall be made with a 30 inch vertical blank by variable with suffix. The name of the roads to the right mounted shown as the street name on top. All legend shall be 8" upper and lower case.

 - 4. Various streets in the City change names at major intersections. Mast Arm

 - 5. Signs that designate different names shall be made with a 30 inch vertical blank by variable with suffix.

 - 6. The name of the roads to the right mounted shown as the street name on top.

 - 7. All legends shall be 8" upper and lower case.

- I. Corner Street Name signs shall be mounted on top of stop signs when appropriate, otherwise they can be mounted separately.
 - 1. The U Channel sign bracket with minimum 12" blade shall used and mounted on the new or existing square post. At least two holes shall be used to affix the bracket to the post and sign to bracket. A 5/16" x 3/4" bolt shall be used to affix the bracket to the pole. There shall be at least two threaded holes for the set screws to affix the sign to the blade. These set screws shall be a 12 point 5/16-18 x 1/2" as distributed by Simi Fasteners (or Equal). For clarification and guidance, contact traffic operations.

 - 2. The corresponding U channel bracket at the intersection shall be mounted with a one piece double bladed positioned perpendicular to each other. Each blade shall include two 5/16-18 threaded, spaced at 6" centers, to accept a 5/16-18x1/2" 12 point faster as distributed by Simi Fasteners (or Equal). The top street name sign shall not show the any holes.

20.3 INSTALLATION

- A. Sign Height – Traffic signs shall be mounted a minimum of 7'-0" and 7'-2" above existing grade from the bottom of the sign. Street name signs shall be mounted between 9'-0" and 10'-5" above existing grade. Height of the bottom of the sign maybe adjusted higher to compensate for roadway approach grade. Please refer to CA MUTCD for any variation.
- B. Street Name Signs – Shall be mounted on a square perforated tube above stop sign, if provided with a one piece bracket assembly mounted on the post and another once piece bracket assemble mounted above the first represented street name.
- C. New sign on any new or existing pole (street light or standard sign post) shall be installed using stainless steel bolts.

20.4 MEASUREMENT AND PAYMENT

Roadside signs on metal posts will be measure by lump sum combining dual signed posts, single signed posts, or strap and saddle on an existing or new post.

Mast arms signs shall be measured based on lump sum and incorporated into the cost of the traffic signal.

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SECTION 21: MISCELLANEOUS CONCRETE

21.1 DESCRIPTION

Work shall conform with Section 90 of the State Specifications and attain a minimum 28-day compressive strength of 3000 PSI.

21.2 MATERIALS

Contractor shall ensure that the concrete suppliers have a current (calendar year) mix design on file with the City of Fairfield prior to any placement of concrete.

21.3 TESTING

The compressive strength shall be tested in accordance with California Test Method No. 521. The consistency of concrete shall be tested in accordance with California Test Method No. 533. The sampling shall be in conformance with California Test Method No. 539. Casting, handling and storage shall be in conformance with California Test Method No. 540.

21.4 MEASUREMENT AND PAYMENT

Miscellaneous concrete shall be measured and payment made at the bid price per unit as shown on the bid sheet. Payment shall include full compensation for the furnishing, forming, placing and curing of the concrete together with the excavation, cushion material, and all incidentals.