



CITY OF PERRIS
COMMUNITY SERVICES

PROJECT MANUAL

INTERNATIONAL MOTHER LANGUAGE
MONUMENT SIGN PROJECT
CIP No. F-061

Prepared By:

City of Perris
Community Services Department
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Perris, CA 92570
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Perris, CA 92570
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Bid Opening: 10:00 AM (PST) August 15, 2022
Active Bidder Website

Pre-Bid Meeting – August 9, 2022
Expected Award of Contract – August 30, 2022
Mandatory Start of Construction – September 6, 2022



CITY OF PERRIS

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Project Information Sheet

Project:	INTERNATIONAL MOTHER LANGUAGE MONUMENT SIGN PROJECT
Date Published:	July 29, 2022
Project Bid Advertise Date:	July 29, 2022
Pre-Bid Meeting:	August 9, 2022 at 2:00 PM (PST)
Bid Opening Date:	August 15, 2022 at 10:00 AM (PST)
Expected Bid Award Date:	August 30, 2022
Mandatory Start Date:	September 6, 2022
Construction Time:	60 Calendar Days
Liquidated Damages:	\$500 per calendar day

Project Description:

The CITY OF PERRIS invites online bids on the City website, until 10:00 AM on August 15, 2022, for the **International Mother Language Monument Sign Project**. The City of Perris is requesting proposals from qualified Contractors to submit Informal Bid Proposals for the procurement and installation of an exterior monument sign with lighting at:

- (1) one specified location, and for the demolishing and disposal of existing landscaping and concrete flatwork, and rerouting irrigation and existing electrical components and the installation of new sod and landscaping as needed, located at **163 E San Jacinto Ave, Perris, CA 92570**.

The plans and specifications are available online to download through the Active Bidder website which can also be accessed through the City of Perris website (<https://www.cityofperris.org/our-city/city-hall/bids-rfps>). All Bidders will be required to hold their original bid prices, without change, for a period of forty-five (45) days from the date bids are opened, except to the extent relief is available pursuant to Public Contract Code, Section 5100 et. seq. The City may issue Addenda to the Bid documents during the proposal submission period by posting them on the online bid page. Contractors are responsible for ensuring that they received all Addenda prior to submitting a Bid proposal.

All inquiries shall be in writing through Active Bidder. The last day to submit technical inquiries or request for product substitutions shall be August 9, 2022 by 1:00 PM (PST)

Note: *See specifications for details regarding the above information.*

Contact Person for Purchasing Bid Package: Luis Natera
lnatera@cityofperris.org
City of Perris
227 N D Street, Perris, CA 92570
PH (951) 423-4002



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DOCUMENTS CHECKLIST

Please ensure that you have completed the following documents and have submitted originals with your proposal, as only responsive bids will be considered.

- Part I Procedural Documents - Bid pages BF-1 to BF-19
 - Bid pages BF-1 to BF-8
 - Bid Schedule of Values
 - Equal Employment Opportunity Certification
 - Non-Collusion Affidavit
 - Debarment and Suspension Certification
 - Non-Lobbying Certification
 - Addenda and Signature page
 - Bid Bond BF-9 to BF-10C
 - Designation of Sub-Contractors page BF-11
 - Listing of Manufacturers page BF-12
 - Anti-Trust Claim page BF-13
 - Contractor's certification concerning worker's compensation insurance page BF-14
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1.1 Labor Standard Provisions

“This is a state-assisted project and prevailing wage requirements will be strictly enforced. Contractors, including all subcontractors and apprentices, must be eligible to participate. State of California Prevailing Wage-Index 2020-1 are attached of the State of California Prevailing Wage Determination made by the California Director of Industrial Relations.”

“This project is subject to Sect. 3 Economic Opportunities to Low and Very Low-Income Persons and Business Concerns. Bidders seeking Sect. 3 preference must submit a Business Certification Form and required documentation. See attached Section 3 Fact Sheet for mor information.”

1.2 Incorporation of and compliance With State, Federal and Local Law.

All applicable State of California, Federal, and local laws, statutes, rules, regulations, orders, determinations, and resolutions required to be contained in public works contracts which are not specifically referenced in the Agreement are incorporated herein by this reference. The Contractor is responsible for and has an independent duty to be familiar with all State of California, Federal, and local laws, statutes, rules, regulations, orders, determinations, and resolutions related to, pertaining to, and/or associated with the work and services to be provided under the Agreement. All work and services rendered hereunder shall be provided in accordance with all laws, statutes, rules, regulations, orders, determinations, and resolutions of the City and any Federal, State or local governmental agency of competent jurisdiction.



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NOTICE INVITING SEALED PROPOSALS (BIDS)

PUBLIC NOTICE

City of Perris Public Project

International Mothers Language Monument Sign Project

SECTION 1 – NOTICE OF BIDS

The CITY OF PERRIS invites online bids on the City website, until 10:00 AM on August 15, 2022, for the **International Mother Language Monument Sign Project**. The City of Perris is requesting proposals from qualified Contractors to submit Informal Bid Proposals for the procurement and installation of an exterior monument sign with lighting at:

- (2) one specified location, and for the demolishing and disposal of existing landscaping and concrete flatwork, and rerouting irrigation and existing electrical components and the installation of new sod and landscaping as needed, located at **163 E San Jacinto Ave, Perris, CA 92570**.

As part of the Work, the Contractor shall furnish and assume full responsibility for everything required for the orderly progress and proper execution and completion of the Work, whether temporary or permanent and whether or not incorporated into the Work including, but not limited to, drawings, materials, equipment, labor including subcontractor, transportation, construction equipment and machinery, tools, and other facilities, incidentals, and performing all operation necessary and required in conformity with the requirements in the specifications and plans. The Contractor shall perform and complete assigned work including all demolition, construction services, supervision, administrative services, coordination of all Subcontractors, tests, inspections, and other items that are necessary to and appropriate for the finishing, equipping, and functioning of the facilities and structures, together with all additional, collateral, and incidental work and services required for the completion of the provision of the Work. The City reserves the right to accept the bids and the alternate bid or reject the bids. The approved plans and specification will be uploaded to the "Active Bidder" site.

The plans and specifications are available online to download through the Active Bidder website which can also be accessed through the City of Perris website (<https://www.cityofperris.org/our-city/city-hall/bids-rfps>). All Bidders will be required to hold their original bid prices, without change, for a period of forty-five (45) days from the date bids are opened, except to the extent relief is available pursuant to Public Contract Code, Section 5100 et. seq. The City may issue Addenda to the Bid documents during the proposal submission period by posting them on the online bid page. Contractors are responsible for ensuring that they received all Addenda prior to submitting a Bid proposal.

To be considered in the selection process, interested parties shall submit their Proposals online up to the hour of 10:00AM, on Monday, August 15, 2022. Late proposals will not be accepted.

The last day to submit technical inquiries shall be Wednesday, August 9, 2022, by 1:00 P.M. (PST). All inquiries shall be submitted through Active Bidder. All addenda shall be posted on the City website and contractors are to check the site during the bidding process. All addenda are to be acknowledged for a valid submission.

- (1) The successful bidder will have sixty (60) working days from the mandatory start of construction date (Tuesday, September 6, 2022) to fully complete all Work. Award of Contract is expected on Tuesday, August 30, 2022. There is a Pre-Bid Meeting scheduled for Tuesday, August 9, 2022, at 2PM onsite at the Caesar Chavez Library, 163 E San Jacinto Ave, Perris, CA 92570.

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Also scheduled is a Pre-Construction meeting on **Thursday September 1, 2022 at 1:00 P.M.** The City reserves the right to reject any and all bids and waive informalities, irregularities in the bidding. All contractors will be required to comply with all applicable Equal Opportunity laws and regulations. The City hereby notifies all bidders that it will affirmatively ensure that, in regard to this advertisement, minority business enterprises will be afforded full opportunity to submit bids in response to this invitation and will not be discriminated against on the grounds of race, color, or national origin in consideration for an award. Moreover, the City will not discriminate against any person or firm interested in providing goods or services to the City on the basis of race, color, religion, sex, marital status, national origin, age, veteran's status or handicap. Bidders are advised that it has been determined that DBE's could reasonably be expected to compete for opportunities on this project, and that there is likely a certain percentage of availability on this project. The City also advises that participation of DBE's in the specific percentage is not a condition of award.

MINIMUM AND PREVAILING WAGES: THE DAVIS-BACON FAIR LABOR STANDARDS ACT WILL BE ENFORCED. THE APPLICABLE WAGE DETERMINATION FOR SAID PROJECT IS THE ONE PUBLISHED 10-DAYS PRIOR TO BID AWARD.

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SECTION 2 - INFORMATION FOR BIDDERS

1. Bids will be received by the CITY OF PERRIS, herein called the "Agency", online up to the hour of 10:00 AM (PST), on August 15, 2022. Late proposals will not be accepted.
2. All bids must be made on the required Bid Form. All blank spaces for Bid Prices must be filled in, and the Bid Form must be fully completed and executed when submitted. All Bids must be submitted electronically through the City of Perris Active Bidder website. **Contractors must be registered with Active Bidder to bid on City projects.** Only sealed electronic bids will be received and evaluated for bid award.
3. Each Bid must be accompanied by a Bid Bond (on the required form) payable to the Agency for ten (10) percent of the total amount of the Bid. As soon as the Bid prices have been compared, the Agency will return the Bonds of all except the three lowest responsible Bidders. When the Contract is executed, the bonds of the two remaining unsuccessful Bidders will be returned. The Bid Bond of the successful Bidder will be retained until all Contract Documents have been executed and approved, after which it will be returned. A cashier's check or cash may be used in lieu of a Bid Bond.
4. The Agency may waive informalities, irregularities or reject any and all Bids. Any Bid may be withdrawn by written request prior to the above-scheduled time for the opening of Bids or authorized postponement thereof with right of resubmitting. The request for withdrawal shall be executed in writing by the Bidder or his duly authorized representative. Any Bid received after the bid time shall not be considered.
5. Bidders must satisfy themselves of the character of the Work to be performed by Examination of the site and reviewed of the Drawings and Specifications, including Addenda, if any. After Bids have been submitted, the Bidder shall not assert that there was a misunderstanding concerning the nature of the Work to be done.
6. The Contract Documents contain the provisions required for the construction of the Project. Information obtained from an officer, agent, or employee of the Agency or any other person shall not affect the risks or obligations assumed by the Contractor or relieve him from fulfilling any of the conditions of the Contract.
7. Bonds and Insurance Certificates must be in the form required by the Agency (substitutions may be permitted at the Agency's discretion). The Bond Company must be authorized to do business in the State of California.
8. The Contractor will be required to submit a certificate of insurance which indemnifies the Agency for any damage to any of the work resulting from fire, explosion, vandalism, water, malicious mischief, collapse, riot, aircraft, smoke, or any acts of God.

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9. A Payment Bond and a Contract Performance Bond (on the required form), each in the amount of one hundred percent (100%) of the Contract Price, with a corporate surety approved by the Agency, will be required for the faithful performance of the Contract.
10. Progress Payments will be made to the Contractor in accordance with the provisions of the Specifications and on itemized estimates duly certified and approved by the Agency submitted in accordance therewith, based on labor and materials incorporated into said work during the preceding month by the Contractor.
11. Attorneys-in-fact who sign Bid Bonds or Payment Bonds and Contract Performance Bonds must file with each Bond a certified and effective dated copy of their power of attorney.
12. The party to whom the Contract is awarded will be required to execute the Contract and submit the Payment Bond, Contract Performance Bond, and Insurance Certificates on the required forms within ten (10) calendar days from the date of the Notice of Award.
13. Pursuant to Government Code §4590, the Contractor may substitute equivalent securities for retention amounts, which this Contract requires. However, the Agency reserves the right to solely determine the adequacy of the securities being proposed by the Contractor and the value of those securities.
14. The Notice of Award shall be accompanied by the necessary Contract, Bond, and insurance Certificate forms. In case of failure of the Bidder to execute the Contract, the Agency may, at his option, consider the Bidder in default, in which case the Bid Bond accompanying the proposal shall become the property of the Agency. Forfeiture of the bid bond, or any deposit in lieu thereof, does not preclude the Agency from seeking all other remedies provided by law to recover losses sustained as a result of the Contractor's failure to execute a written contract to perform the work at his bid price.
15. The Agency, within ten (10) days of receipt of acceptable Labor and Material Payment Bond, Contract Performance Bond, Insurance Certificates, and Contract signed by the party to whom the Contract was awarded, shall sign the Contract and return to such party an executed duplicate of the Contract.
16. Notice to Proceed to start construction (mandatory) is scheduled for August 30, 2022. Should there be reasons why the Notice to Proceed cannot be issued for this date by City, the time may be extended by the Agency. If the Notice to Proceed has not been issued within the forty-five (45) day period or within the period mutually agreed upon, the Contractor may terminate the Contract without further liability on the party.
17. The Agency may make such investigations as it deems necessary to determine the ability of the Bidder to perform the Work, and the Bidder shall furnish to the Agency all such information and data for this purpose as the Agency may request. A conditional or qualified Bid will not be accepted.

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18. Award, if made, will be made to the lowest responsive, and responsible Bidder (all schedules) expected on August 30, 2022.
19. All applicable laws, ordinances, and the rules and regulations of all authorities having jurisdiction over construction of the Project shall apply to the Contract throughout.
20. Each Bidder is responsible for inspecting the site and for reading and being thoroughly familiar with the Contract Documents. Failure or omission of any Bidder to do any of the foregoing shall in no way relieve any Bidder for any obligation in respect to his bid.
21. Further, the Bidder agrees to abide by the requirements under Executive Order No. 11246 (Equal Employment Opportunity Clause), as amended, California Labor Code 1410 et. Seq., California Labor Code 1777.6, and implement Agency regulations concerning equal opportunity for apprentices.
22. All Bidders shall supply the names and address of Subcontractors as set forth in the Bid.
23. **Successful Bidder and Subcontractors shall obtain a City Business License prior to commencing any work within City limits. The license can be obtained via mail at City of Perris Business Support Center, 8839 N Cedar Ave #212, Fresno, CA 93720 or online at <https://perris.hdlgov.com/> or by phone at (951) 404-0586.**
24. The Director of the Department of Industrial Relations has ascertained the general prevailing rate of per diem wages and the general rate for holiday and overtime work in the locality in which the work is to be performed for each craft or type of workman needed to execute the contract or work as hereinafter set forth (see Labor Code 1770 et. seq.). Copies of rates are on file at the offices of the City Clerk of the City of Perris. Copies shall be made available to any interested party upon request. The successful Bidder shall post a copy of such determination at each job site. Attention is called to the fact that not less than the minimum salaries and wages shall be paid on this project by all Contractors and Subcontractors. The successful Bidder shall provide the Agency with copies of certified payroll on forms provided by the Division of Labor Standards Enforcement (213) 897-2905 or other approval forms.
25. Pursuant to Section 1740 of the California Labor Code, Bidders are notified that the said wage rates shall be subject to modification to comply with revisions in Federal Minimum Wage schedules without necessity of republication.
26. Bidder understands and agrees to hold his original bid prices, without change, for a period of forty-five (45) days from the date bids are opened except to the extent relief is available pursuant to Public Contract Code, Section 5100 et. seq.
27. If the Contract cannot be awarded within a forty-five (45) day period for any reason, Bidder understands and agrees that the time to award may be extended by mutual agreement between the Agency and each Bidder.

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Bidder understand and agrees that Bidders electing not to extend their original bids more than forty-five (45) days following a request for extension by the Agency shall be treated as withdrawing their bid and will not be considered in the final award. The Bidder may withdraw his bid without further liability on the part of either party.

28. To the extent permissible under Federal policy or regulation applicable to this project, the Contractor shall be permitted to substitute securities for any monies withheld by the public agency, pursuant to the provisions of California Public Contracts Code Section 22300.
29. Since time is of the essence, Bidder agrees to commence work under this contract on or before the mandatory construction start date of September 6, 2022 and to fully complete all work on or before the 75th calendar day. The Contractor agrees that failure to complete work within the time allowed will result in damages being sustained by the City. Contractor and City agree that failure to complete the project will result in inconvenience to the citizens of PERRIS. The parties also agree that failure to complete the project on time will prevent the City from having the use of the affected facilities. Therefore, the parties agree such damages among others are, and will continue to be, impracticable and extremely difficult to determine, but that \$500 a calendar day is the minimum value of such costs to the City and is a reasonable amount that the Contractor agrees to reimburse the City for each calendar day of delay in finishing the work in excess of the time specified for completion, plus any authorized time extensions. Execution of the contract under these specifications shall constitute agreement by the Contractor and the City that the above indicated liquidated damage amount per calendar day is the minimum value of the costs and actual damage caused by failure of the Contractor to complete the work within the allotted time, that such sum is liquidated damages and shall not be construed as a penalty, and that such sum may be deducted from payments due the Contractor if such delay occurs. Said amount may be reduced by the City if work is sufficiently completed within the allotted time so that the damages are minimized.
30. No contract will be awarded to any contractor who has not been licensed in accordance with the provisions of Chapter 9 of Division III of the state Business and Professions Code, Section 7,000 et seq. The contractor shall possess the appropriate legal and necessary licenses required to complete the work as shown in the contract at the time the contract is awarded.
31. For this contract, the contractor shall possess **Classification "B" General Building License** at the time the contract is awarded. A contractor is prohibited from working on this contract with any subcontractor who is ineligible to perform work pursuant to Section 1777.1 or 1777.7 of the Labor Code.
32. The City has established a DBE Annual Goal of 7.56% (3.99% Race Neutral and 3.57% Race Conscious). Participation by MBE and WBE Contractors, suppliers and sub-contractors are encouraged.

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- 33.** Bid prices shall include everything necessary for the completion of the work including but not limited to, materials, equipment, tools, other facilities, management, superintendents, labor, services, insurance, overhead, profit, permits, Federal, State, and Local taxes, etc.
- 34.** Bidders are required prior to submitting a bid to inspect the site of the work and satisfy themselves by personal examination or by such other means as they may prefer, as to the location of the proposed work, and of the actual conditions.
- 35.** Any information provided by the Landscape Architect, the City, or any City personnel is not intended to be a substitute for, or a supplement to the independent verification by the Bidder to the extent such independent investigation of site conditions is deemed necessary or desirable by the Bidder. Bidder acknowledges that he has not relied upon City, City personnel, or Landscape Architect furnished information regarding site conditions in preparing and submitting a bid hereunder. The Plans show conditions as they are believed to exist, but it is not intended nor is it to be inferred that the conditions as shown therein constitute a representation by the City or any of its officers that such conditions actually exist, nor shall the City or any of its officers be liable for any loss sustained by the Contractor as a result of any variance between any conditions as shown on the Plans and the actual conditions revealed during the progress of the project, or otherwise.
- 36.** The City disclaims responsibility for the interpretation by Bidders of data, such as projecting or extrapolating from the test holes to other locations on the site of the work, soil bearing values and profiles, soil stability and the presence, level and extent of underground water for subsurface conditions during construction operations.
- 37.** Submission of a bid by the Bidder shall constitute acknowledgement that, if awarded the Contract, the Bidder has relied and is relying on his own examination of (1) the site of the work, (2) access to the site, and (3) all other data and matters requisite to the fulfillment of the work and on his own knowledge of existing facilities on and in the vicinity of the work to be constructed under the Contract.
- 38.** The Bidders shall examine carefully the Plans and Specifications and the site of the proposed Project and shall solely judge for themselves the nature and location of the work to be done and all the conditions; and the submission of a Bid shall be deemed as conclusive evidence that a Bidder has made the necessary investigation and that the Contractor is satisfied with the conditions to be encountered, quantity and quality of the work or materials to be performed or furnished, and the requirements and provisions of the Plans and Specifications and the Contract Documents. The Bidder agrees that if he is awarded the Contract he will make no claim against the City, or any other City officials or City personnel based on ignorance or misunderstanding of any of the provisions of the Contract Documents, nor because of any unforeseen subsurface conditions except in the manner and under the circumstances as provided in the Contract Documents.

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- 39.** Each Bidder must be informed fully of the conditions relating to the construction of the project and the employment of labor thereon. Failure to do so will not relieve a successful Bidder of his obligation to furnish all material and labor necessary to carry out the provisions of his Contract.
- 40.** All applicable state laws, municipal ordinances, and the rules and regulations of all authorities having jurisdiction over construction for the project shall apply to the Contract throughout, and they will be deemed to be included in the Contract the same as though herein written out in full.
- 41.** No interpretation of the meaning of the plans, specifications or other pre-bid documents will be made to any Bidder orally. Every proper request for such interpretation shall be made through ActiveBidder, and to be given consideration must be received within the allotted time frame, noted on ActiveBidder. Any and all such interpretations and any supplemental instruction will be in the form of written addenda to the Contract Documents which, if issued, will be uploaded on ActiveBidder, not later than three (3) calendar days prior to the date fixed for the opening of bids. At any time prior to an announced bid opening time the City reserves the right to issue an addendum extending the bid opening time by one or more days. Failure of any Bidder to receive any such addendum or interpretation shall not relieve such Bidder from any obligations under his bid as submitted. All Addenda so issued shall become part of the Contract Documents. It shall be the responsibility of each Prospective Bidder to verify that each addendum has been received applicable to the project. Bidders are responsible to check ActiveBidder periodically to verify if new addenda have been posted.
- 42.** Before submitting a Proposal, Bidders shall carefully examine the Plans, read the specifications and all other Contract Documents, visit the site of the project, and fully inform themselves as to all existing and local conditions and limitations. It is expressly stipulated that the drawings, Specifications and other Contract Documents set forth the requirements as to the nature of the work and do not purport to control the method of performing work except in those instances where the nature of the completed work is dependent upon the method of performance.
- 43.** The quantities of the various classes of work to be done and material to be furnished under this Contract, which have been estimated as stated in the Proposal, are only approximate and are to be used solely for the purpose of comparing, on a consistent basis, the Proposals offered for the work under this Contract. If any error, omission, or misstatement is found to occur in the estimated quantities, the same shall not invalidate the Contract or release the Contractor from the execution and completion of the whole or any part of the work in accordance with the Specifications and the Plans herein mentioned, and for the prices herein agreed upon and fixed therefore, or excuse the Contractor from any of his obligations or liabilities hereunder, or entitle the Contractor to any damages or compensation except as may be provided in this Contract.

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44. The City reserves the right to pre-qualify all bids, post-qualify all bids, or reject all bids, not to make an award or accept the Proposal deemed most advantageous and in the best interest of the City. The City shall enter into a Contract with the lowest responsible responsive bidder whose proposal is satisfactory. A written Notice of Award will be sent to the successful Bidder(s).
45. **OR APPROVED EQUAL CLAUSE** -- Manufacturers or suppliers of materials and equipment may request that alternatives to specified products be considered equal and that inclusion of such alternatives be permitted in the bids. Such request must be made in writing and received by the City at Fourteen (14) calendar days prior to the date bids are to be received. Granting a request that an alternative product be considered equal to those specified may be made only by the issuance of an Addendum by the City. Denial of the request during bidding does not waive the manufacturer's or supplier's right to offer the alternative product to the Contractor after Award of the Contract. After Award of Contract, the offer will be considered as a substitution and will be considered only if the City believes the offer of substitution is equal to or superior in quality to the specified product.
46. As part of mobilization, the Contractor shall also provide a single place (job board, etc.) to place all required federal forms, Cal/OSHA and EEO labor compliance posters, all permits, all safety items, and any and all paperwork that must be posted in public view.
47. **Contractor has given the City written notice of all conflicts, errors or discrepancies that he has discovered in the Contract Documents and the written resolution thereof by City is acceptable to Contractor.**

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NOTICE TO ALL BIDDERS

Completion and submittal of all enclosed forms including, but not limited to sheets **BF-14 & BF-15** is required and must be included with original bid. Failure to submit the required documents shall be deemed as an incomplete bid and shall not be considered by City as a valid bid.

BID FORM

Bid Date: July 29, 2022

Time: 8:00 AM (PST)

Place: 101 North "D" Street, Perris- Online through Active Bidder

Project: International Mother Language Monument Sign Project

TO THE CITY OF PERRIS, hereinafter called the Agency, the undersigned, as Bidder, declares that he has carefully examined the location of the project, that he has examined the plans and specifications and addenda (if any), and has read the Information for Bidders, and hereby proposes and agrees, if this bid is accepted, to furnish all materials to do all work required to complete the said plans and specifications in the time and manner herein prescribed for the Bid Price set forth in the Schedule of Bid Items.

Proposal of _____, hereinafter called "Bidder", organized and existing under the laws of the _____ State of California, doing business as _____. Insert "a corporation", "a partnership", "a joint venture", or "an individual", as applicable.

No separate payment will be made for any item that is not specifically set forth in the Schedule of Bid Items. All costs, therefore, shall be included in the prices named in the Schedule of Bid Items for the various appurtenant items of work. In the case of discrepancies in the amounts bid, unit prices shall govern over extended amounts, and words shall govern over figures.

By submission of this Bid, each Bidder certifies, and in the case of a joint Bid, each party thereto certifies, as to his own organization that this Bid has been arrived at independently, without consultation, communication, or agreement as to any matter relating to this Bid with any other Bidder or with any competitor.

Since time is of the essence, Bidder hereby agrees to commence work under this Contract on September 6, 2022 and to fully complete all work on or before the 60 working day in accordance with the schedule provided in Notice Inviting Bids, after receiving the Notice to Proceed. The Contractor agrees that failure to complete work within the time allowed will result in damages being sustained by the City. Contractor and City agree that failure to complete the project will result in inconvenience to the citizens of PERRIS. The parties also agree that failure to complete the project on time will prevent the City from having the use of the affected facilities. Therefore, the parties agree such damages among others are, and will continue to be, impracticable and extremely difficult to determine, but that \$500 a calendar day is the minimum value of such costs to the City and is a reasonable amount that the Contractor agrees to reimburse the City for each calendar day of delay in finishing the work in excess of the time specified for completion, plus any authorized time extensions. Execution of the contract under these specifications shall constitute agreement by the Contractor and the City that the above indicated liquidated damage amount per calendar day is the minimum value of the costs and actual damage caused by failure of the Contractor to complete the work within the allotted time, that such sum is liquidated damages and shall not be construed as a penalty, and that such sum may be deducted from payments due the Contractor if such delay occurs. Said amount may be reduced by the City if work is sufficiently completed within the allotted time so that the damages are minimized.

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CITY OF PERRIS

COMMUNITY SERVICES

The undersigned, as Bidder, proposes and agrees, if the proposal is accepted, that he will execute a Contract with the Agency in the form set forth in the Contract Documents and that he will accept in full payment thereof the following prices as set forth in Bid Schedules.

Quantities provided in the Bid Schedule are for the purpose of comparison only and payments will be made on the basis of actual measurement of work completed. Upon receipt of the Notice of Award, Contractor shall submit to the Agency for approval, a detailed breakdown of the Contractor's cost estimate into the various elements of materials and construction operations. When approved, this breakdown will serve as a basis for the Agency to determine partial payments.

If awarded this contract, the Bidder agrees to execute the Contract and submit the Labor and Materials Payment Bond, Contract Performance Bond, and Insurance Certificates on the required forms within ten (10) calendar days from the date of the Notice of Award. The Notice of Award shall be accompanied by the necessary Contract, Bond, and Insurance Certificate forms. In case of failure of the Bidder to execute the Contract, the Agency may at his option consider the Bidder in default, in which case the Bid Bond, or any deposit in lieu thereof, accompanying the proposal shall become the property of the Agency. Forfeiture of the Bid Bond, or any deposit in lieu thereof, does not preclude the Agency from seeking all other remedies provided by law to recover losses sustained as a result of the Contractor's failure to execute a written agreement to perform the work at his Bid Price.

The Bidder's execution on the signature portion of this proposal shall also constitute an endorsement and execution of those certifications which are a part of this Proposal.

EQUAL EMPLOYMENT OPPORTUNITY CERTIFICATION

The bidder _____, proposed subcontractor _____, hereby certifies that he has _____, has not _____, participated in a previous contract or subcontract subject to the equal opportunity clause, as required by Executive Orders 10925, 11114, or 11246, and that, where required, he has filed with the Joint Reporting Committee, the Director of the Office of Federal Contract Compliance, a Federal Government contracting or administering agency, or the former President's Committee on Equal Employment Opportunity, all reports due under the applicable filing requirements.

NOTE: The above certification is required by the Equal Employment Opportunity Regulations of the Secretary of Labor (41CFR 60-1.7(b)(1)), and must be submitted by Bidders and proposed subcontractors only in connection with contracts and subcontracts which are subject to the equal opportunity clause. Contracts and subcontracts which are exempt from the equal opportunity clause are set forth in 41 CFR 60-1.5. (Generally only contracts or subcontracts of \$10,000 or under are exempt). Currently, Standard Form 100 (EEO-1) is the only report required by the Executive Orders or their implementing regulations.

Proposed prime contractors and subcontractors who have participated in a previous contract or subcontract, subject to the Executive Orders, and have not filed the required reports should note that 41 CFR 60-1.7 (b) (1) prevents the award of contracts and subcontracts unless such contractor submits a report covering the delinquent period or such other period specified by the Federal Highway Administration or by the Director, Office of Federal Contract Compliance, U.S. Department of Labor.

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CITY OF PERRIS

COMMUNITY SERVICES

Noncollusion Affidavit

(Title United States Code Section 112 and
Public Contract Code Section 7106)

In accordance with Title 23 United States Code Section 112 and Public Contract Code 7106 the bidder declares that the bid is not made in the interest of, or on behalf of, any undisclosed person, partnership, company, association organization, or corporation; that the bid is genuine and not collusive or sham; that the bidder has not directly or indirectly induced or solicited any other bidder to put in a false or sham bid, and has not directly or indirectly colluded, conspired, connived, or agreed with any bidder or anyone else to put in a sham bid, or that anyone shall refrain from bidding; that the bidder has not in any manner, directly or indirectly, sought by agreement, communication, or conference with anyone to fix the bid price of the bidder or any other bidder, or to fix any overhead, profit, or cost element of the bid price, or of that of any other bidder, or to secure any advantage against the public body awarding the contract of anyone interested in the proposed contract; that all statements contained in the bid or true; and, further, that the bidder has not, directly or indirectly, submitted his or her bid price or any breakdown thereof, or the contents thereof, or divulged information or data relative thereto, or paid, and will not pay, any fee to any corporation, partnership, company association, organization, bid depository, or to any member or agent thereof to effectuate a collusive or sham bid.

Note: The above Noncollusion Affidavit is part of the Proposal. Signing this Proposal on the signature portion thereof shall also constitute signature of this Noncollusion Affidavit. Bidders are cautioned that making a false certification may subject the certifier to criminal prosecution.

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CITY OF PERRIS
COMMUNITY SERVICES

DEBARMENT AND SUSPENSION CERTIFICATION

(Title 49, Code of Federal Regulations, Part 29)

The Bidder, under penalty of perjury, certifies that, except as noted below, he/she or any person associated therewith in the capacity of owner, partner, director, office manager:

- Is not currently under suspension, debarment, voluntary exclusion, or determination of ineligibility by any federal agency;
- Has not been suspended, debarred, voluntarily excluded or determined ineligible by any federal agency within the past 3 years;
- Does not have a proposed debarment pending; and
- Has not be indicted, convicted, or had a civil judgment rendered against it by a court of competent jurisdiction in any manner involving fraud or official misconduct within the past 3 years.

If there are any exceptions to this certification, insert the exceptions in the following space.

Exceptions will not necessarily result in denial of award, but will be considered in determining Bidder responsibility. For any exception noted above, indicate below to whom it applies, initiating agency, and dates of action.

Note: Providing false information may result in criminal prosecution or administrative sanctions.

The above certification is part of the Proposal. Signing this proposal on the signature portion thereof shall also constitute signature of this Certification.



CITY OF PERRIS

COMMUNITY SERVICES

NON LOBBYING CERTIFICATION FOR FEDERAL AID CONTRACTS

The prospective participant certifies, by signing and submitting this bid or proposal, to the best of his or her knowledge and belief, that:

- (1) No Federal appropriated funds have been paid or will be paid, by or on behalf of the undersigned, to any person for influencing or attempting to influence an officer or employee of any Federal agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with the awarding of any Federal contract, the making of any Federal grant, the making of any Federal loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any Federal contract, grant, loan or cooperative agreement.
- (2) If any funds other than Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any Federal agency a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with this Federal contract, grant, loan or cooperative agreement, the undersigned shall complete and submit Standard Form – LLL, “Disclosure of Lobbying Activities”, in accordance with its instructions.

This certification is a material representation of fact upon which reliance was placed when this transaction was made or entered into. Submission of this certification is a prerequisite for making or entering into this transaction imposed by Section 1352, Title 31, and U.S. Code. Any person who fails to file the required certifications shall be subject to a civil penalty of not less than \$10,000 and not more than \$100,000 for each such failure.

The prospective participant also agrees by submitting his or her bid or proposal that he or she shall require that the language of this certification be included in all lower tier subcontracts, which exceed \$100,000 and that all such sub-recipients shall certify and disclose accordingly.

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CITY OF PERRIS
COMMUNITY SERVICES

Person who inspected site of the proposed work as a representative of your firm:

Name (please print)

Date of Inspection

Bidder acknowledges receipt of the following Addenda:

_____	Dated _____
_____	Dated _____
_____	Dated _____
_____	Dated _____

NAME OF BIDDER: _____

NAME AND TITLE OF SIGNING PARTY: _____

SIGNATURE OF BIDDER: _____

(CORPORATE SEAL)

Contractor's California License No.

Name of License Holder

Type of License

Expiration Date

Contact Information:

Company Name: _____

Contact Person: _____

Title: _____

Company Address: _____

Phone Number: _____

Fax Number: _____

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CITY OF PERRIS

COMMUNITY SERVICES

INTERNATIONAL MOTHER LANGUAGE MONUMENT SIGN PROJECT Schedule of Bid Items

Bidder (Company Name): _____

The bid prices stated below shall include all cost for profit, overhead, material, labor, transportation, taxes, installation work and all other incidental cost and work that are necessary to complete all items as specified on the project plans and delineated in the project specifications ready for use by the City.

BASE BID ITEMS:

<u>Bid Item #</u>	<u>Unit</u>	<u>Item Description</u>	<u>Unit Cost</u>	<u>Total Figures</u>
1.	<u>LS</u>	<u>Mobilization including General Conditions, and Special Provisions</u>	\$ _____ LS	\$ _____
2.	<u>LS</u>	<u>Traffic Control System</u>	\$ _____ LS	\$ _____
3.	<u>LS</u>	<u>Construction Fencing With Windscreen</u>	\$ _____ LS	\$ _____
4.	<u>LS</u>	<u>Insurance and Bonds</u>	\$ _____ LS	\$ _____
5.	<u>LS</u>	<u>All Req. Construction & Utility Permits</u>	\$ _____ LS	\$ _____

DEMOLITION

5.	<u>LS</u>	<u>Demolition of (E) concrete, clearing and grubbing, etc.</u>	\$ _____ LS	\$ _____
----	-----------	--	-------------	----------

SITE CONSTRUCTION

6.	<u>LS</u>	<u>Site Concrete</u>	\$ _____ LS	\$ _____
7.	<u>LS</u>	<u>Pavers</u>	\$ _____ LS	\$ _____
8.	<u>LS</u>	<u>Trenching for electrical to Library Electrical Room.</u>	\$ _____ LS	\$ _____
9.	<u>LS</u>	<u>Other Site Work Landscape / Irrigation, Patching and Repairing, replacing sod installation, etc.</u>	\$ _____ LS	\$ _____

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CITY OF PERRIS
COMMUNITY SERVICES

MONUMENT SIGN

10.	<u>LS</u>	<u>Materials</u>	\$ _____	<u>LS</u>	\$ _____
11.	<u>LS</u>	<u>Installation</u>	\$ _____	<u>LS</u>	\$ _____
12.	<u>LS</u>	<u>Concrete Slab and Footings</u>	\$ _____	<u>LS</u>	\$ _____
13.	<u>LS</u>	<u>Custom Fabricated Memorial</u>	\$ _____	<u>LS</u>	\$ _____
14.	<u>LS</u>	<u>Powder Coating Metal Frame</u>	\$ _____	<u>LS</u>	\$ _____
15.	<u>LS</u>	<u>Red Flat earth, with Gold overlay of Continents</u>	\$ _____	<u>LS</u>	\$ _____
16.	<u>LS</u>	<u>Flag Pole Holders, & Dedication Plaques.</u>	\$ _____	<u>LS</u>	\$ _____

ELECTRICAL

17.	<u>LS</u>	<u>Lighting Fixtures</u>	\$ _____	<u>LS</u>	\$ _____
18.	<u>LS</u>	<u>Complete Electrical Installation Including All Connections, Conduits To (E) Walkway Lighting</u>	\$ _____	<u>LS</u>	\$ _____
19.	<u>LS</u>	<u>Connecting Electrical to (E) Panels in Electrical Room.</u>	\$ _____	<u>LS</u>	\$ _____

**TOTAL BASE BID AMOUNT FOR:
INTERNATIONAL MOTHER DAY LANGUAGE MONUMENT SIGN PROJECT
(Total Lump Sum Bid Amount)**

WRITTEN IN FIGURES \$ _____

WRITTEN IN WORDS

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CITY OF PERRIS

COMMUNITY SERVICES

Please note the following regarding bids:

- A. **Award, if made, will be based upon the responsible Bidder's lowest Grand Total Bid Amount of all bid items listed above. The City reserves the right to reject any or all bids received.**

The Grand Total Bid Amount stated above shall include all work and cost for work as specified on the project plans and delineated in the project specifications, whether specifically listed above or not, and all other incidental and appurtenant work that is necessary to complete the specific items of work including Bidder's overhead and mark-up, purchase of materials, tools and equipment, taxes, and all other taxes and fees, transportation cost, permit fees, testing laboratory cost, and all other costs made necessary by the Contract Documents to provide the City of Perris with a complete operational and facility meeting the approval of the City of Perris and other agencies having jurisdiction over the project.

- B. **Bid is for a project complete-in-place.**
C. **Bid shall include all sales tax, and all other taxes and fees.**
D. **Quantities above are for the purpose of comparison only, and payments will be made on a basis of actual measurement of work completed. For quantities indicated as lump sum, Contractor shall be paid at the Contract per lump sum price indicated, and shall include full compensation for all work and no additional compensation will be allowed thereof.**

The undersigned, as Bidder, proposes and agrees, if the proposal is accepted, that he will execute a Contract with the Agency in the form set forth in the Contract Documents and that he will accept in full payment thereof the following prices as set forth in Bid Schedules.

Payments will be made on the basis of actual measurement of work completed. Measurements which vary from estimated quantities shall require verification by City, and a written change order will be required prior to payment. Upon receipt of the Notice of Award, Contractor shall submit to the Agency for approval, a detailed breakdown of the Contractor's cost estimate into the various elements of materials and construction operations. When approved, this breakdown will serve as a basis for the Agency to determine partial payments.

If awarded this contract, the Bidder agrees to execute the Contract and submit the Labor and Materials Payment Bond, Contract Performance Bond, and Insurance Certificates on the required forms within ten (10) calendar days from the date of the Notice of Award. The Notice of Award shall be accompanied by the necessary Contract, Bond, and Insurance Certificate forms. In case of failure of the Bidder to execute the Contract, the Agency may at his option consider the Bidder in default, in which case the Bid Bond, or any deposit in lieu thereof, accompanying the proposal shall become the property of the Agency. Forfeiture of the Bid Bond, or any deposit in lieu thereof, does not preclude the Agency from seeking all other remedies provided by law to recover losses sustained as a result of the Contractor's failure to execute a written agreement to perform the work at his Bid Price.

The Bidder's execution on the signature portion of this proposal shall also constitute an endorsement and execution of those certifications which are a part of this Proposal.

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CITY OF PERRIS
COMMUNITY SERVICES

BID BOND

KNOW ALL MEN BY THESE PRESENTS, that we, the undersigned, _____ as Principal, and _____ as Surety, are hereby held and firmly bound unto the CITY OF PERRIS as Agency in the penal sum of _____

_____ for the payment of which, well and truly to be made, we hereby jointly and severally bind ourselves, successors and assigns. (Note: City of Perris requires bid bond to be at least equal to 10% of bid amount).

Signed, this _____ day of _____, 20__.

The Condition of the above obligation is such that whereas the Principal has submitted to the Agency a certain Bid, attached hereto and hereby made a part hereof, to enter into a contract in writing for the _____

NOW, THEREFORE,

A. If said Bid shall be rejected, or

B. If said Bid shall be accepted and the Principal shall execute and deliver a contract in the Form of Contract attached hereto (properly completed in accordance with said Bid) and shall furnish Bonds for his faithful performance of said Contract and for the payment of all persons performing labor or furnishing materials in connection therewith, the required Insurance Certificates, and shall in all other respects perform the agreement created by the acceptance of said Bid, then this obligation shall be void, otherwise the same shall remain in force and effect; it being expressly understood and agreed that the liability of the Surety for any and all claims hereunder shall, in no event, exceed the penal amount of this obligation as herein stated.

The Surety, for value received, hereby stipulates and agrees that the obligation of said Surety and its Bond shall be in no way impaired or affected by any extension of the time within which the Agency may accept such Bid; and said Surety does hereby waive notice of any such extension.

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CITY OF PERRIS
COMMUNITY SERVICES

IN WITNESS WHEREOF, the Principal and the Surety have hereunto set their hands and seals, and such of them as are corporations have caused their corporate seals to be hereto affixed and these presents to be signed by their proper officers, the day and year first set forth above.

**Two Witnesses
(If Individual):**

PRINCIPAL: _____

By: _____

Title: _____

ATTEST (If Corporation):

By: _____

Title: _____

(Corporate Seal)

SURETY: _____

ATTEST:

By: _____

By: _____

Title: _____

Title: _____

(Corporate Seal)

IMPORTANT: Surety companies executing Bonds must appear on the Treasury Department's most current list (Circular 570 as amended) and be authorized to transact business in the state where the Project is located.

THIS IS A REQUIRED FORM

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CITY OF PERRIS
COMMUNITY SERVICES

Any claims under this bond may be addressed to:

(Name and Address of Surety)

**(Name and Address of Agent
or Representative for
service of process in
California, if different
from above)**

**(Telephone Number of Surety
and Agent or Representative
for service of process in
California)**

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CITY OF PERRIS

COMMUNITY SERVICES

DESIGNATION OF SUBCONTRACTOR

In compliance with the provisions of section 2.3 of the Standard Specifications, the Bidder shall set forth below the name and location of the mill, shop or office of each Subcontractor and the portions of the work, which will be done by that Subcontractor.

In compliance with the provisions of the Government Code, Section 4100-4108, the undersigned Bidder herewith sets forth the name and location of the place of business of each Subcontractor who will perform work or labor or render service to the Contractor on or about the construction site of the work or improvements in an amount in excess of one-half of one percent (1/2%) of the Contractor's total bid and the portion of the work which will be done by each Subcontractor as follows:

% Of Work

Trade To Be Done Name License No. Address

* Identify any DBE subcontractors.



CITY OF PERRIS

COMMUNITY SERVICES

LISTING OF MANUFACTURERS

The Contractor shall submit this sheet with his Bid, completed, to list the manufacturers of materials he intends to use. It shall be understood that where the Contractor elects not to use the material manufacturers called for in the Specifications, he will substitute only items of equal quality, durability, functional character and efficiency as determined by the Agency. The Contractor should ascertain prior to bidding the acceptability of substitutes. Only one manufacturer shall be listed for each item.

<u>Item or Material</u>	<u>Manufacturer or Supplier</u>	<u>DBE*</u>
-------------------------	---------------------------------	-------------

No change shall be allowed of any material manufacturer listed after receipt of Bids unless the manufacturer so listed cannot furnish materials meeting the Specifications. Any manufacturer, which is not deemed to be equal-to or better in every significant respect to that required by the Contract Documents, shall be rejected at the sole discretion of the Agency. Should such change be allowed by the Agency, bidder shall provide materials meeting the specification, as determined by the Agency, and there shall be no increase in the amount of the Bid originally submitted.

* Identify if Supplier is a DBE.



CITY OF PERRIS
COMMUNITY SERVICES

ANTI-TRUST CLAIM

In entering into a public works contract or a subcontract to supply goods, services, or materials pursuant to a public works contract, the contractor or Subcontractor offers and agrees to assign to the Agency 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 [commencing with Section 16700] of Part 2 of Division 7 of the Business and Professions Code), arising from purchases of goods, services, or materials pursuant to the Public Works Contract or the Contract or the Subcontract. This assignment shall be made and become effective at the time the Agency tenders final payment to the Contractor, without further acknowledgment by the parties.

RESPECTFULLY SUBMITTED:

_____	_____
Signature	Please Print
_____	_____
Title	Address
_____	_____
Date	

_____	_____
Contractor's California License No.	Type of License
_____	_____
Name of License Holder	Expiration Date

THE REPRESENTATIONS MADE HEREIN ARE MADE UNDER PENALTY OF PERJURY.

_____ **Federal I.D. No.**

(SEAL-if Bid is by a Corporation)

ATTEST _____



CITY OF PERRIS
COMMUNITY SERVICES

CERTIFICATION - LABOR CODE SECTION 1861

I, the undersigned Contractor, am aware of the provisions of section 3700 et. seq. of the Labor Code which requires every employer to be insured against liability for Worker's Compensation or to undertake self-insurance in accordance with the provisions of that Code, and I, the undersigned Contractor, agree to and will comply with such provisions before commencing the performance of the Work of this Contract.

CONTRACTOR:

Firm Name

Signature

Print Name

Contractor's California License No.

Expiration Date

Federal I.D. No.

(SEAL-if Bid is by a Corporation)

ATTEST _____

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CITY OF PERRIS
COMMUNITY SERVICES

CERTIFICATION OF NON-DISCRIMINATION

On behalf of the Bidder making this proposal, the undersigned certifies that there will be no discrimination in employment with regard to ethnic group identification, color, religion, sex, age, physical or mental disability, or national origin; that all Federal, State, and local directives and executive orders regarding nondiscrimination in employment will be complied with; and that the principle of equal opportunity in employment will be demonstrated positively and aggressively.

DATED: _____

(Name of Bidder)

(Signature)

(Typed Name and Title)

**California
License No.**

Type of License

Name of License Holder

Expiration Date

Federal I.D. No.

(SEAL-if Bid is by a Corporation)

ATTEST _____



CITY OF PERRIS
COMMUNITY SERVICES

EXPERIENCE STATEMENT

Bidder submits, as part of his bid, the following statements as to his experience qualifications. Bidder certifies that all statements and information set forth below are true and accurate. Bidder hereby authorizes the agency to make inquiry as appropriate regarding his experience.

GENERAL INFORMATION

Submitted by _____

(Check One)

- A Corporation
- A Partnership
- An Individual

Principal office _____ (street address)
 _____ (City, state, zip)
 () _____ (telephone number)
 () _____ (FAX number)
 _____ (E-mail/optional)

1. If corporation:
When incorporated? _____ In what state? _____
2. How many years has your organization been in business as a contractor under your present business name?

Previous business name, if changed during past three years.

3. How many years of experience in similar trail improvement projects has your organization had:

As a principal contractor? _____

As a subcontractor? _____

List a minimum of three new construction park projects which your company has performed in the last five years that meets or exceeded the total scope of work for Morgan Park Phase II Project where the cost of construction for each project was at least \$1,000,000 or greater:

<u>Name & Address</u>	<u>Representative</u>	<u>Type of Work, Year</u>
<u>of Owner/Agency</u>	<u>and Telephone</u>	<u>Completed & \$ Amount</u>

B-15A



CITY OF PERRIS

COMMUNITY SERVICES

4. In the past ten years, have you or your organization been debarred or suspended from eligibility to bid on city, state or federal work? _____ If so, state details below:

a. Officer(s), person(s), and organization(s) involved:

b. Reason for such failure:

c. Name of the surety:

d. Description of project:

5. In the past ten years, have you or your organization failed to complete any work awarded to you or your organization? Has any officer, member, or partner of your organization ever been an officer, member, or partner in an organization that failed to complete any work awarded to it? _____ If so, state details below:

a. Officer(s), person(s), and organization(s) involved:

b. Reason for such failure:

c. Name of the surety:

d. Description of project:



CITY OF PERRIS

COMMUNITY SERVICES

DISQUALIFICATION OF BIDDERS

A bid may be rejected if it is incomplete, or if it contains any alterations of form or other irregularities of any kind including calculation errors in individual line items or the total bid. The City of Perris may reject any or all bids at any time for any reason, and the City of Perris may waive any immaterial deviation in a bid. The City of Perris' waiver of immaterial defect shall in no way modify the document or excuse the bidder from full compliance with all requirements set forth in the bid if awarded the contract. The decision respecting the existence or treatment of an irregularity, or incomplete bid, shall be determined in the discretion of the City of Perris, and that discretion will be exercised in the manner deemed by the City of Perris, to best protect the public interest in the prompt and economical completion of the work.

Any one or more of the following causes may be considered as sufficient for rejection of the bid and disqualification of the bidder as may be determined by the City of Perris.

- a. Developments, subsequent to establishment of a bidder's competency and qualifications, which in the opinion of the City of Perris would reasonably be construed as affecting the responsibility of the bidder.**
- b. Conviction of a major violation of a State or Federal law, or a rule or regulation of a Federal department, board or bureau, or a State department, board or commission, relating to or reflecting on the competency of the bidder for performing construction work.**
- c. More than one proposal for the same work from an individual, partnership or corporation under the same or different names.**
- d. Indictment for or evidence of collusion among bidders.**
- e. Failure to complete any contractual obligations satisfactorily as shown by past work for the City.**
- f. Noncompliance with terms of previous or existing contracts.**
- g. Previously uncompleted work, which in the judgment of the City of Perris might hinder or prevent the completion of the additional work, if awarded.**



CITY OF PERRIS

COMMUNITY SERVICES

<u>MATERIAL</u>	<u>TEST REQUIRED</u>	<u>CALIFORNIA TEST</u>
Permeable Material	Grading	202
	Sand Equivalent	217
	Durability Index	229
Imported Material (Shoulder Backing)	Grading	202
	Sand Equivalent	217
	Durability Index	229
Aggregate Subbase	Grading	202
	Sand Equivalent	217
	Resistance (R-Value)	301
Aggregate Base	Grading	202
	Sand Equivalent	217
	Resistance (R-Value)	301
	Durability Index	229
	Percentage of crushed particles	205
Screenings	Grading	202
	Loss in Los Angeles Rattler	211
	Crushed Particles	205
	Film Striping	302
	Cleanness valve	227
Asphalt Concrete (Except Open Graded)	Grading	202
	Specific Gravity	206
	(coarse & fine aggregate)	208
	Percentage of crushed particles	205
	Loss in Los Angeles Rattler	211
	Sand Equivalent	217
	Film Striping	302
	Kc Factor (CKE)	303
	Kf Factor (CKE)	303
	Stabilometer	366
	Swell	305
Moisture Vapor Susceptibility	307	
Optimum Bitumen Content*	367	
Open Graded AC, Asphalt Treated Permeable Material, Asphalt Treated Permeable Base	Grading	202
	Crushed Particles	205
	Loss in Los Angeles Rattler (500 revolutions)	211
	Durability Index	229
	Firm Striping	310 or 362 or 379

*(Not shown in Construction Manual, use CDE frequency.)

Note: Should any potential source sampling and testing be waived by reason of previous acceptance of material from the source, there will be no reduction in contract prices by reason of such waiver.

FOREIGN MATERIALS – The requirements of the fifth paragraph in Section 6-1-08, "Foreign Materials," of the Standard Specifications shall not apply.

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CITY OF PERRIS
COMMUNITY SERVICES

NOTICE OF AWARD
CITY OF PERRIS

INTERNATIONAL MOTHER LANGUAGE MONUMENT SIGN PROJECT

The Agency has considered the Bid submitted by you for the above described work in response to its Notice Inviting Sealed Proposals (Bids) dated _____, 2022 and Information for Bidders.

You are hereby notified that your Bid has been accepted in the amount of \$ _____ and the Extract of Public Works contract Award has been forwarded to the California Department of Industrial Relations and the Division of Apprenticeship Standards.

You are required by the Information for Bidders to execute the Contract and furnish the required Contractor's Labor and Material Payment Bond, Contract Performance Bond, and Certificates of Insurance within ten (10) calendar days from the date of this Notice. Mandatory construction start date is _____, 2022.

If you fail to execute said Contract and to furnish said Bonds and Insurance Certificates within ten (10) days from the date of this Notice, said agency will be entitled to consider all your rights arising out of the Agency's acceptance of your Bid as abandoned and as a forfeiture of your Bid Bond. The Agency will be entitled to such other rights as may be granted by law.

A mandatory pre-construction meeting for the contractor and all of his subs will be required prior to start of work and will be scheduled upon receipt of all contract documents.

You are required to return an acknowledged copy of this Notice of Award to the Agency. Dated this _____ day of __, 20____.

City of Perris Agency

By: **Sabrina Chavez, Director Community Services**
Title

N-1A



CITY OF PERRIS
COMMUNITY SERVICES

ACCEPTANCE OF NOTICE OF AWARD

Receipt of the above Notice of Award is hereby acknowledged

By _____ this
____ Day of _____, 20 ____.

Contractor

By _____

Title _____

Contractor's California License No.

Expiration Date

N-1B



CITY OF PERRIS

COMMUNITY SERVICES

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CITY OF PERRIS

CONTRACT FOR **International Mother Language Monument Sign Project**

THIS CONTRACT (herein "Agreement") is made and entered into this ____ day of _____, _____, by between the CITY OF PERRIS, a municipal corporation, (herein "City") and _____ (herein "Contractor").

NOW, THEREFORE, the parties hereto agree as follows:

1.0 SERVICE OF CONTRACTOR

1.1 Contract.

The complete contract includes all contract documents, to wit: **International Mother Language Monument Sign Project** Plans and Specifications and Information for Bidders, Special Provisions, which are incorporated by this reference as though set forth in full herein; and the Federal Prevailing Wage Determinations.

1.2 Scope of Services.

In compliance with all of the terms and conditions of this Agreement, the Contractor shall furnish all tools, equipment, services, apparatus, facilities, transportation, labor, building/encroachment permits, disposal and materials necessary and reasonably incidental to create **International Mother Language Monument Sign Project**, and miscellaneous related improvements in Perris, California, in strict accordance with improvements plans and Specification. Contractor warrants that all work and services set forth in the Scope of Service will be performed in a competent, professional and satisfactory manner.

1.3 Incorporation of and Compliance With State, Federal and Local Law.

All applicable State of California, Federal, and local laws, statutes, rules, regulations, orders, determinations, and resolutions required to be contained in public works contracts which are not specifically referenced in the Agreement are incorporated herein by this reference. The Contractor is responsible for and has an independent duty to be familiar with all State of California, Federal, and local laws, statutes, rules, regulations, orders, determinations, and resolutions related to, pertaining to, and/or associated with the work and services to be provided under the Agreement. All work and services rendered hereunder shall be provided in accordance with all laws, statutes, rules, regulations, orders, determinations, and resolutions of the City and any Federal, State or local governmental agency of competent jurisdiction

1.4 Licenses, Permits, Fees and Assessments.

If applicable, Contractor shall obtain at its sole cost and expense such licenses, permits and approvals as may be required by law for the performance of the services required by this Agreement.

1.5 Additional Services

City shall have the right at any time during the performance of the work and services, without invalidating this Agreement, to order extra work beyond that specified in the Scope of Services or make changes by altering, adding to or deducting from said work. No such extra work may be undertaken unless a written order is first given by the Contract Officer to the Contractor, incorporating therein any adjustments in (i) the Contract Sum, and/or (ii) the time to perform this Agreement, which said adjustments are subject to the written approval of the Contractor. City and Contractor agree to negotiate the cost for additional services based on the unit pricing proposed by the Contractor in the original Bid Schedule of Values found in Section BF, "Bid Form," of the Specification. City and Contractor agree that City may seek additional cost estimates from third party contractor's to perform additional services. In no event shall Contractor be entitled to recover damages against the City for any delay in the performance of this Agreement, while City seeks estimates from third party contractor's to perform additional services. Written orders shall be made on forms prescribed by the Contract Officer in accordance with Part I "Procedural Documents," Section CO of the Specification. Any increase in compensation of up to ten percent (10%) of the Contract Sum; or in the time to perform of up to one hundred twenty (120) days may be approved by the Contract Officer. Any greater increases, taken either separately or cumulatively must be approved by the City Council. It is expressly understood by Contractor that the provisions of this Section shall not apply to services and work specifically set forth in the Scope of Services or reasonably contemplated therein. Contractor hereby acknowledges that it accepts the risk that the work and services to be provided pursuant to the Scope of Services may be more costly or time consuming than the Contractor anticipates and that the Contractor shall not be entitled to additional compensation therefore.

2.0 **COMPENSATION**

2.1 Contract Sum.

For the services rendered pursuant to this Agreement, the Contractor shall be compensated, except as provided in Section 1.5, the sum of _____ and 00/100 dollars (\$_____), see Exhibit "A", in accordance with Section GP and Section SP, "General Provisions" and "Special Provisions," and Section BF, "Bid Form," and "Bid Schedule of Values."

2.2 Method of Payment.

Contractor shall submit to the City, and invoice for services rendered prior to the date of the invoice. In accordance with Section GP, "General Provision", Section SP, "Special Provisions"; "Schedule of Values", and upon receipt and approval of invoice by the City, City shall pay Contractor within a reasonably prompt manner consistent with City's normal procedures for payable accounts, but not to exceed thirty (30) days from date received by City, unless otherwise directed by the labor compliance officer. Progress payments shall be issued upon successful completion of items listed on the bid schedule of values, and inspection made by the City, unless otherwise directed by the project manager or labor compliance officer. A retention of five percent (5%), unless otherwise directed by the project manager shall be withheld from this payment. Upon completion of the work by the contractor,

a final inspection shall be made by the City. Unless otherwise directed by the project manager or labor compliance officer, upon approval, the City shall file a Notice of Completion and a final payment will be issued (minus five (5%) percent retention). The final retention payment shall be issued following 45 days from the filing of the Notice of Completion, unless otherwise directed by the labor compliance officer. The City must pay interest at the legal rate on any Contractor payment request not paid within 30 days of its submission when the validity of the request is not disputed and the request has been properly submitted. (Public Contract Code § 20104.50)

2.3 Retention of Funds.

Contractor hereby authorized City to deduct from any amount payable to Contractor (whether or not arising out of this Agreement) (i) any amounts the payment of which may be in dispute hereunder or which are necessary to compensate City for any losses, costs, liabilities, or damages suffered by City, and (ii) all amounts for which City may be liable to third parties, by reason of Contractor's acts or omission in performing or failing to perform Contractor's obligation under this Agreement. In the event that any claim is made by a third party, the amount or validity of which is disputed by Contractor, or any indebtedness shall exist which shall appear to be the basis of such withholding, an amount sufficient to cover such claim. The failure of City to exercise such right to deduct or to withhold shall not, however, affect the obligations of the Contractor to insure, indemnify, and protect City as elsewhere provided herein.

3.0 COORDINATION OF WORK

3.1 Representative of Contractor.

_____, designated as being the principal and representative of Contractor authorized to act in its behalf with respect to the work and services specified herein and make all decisions in connection therewith.

3.2 Contract Officer.

Sabrina Chavez _____, is hereby designated as being the representative the City authorized to act in its behalf with respect to the work and services specified herein and make all decisions in connection therewith ("Contract Officer"). The City Manager of City shall have the right to designate another Contract Officer at any time.

3.3 Prohibition Against Subcontracting or Assignment.

Contractor shall not contract with any entity to perform in whole or in part the work or services required hereunder without the express written approval of the City. Neither this Agreement nor any interest herein may be assigned or transferred, voluntarily or by operation of law, without the prior written approval of City. Any such prohibited assignment or transfer shall be void.

3.4 Independent Contractor.

Neither the City nor any of its employees shall have any control over the manner, mode or means by which Contractor, its agents or employees, perform the services required herein, except as otherwise set forth. Contractor shall perform all services required herein as an independent contractor of City and shall remain under only such obligations as are consistent with that role. Contractor shall not at any time or in any manner represent that it or any of its agents or employees are agents or employees of City. City shall not in any way for any purpose become or deemed to be a partner of Contractor in its business or otherwise or a joint venture or a member of any joint enterprise of Contractor.

4.0 INSURANCE, INDEMNIFICATION AND BONDS

4.1 Insurance.

The Contractor shall procure and maintain, at its sole cost and expense, in a form and content satisfactory to City, during the entire term of this Agreement including any extension thereof, the following policies of insurance.

- (a) Commercial General Liability Insurance. A policy of commercial general liability insurance written on a per occurrence basis with a combined single limit of at least \$2,000,000 bodily injury and property damage including coverage for contractual liability, personal injury, independent contractors, broad form property damage, products and completed operations. The Commercial General Liability Policy shall name the City of Perris, California, its officers, employees and agents as additional insured in accordance with standard ISO additional insured endorsement form CG2010(1185) or equivalent language.
- (b) Worker's Compensation Insurance. A policy of worker's compensation insurance in such amount as will fully comply with the laws of the State of California and which shall indemnify, insure and provide legal defense for both the Contractor and the City against any loss, claim or damage arising from any injuries or occupational diseases carrying out the work or service contemplated in this Agreement.
- (c) Business Automobile Insurance. A policy of business automobile liability insurance written on a per occurrence basis with a single limit liability in the amount of \$1,000,000 bodily injury and property damage. Said policy shall include coverage for owned, non-owned, lease and hired cars.

All of the above policies of insurance shall be primary insurance. The insurer shall waive all rights of subrogation and contribution it may have against the City of Perris, its officers, employees and agents, and its insurers. In the event any of said policies of insurance are canceled, the Contractor shall, prior to the cancellation date, submit new evidence of insurance in conformance with this Section 4.1 to the Contract Officer. No work or service under this Agreement shall commence until the Contractor has provided the City with Certificates of Insurance or appropriate insurance binders evidencing the above insurance coverage and said Certificates of Insurance or binders are approved by the City.

Contractor agrees that the provision of this Section 4.1 shall not be construed as limiting in any way the extent to which the Contractor may be held responsible for the payment of damages to any persons or property resulting from the Contractor's activities or the activities of any person or person for which the Contractor is otherwise responsible.

In the event the Contractor subcontracts any portion of the work in compliance with Section 3.3 of this Agreement, the contract between the Contractor and such subcontractor shall require the subcontractor to maintain the same policies of insurance that the Contractor is required to maintain pursuant to this Section.

4.2 Indemnification.

- (a) To the fullest extent permitted by law, Contractor hereby agrees, at its sole cost and expense, to defend, protect, indemnify, and hold harmless the City of Perris, its officers and their representatives, consultants, employees, directors, shareholders, successors, and assigns (individually as "Indemnities") from and against any and all damages, cost, expenses, liabilities, claims, demands, causes of action, proceedings, expenses, attorneys, expert witnesses, consultants, or other professionals and all costs associated therewith (collectively, "Claims"), to the extent arising or claimed to arise out of, in connection with, resulting from, or related to any negligent act, error, omission or failure to act of Contractor or any of its subcontractors and their respective officers, agents, servants, employees, subcontractors, material men, suppliers or Contractor's failure to perform or negligent performance of any term, provision, covenant or condition of the Agreement or the Scope of Services, including this indemnity provision. This indemnity also applies to any Claims of any type or nature asserted on behalf of any of Contractor's subcontractors. This indemnity provision shall survive the termination of the Agreement and is in addition to any other rights or remedies which Indemnities may have under the law. Payment is not required as a condition precedent to and Indemnities' right to recover under this indemnity provision. An indemnity shall have the right to select the attorneys to represent it in the event of a Claim and at Contractor's expense. Contractor shall pay Indemnities for any attorney's fees, consultant and expert witness fees and costs incurred in enforcing this indemnification provision. This indemnity is effective without reference to the existence or applicability of any insurance coverage which may have been required under the Agreement or any additional insured endorsements, which may extend to Indemnities.
- (b) Contractor, on behalf of itself and all parties claiming under or through it, hereby waives all rights of subrogation and contribution against any Indemnities with respect to those Claims as to which such Indemnities is indemnified under Section 4.2(a) above, except for such Claims which are the result of such Indemnities' willful misconduct.
- (c) In the event the City and its officers, agents or employees are made a party to any action or proceeding filed or prosecuted against Contractor for such damages or other claims arising out of or in connection with the negligent performance of or failure to perform the work, operations or activities of Contractor hereunder, Contractor agrees to pay to the City and its officers, agents or employees, any and all costs and expenses incurred by the City, and its officers, agents or employees in such action or proceeding, including but not limited to, legal costs and attorneys' fees.

4.3 Sufficiency of Insurer or Surety.

Insurance or bonds required by this Agreement shall be satisfactory only if issued by companies qualified to do business in California, rated "A" or better in the most recent edition of Best Rating Guide, The Key Rating Guide or in the Federal Register, and only if they are of a financial category Class VII or better, unless such requirements are waived by the City's Risk Manager or designee of the City due to unique circumstances. In the event the City's Risk Manager determines that the work or services to be performed under this Agreement creates an increased or decreased risk of loss to the City, the Contractor agrees that the minimum limits of the insurance policies required by this Section 5 may be changed accordingly upon receipt of written notice from the City's Risk Manager or designee; provided that the Contractor shall have the right to appeal a determination of increased coverage by the City's Risk Manager to the City Council within ten (10) days of receipt of notice from the City's Risk Manager.

4.4 Labor and Materials Bond.

Concurrently with the execution of this Agreement, Contractor shall deliver to City a labor and materials bond in a sum not less than one hundred percent of the total amount payable by terms of the Agreement, in the form provided by the City Clerk, which secures payments to subcontractors and suppliers in the event of default by Contractor. The labor and materials bond shall contain the original notarized signature of an authorized officer of the surety and affixed thereto shall be a certified and current copy of his power of attorney. The labor and materials bond shall be unconditional and remain in force during the entire term of the Agreement and shall be null and void only if the Contractor completely and faithfully pays all subcontractors and suppliers that have been approved in writing to perform in whole or part the services required herein. If Contractor is the provider of architectural, engineering, and land surveying services pursuant to an existing contract with City for a public work, Contractor shall not be required to post or deliver a labor and materials bond.

4.5 Performance Bond.

Concurrently with execution of this Agreement, Contractor shall deliver to City a performance bond in the sum of the amount of this Agreement, in the form provided by the City Clerk, which secures the faithful performance of this Agreement, unless such requirement is waived by the Contract Officer. The bond shall contain the original notarized signature of an authorized officer of the surety and affixed thereto shall be a certified and current copy of his power of attorney. The bond shall be unconditional and remain in force during the entire term of the Agreement and shall be null and void only if the Contractor promptly and faithfully performs all terms and conditions of this Agreement.

5.0 TERM

5.1 Time for Completion and Liquidated Damages.

The work for the **International Mother Language Monument Sign Project**, shall commence on the 6 day of September, 2022 and shall be completed within **Sixty (60)** calendar days from and after said date. It is expressly agreed that, except for extensions of time duly granted in writing by the City Manager and for reasons authorized in this Agreement, time shall be of the essence, and contractor shall be held responsible for liquidated damages in a sum equal to \$500.00 (five hundred dollars) for each and every day after the permitted time if the work is not completed to the City's satisfaction.

5.2 Force Majeure.

The time period(s) specified in this Agreement for performance of the services rendered pursuant to this Agreement shall be extended because of any delays due to unforeseeable causes beyond the control and without the fault or negligence of the Contractor, including, but not restricted to, acts of God or of the public enemy, unusually severe weather, fires, earthquakes, floods, epidemics, quarantine restrictions, riots, strikes, freight embargoes, wars, litigation, and/or acts of any governmental agency, including the City, if the Contractor shall within ten (10) days of the commencement of such delay notify the Contract Officer in writing of the causes of the delay. The Contract Officer shall ascertain the facts and the extent of delay, and extend the time for performing the services for the period of the enforced delay when and if in the judgment of the Contract Officer such delay is justified. The Contract Officer's determination shall be final and conclusive upon the parties to this Agreement. In no event shall Contractor be entitled to recover damages against the City for any delay in the performance of this Agreement, however caused, Contractor's sole remedy being extension of the Agreement pursuant to this Section.

5.3 Termination for Default of Contractor.

If the Contract Officer determines that the Contractor is in default due to the Contractor's failure to fulfill its obligations under this Agreement, City will give Contractor a written Notice of Default which will be served personally on the Contractor's representative or sent via U.S. First Class Mail to the Contractor at the address set forth in Section 8.1. The Contractor shall continue performing its obligations hereunder so long as the Contractor commences to cure such default within five (5) calendar days of service of such notice and completes the cure of such default within forty-five (45) calendar days after service of the notice, or such longer period as may be permitted by the City; provided that if the default is an immediate danger to the health, safety and general welfare, the City reserves the right to not notify the Contractor of the default and to take any and all action that may be necessary to cure the default.

If a Notice of Default is issued and the Contractor fails to cure the default within the time periods set forth in this Section, the City may take over the work and prosecute the same to completion by contract or otherwise. The City may use any portion or all of the Contract Sum to pay for said work. The Contractor shall be liable to the extent that the total cost for

completion of the services required hereunder exceeds the compensation herein stipulated (provided that the City shall use reasonable efforts to mitigate such damages).

Contractor agrees that if the default is an immediate danger to the health, safety, and general welfare, the City may take immediate action to cure the default and the Contractor shall be liable for all costs and expenses associated with curing the default.

Compliance with the provisions of this Section shall only be a condition precedent to termination of this Agreement for cause. Such compliance shall not be a waiver of the City's right to take legal action in the event that the dispute is not cured. Further, compliance with this Section shall not be a waiver of the City's right to seek liquidated damages or other damages from the Contractor caused by the Contractor's failure to comply with any term of the Agreement.

5.4 Resolution of Contractor Construction Claims.

Public Contracts Code section 20104 et. seq. sets forth detailed procedures for resolving disputes of \$375,000 or less. In the event that a dispute, valued at \$375,000 or less, arises as a result of the work described in this Agreement, the Contractor shall notify the City in writing of its contentions by submitting a claim therefore. Contractor and City shall comply with the detailed procedures stipulated in Public Contract Code Section 20104-20104.6, for resolving claims of \$375,000 or less.

In the event of any dispute valued at more than \$375,000 arises as a result of the work described in this Agreement, the Contractor shall notify the City in writing of its contentions by submitting a detailed claim that sets forth the amount of damages, the basis and/or cause of the damages and all supporting documents which support the claim within ten

(10) calendar days after the claim arose. Contractor agrees to submit any additional information or documents requested by the City so it can fully analyze the claim.

In the event of any dispute, the Contractor shall not be relieved of its obligations under this Agreement and shall continue performing its obligations hereunder unless the City agrees in writing to release the Contractor from its obligations under the Agreement. Compliance with the provisions of this Section shall be a condition precedent to any legal action.

6.0 CITY OFFICERS, EMPLOYEES, AND U.S. MEMBERS OF CONGRESS

6.1 Non-liability of City Officers and Employees

No officer or employee of the City shall be personally liable to the Contractor, or any successor in interest, in the event of any default or breach by the City or for any amount which may become due to the Contractor or to its successor, or for breach of any obligation of the terms of this Agreement.

6.2 Conflict of Interest

No officer or employee of the City shall have any financial interest, direct or indirect, in this Agreement nor shall any such officer or employee participate in any decision relating to the Agreement which effects his financial interest or the financial interest of any corporation, partnership or association in which he is, directly or indirectly, interested, in violation of any State statute or regulation. The Contractor warrants that it has not paid or given and will not pay or give any third party any money or other consideration for obtaining this Agreement.

6.3 Federal Employee Benefit Clause

No member of or delegate to the Congress of the United States, and no resident commissioner shall be admitted to any share or part of this agreement or to any benefit to arise from the same.

7.0 NON-DISCRIMINATION AND EQUAL OPPORTUNITY

7.1 Covenants Against Discrimination

Contractor covenants that, by and for itself, its heirs, executors, assigns, and all persons claiming under or through them, that there shall be no discrimination against or segregation of, any person or group of persons on account of race, color, creed, religion, sex, marital status, national origin, or ancestry in the performance of this Agreement. Contractor shall take affirmative action to insure that applicants are employed and that employees are treated during employment without regard to their race, color, creed, religion, sex, marital status, national origin, or ancestry.

Statement of Equal Opportunity Clause

- (a) Contractor will not discriminate against any employee or applicant for employment because of race, color religion, sex, or national origin. Contractor will take affirmative action to ensure that applicants are employed and that employees are treated during employment, without regard to their race, color, religion, sex, or national origin. Such action shall include, but not be limited to, the following: employment, upgrading, demotion, or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship. Contractor agrees to post in a conspicuous place, available to employees and applicants for employment, notices to be provided by the County setting forth the provisions of this non-discriminating clause.
- (b) Contractor will ensure that all qualified applicants will receive consideration for employment without regard to race, color, religion, sex or national origin.

8.0 MISCELLANEOUS PROVISIONS

8.1 Notice

Any notice, demand, request, document, consent, approval, or communication either party desires or is required to give to the other party or any other person shall be in writing and either served personally or sent by prepaid, first-class mail addressed as follows:

City

City of Perris
101 N. "D" Street
Perris, CA 92570
ATTN: Sabrina Chavez, Director of Community Services

Contractor

8.2 Handicap Accessibility Certification.

Contractor certifies that with respect to the public facilities or parts thereof that are altered by the work in this contract, the altered portions of the facilities are readily accessible to and usable by individuals with disabilities, including individuals who use wheelchairs, and meet the laws established by the Americans With Disabilities Act of 1990, Public Law 101-336, and applicable portions of Title 24 of the California Code of Regulations (Access Code).

8.3 Records Retention Clause Examination and Audit

Contractor shall maintain and keep books and records on a current basis, recording all transactions pertaining to this Agreement in a form in accordance with generally acceptable accounting principals. Said books and records shall be made available to the City of Perris, the State Auditor of California, the Federal Government and to any authorized representatives thereof for purposes of audit at all reasonable times and places. All such books and records shall be retained for such periods of time as required by law, provided, however, notwithstanding any shorter periods of retention, all books, records, and supporting detail shall be retained for a period of at least five (5) years after receiving a project close out/completion letter from the City of Perris.

8.4 Certified Payroll Records

Contractor shall comply with State Labor Code section 1776, and shall maintain and keep accurate certified payroll records of employees, and shall certify these records upon request by the

City. Said certified payroll records shall be made available to the City, the State Division of Labor Standards Enforcement, and the State Division of Apprenticeship Standards. If the Contractor fails to comply with State Labor Code Section 1776, Contractor shall be held responsible for penalties as set forth in said section.

8.5 Prevailing Wages (please see Appendix G and Appendix I)

Pursuant to State and Federal statutes, rules, orders, resolutions, and regulations, the Contractor is required to pay the higher of the State of California or Federal prevailing wages. The Contractor is required to be fully familiar with and comply with all State of California and Federal statutes, rules, regulations, orders, resolutions, and determinations which govern the payment of wages for the work and services provided for in this Agreement.

Under the State Labor Code, Contractor shall not pay less than the general prevailing rate of per diem wages for work of a similar character in the locality in which the public work is performed, and not less than the general prevailing rate per diem wages for holiday, overtime, health and welfare, pension, vacation and similar purposes to all workers employed on the work described in this Agreement. The City has obtained from the Director of the Department of Industrial Relations, State of California, the determination of general prevailing rates of per diem wages believed to be applicable to the work described in this Agreement, including employer payments for health and welfare, pension, vacation and similar purposes. Contractor shall obtain from the City Clerk said General Prevailing Wage Determination, and post it in a conspicuous place at the site of the work described in this Agreement.

8.6 Working Hours Restriction and Penalties For Non-Compliance

Contractor agrees that eight (8) hours is a legal days work for all employees hired by the Contractor, and that any worker's time of service is restricted to eight (8) hours during any calendar day, and forty (40) hours during any calendar week, unless overtime compensation is paid at not less than one and one half times the basic rate of pay. Contractor shall comply with said working hours restrictions and overtime compensation provisions, and shall pay a penalty of \$50.00 (fifty and 00/100 dollars) for each and every day a worker is employed in violation of said working hours restrictions and overtime compensation provisions.

8.7 Employment of Apprentices

Contractor shall comply with State Labor Code 1777.5, and shall maintain and keep accurate records of apprentices who are employed pursuant to and individually registered in a bona fide apprenticeship program registered with the U.S. Department of Labor, Employment and Training Administration, Bureau of Apprenticeship and Training, or with a State Apprenticeship Agency; and shall certify these records upon request by the City.

8.8 Interpretation

The terms of this Agreement shall be construed in accordance with the meaning of the language used and shall not be construed for or against either party by reason of the authorship of this Agreement or any other rule of construction which might otherwise apply.

8.9 Integration; Amendment

It is understood that there are no oral agreements between the parties hereto affecting this

Agreement and this Agreement supersedes and cancels any and all previous negotiations, arrangements, agreements and understandings, if any, between the parties, and none shall be used to interpret this Agreement. This Agreement may be amended at any time by the mutual consent of the parties by an instrument in writing.

8.10 Severability

In the event that any one or more of the phrases, sentences, clauses, paragraphs, or sections contained in this Agreement shall be declared invalid or unenforceable by a valid judgment or decree of a court of competent jurisdiction, such invalidity or unenforceability shall not affect any of the remaining phrases, sentences, clauses, paragraphs, or sections of this Agreement which are hereby declared as severable and shall be interpreted to carry out the intent of the parties hereunder unless the invalid provision is so material that its invalidity deprives either party of the basic benefit of their bargain or renders this Agreement meaningless.

8.11 Corporate Authority

The persons executing this Agreement on behalf of the parties hereto warrant that (i) such party is duly organized and existing, (ii) they are duly authorized to execute and deliver this Agreement on behalf of said party, (iii) by so executing this Agreement, such party is formally bound to the provisions of this Agreement, and (iv) the entering into this Agreement does not violate any provision of any other Agreement to which said party is bound.

[End – Signature Page Follows]

IN WITNESS WHEREOF, the parties have executed and entered into this Agreement as of the date first written above.

ATTEST:

"CITY"
CITY OF PERRIS

By: _____
Nancy Salazar, City Clerk

By: _____
Clara Miramontes, City Manager

APPROVED AS TO FORM:

ALESHIRE & WYNDER, LLP

By: _____
Eric L. Dunn, City Attorney

"CONTRACTOR"

By: _____
Signature

Print Name and Title

By: _____
Signature

Print Name and Title

(Corporations require two signatures; *one from each* of the following: A. Chairman of Board, President, any Vice President; *AND B.* Secretary, Assistant Secretary, Treasurer, Assistant Treasurer, or Chief Financial Officer.)

[END OF SIGNATURES]

CERTIFICATE OF CONTRACTOR

I, _____, certify that I am a/the
_____ (designate sole proprietor,
partner in partnership, or specify corporate office, e.g., secretary) in the entity
named as CONTRACTOR in the foregoing contract.

I hereby expressly certify that the name of the entity to which I am
associated is _____; that this entity is in good
standing and has complied with all applicable laws and regulations, and that I
have been expressly authorized by the proper parties in this entity to execute
this Contract on behalf of the above named entity.

SIGNATURE OF CONTRACTOR: _____

Contractor's California License No.

Name of License Holder

Type of License

Expiration Date

(CORPORATE SEAL)

ATTEST:

PAYMENT BOND
(CALIFORNIA PUBLIC WORK)

KNOW ALL MEN BY THESE PRESENTS:

THAT WHEREAS, CITY OF PERRIS (referred to hereinafter as "obligee") has awarded to _____ (hereinafter designated as the "Contractor") an agreement dated _____, for work described as follows:

International Mother Language Monument Sign Project (hereinafter referred to as the "Public Work Contract"); and

WHEREAS said Contractor is required to furnish a bond in connection with said Public Works Contract, providing that if said Contractor, or any of his or its Subcontractors, shall fail to pay for any materials, provisions, provender or other supplies or teams used in, upon, for or about the performance of the work contracted to be done, or for any work or labor done thereon of any kind, or for amounts due under the Unemployment Insurance Code, or for any amounts required to be deducted, withheld, and paid over to the Contractor and his Subcontractors pursuant to Section 18806 of the Revenue and Taxation Code with respect to such work or labor, that the Surety on this bond will pay the same together with a reasonable attorney's fee (to be fixed by the court) in case suit is brought on the bond;

NOW, THEREFORE, we, _____, the undersigned Contractor, as Principal, and _____, a corporation organized and existing under the laws of the State of _____, and duly authorized to transact business under the laws of the State of California, as Surety, are held and firmly bound unto the _____ and to any and all material, men, persons, companies or corporations furnishing materials, provisions, provender or other supplies used in, upon, for or about the performance of the said Public Work, and all persons, companies, or corporations renting or hiring teams, or implements or machinery, for or contributing to said Public Work to be done, and all persons performing work or labor upon the same and all persons supplying both work and materials as aforesaid, excepting the said Contractor, in the sum of _____ (words) Dollars (\$ _____), said sum being not less than 100 percent of the total amount payable by the said Oblige under the terms of the said Public Work Contract, for which payment will and truly to be made, we bind ourselves, our heirs, executors and administrators, successors and assigns, jointly and severally, firmly by these presents.

THE CONDITION OF THIS OBLIGATION IS SUCH that, if said Contractor, his or its heirs, executors, administrators, successors or assigns, or Subcontractors, shall fail to pay for any materials, provisions, implements or machinery used in, upon, for or about the performance of the Public Work contracted to be done, or to pay for any work or labor thereon of any kind, or for amounts due under the Unemployment Insurance Code with respect to such work or labor, or for any amounts required to be deducted, withheld, and paid over to the Employment Development Department from the wages of said employees of said Contractor and his Subcontractors pursuant to Section 13020 of the Unemployment Insurance Code with respect to such work and labor as required by the provisions of Section 3247 through 3252 of the Civil Code, the Surety or Sureties hereon will pay for the same in an amount not exceeding the sum specified in this bond, otherwise the above obligation shall be void. In case suit is brought upon this bond, the said Surety or Sureties will pay a reasonable attorney fee to be fixed by the Court. In addition to the provisions herein above, it is agreed that this bond will insure to the benefit of any and all persons, companies, and corporations entitled to serve stop notices under Section 3181 of the Civil Code, so as to give a right of action to them or their assigns in any suit brought upon this bond.

The Surety, for value received, hereby stipulates and agrees that no change, extension of time, alteration or additions to the terms of the said Public work Contract or to the work to be performed hereunder or the Specifications accompanying the same shall in any way affect its obligations 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.

No final settlement between the Oblige and the Contractor hereunder shall abridge the right of any beneficiary hereunder, whose claim may be unsatisfied.

Principal and Surety agree that if the Agency is required to engage the services of an attorney in connection with the enforcement of this bond, the Principal and Surety shall be jointly and severally liable for all of the Agency's costs and reasonable attorney fees, whether or not litigation or arbitration is actually commenced to enforce the bond.

Principal and Surety agree that after completion and acceptance of the work by Agency, 10% value of the bond shall remain in effect for a 12 month period to warranty the work.

IN WITNESS WHEREOF, we have hereunto set our hands and seals this

_____ Day of _____, 20____.

PRINCIPAL:

By _____

SURETY:

By _____

Attorney-in-Fact

IMPORTANT: Surety companies executing Bonds must appear on the Treasury Department's most current list (Circular 570 as amended) and be authorized to transact business in the State where the Project is located.

Any claims under this bond may be addressed to:

(Name and Address of Surety)

(Name and Address of Agent or Representative for service of process in California, if different from above)

(Telephone Number of Surety and Agent or Representative for service of process in California)

THIS IS A REQUIRED FORM

ACKNOWLEDGMENT

**A notary public or other officer
completing this certificate
verifies only the identity of the**

**State of California
County of _____)**

**On _____ before me,
_____ (insert name and title of the office**

personally appeared

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

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

WITNESS my hand and official seal.

Signature _____ (Seal)

THIS IS A REQUIRED FORM

CERTIFICATE OF CONTRACTOR

I, _____, certify that I am a/the

_____ (specify either partner or specific corporate office) of the Contractor names as Principal on the above-referenced bond. I further certify that the Principal is an entity in good standing having complied with all applicable laws and regulations and that I have been given the express power on behalf of the Principal to execute this bond.

NAME OF ENTITY:

TITLE OF SIGNING PARTY:

By _____

_____ California License No.

(CORPORATE SEAL)

_____ Name of License Holder

_____ Type of License

_____ Expiration Date

THIS IS A REQUIRED FORM

CONTRACT PERFORMANCE BOND

(CALIFORNIA PUBLIC WORKS)

KNOW ALL MEN BY THESE PRESENTS:

THAT WHEREAS, THE CITY OF PERRIS, (sometimes referred to hereinafter as "Oblige" has awarded to _____ (hereinafter designated as the "Contractor"), a contract for the work described as follows:

International Mother Language Monument Sign Project, (hereinafter referred to as the "Public Work Contract"); and

WHEREAS, the work to be performed by the Contractor is more particularly set forth in that certain contract for the said Public Work dated _____, (hereinafter referred to as the "Public Work Contract"), which Public Work Contract is incorporated herein by this reference; and

WHEREAS, The Contractor is required by said Public Work Contract to perform the terms thereof and to provide a bond both for the performance and guaranty thereof:

NOW, THEREFORE, we, _____, the undersigned Contractor, as Principal, and _____, a corporation organized and existing under the laws of the State of _____, and duly authorized to transact business under the laws of the State of California, as Surety, are held and firmly bound unto the _____ in the sum of _____ Dollars (\$ _____), said sum being not less than 100 percent of the total amount payable by the said Oblige under the terms of the said Public Work Contract, for which amount well and truly to be made, we bind ourselves, our heirs, executors and administrators, successors and assigns, jointly and severally, firmly by these presents.

THE CONDITION OF THIS OBLIGATION IS SUCH, that, if the 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 said Public Work Contract and any alteration thereof made as therein provided, on his or its part, to be kept and performed at the time in the manner therein specified, and in all respects according to their intent and meaning; and shall faithfully fulfill the guarantee of all materials and workmanship; and indemnify and save harmless the Oblige, its officers and agents, as stipulated in said Public Work Contract, then this obligation shall become null and void; otherwise it shall be and remain in full force and effect. In case suit is brought upon this bond, the said Surety will pay to Oblige a reasonable attorney's fee to be fixed by the Court.

The said Surety, for value received, hereby stipulates and agrees that no change, extension of time, alteration or addition to the terms of the Public Work Contract or to the work to be performed hereunder or the Specifications accompanying the same shall in any way affect its obligations 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.

No final settlement between the Oblige and the Contractor shall abridge the right of any beneficiary hereunder, whose claim may be unsatisfied.

Principal and Surety agree that if the Agency is required to engage the services of an attorney in connection with the enforcement of this bond, the Principal and Surety shall be jointly and severally liable for all of the Agency's costs and reasonable attorney fees, whether or not litigation or arbitration is actually commenced to enforce the bond.

Principal and Surety agree that after completion and acceptance of the work by Agency, 10% value of the bond shall remain in effect for a 12-month period to warranty the work.

IN WITNESS WHEREOF, this document has been executed this ___ day of _____, 20__.

PRINCIPAL:

By:

SURETY:

BY:

Attorney-in-Fact

The rate of premium on this bond is _____ per thousand.

The total amount of premium charged: \$ _____. (The above must be filled in by corporate surety.)

IMPORTANT:

Surety companies executing Bonds must appear on the Treasury Departments most current list (Circular 570 as amended) and be authorized to transact business in the State where the Project is located.

THIS IS A REQUIRED FORM

CPB-2

Any claims under this bond may be addressed to:

(Name and Address of Surety)

**(Name and Address of Agent
or Representative for service
of process in California
if different from above)**

**(Telephone Number of Surety
and Agent or Representative
for service of process in
California)**

THIS IS A REQUIRED FORM

ACKNOWLEDGMENT

A notary public or other officer completing this certificate verifies only the identity of the individual

State of California
County of _____)

On _____ before me,

(insert name and title of the officer)

personally appeared _____,

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

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

WITNESS my hand and official seal.

Signature _____(Seal)

THIS IS A REQUIRED FORM

CONTRACT PERFORMANCE BONDS
CERTIFICATE OF CONTRACTOR

I, _____, certify that I am a/the _____ (specify either partner or specific corporate office) of the Contractor names as Principal on the above-referenced bond. I further certify that the Principal is an entity in good standing having complied with all applicable laws and regulations and that I have been given the express power on behalf of the Principal to execute this bond.

NAME OF ENTITY: _____

NAME AND TITLE OF SIGNING PARTY: _____

SIGNATURE: _____

Contractor's California License No.

Name of License Holder

Type of License

Expiration Date

(CORPORATE SEAL)

ATTEST:

THIS IS A REQUIRED FORM

CERTIFICATION OF INSURANCE AND ENDORSEMENTS

The Contractor shall not commence any work under the Contract Documents until he obtains, at his own expense, all required insurance. The required insurance shall be provided by the Contractor in conformance with the requirements of Sections 6 and 7 of the General Provisions of these Contract Documents:

The insurance company or companies utilized by the Contractor shall be authorized to transact business in the State of California and to issue policies in the amounts required in said Sections 6 and 7 of the General Provisions of these Contract Documents.

No substitutions or revisions to the certificates and endorsements which follow will be accepted. If the insurance called for is provided by more than one company, a separate certificate, using the format presented, shall be provided for each company.

Contractor shall include the City of Perris, County of Riverside, their elected and appointed officials, employees, agents, Agency, Consultants as additional insured under Contractor's General Liability Policy.

ADDITIONAL INSURED AND WAIVER OF SUBROGATION- The Certificate of Insurance supplied to the City of Perris shall name the City of Perris, its officers, employees, agents, consultants, and independent contractors as additional insured and shall specify that the City of Perris be given thirty (30) days prior written notice of any modification, decrease or termination of the Contractor's Insurance coverage. The insurer shall waive all rights of subrogation and contribution it may have against the City, its officers, employees and agents and their respective insurers. Such insurance shall be subject to approval by the City Attorney.

CERTIFICATE OF INSURANCE

AGENCY: **CITY OF PERRIS**

DESCRIPTION: _____

TYPE OF INSURANCE: **WORKERS' COMPENSATION INSURANCE**

THIS IS TO CERTIFY that the policies of insurance listed below have been issued by the company named below in conformance with the requirements set forth in the Agency's Contract Documents, and that said policies are now in force.

Said company will give at least 30 days advance written notice by registered mail to the agency and Engineer prior to any material change or cancellation of said policies.

Nothing contained in this Certificate of Insurance shall be construed as an amendment to an existing insurance coverage.

Policy Number Effective Date Expiration Date

The insurance provided by said policies complies in all respects as to coverage and limits of liability with the requirements of the Workers' Compensation Insurance Laws of the State of California.

EFFECTIVE: _____

_____ Named Insured	_____ Insurance Company
_____ Street Number	_____ Street Number
_____ City and State	_____ City and State

**Insurance Company Agent for
Service of process in California**

**(Authorized Representative)
(Attach Acknowledgement)**

_____ (Name)	_____ (Company)
_____ (Street Number)	_____ (Street Number)
_____ (City)	_____ (City and State)
_____ (Telephone Number)	_____ (Telephone Number)

NOTICE: Substitution or revision to this certificate will be accepted. If the insurance called for is provided by more than one company, a separate certificate, using this format, shall be provided for each company.

ACKNOWLEDGMENT

A notary public or other officer completing this certificate verifies only the identity of the individual who signed the

State of California
County of _____)

On _____ before me,

(insert name and title of the officer)

personally appeared

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

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

WITNESS my hand and official seal.

Signature _____(Seal)

THIS IS A REQUIRED FORM

CERTIFICATE OF INSURANCE

AGENCY: CITY OF PERRIS

DESCRIPTION: _____

TYPE OF INSURANCE: **COMPREHENSIVE GENERAL LIABILITY INSURANCE**

THIS IS TO CERTIFY that the policies of insurance listed below have been issued by the company named below in conformance with the requirements set forth in the Agency's Contract Documents, and that said policies are now in force.

Said company will give at least 45 days advance written notice by registered mail to the Agency and Engineer prior to any material change or cancellation of said policies.

Nothing contained in this Certificate of Insurance shall be construed as an amendment to an existing insurance coverage.

<u>Policy</u>	<u>Date</u>	<u>Limits of Liability</u>		
<u>Number</u>	<u>Effective</u>	<u>Expiration</u>	<u>Bodily Injury</u>	<u>Property Damage</u>

The following types of coverage are included in this policy (indicated by "X" in space):

Manufacturers' and Contractors'	Yes ___ No ___
Owners' and Contractors' Protective	Yes ___ No ___
Blanket Contractual	Yes ___ No ___
Completed Operations	Yes ___ No ___
Owned Automobiles	Yes ___ No ___
Hired Automobiles	Yes ___ No ___
Non-Owned Automobiles	Yes ___ No ___
Broad Form Property Damage	Yes ___ No ___
"XCU" Exposure	Yes ___ No ___

ENDORSEMENT:

The Agency, the Owner's Representative, the County of Riverside, the Engineer, Interwest Consulting Group, and his consultants, and each of their officers, agents, and employees are included as additional insureds under these policies but only while acting in their capacity as such and only as respects operations of the original named insured, his subcontractors, agents, and employees in the performance of the above-referenced contract.

This endorsement shall not operate to increase the Company's total limits of liability under the above-listed policies.

The insurance company hereby waives its rights of subrogation against the additional insureds.

EFFECTIVE: _____

Named Insured

Insurance Company

Street Number

Street Number

City and State

City and State

Insurance Company agent for
service of process in California

By _____
(Authorized Representative)
(Attach Acknowledgment)

(Name)

(Company)

(Street Number)

(Street Number)

(Telephone Number)

(Telephone Number)

NOTICE: No substitution or revision to this certificate will be accepted. If the insurance called for is provided by more than one company, a separate certificate, using this format, shall be provided for each company.

ACKNOWLEDGMENT

A notary public or other officer completing this certificate verifies only the identity of the individual who

**State of California
County of _____)**

On _____ before me,

(insert name and title of the officer)

personally appeared

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

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

WITNESS my hand and official seal.

Signature _____(Seal)

THIS IS A REQUIRED FORM

NOTICE TO PROCEED

TO: _____

Project Description: _____

You are hereby notified to commence Work in accordance with the Contract dated _____, on or before _____, and you are to complete all work on or before _____ calendar days.

You are required to return an acknowledged copy of this Notice to Proceed to the Agency.

Dated this _____ day of _____.

City of Perris
Agency

By: _____
Sabrina Chavez

Director of Community Services
Title

ACCEPTANCE OF NOTICE

Receipt of the Notice to Proceed is hereby acknowledged by
_____, this the _____ day of
_____, 20____.

_____ By _____

Contractor

Title _____

Contractor's California License No.

Name of License Holder

Type of License

Expiration Date

**STATE OF CALIFORNIA - DEPARTMENT OF INDUSTRIAL RELATIONS
DIVISION OF APPRENTICESHIP STANDARDS**

TO: California Department of Industrial Relations
Division of Apprenticeship Standards
P.O. Box 420603
San Francisco California 94142

FROM: AWARDING AGENCY

**EXTRACT OF
PUBLIC WORKS CONTRACT AWARD**

A CONTRACT TO PERFORM PUBLIC WORKS UNDER LABOR CODE SECTION 1777.5 HAS BEEN AWARDED TO:

2. NAME OF GENERAL CONTRACTOR		3. CONTRACTOR'S LICENSE NO	
4. MAIL ADDRESS (STREET NUMBER OR P.O. BOX)		5. CITY	
		6. ZIP CODE	7. TELEPHONE NUMBER
8. ADDRESS OR LOCATION OF PUBLIC WORKS SITE (INCLUDE CITY AND/OR COUNTY)			
9. CONTRACT OR PROJECT NUMBER		10. DOLLAR AMOUNT OF CONTRACT AWARD \$	
11. STARTING DATE (ESTIMATED OR ACTUAL) MONTH / DAY / YEAR (USE NUMBERS)		12. COMPLETION DATE (ESTIMATED OR ACTUAL) MONTH / DAY / YEAR / (USE NUMBERS)	
13. TYPE OF CONSTRUCTION (HIGHWAY, SCHOOL, HOSPITAL, ETC.)		14. <input type="checkbox"/> NEW CONSTRUCTION <input type="checkbox"/> ALTERATIONS	
15. CLASSIFICATION OR TYPE OF WORKER (CARPENTER, PLUMBER, ETC.) THAT WILL BE EMPLOYED BY THE CONTRACTOR(S)			
16. Is language included in the Contract Award to effectuate the provision of section 1777.5, as required by the Labor Code?		<input type="checkbox"/> Yes <input type="checkbox"/> No	
Is language included in the Contract Award to effectuate the provisions of Section 1776, as required by the Labor Code?		<input type="checkbox"/> Yes <input type="checkbox"/> No	
17. SIGNATURE	18. TITLE	19. DATE	
20. PRINTED OR TYPED NAME		21. TELEPHONE NUMBERS	

Duplication of this form is permissible

DAS 13 (rev. 5/01)



CITY OF PERRIS

CHANGE ORDER

Order No. _____

Date _____

Contract Date _____

Project: International Mother Language Monument Sign Project

This Change Order # _____ changes the Agreement between the City of Perris and _____, for the International Mother Language Monument Sign Project, please read it carefully. **JUSTIFICATION:**

CHANGE TO CONTRACT PRICE:

Original Contract Price \$ _____

Current Contract Price (Adjusted by Previous Change Order(s)): \$ _____

Contract Price due to this Change Order will be increased: \$ _____

New Contract Price including this Change Order: \$ _____

CHANGE TO CONTRACT TIME

Contract Time will be increased:

As per Paragraph 5.1 "Time For Completion and Liquidated Damages," of the original Agreement, and a total of _____ () additional calendar days, from the completion date specified on the original Notice To Proceed. The new completion date is _____.

Date for completion of all work:

(Date)

APPROVALS REQUIRED

To be effective, this change order must be approved by the City of Perris and _____.

CITY OF PERRIS:

Approved by: _____ Date _____
_____:

Approved by: _____ Date _____
Contractor

End of Change Order# ____
Nothing Follow

CERTIFICATE OF SUBSTANTIAL COMPLETION

PROJECT: **International Mother Language Monument Sign Project**

CONTRACTOR

CONTRACT DATE

This Certificate of Substantial Completion applies to all Work under the Contract Documents or to the following specified parts thereof:

To: City of Perris
(OWNER)

And To: _____
(CONTRACTOR)

The Work to which this Certificate applies has been inspected by authorized representatives of OWNER and CONTRACTOR and that Work is hereby declared to be substantially complete in accordance with the Contract Documents on

.....
Date of Substantial Completion

A tentative list of items to be completed or corrected is attached hereto. This list may not be all-inclusive, and the failure to include an item in it does not alter the responsibility of CONTRACTOR to complete all the Work in accordance with the Contract Documents. The items in the tentative list shall be completed or corrected by CONTRACTOR within days of the above dated of Substantial Completion.

The responsibilities between OWNER and CONTRACTOR for security, operation, safety, maintenance, heat, utilities, insurance, and warranties shall be as follows:

OWNER: _____

CONTRACTOR: _____

The following documents are attached to and made a part of this Certificate:

This Certificate does not constitute an acceptance of Work not in accordance with the Contract Documents nor is it a release of CONTRACTOR's obligation to complete the Work in accordance with the Contract Documents.

CONTRACTOR accepts this Certificate of Substantial Completion on _____, 20__

Contractor

By _____

California Contractor License No.

OWNER accepts this Certificate of Substantial Completion on _____, 20__

CITY OF PERRIS

By _____

RELEASE FORM

NAME OF CONTRACTOR: _____

PROJECT DESCRIPTION: **International Mother Language Monument Sign Project**

PERIOD WORK PERFORMED: _____

Above named Contractor hereby acknowledges payment in full for all compensation of whatever nature due the Contractor for all labor and materials furnished and for all work performed on the above-referenced project for the period specified above with the exception of contract retention amounts and disputed claims specifically shown below.

RETENTION AMOUNT FOR THIS PERIOD:

\$ _____

(words)

DISPUTED CLAIMS

DESCRIPTION OF CLAIM

AMOUNT CLAIMED

The Contractor further expressly waives and releases any claim the Contractor may have of whatever type of nature for the period specified which is not shown as a retention amount or a disputed claim on this form. This release and waiver have been made voluntarily by Contractor without any fraud, duress, or undue influence by any person or entity.

Contractor further certifies, warrants, and represents that all bills for labor, materials, and work due Subcontractors for the specified period have been paid in full and that the parties signing below on behalf of Contractor have express authority to execute this release.

Printed Name of Contractor

Date _____

Describe Entity (Partnership, Corporation, etc.)

California Contractor's License No.

By: _____

by: _____

GENERAL PROVISIONS

The work embraced herein shall be done in accordance with the applicable portions of the current edition of the "Standard Specifications for Public Works Construction" prepared and promulgated by the Southern California Chapters of the American Public Works Association and Associated General Contractors of California, except when said "Standard Specifications" are in conflict with other contract documents.

The "General Provisions" contained in said "Standard Specifications" are by this reference incorporated herein as the General Provisions of these contract documents, subject to the following modifications and additions.

1. Section 2-3, "Subcontracts" Section 2-3 of said "Standard Specifications" is amended to read:

Unless otherwise provided in Section 4100.5 of the Government Code, each bidder shall file with his bid the name and address of each subcontractor who will perform the work or labor or render service to the prime Contractor in or about the construction of the work or improvement and of each subcontractor, licensed by the State of California, who specially fabricates and installs a portion of the work or improvement according to detailed drawings contained in the plans and specifications, in an amount in excess of one-half of one percent of the prime Contractor's total bid. Only one subcontractor shall be listed for each portion of the work, which portion shall be defined in the bid. In each instance, the nature and extent of the work to be sublet shall be described. The failure of the Contractor to specify a subcontractor, or the listing of more than one subcontractor for the same portion of the work, constitutes an agreement by the Contractor that he is fully qualified to perform that portion himself, and that he shall perform that portion himself.

2. Section 3-4, "Changed Conditions" Section 3-4 of said "Standard Specifications" is amended to read:

All loss or damage arising out of the nature of the work to be done under the contract, or from any unforeseen obstructions or difficulties which may be encountered during the progress of the work and in the prosecution of the same, or from the action of the elements (except as otherwise provided in Section 6-6 hereof) or from encumbrances on the line of the work, shall be sustained by the Contractor.

3. Section 4-1.1, "General" Section 4-1.1 of said "Standard Specifications" is amended to read:

No materials, supplies or equipment for the work under this contract shall be purchased subject to any chattel, mortgage or under a conditional sale contract or other agreement by which an interest therein or any part thereof is retained by the seller or supplier. The Contractor warrants clear and good title to all materials, supplies and equipment installed and incorporated in the work, and

agrees upon completion of all work to deliver the premises, together with all improvements and appurtenances constructed or placed thereon by him, to the City free from any claims, liens, encumbrances or charges, and further agrees that neither he nor any person, firm, or corporation furnishing any material or labor for any work covered by the contract shall have any right to a lien upon the premises or any improvement or appurtenances thereon, provided that this shall not preclude the Contractor from installing metering devices or other equipment of utility companies the title of which is commonly retained by the utility company. Nothing contained in this article, however, shall defeat or impair the right of such persons furnishing materials or labor under any bond given by the Contractor for their protection of any right under any law permitting such persons to look to funds due the Contractor, in the hands of the City. The provisions of this article shall be inserted in all subcontracts and material contracts, and notices of its provisions and material contracts, and notices of its provisions shall be given to all persons furnishing materials for the work when no formal contract is entered into for such materials.

4. Section 6-9, "Liquidated Damages" Section 6-9 of said "Standard Specifications" is amended to read:

It is agreed by the parties to the contract that in case all the work called for under the contract in all parts and requirements is not finished or completed within the number of calendar days as set forth in the contract, damage will be sustained by the City. Because it is impracticable and extremely difficult to ascertain and determine the actual damage which the City will sustain, in the event of and by reason of such delay, it is therefore agreed that the Contractor will pay to the City \$500 for each and every calendar day's delay in finishing the work in excess of the time specified for completion, plus any authorized time extensions.

The Contractor agrees to pay said liquidated damages herein provided for, and further agrees that the City may deduct the amount thereof from any monies due or that may become due the Contractor under the contract.

5. Section 7-2.2, "Laws" Section 7-2.2 of said "Standard Specifications" is amended to read:

The Contractor, his agents and employees, shall be bound by and comply with all applicable provisions of the Labor Code and with Federal, State and local laws related to labor. Particular attention is directed to:

- A. Hours of Labor: Eight hours labor constitutes a legal day's work. The Contractor shall forfeit, as a penalty to the City, \$50.00 for each worker employed in the execution of the contract by the Contractor or any subcontractor under him for each calendar day during which such worker is required or permitted to work more than 8 hours in any one calendar day and 40 hours in any one calendar week in violation of the provisions of the Labor Code, and in particular, Section 1810 to Section 1815,

thereof, inclusive, except that work performed by employees shall be permitted upon compensation for all hours worked in excess of 8 hours per day and/or 40 hours per week at not less than one and one-half times the basic rate of pay, as provided in said Section 1815.

- B. Labor Discrimination: Attention is directed to Section 1735 of the Labor Code, which reads as follows:

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

- C. Prevailing Wage: The Contractor shall comply with Labor Code Section 1775. In accordance with said Section 1775 the Contractor shall forfeit as a penalty to the City, \$50.00 for each calendar day or portion thereof, for each worker paid less than the stipulated prevailing rates for such work or craft in which such worker is employed for any work done under the contract by him or by any subcontractor under him in violation of the provisions of the Labor Code and in particular, Labor Code Sections 1770 to 1780, inclusive. In addition to said penalty and pursuant to said Section 1775, the difference between such stipulated prevailing wage rates and the amount paid to each worker was paid less than the stipulated prevailing wage rate shall be paid to each worker by the Contractor.

Pursuant to State and Federal statutes, rules, orders, resolutions, and regulations, the Contractor is required to pay the higher of the State of California or Federal prevailing wages. The Contractor is required to be fully familiar with and comply with all State of California and Federal statutes, rules, regulations, orders, resolutions, and determinations which govern the payment of wages for the work and services provided for in this Agreement.

Pursuant to the provisions of Section 1770 of the Labor Code of the State of California, the City has ascertained the general prevailing rate of wages (Which rate includes employer payments for health and welfare, vacation, pension and similar purposes) applicable to the work to be done, for straight time, overtime, Saturday, Sunday and holiday work. The holiday wage rate listed shall be applicable to all holidays recognized in the collective bargaining agreement of the particular craft, classification, or type of worker concerned. The Contractor shall pay travel and subsistence payment to each worker as such payments are defined and required in applicable collective bargaining agreements filled in connection with Labor Code Section 1773.8.

The City will not recognize any claim for additional compensation

because of the payment by the Contractor of any wage in excess of the prevailing wage rate set forth in the contract. The possibility of wage increases is one of the elements to be considered by the Contractor in determining his bid, and will not under any circumstances be considered as the basis of a claim against the City on the contract.

- D. Contractor's Licensing Laws: Attention is directed to the provisions of Chapter 9 of Division 3 of the Business and Professions Code concerning the licensing of Contractors.
- E. Apprentices: In the awarding of any contract or written order for any public work or improvement, the Director of Public Works/City Engineer, or his/her designee, shall require all contractors and subcontractors offering or agreeing to perform any work on said public improvement to provide proof of participation as a signatory to a recognized apprenticeship and/or training program under Chapter 4 (commencing at Section 3070), Division 3, of the Labor Code of the State of California and certified by the State of California Division of Apprenticeship Standards, where such programs exist for the work to be performed.

They shall also provide information concerning their experience, financial qualifications and ability to perform said contract or subcontract, as well as to whether said contractor or subcontractor possesses, or can obtain the necessary equipment in time to perform said contract or subcontract.

Should the Director of Community Services/City Engineer, or his/her designee, determine that said contractor or any subcontractor is not a signatory to a recognized apprenticeship and/or training program under Chapter 4 (commencing at Section 3070), Division 3, of the Labor Code of the State of California and certified by the State Division of Apprenticeship Standards, where such programs exist for the work to be performed, or he/she does not possess the necessary experience and financial qualifications to perform said contract or subcontract, or that he/she does not possess, or cannot obtain in due time the necessary equipment to perform said contract, the Director of Community Services, Engineer, or his/her designee, may reject the bid of any said contractor or subcontractor. If such determination affects only a subcontractor then the Director of Public Works/City Engineer, or his/her designee, may compel the contractor to substitute a subcontractor who is a signatory to a recognized apprenticeship and/or training program under Chapter 4, (commencing at Section 3070), Division 3, of the Labor Code of the State of California and certified by the State of California Division of Apprenticeship Standards, where such programs exist for the work to be performed, or who, in the opinion of the Director of Community Services and/or City Engineer, or his/her designee, possess the necessary experience, financial qualifications, and equipment to perform said subcontract.

The apprenticeship provisions contained herein shall not apply to contracts of general contractors involving less than fifty thousand dollars (\$50,000.00) or twenty (20) working days or to contracts of specialty contractors not bidding for work through a general or prime contractor, involving less than five thousand dollars (\$5,000.00) or fewer than five (5) working days.

6. Section 7-3, "Liability Insurance" Section 7-3 of said "Standard Specifications" is amended to read:

7-3 "Contractor's Liability and Insurance"

7.3.1 Contractor's Liability:

- (a) To the fullest extent permitted by law, Contractor hereby agrees, at its sole cost and expense, to defend, protect, indemnify, and hold harmless the City of Perris, its officers, and their respective elected and appointed officials and members, officers, attorneys, agents, representatives, consultants, employees, directors, shareholders, successors, and assigns (individually as "Indemnities" and collectively, "Indemnities") from and against any and all damages, costs, expenses, liabilities, claims, demands, causes of action, proceedings, expenses, judgments, penalties, liens, and losses of any nature whatsoever, including fees of accountants, attorneys, expert witnesses, consultants, or other professionals and all costs associated therewith (collectively, "Claims"), to the extent arising or claimed to arise out of, in connection with, resulting from, or related to any negligent act, error, omission or failure to act of Contractor or any of its subcontractors and their respective officers, agents, servants, employees, subcontractors, material men, suppliers or Contractor's failure to perform or negligent performance of any term, provision, covenant or condition of the Agreement or the Scope of Services, including this indemnity provision. This indemnity also applies to any Claims of any type or nature asserted on behalf of any of Contractor's subcontractors. This indemnity provision shall survive the termination of the Agreement and is in addition to any other rights or remedies which Indemnities may have under the law. Payment is not required as a condition precedent to an Indemnities' right to recover under this indemnity provision. An Indemnities shall have the right to select the attorneys to represent it in the event of a Claim and at Contractor's expense. Contractor shall pay Indemnities for any attorneys' fees, consultant and expert witness fees and costs incurred in enforcing this indemnification provision. This indemnity is effective without reference to the existence or applicability of any insurance coverage which may have been required under the Agreement or any additional insured endorsements, which may extend to Indemnities.
- (b) Contractor, on behalf of itself and all parties claiming under or through it, hereby waives all rights of subrogation and contribution against any Indemnities with respect to those Claims as to which such Indemnities is indemnified under Section 7.3.1.A above, except for such Claims which are the result of such Indemnities' willful misconduct.

- (c) In the event the City of Perris, its officers, agents or employees are made a party to any action or proceeding filed or prosecuted against Contractor for such damages or other claims arising out of or in connection with the negligent performance of or failure to perform the work, operations or activities of Contractor hereunder, Contractor agrees to pay to the City and its officers, agents or employees, any and all costs and expenses incurred by the City and its officers, agents or employees in such action or proceeding, including but not limited to, legal costs and attorneys' fees.

7.32 Liability Insurance:

The Contractor shall procure and maintain, at its sole cost and expense, in a form and content satisfactory to City, during the entire term of this Agreement including any extension thereof, the following policies of insurance.

- (a) Commercial General Liability Insurance. A policy of commercial general liability insurance written on a per occurrence basis with a combined single limit of at least \$2,000,000 bodily injury and property damage including coverage for contractual liability, personal injury, independent contractors, broad form property damage, products and completed operations. The Commercial General Liability Policy shall name the City of Perris, its officers, employees and agents as additional insured in accordance with standard ISO additional insured endorsement form CG2010(1185) or equivalent language.
- (b) Worker's Compensation Insurance. A policy of worker's compensation insurance in such amount as will fully comply with the laws of the State of California and which shall indemnify, insure and provide legal defense for both the Contractor and the City against any loss, claim or damage arising from any injuries or occupational diseases carrying out the work or service contemplated in this Agreement.
- (c) Business Automobile Insurance. A policy of business automobile liability insurance written on a per occurrence basis with a single limit liability in the amount of \$1,000,000 bodily injury and property damage. Said policy shall include coverage for owned, non-owned, lease and hired cars.

All of the above policies of insurance shall be primary insurance. The insurer shall waive all rights of subrogation and contribution it may have against the City of Perris, its officers, employees and agents, and its insurers. In the event any of said policies of insurance are canceled, the Contractor shall, prior to the cancellation date, submit new evidence of insurance in conformance with this Section 7.3.2 to the Contract Officer. No work or service under this Agreement shall commence until the Contractor has provided the City with Certificates of Insurance or appropriate insurance binders evidencing the above insurance coverage and said Certificates of Insurance or binders are approved by the City.

Contractor agrees that the provision of this Section 7.3.2 shall not be construed as limiting in any way the extent to which the Contractor may be held responsible for the payment of damages to any persons or property resulting from the Contractor's activities or the activities of any person or person for which the Contractor is otherwise responsible.

In the event the Contractor subcontracts any portion of the work in compliance with Section 3.3 of the Agreement, the contract between the Contractor and such subcontractor shall required the subcontractor to maintain the same policies of insurance that the Contractor is required to maintain pursuant to this Section.

"It is hereby understood and agreed that this policy may not be canceled nor the amount of the coverage thereof reduced until (30) days after receipt by the City of a written notice of such cancellation or reduction on coverage, as evidenced by receipt of a registered letter."

7.33 Sufficiency of Insurer or Surety:

Insurance or bonds required by this Agreement shall be satisfactory only if issued by companies qualified to do business in California, rated "A" or better in the most recent edition of Best Rating Guide, The Key Rating Guide or in the Federal Register, and only if they are of a financial category Class VII or better, unless such requirements are waived by the City's Risk Manager or designee of the City due to unique circumstances. In the event the City's Risk Manager determines that the work or services to be performed under this Agreement creates an increased or decreased risk of loss to the City, the Contractor agrees that the minimum limits of the insurance policies required by this Section 5 may be changed accordingly upon receipt of written notice from the City's Risk Manager or designee; provided that the Contractor shall have the right to appeal a determination of increased coverage by the City's Risk Manager to the City Council within ten (10) days of receipt of notice from the City's Risk Manager.

7-4 "Workers' Compensation Insurance"

7.4.1 Section 7-4 of said "Standard Specifications is amended to read:

Before execution of the contract by the Board, the Contractor shall file with the engineer the following certification:

"I am aware of, and will comply with, Section 3700 of the Labor Code by securing, paying for, and maintaining in full force and effect for the duration of the contract, complete Workers' Compensation Insurance, and shall furnish a Certificate of Insurance to the engineer before execution of the contract". The City, its officers, or employees, will not be responsible for any claims in law or equity occasioned by failure of the Contractor to comply with this paragraph.

Said policy of insurance shall contain an endorsement which:

- A. Waives all right of subrogation against the City and any persons and entities designated in the Special Provisions to be listed as additional insureds in the policy of insurance provided for in Section 7-3.2 by reason of any claim arising out of or connected with the operations of Contractor or any subcontractor in performing the work provided for herein;
- B. Provides it shall not be cancelled or altered without thirty (30) days notice thereof given to the City by registered mail.

The Contractor shall require all subcontractors similarly to provide such compensation insurance for their respective employees.

7. Section 7-10.4.1, "Safety Orders" Section 7-10.4.1 of said "Standard Specifications" is amended to read:

The Contractor shall have at the worksite, copies or suitable extracts of: Construction Safety Orders, Tunnel Safety Orders, and General Industrial Safety Orders issued by the State Division of Industrial Safety. He shall comply with provisions of these and all other applicable laws, ordinances, and regulations, including but not limited to, the Occupational Safety and Health Act of 1970 to which particular attention is directed. He also shall have the latest edition of the "Work Area Traffic Control Handbook" published by Building News, Inc.

8. Section 7-13, "Laws to Be Observed" Section 7-13 of said "Standard Specifications" is amended to read:

The Contractor shall keep himself fully informed of all existing and future State and Federal laws and county and municipal ordinances and regulations which in any manner affect those engaged or employed in the work, or the materials used in the work, or which in any way affect the conduct of the work, and of all such orders and decrees of bodies of tribunals having any jurisdiction or authority over same. He shall at all times observe and comply with, and shall cause all his agents and employees to observe and comply with all such existing and future laws, ordinances, regulations, orders, and decrees of bodies or tribunals having any authority over the work; and shall protect and indemnify the City and all officers and employees thereof connected with the work, including but not limited to the Engineer, against any claim or liability arising from or based on the violation of any such law, ordinance, regulation, order or decree, whether by himself or his employees. If any discrepancy or inconsistency is discovered in the plans, drawings, specifications, or contract for the work in relation to any such law, ordinance, regulation, order or decree the Contractor shall forthwith report the same to the engineer in writing.

9. Section 9-3, "Payment" Section 9-3 of said "Standard Specifications" is amended to read:

Upon the written request of the Contractor, delivered to the City at least ten (10) days in advance, and at the sole cost and expense of the Contractor, the Contractor may substitute securities for any monies held by the City to ensure the performance of the Contractor hereunder. The securities proposed to be substituted shall be specifically identified in the Contractor's notice, shall be limited to those listed in Government Code Section 16430 and to bank or savings and loan certificates of deposit, and shall be of the market value (as determined by the Finance Director of the City) at least equal to the amount of money withheld by the City. Upon the approval of the proposed substitution by the City, the securities may be deposited with the City or with a State or Federally chartered bank approved by the City as the escrow agent of the parties. The Contractor shall be the beneficial owner of these securities and shall receive interest thereon.

Section 9-3.2 of said "Standard Specifications" shall be amended to read: PARTIAL PAYMENTS: At the request of the Contractor, partial payments will be made on a monthly basis. The Progress Payments will be made on a monthly basis. The Progress Payment request shall be submitted on or before the 20th day of each month. The estimate may include only work completed up to and including this date. Progress pay requests showing work not accomplished by the 20th day of the month shall be rejected.

Progress payments shall be issued upon successful completion of items listed on the bid schedule of values, and inspection made by the City of Perris, unless otherwise directed by the Engineer, or labor compliance officer. A retention of five (5%) shall be withheld from this payment. In accordance with Federal Labor Standards Provisions at 29.CFR.Part 5, Section 5.9 "Suspension of Funds", the Labor Compliance Officer shall suspend all progress payments pending the resolution of alleged labor violations.

10. Section 10, "Other Provisions" Section 10 is added to said "Standard Specifications" to read:

10.1 Responsibility for Work. Until the formal acceptance of the work by the City, the Contractor shall have the charge and care thereof and shall bear the risk of injury or damage to any part thereof and shall bear the risk of injury or damage to any part thereof by the action of the execution or from the non-execution of the work. The Contractor shall rebuild, repair, restore, and make good all injuries or damages to any portion of the work occasioned by any of the above before its completion and acceptance and shall bear the expense thereof, except for such injuries or damages as are occasioned by acts of the federal government or the public enemy. In case of suspension of work from any cause whatever, the Contractor shall be responsible for all materials and shall properly store them if necessary and shall erect temporary structure where necessary.

Any other provisions of this contract to the contrary notwithstanding, to the extent required by Chapter 2.5 (commencing with Section 4150) of Division 5 of Title I of the Government Code, the Contractor shall not be responsible for the

cost of repairing, or restoring damage to the work caused by an act of God as that phrase is defined in Government Code 4151(b).

The City will not be held responsible for the care or protection of any material or parts of the work prior to the final acceptance except as expressly provided in these specifications. The City will not be responsible for any changes in the Contractor's operations due to encountering obstructions which may interfere with the work.

- 10.2 Provisions for Emergencies: Unusual conditions may arise on the work which will require that immediate and unusual provision be made to protect the public from danger or loss or damage to life and property, due directly or indirectly to the prosecution of the work, and it is part of the service required of the Contractor to make such provisions and to furnish such protection.

The Contractor shall use such foresight and shall take such steps and precautions as his operations make necessary to protect the public from danger or damage, or loss of life or property, which would result from the interruption or contamination of public water supply, irrigation or other public service, or from the failure of partly completed work.

Whenever, in the opinion of the engineer, an emergency exists against which the Contractor has not taken sufficient precaution for the safety of the public or the protection of utilities or of adjacent structures or property which may be injured by process of construction on account of such neglect; and whenever in the opinion of the engineer, immediate action shall be considered necessary in order to protect the public or private, personal or property interests, or prevent likely loss of human life or damage on account of the operations under the contract, then and in the event the Engineer may provide suitable protection to said interest by causing such work to be done and material to be furnished as, in the opinion of the engineer, may seem reasonable and necessary.

The cost and expense of said labor and material, together with the cost and expense of such repairs as may be deemed necessary, shall be borne by the Contractor, and if he shall not pay said cost and expense upon presentation of the bills therefore, duly certified by the engineer, then said cost and expense will be paid by the City and shall thereafter be deducted from any amounts due, or which become due said Contractor. Failure of the City, however, to take such precautionary measure, shall not relieve the Contractor of his full responsibility for public safety.

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

- 10.3 Guarantees: Besides guarantees required elsewhere, the Contractor shall and hereby does guarantee all work for a period of one (1) year after the date of acceptance of the work by the City and shall repair and replace any and all such work by the City and shall repair and replace any and all such work,

together with any other work which may be displaced in so doing, that may prove defective in workmanship and/or materials within the one (1) year period from date of acceptance, without any expense whatsoever to the City, ordinary wear and tear and unusual abuse or neglect excepted. In the event of failure to comply with the above mentioned conditions within a week after being notified in writing, the City hereby authorized to proceed to have the defects repaired and made good at the expense of the Contractor, who hereby agrees to pay the cost and charges therefore immediately on demand.

11. "Environmental Provisions" The Contractor shall, as appropriate, comply with all provisions of Public Contracts Code Section 7104 (SB1470). The requirements of this code are summarized as follows: In the event Contractor is required to dig any trench or excavation that extends deeper than four feet below the surface in order to perform the work authorized under this contract, Contractor agrees to promptly notify City in writing and before further disturbing the site if any of the conditions set forth below are discovered:

- (1) Material that the Contractor believes may be material that is hazardous waste, as defined in Section 25117 of the Health and Safety Code, that is required to be removed to a Class I, Class II, or Class III disposal site in accordance with the provisions of existing law.
- (2) Subsurface or latent physical conditions at the site differing from those indicated.
- (3) Unknown physical conditions at the site of any unusual nature, different materially from those ordinarily encountered and generally recognized as inherent in the work of the character provided for in this Contract.
 - (a) City agrees to promptly investigate the conditions, and if City finds that the conditions do materially differ, or do involve hazardous waste, and cause a decrease or increase in Contractor's cost of, or the time required for, performance of any part of the work, shall issue a change order under the procedures described in this Contract.
 - (b) That, in the event a dispute arises between City and Contractor as to whether the conditions materially differ, or involve hazardous waste, or cause a decrease or increase in Contractor's cost of, or time required for, performance of any part of the work, Contractor shall not be excused from any scheduled completion date provided for in this Contract, but shall proceed with all work to be performed under the Contract.

Contractor shall retain any and all rights provided either by this contract or by law which pertain to the resolution of disputes and protests between contracting parties.

STANDARD PROVISIONS

PART I - STANDARD CONDITIONS

SP-1-1.00 GENERAL — It is the intent of these General Provisions, Standard Provisions, Project Specifications, Special Provisions, and the plans referred to herein and other documents comprising the contract for the Contractor to provide for and include all labor, materials, equipment, plant, tools, transportation, insurance, bonds, sales taxes, permits, temporary protection, traffic control, watchmen, superintendence and other work necessary to construct and complete all work specified herein, including all addenda and change orders. No separate payment will be made for any item that is not specifically set forth in the Schedule of Bid Items. All costs not specified, therefore, shall be included in the prices named in the Schedule of Bid Items and under various items of work.

The contract documents are complementary, and a requirement in one is as binding as though occurring in all. They are intended to be cooperative, to describe and provide for a complete work.

SP-1-1.01 STANDARD SPECIFICATIONS — The specifications entitled, Standard Specifications for Public Works Construction ("Greenbook"), as amended, in the General Provisions of these Specifications, shall hereinafter be referred to as the Standard Specifications. These shall be the most recent version published.

All work shall meet all requirements applicable of Federal, State, County and City regulations and codes governing safety, health, welfare, dust and sound control.

SP-1-1.02 DEFINITIONS — Attention is invited to the provisions of Section 1 — "Terms, Definitions, Abbreviations and Symbols", of the Standard Specifications and these Special Provisions. Whenever in the contract documents, the following terms are used, the intent and meaning shall be interpreted as follows:

AGENCY	City of Perris
BOARD	City Council of the City of Perris
DEPARTMENT	California State Department of Transportation (Caltrans)
ENGINEER	The City Engineer of City of Perris his properly authorized agents, such agent acting within the scope of the particular duties entrusted to them.
STATE	City of Perris
DIRECTOR	Community Services Director of the City of Perris

LABORATORY The laboratory to be designated by the Engineer to test materials and work involved in the contract.

NOTICE TO CONTRACTORS Notice Inviting Bids.

Other terms appearing in the plans, Standard Specifications and in these Special Provisions shall have the same intent and meaning specified in Section 1-2, "Definitions", of the Standard Specifications.

SP-1-1.03 EXAMINATION OF PREMISES — Before bidding on this work, all prospective bidders shall make a careful examination of the jobsite and shall thoroughly familiarize themselves with the requirements of the Contract. By the act of submitting a proposal for the work, the contractor shall be deemed to have made such study and examination and that he is familiar with and accepts all conditions of the site.

SP-1-2.00 PLANS AND SPECIFICATIONS — Attention is invited to the provisions of Section 2-5, "Plans and Specifications", of the Standard Specifications and these Special Provisions.

The Specifications, drawings, Special Provisions, Standard Specifications, Riverside County Flood Control Standards, EMWD Standards, and all supplementary documents are essential parts of the contract, and a requirement in one is as binding as though occurring in all. They are intended to be cooperative, to describe and provide for a complete work.

If, however, the provisions within the documents comprising the contract are in conflict, the most stringent in the opinion of the City Engineer shall apply.

Provide and maintain in good order at one's work site, a complete set of contract prints. All changes to the contract shall be clearly recorded on this set of prints. At the end of the project, the contractor shall transfer all changes to one (1) set of prints for submission to the City Engineer.

SP-1-2.01 SCHEME OF WORK — The work contemplated in the project consists of furnishing labor, materials, services and equipment for the work described in these Special Provisions and shown on the plans and delineated in the specifications of this project.

SP-1-2.02 TIME LIMIT — The work, both onsite and offsite, shall be completed within seventy-five (75) calendar days after commencement date given in the Notice to Proceed. The time stated for completion includes final cleanup and any testing required. Additional days will be given for days classified as rainy days by the Director of Community Services.

SP-1-2.03 AWARD AND EXECUTION OF CONTRACT — The bidder's attention is directed to the provisions of the Information for Bidders and to these Special Provisions for the requirements and conditions concerning award and execution of the Contract. A guaranty form to be signed and delivered to the Agency before acceptance is included in the proposal.

The award of the Contract, if it be awarded, will be to the lowest responsible bidder whose proposal complies with all the requirements described. The award, if made, will be made within forty-five (45) days after the opening of the bids. All bids will be compared on the basis of the Engineer's estimate of quantities of work to be done.

THE CITY RESERVES THE RIGHT TO REJECT ANY OR ALL BIDS.

All bonds in the amounts stipulated in the Information for Bidders shall be furnished by the bidder to whom the contract has been awarded and at this own cost and expense. Whenever the City of Perris has cause to believe that any such bond has become insufficient, a demand in writing may be made of the contractor for such further or additional bond as is considered necessary, considering the extend of the work remaining to be done. Thereafter, no payment shall be made upon such Contract to the contractor or any assignee of the contractor until such further or additional bond has been furnished.

Before commencing any work, the contractor shall obtain insurance required under the General Provisions of these Specifications and show proof of same. Contractor shall not allow any subcontractor to work until similar insurance required of the subcontractor has been obtained and approved by the General Contractor.

The contractor shall, in providing the insurance as provided in Sections 6 and 7 of the General Provisions, include as a provision of the insurance policy, a clause substantially in the following language:

It is hereby understood and agreed that this policy may not be canceled nor the amount of the coverage thereof reduced except upon thirty (30) days prior to written notice to the City as evidenced by receipt of a registered letter. The insurance policy shall also specify that it is primary insurance and that any insurance held or owned by the designated additional insureds shall be excess thereto and shall not be called upon to cover a loss under said policy.

SP-1-2.04 AUTHORITY OF THE CITY ENGINEER — The City Engineer shall decide all questions as to the quality or acceptability of the work performed and to the manner or performance and rate of progress of the work, all questions as to the acceptable fulfillment of the contract on the part of the contractor, and all questions as to compensation. His decision shall be final and he shall have authority to enforce and make effective such decisions and orders which the contractor fails to carry out promptly. Attention is invited to the provisions of Section 2-10 of the Standard Specifications.

SP-1-2.05 SUBCONTRACT — Attention is directed to the provisions of Section 2- 3, "Subcontracts", of the Standard Specifications as amended in the General Provisions herein and these Special Provisions.

A sheet for listing subcontractors, as required, is included in the proposal.

The Contract documents shall not create any contractual relation between any subcontractor and the City. Contractor agrees that he is fully responsible to the City for the acts and omissions of his subcontractors and of persons either directly or indirectly employed by them, as he is for the acts and omissions of persons directly employed by him.

SP-1-3.00 CHANGES IN WORK — All changes in the work, whether requested by the contractor, initiated by the City and/or caused by changed conditions, shall be undertaken only after the issuance of a change order by the Director of Community Services. Attention is invited to Section 3 of the Standard Specifications and the provisions of Paragraph 2 of the General Provisions.

SP-1-4.00 CONTROL OF MATERIALS AND WORKMANSHIP — All materials, parts and equipment furnished by the Contractor in the work shall be new, high grade and free from defects. Quality of work shall be in accordance with generally accepted standards. Attention is invited to Section 4 of the Standard Specifications and the provisions of Paragraph 3 of the General Provisions. No used or secondhand materials, parts and equipment shall be incorporated in the project unless specifically permitted in writing by the Director of Community Services.

SP-1-4.01 TESTS OF MATERIALS AND WORKMANSHIP — All materials shall first be tested and satisfactorily passed in accordance with the requirements of the plans and these specifications, before incorporating said material in the work. Materials placed otherwise shall be considered defective and will be subject to rejection. The cost of testing of materials and workmanship shall be paid by the Contractor. The cost of re-testing of materials and workmanship shall be at the expense of the contractor. The contractor, at his expense, shall deliver materials for testing to the place and at the time designated by the Engineer. Attention is invited to Section 4-1.4, "Test of Materials", of the Standard Specifications.

SP-1-4.02 LABORATORY — The Contractor shall make all arrangements for a laboratory, designated by the City, to conduct the test requirements for the project. The contractor shall render all necessary assistance to the personnel of said laboratory to facilitate the inspection and testing of materials. Request for inspection and/or testing shall be made at least twenty-four (24) hours in advance.

SP-1-5.00 UTILITIES — The existence and location of utility structures and facilities are shown on the plans or in the Special Provisions according to records and information available to the City. Attention is called to the fact of the possible existence of other utility facilities or structures not known to the City or in a location different from that shown on the plans or in the Special Provisions. The contractor is required to ascertain the location of all underground utility structures and facilities prior to doing work that may damage such structures and facilities, including those not shown, or interfere with their service and to take such precautionary measures in the course of said work to prevent such damage or interference. Attention is invited to Section 5 of the Standard Specifications. If the contractor, while performing the work under the contract, discovers utility structures or facilities not identified in the plans or specifications or shown differently, he shall immediately notify the City in writing of such discovery and allow the City 48 hours to advise. Contractor shall continue with his work on other areas and provide utility purveyors adequate time to resolve the conflict or continue work if in the opinion of the City and utility purveyors, the construction will not impact these utilities.

SP-1-6.00 PROSECUTION, PROGRESS AND ACCEPTANCE OF THE WORK — Attention is invited to Section 6 of the Standard Specifications and these Special Provisions.

SP-1-6.01 PROGRESS SCHEDULE — After notification of award and prior to starting any work, the contractor shall submit to the Engineer for approval his proposed construction schedule. Attention is invited to Section 6-1 of the Standard Specifications. The proposed construction schedule shall be submitted on or before the date set for the preconstruction meeting between City and contractor's staff and representatives of utility companies.

SP-1-6.02 BEGINNING OF WORK — The contractor shall begin work on **September 6, 2022**. If for some reason the City does not authorize the work to begin on such date, the work shall begin on the date specified by the City.

SP-1-6.03 TIME OF COMPLETION — The contract time shall commence upon the date of issuance of the Notice to Proceed and shall continue for a period stated in the Proposal. The contractor shall diligently prosecute the project and complete all work within the contract time. Contractor agrees that failure to complete the project within the contract time shall subject him to the liquidated damages provided herein. Attention is invited to Section 6-7 of the Standard Specifications.

SP-1-6.04 PROSECUTION OF WORK — The contractor shall give his personal attention to the fulfillment of the contract and shall keep the work under his control. All persons engaged in the project shall be considered by the City as employees of the contractor and he shall be held responsible for their work subject to the provisions of the contract and specifications. The contractor shall prosecute the work vigorously and diligently until completed with the minimum inconvenience and hazard to the public. Streets and other improvements in the work area shall be restored to their original condition and former state of usefulness as soon as practicable. Attention is invited to the provisions of Section 6-2 of the Standard Specifications.

SP-1-6.05 TEMPORARY SUSPENSION OF WORK — The Director of Community Services shall have the authority to suspend the work wholly, or in part, for such period as he may deem necessary due to unsuitable weather or to such other conditions as are considered unfavorable for the suitable prosecution of the work, or for such time as he may deem necessary due to the failure on the part of the contractor to carry out orders given, or to perform the work in accordance with these Specifications. The contractor shall immediately comply with the written order of the Director of Community Services to suspend the work wholly or in part. The work shall be resumed when conditions are favorable and methods are corrected, as ordered or approved in writing by the Director of Community Services.

In the event of a suspension of work under any of the conditions above set forth such suspension of work shall not relieve the contractor of his responsibilities as set forth under these Specifications.

SP-1-6.06 SUSPENSION OF CONTRACT — If at any time in the opinion of the Director of Community Services, the contractor has failed to supply adequate working force or material of proper quality or has failed in any other respect to prosecute the work with the diligence and force specified and intended in and by the terms of the contract, notice thereof in writing will be served upon him; and should he neglect or refuse to provide means for a satisfactory compliance with the contract, as directed by the Director of Community Services, within the time specified in such notice, the City in any such case shall have the power to suspend the operation of the contract.

Attention is invited to the provisions of Section 6-3 of the Standard Specifications. Upon receiving notice of such suspension, the contractor shall discontinue said work, or such parts of it as the City may designate. Upon such suspension the contractor's control shall terminate and thereupon the City or its duly authorized representative may take possession of all or any part of the contractor's materials, tools, equipment and appliances upon the

premises, and use the same for the purpose of completing said contract, and hire such force and buy or rent such additional machinery, tools, equipment and appliances at the contractor's expense as may be necessary for the proper conduct of the work and for completion, employ other parties to carry the contract to completion, or may employ the necessary workman, substitute other machinery or materials, and purchase the materials contracted for, in such manner as the City may deem proper; or the City may annul and cancel the contract and relate the work or any part thereof. Any excess cost arising therefrom over and above the contract price shall be charged against the contractor and his sureties, who shall be liable therefore. In the event of such suspensions, all monies due the contractor or retained under the terms of this contract shall be forfeited to the City; but such forfeiture shall not release the contractor or his sureties from liability for failure to fulfill the contract. The contractor and his sureties shall be credited with the amount of money so forfeited toward any excess of cost over the above contract price, arising from the suspension of the operation of the Contract and the completion of the work by the City as above provided, and the contractor shall be so credited with any surplus remaining after all just claims for such completion have been paid.

In the determination of the question whether there has been any such noncompliance with the contract as to warrant the suspension or annulment thereof, the decision of the City Council shall be binding on all parties to the contract.

SP-1-6.07 TERMINATION OF CONTRACT — Subject to all applicable provisions of these specifications and/or the contract, the Engineer is hereby empowered to direct the time and date of delivery of materials at the site of work and direct the time, rate and sequence of work. If contractor fails to begin delivery of material and equipment or to commence work within the time specified herein, and/or in the contract, or to maintain the rates of delivery of material, or to execute the work in a manner and at such locations as directed by the Director of Community Services, or fails to maintain the approved progress schedule in such manner as well, in the judgment of the Engineer, inure to the interests of the City, or, if in the judgment of the Engineer, the contractor is not carrying out the provisions of the contract in their true intent and meaning, written notice by the Director of Community Services may be served upon him and the Surety on his faithful performance bond demanding a satisfactory compliance with the contract, and with these specifications. If the contractor and/or his Surety refuses or neglects to comply with such notice within five (5) days after receiving same, or after commencing so to do, fails to continue so to do, or has assigned or sublet the contract without the consent of the Engineer, then the Engineer may exclude him from the premises and take possession thereof, together with all material and equipment thereon, and may complete the work itself, either by force account, or by letting the unfinished portion of the work to another contractor or by a combination of such methods.

In any event, the cost of the completion of said work shall be a charge against the contractor and his Surety and may be deducted from any money due or becoming due from the City, and if the sums due under the contract are insufficient, said contractor and/or his Surety shall pay to the City within five (5) days after the completion of the work all of such cost in excess of the contract price.

The Surety, in the event that it assumes part of the work, shall take the contractor's place in this contract in all respects for that part and shall be paid by the City for all work performed by it in accordance with the terms of this contract. If the Surety assumes the entire contract,

all monies remaining due the contractor at the time of his default shall be made payable to the Surety as the work progresses, subject to the terms of the contract.

SP-1-6.08 LIQUIDATED DAMAGES — It is hereby understood and mutually agreed by and between the contractor and the City, that the date of beginning and the time of completion as specified in the contract of the work to be done hereunder are essential conditions of this contract. Attention is invited to Section 6-9 of the Standard Specifications as amended in Paragraph 4 of the General Provisions.

The contractor agrees that said work shall be prosecuted regularly, diligently, and uninterruptedly at such rate of progress as will ensure full completion thereof within the time specified. It is expressly understood and agreed, by and between the contractor and the City, that the time for the completion of the work described herein is a reasonable time for the completion of the same, taking into consideration the average climatic range and usual industrial conditions prevailing in this locality. If the said contractor shall neglect, fail or refuse to complete the work within the time herein specified, or any proper extension thereof granted by the City, then the contractor does hereby agree, as a part consideration for the awarding this contract, to pay to the City of Perris the amount of liquidated damages stipulated in Paragraph 4 of the General Provisions for each and every calendar day that the contractor shall be in default after the time stipulated in the contract for completing the work, not as a penalty but as liquidated damages for such breach of contract as hereinafter set forth.

The said amount is fixed and agreed upon by and between the contractor and the City because of the impracticability and extreme difficulty of fixing and ascertaining the actual damages the City would in such event sustain, and said amount agreed to be the amount of damages which the City would sustain and said amount shall be retained from time to time by the City from current periodical estimates.

SP-1-7.00 RESPONSIBILITIES OF THE CONTRACTOR — Attention is invited to Section 7 of the Standard Specifications as amended in the General Provisions and the provisions of these Special Provisions. The contractor shall keep himself fully informed of all existing and future State and Federal laws and county and municipal ordinances and regulations which in any manner affect those engaged or employed in the work, or the materials used in the work, or which in any way affect the conduct of the work, and of all such orders and decrees of bodies or tribunals having any jurisdiction or authority over the same. He shall at all times observe and comply with, and shall cause all his agents and employees to observe comply with all such existing and future laws, ordinances, regulations, orders and decrees of bodies or tribunals having any jurisdiction or authority over the work; and shall protect and indemnify the City, and all officers and employees thereof connected with the work, including but not limited to the City Engineer, against any claim or liability arising from or based on the violation of any such law, ordinances, regulation, order, or decree, whether by himself or his employees. If any discrepancy or inconsistency is discovered in the plans, drawing, specifications, or contract for the work in relation to any such law, ordinance, regulation, order or decree, the contractor shall forthwith report the same to the Engineer in writing.

SP-1-7.01 ASSUMPTION OF RISK — During the progress of the work, the City of Perris will not be answerable or accountable in any manner for any loss or damage that may happen to the work or any part thereof; or for any of the materials or other things used or employed in performing the work; or for injury to any person or persons, either workmen or the public;

for damage to adjoining property from any cause which might have been prevented by the contractor, or his workmen, or anyone employed by him; against all of which injuries or damages to persons and property the contractor having control over such work must properly guard. The contractor shall be responsible for any damage to any person or property resulting from defects or obstructions or from any causes whatsoever during the progress of the work or at any time before its completion and final acceptance, and shall indemnify and save harmless the City of Perris and/or its officers and/or its employees from all suits or actions of every name and description, brought for, or on account of any injuries or damages received or sustained by any person or persons, by or from the Contractor, his servants or agents, in the construction of the work or by or in consequence of any negligence in guarding the same, in improper materials used in its construction, or by or on account of any act or omission of the contractor or his agents.

SP-1-7.02 LABOR — Attention is invited to the provisions of Section 7-2 of the Standard Specifications as amended in Paragraph 5 of the General Provisions.

SP-1-7.03 LIABILITY INSURANCE — Attention is invited to the provisions of Section 7-3 of the Standard Specifications as amended in Paragraph 6 of the General Provisions.

SP-1-7.04 WORKER'S COMPENSATION INSURANCE — Attention is invited to the provisions of Section 7-4 of the Standard Specifications as amended in Paragraph 7 of the General Provisions.

SP-1-7.05 PERMITS AND INSPECTION — The contractor shall obtain a no-fee excavation permit before proceeding with any work on the project.

The contractor shall call for inspections at the different stages of the work as required by the City of Perris Building Inspector. Any portion of the project completed without these required inspections shall be considered as defective and the City reserves the right to reject the affected portion of the work. The contractor shall remove rejected portion of the work upon instruction by the City without additional compensation.

City inspectors work from 8:00 a.m. until 5:00 p.m., Monday through Thursday. Inspections outside these hours and legal holidays may be available through appointments approved by Director/City Engineer only, and inspector's time will be billed to the contractor at the rate of \$85.00 per hour.

SP-1-7.06 CONTRACTOR'S REPRESENTATIVE — On or before the preconstruction meeting, the contractor shall designate, in writing, a representative who shall have complete authority to act for him. An alternate representative may also be designated. The representative or alternate shall be present at all times at the worksite whenever work is in progress or whenever actions of the elements require his presence to take measures necessary to protect the work, persons or property. Attention is invited to Section 7-6 of the Standard Specifications.

SP-1-7.07 COOPERATION AND COLLATERAL WORK — Attention is directed to Section 7-7 of the Standard Specifications and these Special Provisions.

Construction work by other contractors may be underway within or adjacent to the worksite specified herein. For this reason, the contractor shall cooperate with all such other contractors to the end that any delay or hindrance to their work shall be avoided, or

conduct his operations in such a manner as not to cause any unnecessary delay or hindrance to the other. Each contractor shall be responsible to the other for all damage to work, to persons or property caused to the other by his operations, and for loss caused the other due to his unnecessary delays or failure to finish work within the time specified for completion. The Engineer reserves the right to direct the contractor to perform other or additional work at the worksite at any time in order to better coordinate the different activities on the entire project.

It is anticipated that existing utilities will not interfere with the contractor's operations. However, the contractor shall exercise due care to insure that these utility facilities are not damaged during his operations. The contractor shall call Underground Service Alert (U.S.A.), 800-227-2600, twenty-four (24) hours prior to performing any excavation on this project.

The utility locations shown on the plans are correct to the best of our knowledge. When in doubt, the contractor shall contact utility concerned before proceeding further. The agencies below may be contacted at the following telephone numbers:

AGENCY	TELEPHONE NUMBER
Southern California Edison Company	(909) 925-5999
Southern California Gas Company	(800) 662-9777
City of Perris Water Department	(909) 657-3280
Eastern Municipal Water District	(909) 928-3777
Verizon	(800) 483-5000
Time Warner Cable	(888) 892-2253
Paragon Communications	(714) 379-3376

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

SP-1-7.08 PROJECT APPEARANCE — The contractor shall maintain a neat appearance to the work. Attention is invited to Section 7-8 of the Standard Specifications.

In any area visible to the public, the following shall apply:

Broken asphalt concrete, aggregate base and debris developed during removals, shall be disposed of concurrently with its removal.

Dust caused by the passage of public traffic through the work shall be considered as resulting from the contractor's performance of the work.

Whenever the contractor fails to control dust resulting from the performance of the work, the Engineer may cause such dust to be controlled and costs thereby incurred shall be deducted from monies due or to become due the contractor.

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

SP-1-7.09 – PROTECTION AND RESTORATION OF EXISTING IMPROVEMENTS — The Contract shall take all necessary precautions to protect in place all existing improvements not scheduled for removal. The entire cost of replacing and/or repairing said existing improvements shall be borne by the contractor. Attention is directed to the provisions of Section 7-9 of the Standard Specifications. Permit conditions, rules and regulations of agencies having jurisdiction over the contractor's operations shall be strictly complied with.

The contractor shall protect existing improvements in place wherever possible. All existing improvements which must be removed for construction shall be restored to an equal or better condition than that of the existing improvements removed or damaged. Restoration of existing improvements shall be in accordance with the Plans and Specifications and all provisions of the City of Perris Standard Plans.

The contractor shall preserve and protect from injury all buildings, pole lines and all direction, warning and mileage signs which have been placed within the right-of-way.

Full compensation for the work involved in the preservation of property as above specified shall be considered as included in the prices paid for the various contract items of work, and no additional allowance will be made therefore.

SP-1-7.10 PUBLIC CONVENIENCE —

The contractor shall so conduct his operations to offer the least possible obstruction and inconvenience to the public or to the public traffic. Where existing streets are not available for use as detours, unless otherwise provided in these Special Provisions, all traffic shall be permitted to pass through the work. Convenience of residents along the street or in the vicinity of the project site shall be provided for as far as practicable. Convenience access to driveways, houses and buildings along the line of the work shall be maintained and temporary approaches to crossings or intersecting streets shall be provided and kept in good condition.

Full compensation for all work involved in providing for public convenience as set forth in this section shall be considered as included in the prices paid for the various contract items of work and no additional allowance will be made therefore.

SP-1-7.11 PUBLIC SAFETY — The contractor shall furnish, erect, and maintain such fences, barriers, lights and signs as are necessary to give adequate warning to the public at all times that the work is under construction and of any dangerous conditions to be encountered as a result thereof in strict compliance with the latest edition of the "Work Area Traffic Control Handbook"; W.A.T.C.H. Attention is directed to Section 7-10.4 of the Standard Specifications as amended in Paragraph 8 of the General Provisions. He shall also erect such warning and directional signs as shown on plans and as requested by the Engineer. This shall include installing and maintaining all items shown on the traffic control plans.

All barricades shall be of substantial construction and painted in a distinctive color or manner so as to be clearly visible to the approaching public.

Should the City place any warning lights or barricades to protect or warn the public of any dangerous condition connected with contractor's operations, contractor shall become liable to the City at the current rental rate per night for each lantern or warning light placed by the City, plus actual labor, equipment rental and overhead costs, with a minimum charge of fifty (\$50.00) dollars per day for each obstruction or dangerous condition so barricaded or lighted.

Full compensation for all work involved in providing for public safety as set forth this section shall be considered as included in the prices paid for the various contract items of work and no additional allowance will be made therefore.

SP-1-7.12 PUBLIC NOTICE —

The Contractor shall notify the residents/businesses and schools affected by construction in writing not less than 7 days in advance of commencement of construction or storage of material upon the streets. The notice shall include but not be limited to:

1. The time and date of commencement.
2. A copy of the proposed construction schedule.
3. Date of completion.

In addition to the above, the Contractor shall notify all affected parties if work is to begin on new portions of the project as work proceeds, especially if the work involves changes to the traffic control system.

A copy of this notification shall be approved by the City Engineer prior to its distribution.

Personal vehicles of the contractor's employees shall not be parked on the traveled way at any time, including any section closed to public traffic.

When entering or leaving roadways carrying public traffic, the contractor's equipment, whether empty or loaded, shall in all cases yield to public traffic.

SP1-7.13 SOUND CONTROL REQUIREMENTS — If work is permitted for evening and weekends and holidays, the noise level from the contractor's operations, between the hours of 8:00 p.m. and 6:00 a.m., shall not exceed 86 db at a distance of fifty (50') feet. This requirement in no way relieves the contractor from the responsibility for complying with local ordinances regulating noise level. All other times, noise level shall be in compliance with standards.

Said noise level requirement shall apply to all equipment on the job or related to the job, including but not limited to trucks, transit mixers or transient equipment that may or may not be owned by the contractor. The use of loud sound signals shall be avoided in favor of light warnings except those required by safety laws for the protection of personnel.

The contractor shall comply with all local sound control and noise level rules, regulations and ordinances which apply to any work performed pursuant to the contract. Each internal combustion engine, used for any purpose on the job or related to the job, shall be equipped with a muffler of a type recommended by the manufacturer. No internal combustion engine shall be operated on the project without the muffler.

Full compensation for conforming to the requirements of this section shall be considered as included in the prices paid for the various contract items of work involved and no additional compensation will be allowed therefore.

SP-1-7.14 LAWS TO BE OBSERVED — The contractor shall keep himself fully informed of Stated and National laws and County and City ordinances and regulations which in any manner affect those employed in the work or the materials used for the work or in any way affect the conduct of work. Attention is directed to Section 7.13 of the Standard Specifications as amended in Section 9 of the General Provisions.

SP-1-7.15 ADVANCE NOTIFICATION — It shall be the contractor's responsibility to determine and notify those agencies requiring advance notification for inspection or other purposes before beginning construction in any area of concern to said agency. A minimum of forty-eight (48) hours advance notice shall be given to the various agencies before beginning construction in the area, unless specific advance times and requirements are stated in these detailed specifications or required by the agency.

The following entities shall be notified at least seventy-two (72) hours in advance of any street closure or restriction to access by the contractor. Coordination of established service schedules will be available to the contractor at the preconstruction meeting.

Southern California Edison Company	(909) 925-5999
Southern California Gas Company	(800) 662-9777
City of Perris Water Department	(909) 657-3280
Eastern Municipal Water District	(909) 928-3777
Verizon	(800) 483-5000
Time Warner Cable	(888) 892-2293
Paragon Communications	(714) 379-3376

Any others that are determined by the City Engineer, as necessary to be notified.

SP-1-7.16 EXPOSURE OF UTILITIES IN ADVANCE OF WORK — It shall be the contractor's responsibility to determine the true location and depth of all utilities and service connections which may be affected by or affect the work. He shall also determine what type, material, and condition of these utilities.

SP-1-7.17 - INTERPRETATION OF DRAWINGS AND CONTRACT DOCUMENTS — If any person contemplating to submit a bid for the proposed work is in doubt as to the correct and true meaning of any part of the drawings, specifications, or other contract documents, or finds discrepancies in, or omissions from the drawings or specifications, he may submit to the City, a written request for an interpretation or correction thereof. The person submitting the request shall be responsible for its prompt delivery. Any interpretation or correction of the document in question will be made by Addendum duly issued and a copy of such Addendum will be mailed or delivered to the aforementioned person as well as the other prospective bidders as specified in the bid documents. THE CITY WILL NOT BE RESPONSIBLE FOR ANY OTHER EXPLANATION OR INTERPRETATION OF THE PLANS, SPECIFICATIONS AND OTHER CONTRACT DOCUMENTS.

PART II — STANDARDS CONSTRUCTION DETAILS

SP-2-1.00 SCOPE OF WORK — The Contractor shall furnish, in accordance with the specifications and drawings, all plant, labor, equipment and materials required for completion of the City of Perris, **International Mother Language Monument Sign Project**

SP-2-2.00 DRAWINGS — Contract drawings applicable to the work to be performed under the contract are the drawings prepared by Community Works Design Group.

SP-2-3.00 SITE OF THE WORK — Site of the work is in the City of Perris within County of Riverside, California, 101 N D Street, Perris, CA 92570.

SP-2-4.00 TIME OF COMPLETION — The work shall be completed within **Sixty (60)** calendar days in accordance with the schedule provided in Notice Inviting Bids from expected construction start date of **September 6, 2022**. The time stated for completion includes final cleanup and any testing required. Additional days will be given for days classified as "rain days" by the Director of Community Services.

SP-2-5.00 LIQUIDATED DAMAGES — As defined in Section 6-9 of the Standard Specifications, the amount fixed for liquidated damages for delay in completion is \$500.00 per calendar day for each and every day over the time of completion in excess of the time specified for completion, plus any authorized time extensions.

SP-2-6.00 INSURANCE — The Contractor shall, as provided in Paragraph 6 of the General Provisions maintain public liability, vehicle liability and property damage insurance, and bodily injury insurance per Section 7-3 of the Standard Specifications and as shown in this specification.

SP-2-7.00 PRECONSTRUCTION CONFERENCE — The Contractor to whom the contract is awarded shall attend a preconstruction conference at a location and time set by the City Engineer or the Director of Community Services.

SP-2-8.00 CONSTRUCTION MEETINGS — Construction meetings will be held at the jobsite as required and as requested by the Contractor or the Director of Community Services to coordinate and discuss construction activities. Details regarding jobsite meetings will be arranged at the preconstruction conference.

SP-2-9.00 STANDARD SPECIFICATIONS — Specifications for work shall follow in order of:

Bid Specification Package Standard Specifications

Public Works Construction Manual Eastern Municipal Water District Elsinore Municipal Water District

References made to Standard Specifications shall mean the latest edition of the California Standard Specifications together with supplements, as published by the California Department of Transportation. Provisions for measurement and payment will not apply. In case of conflicts between plans, specifications and the above standards, the most stringent in the opinion of the Director of Community Services shall apply.

SP-2-10.00 SPECIFICATIONS AND DRAWINGS FURNISHED TO CONTRACTOR

The successful Contractor will be responsible for reproducing all specifications and drawings. At the Contractor's request copies of specifications and drawings will be furnished by the City at reproduction cost

SP-2-11.00 SITE INSPECTION AND VERIFICATION OF EXISTING CONDITIONS

It shall be the Contractor's responsibility to make all examinations, and field studies necessary, both surface and sub-surface, to determine the character of materials and geologic and soils conditions that will be encountered in the work and to fully determine all existing conditions affecting the project and all related cost factors.

SP-2-12.00 SAFETY — In compliance with generally accepted construction practices, the Contractor will be solely and completely responsible for conditions of the jobsite, 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.

When performing underground work, Contractor shall call Underground Service Alert, (800) 227-2600, the one-call underground facility locating service, two working days prior to beginning work on the project. All underground facilities marked in response to the locating phone call shall be hand-dug and exposed prior to any use of power equipment for excavation. If there is any substantial discrepancy between the field locations of underground facilities and those locations shown on the plans, the Contractor shall notify the Engineer prior to making an excavation.

SP-2-13.00 PROTECTION OF EXISTING FACILITIES — During the installation of work, Contractor shall insure that existing facilities, fences and other structures are all adequately protected, unless otherwise stated in the plans or specifications, and that, upon completion of all work, all facilities that may have been damaged are restored to a condition acceptable to the Owner, and no error or omission on said plans shall be construed to relieve the Contractor from the responsibility of protecting any such pipe, conduit or other existing utility structure, fence or structure.

SP-2-14.00 EXAMINATION OF PLANS, SPECIFICATIONS AND SITE OF WORK —

The bidder shall examine carefully the site of the work contemplated. The submission of a bid shall be conclusive evidence that the bidder has investigated and is satisfied as to the conditions to be encountered as to character, quality, and scope of work to be performed, the quantities of materials to be furnished, and as to the requirements of the bid proposal, plans and specifications.

When deemed necessary by the Director of Community Services, revisions of the contract drawings and additional detailed drawings will be issued to the Contractor during the progress of the work.

The Contractor shall inform the Director of Community Services a reasonable length of time in advance of the times and places at which he intends to work in order that inspection may be provided, and then the necessary measurements for records and payments may be made with minimum inconvenience.

SP-2-15.00 COMPLIANCE WITH REGULATIONS — The Contractor shall familiarize himself and comply with all applicable Federal, State, County and City and Special District rules and regulations pertaining to the job and jobsite safety.

SP-2-16.00 POWER AND WATER SUPPLY — The Contractor shall provide, at his own expense, all

necessary power and water required for his operations under the contract. The Contractor shall provide and maintain in good order such modern power equipment as shall be adequate in the opinion of the Director of Community Services to perform in a safe and satisfactory manner the work required by the contract.

It is a misdemeanor to use water from any Public Fire Hydrant without authorization.

SP-2-17.00 DUST ABATEMENT — The Contractor shall furnish all labor, equipment and means required and shall carry out protective measures wherever and as often as necessary in the opinion of the Engineer to prevent his operations from producing dust in amounts damaging to property or causing nuisance. The Contractor shall be responsible for any damage resulting from dust originating from his operations. The dust abatement measures shall be continued until all required resurfacing is completed or until the Contractor has completed arrangements with the proper authorities whereby he is relieved of further responsibility. Such arrangements shall be approved by the Director of Community Services prior to their completion. Unless otherwise provided full compensation for dust abatement as described shall be considered included in the unit price paid for other items of work and no additional allowance will be made therefore.

SP-2-18.00 COOPERATION BETWEEN CONTRACTORS — The Contractor shall be required to cooperate fully with all utility and public agency representatives engaged in construction, relocation, altering or otherwise re-arranging any facilities interfering with the progress of the work. Full compensation for any delay or inconvenience to the Contractor's operation due to such operations as described above shall be considered included in the unit price paid for other items of work and no additional allowance will be made therefore.

SP-2-19.00 DAILY CLEANUP AND ACCESS — At the completion of work each day, the Contractor shall leave the work area in a clean, safe condition. Access to all adjacent properties and driveways and intersections shall be maintained at all times.

SP-2-20.00 FINAL CLEANUP — After completion of all other work on the project, and before making application for acceptance of the work, the Contractor shall clean the site of his operations, including any areas under the control of the City that have been used by the Contractor in connection with the work.

SP-2-21.00 MAINTENANCE AND GUARANTEE — As specified in Paragraph 10.3 of the General Provisions, the Contractor shall guarantee the work constructed by him for a period of one year following date of acceptance by the Owner.

SP-2-22.00 PROTECTION OF THE PUBLIC — The following minimum restrictions shall be maintained by the Contractor in the conduct of his work:

It is part of the service required of the Contractor to make whatever provisions are necessary to protect the public. The Contractor shall use foresight and shall take such steps and precautions as his operations warrant to protect the public from danger, loss of life or loss of property, or from the failure of partially completed work or partially removed facilities. Conditions may arise on the work which will require that immediate and unusual provisions be made to protect the public from danger or loss, or damage to life and property, due directly or indirectly to prosecution of work under this Contract.

Whenever, in the opinion of the Director of Community Services, an emergency exists against which

the Contractor has not taken sufficient precaution for the public safety, protection of utilities and protection of adjacent structures or property, which may be damaged by the Contractor's operations and when, in the opinion of the Director of Community Services, immediate action shall be considered necessary in order to protect the public or property due to the Contractor's operations under this Contract, the Director of Community Services will order the Contractor to provide a remedy for the unsafe conditions.

If the Contractor fails to act on the situation within a reasonable time period, the Director of Community Services may provide suitable protection to said interest by causing such work to be done and material to be furnished as, in the opinion of the Director of Community Services, may seem reasonable and necessary.

The cost and expense of said labor and material together with the cost and expense of such repairs as are deemed necessary shall be borne by the Contractor. All expenses incurred by the City for emergency repairs will be deducted from the progress payments and the final payment due to the Contractor. However, if the City does take such remedial measures, the Contractor is not relieved of the full responsibility for public safety.

SP-2-23.00 TRAFFIC CONTROL (PUBLIC CONVENIENCE AND SAFETY) STREET CLOSURES, DETOURS, BARRICADES — The Contractor shall comply with all applicable State, County and City requirements for work in the public right-of-way. The Contractor shall provide and maintain barriers, guards, lights, signs, temporary bridges, pilot cars, arrow boards, message boards, flag persons and watch persons, advising the public of detours and construction hazards. The Contractor shall also be responsible for compliance with additional public safety requirements which may arise during construction. The Contractor shall furnish and install, and upon completion of the work, promptly remove all signs and warning devices. All work shall be accomplished in accordance with the requirements specified in Subsection 7-10 of the Standard Specifications for "Public Works Construction" latest edition. In addition, traffic control shall be provided in accordance with the State of California's "Traffic Manual", latest edition and plans.

Should the Contractor appear to be neglectful or negligent in furnishing warning and protective measures, the City Engineer or his representative may direct attention to the existence of a hazard and the necessary warning and protective measures shall be furnished and installed immediately by the Contractor at his expense. Should the City Engineer or his representative point out the inadequacy of warning and protective measures, such action on the part of the City Engineer shall not relieve the Contractor from responsibility for public safety or abrogate his obligation to furnish any pay for these devices.

Thru traffic may be detoured and adequate signs posted. Local traffic (2-ways) and access to existing driveways shall be maintained at all times.

A traffic control plan has not been provided. The Contractor shall place "No Parking Anytime" signs 48 hours prior to construction at locations approved by the City Engineer, said signs shall be of the size and type specified by the City Engineer. The Contractor is also responsible for notifying all affected businesses and residents of his scheduled work.

Unless provided, otherwise full compensation for conforming to the requirements of this section shall be considered as included in the prices paid for the various contract items of work involved and no additional compensation will be allowed therefore.

HOURS OF WORK — Except where otherwise noted, all work shall normally be performed between the hours of 8:00 a.m. and 5:00 p.m. on Monday thru Friday except holidays. The Contractor shall obtain the approval of the City Engineer if he desires to work outside of the hours stated herein. The Contractor shall reimburse the City for any inspection and material testing outside of the City's normal working hours at the rate of \$85.00 per hour.

SP-2-24.00 CONTRACTOR'S RESPONSIBILITY — The Contractor shall be responsible to adhere to these specifications as closely as possible. It is the Contractor's responsibility to confer with the City Engineer and to get a written agreement as to the necessary changes prior to performing any work that is not in conformance with these specifications or the contract drawings.

SP-2-25.00 CONSTRUCTION AND ENCROACHMENT PERMITS — The Contractor and his subs shall procure all permits and business licenses, pay all charges, fees and taxes, and give all notices necessary and incidental to the due and lawful prosecution of the work. Any costs for these fees and/or permits shall be included in the prices paid for the various contract items of work listed in the Bid Form except where specified otherwise.

It is the responsibility of the Contractor to contact the applicable agencies and make himself knowledgeable and responsible to all of their requirements. The Contractor shall, at no additional cost to the City, construct the work in strict accordance with all agencies.

SP-2-26.00 DIRT/GRINDING EXPORT — The Contractor shall be responsible for the removal of all excess dirt, grinding or unsuitable materials, if any, created by the construction of the project. The cost for this shall be considered in the various bid items if not specified.

SP-2-27.00 DIRT/MATERIAL IMPORT — The Contractor shall be responsible for the import of any dirt or materials, if required, for the construction of the proposed project. The cost for obtaining, hauling and placement of any material, if not indicated, shall be considered in the various bid items.

SP-2-28.00 COMPACTION — All fill, sub-base, base, under pavement, curb, gutter, and sidewalks to be compacted in place to 95% relative compaction except where specified otherwise. The earthwork will be tested for compliance by a Registered Soils Engineer, as designated by the City at Contractor's expense. Any retesting by the Soils Engineer due to failure to achieve minimum compaction will be paid for by the Contractor.

SP-2-29.00 CONSTRUCTION DETOUR AND TRAFFIC CONTROL — Two way access to residents and business shall be maintained at all times during construction. The Contractor shall provide all signage, barricades, flaggers and warning devices necessary to adequately protect the public, through traffic and the Contractor's workers and equipment. A traffic control plan has not been provided. Contractor shall be responsible for this work. Also refer to NIB- 5, Item #30.

SP-2-30.00 CONSTRUCTION SURVEY STAKING — The Contractor will be responsible to supply construction staking and re-staking. Any costs for construction survey staking shall be included in the prices listed in the Bid Form except where specified otherwise.

SP-2-32.00 MOBILIZATION — Mobilization shall consist of preparatory work and operations, including, but not limited to, those necessary for the movement of personnel, equipment, supplies, and

incidentals to the project site; for the establishment of all offices, buildings and other facilities necessary for work on the project; and for all other work and operations which must be performed or costs incurred prior to beginning work on the various contract items on the project site. The cost of mobilization shall be included in the lump sum bid price of mobilization and shall include re-mobilization for different stages of work necessary to complete the project. **Mobilization cost cannot exceed 5% of total bid price.**

SP-2-33.00 CONSTRUCTION MATERIALS AND METHODS:

GENERAL - Contractor shall contact the affected utility companies for information regarding identification, location, and depth of underground utilities.

PRESERVATION OF PROPERTY - Existing improvements in areas adjoining the property whereon demolition and removal is being performed shall be protected from damage resulting from operations of the Contractor and the Contractor shall be responsible for such damage. In like manner any building, structure, tree, shrub, or other item not designated for removal on the property where demolition and removal is being performed shall be similarly protected and preserved.

DUST CONTROL - The Contractor shall provide such dust laying equipment and methods as may be required to protect adjacent property from annoyance or damage from dust caused by his operations, and failure to control such dust shall be cause for the Engineer to stop the work until said dust is controlled, and the Contractor shall have no recourse to collect from the Town for any loss of time or expense sustained by him due to such suspension of work.

SELECTED MATERIALS - Existing materials excavated within the project limits that meet the specifications for trench backfill, topsoil, or other selected materials may be used to fulfill all or a portion of the requirements for such materials. No additional compensation will be allowed for excavation, stockpiling, overhaul, or placing selected materials encountered in the excavation unless otherwise noted. All work shall meet with the requirement of Soil's Engineer.

SURPLUS MATERIALS - The Contractor shall furnish written consent from the owner of the property where it is intended to dispose of the surplus material, unless requested by City. Surplus excavation shall become the property of the Contractor.

FURNISHING AND APPLYING WATER - Furnishing and applying water shall be considered as included in the bid price paid for the various contract items of work requiring such water and no additional compensation will be made therefore.

SP-2-34.00 FEDERAL LOBBYING RESTRICTIONS – Section 1352, Title 31, United States Code prohibits Federal funds from being expended by the recipient or any lower tier sub recipient of a Federal-aid contract to pay for any person for influencing or attempting to influence a Federal agency or Congress in connection with the awarding of any Federal-aid contract, the making of any Federal grant or loan, or the entering into of any cooperative agreement.

If any funds other than Federal funds have been paid for the same purposes in connection with this Federal-aid contract, the recipient shall submit an executed certification and, if required, submit a completion disclosure form as part of the bid documents.

A certificate for Federal-aid contracts regarding payment of funds to lobby Congress or a Federal agency is included in the Proposal. Standard Form – LLL, "Disclosure of Lobbying Activities", with
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instructions for completion of the Standard Form is also included in the Proposal. Signing the proposal shall constitute signature of the Certification.

The above-reference certification and disclosure of lobbying activities shall be included in each sub-contract and any lower-tier contracts exceeding \$100,000. All disclosure forms, but not certifications, shall be forwarded from tier to tier until received by the Engineer.

The Contractor, subcontractors and any lower-tier contractors shall file a disclosure form at the end of each calendar quarter in which there occurs any event that requires disclosure or that materially affects the accuracy of the information contained in any disclosure form previously filed by the Contractor, subcontractors and any lower-tier contractors. An event that materially affects the accuracy of the information reported includes:

- (1) A cumulative increase of \$25,000 or more in the amount paid or expected to be paid for influencing or attempting to influence a covered Federal action; or
- (2) A change in the person(s) or individual(s) influencing or attempting to influence a covered Federal action; or
- (3) A change in the officer(s), employee(s), or Member(s) contacted to influence or attempt to influence a covered Federal action.

SP-2-35.00 DISADVANTAGED BUSINESS – This project is partially federally funded, and the Contractor is encouraged to comply with Part 23, Title 49, Code of Federal Regulations entitled "Participation By Minority Business Enterprise in Department of Transportation Programs". The Regulations in their entirety are incorporated herein by this reference.

Bidders shall be fully informed respecting the requirements of the Regulations and the Department's Disadvantaged Business (DBE) program developed pursuant to the Regulations; particular attention is directed to the following matters:

(a) A DBE must be a small business concern as defined pursuant to Section 3 of U.S. Small Business Act and relevant regulations promulgated pursuant thereto;

A DBE bidder, not bidding as a joint venture with a non-DBE, will be required to meet the DBE goal through subcontracting or material purchases or make good faith effort to do so;

- (b) A DBE may participate as a subcontractor, joint venture partner with a prime or subcontractor, or vendor of material or supplies;
- (c) A DBE joint venture partner must be responsible for a clearly defined portion of the work to be performed in addition to satisfying requirements for ownership and control. The DBE joint venture must submit either Schedule B of the Regulations or California Department of Transportation Office of Civil Rights form entitled "Minority/Disadvantaged/Women Business Enterprise Joint Venture";
- (d) A DBE must perform a commercially useful function, i.e., must be responsible for the execution of a distinct element of the work and must carry out its responsibility by

actually performing, managing and supervising the work;

- (e) DBE's must be certified by California Unified Certification program (CUCP). Listings of DBEs certified by the CUCP are available from the following sources:
1. The Caltran's "Civil Rights" web site at: <http://www.dot.ca.gov/hq/bep>.
 2. The Caltran's DBE Directory. This directory may be obtained from the Department of Transportation, Material Operations Branch, Publication Distribution Unit, 1900 Royal Oaks Drive, Sacramento, California 95815, Telephone (916) 445-3520.
- (f) When reporting, DBE participation, bidders may count the cost of materials or supplies purchased from DBEs as follows:
1. If the materials or supplies are obtained from A DBE manufacturer, 100 percent of the cost of the materials or supplies. A DBE manufacturer is a firm that operates or maintains a factory or establishment that produces, on the premises, the materials, supplies, articles, or equipment required under the contract and of the general character described by the specifications.
 2. If the materials or supplies are purchased from a DBE regular dealer, count 60 percent of the cost of the materials or supplies. A DBE regular dealer is a firm that owns, operates or maintains a store, warehouse, or other establishment in which the materials, supplies, articles or equipment of the general character described by the specifications and required under the contract are bought, kept in stock, and regularly sold or leased to the public in the usual course of business. To be a DBE regular dealer, the firm must be an established, regular business that engages, as its principal business and under its own name, in the purchase and sale or lease of the products in question. A person may be a DBE regular dealer in such building items as petroleum products, steel, cement, gravel, stone, or asphalt without owning, operating or maintaining a place of business as provided in this paragraph F.1., if the person both owns and operates distribution equipment for the products. Any supplementing of regular dealers' own distribution equipment shall be by a long-term lease agreement and not on an ad hoc or contract- by-contract basis. Packagers, brokers, manufacturers' representatives, or other persons who arrange or expedite transactions are not DBE regular dealers within the meaning of this paragraph F.2.
 3. If the DBE is neither a manufacturer nor a regular dealer, count only the entire amount of fees or commissions charged for assistance in the procurement of the materials and supplies, or fees or transportation charges for the delivery of materials or supplies required on a job site, provided the fees are reasonable and not excessive as compared with fees charged for similar services.
- (g) When reporting DBE participation, bidders may count the participation of DEB trucking companies as follows:
1. The DBE must be responsible for the management and supervision of the entire trucking operation for which it is responsible on a particular contract.

2. The DBE must itself own and operate at least one fully licensed, insured, and operational truck used on the contract.
3. The DBE receives credit for the total value of the transportation services it provides on the contract using trucks it owns, insures, and operates using drivers it employs.
4. The DBE may lease trucks from another DBE firm including an owner-operator, who is certified as a DBE. The DBE who leases trucks from another DBE receives credit for the total values of the transportation services the lessee DBE provides on the contract.
5. The DBE may also lease trucks from a non-DBE firm including from an owner-operator. The DBE who leases trucks from a non-DBE is entitled to credit only for the fee or commission it received as a result of the lease arrangement. The DBE does not receive credit for the total value of the transportation services provided by the lessee, since these services are not provided by a DBE.
6. For the purposes of this paragraph G, a lease must indicate that the DBE has exclusive use of and control over the truck. This does not preclude the leased truck from working for others during the term of the lease with the consent of the DBE, so long as the lease gives the DBE absolute priority for the use of the leased truck. Leased trucks must display the name and identification number of the DBE.

(i) Bidders are encouraged to use services offered by financial institutions owned and controlled by DBE's.

SP-2-36.00 DBE VOLUNTARY GOAL FOR THIS PROJECT – The City has established the following goal for disadvantaged businesses (DBE) participation for this project. Disadvantaged Business (DBE) 7.56%

It is the bidder's responsibility to make a sufficient portion of the work available to subcontractors and suppliers and to select those portions of the work or material needs consistent with the available DBE subcontractors and suppliers, so as to assure meeting the goal for DBE participation.

Bidders are encouraged to utilize the services of Caltrans and/or specialized organizations to contact interested DBEs.

SP-2-37.00 DBE RECORDS – The Contractor shall maintain records of all subcontracts entered with certified DBE subcontractor and records of materials purchased from certified DBE suppliers. Such records shall show the name and business address of each DBE subcontractor or vendor and the total dollar amount actually paid each DBE subcontractor or vendor.

Upon completion of the contract, a summary of these records shall be prepared on Form HC-43 and certified correct by the Contractor or his authorized representative, and shall be furnished to the Engineer.

SP-2-38.00 SUBCONTRACTING – Attention is directed to the provisions in Section 2-3, Subcontracts, or the Standard Specifications, and SP-3, "Submission of DBE Information, Award, and Execution of Contract", elsewhere in these special provisions and these special provisions.

The requirement in Section 2-3.2 of the Standard Specifications that the Contractor shall perform with his own organization contract work amounting to not less than 50 percent of the original contract price is not changed by the Federal Aid requirement that the Contractor perform not less than 30 percent of the original contract work with his own organization.

Each subcontract and any lower tier subcontract that may in turn be made shall include the "Required Contract Provisions Federal-Aid Construction Contracts" in Section 14 of the Standard Specifications of the California Department of Transportation. This requirement shall be enforced as follows:

Noncompliance shall be corrected. Payment for subcontracted work involved will be withheld from progress payments due, or to become due, until correction is made. Failure to comply may result in termination of the contract.

The DBE information furnished under ST-3-1.01, "DBE Information", of these standard provisions is in addition to the subcontractor information required to be furnished under said Section 2-3, "Subcontracts" of the standard provisions.

In accordance with the Federal MBE regulations Section 23.45(f) (2) Part 23, Title 49 CFR:

- (1) No substitution of a DBE subcontractor shall be made at any time without the written consent of the Department, and
- (2) If a DBE subcontractor is unable to perform successfully and is to be replaced, the contractor will be required to make good faith efforts to replace the original DBE subcontractor with another DBE subcontractor.
- (3) The requirement in ST 2-35.00, "Disadvantaged Business", of these standard provisions that DBEs must be certified on the date bids are opened does not apply to DBE substitutions after award of the contract.

SP-2-39.00 PERFORMANCE OF DBE SUBCONTRACTORS AND SUPPLIERS –

The DBEs listed by the Contractor in response to the requirements in the section of these special provisions entitled "Submission of DBE Information, Award, and Execution of Contract", which are determined by the Department to be certified DBEs, shall perform the work and supply the materials for which they are listed unless the Contractor has received prior written authorization to perform the work with other forces or to obtain the materials for other sources.

Authorization to utilize other forces or sources of materials may be requested for the following reasons:

- (1) The listed DBE, after having had a reasonable opportunity to do so, fails or refuses to execute a written contract, when such written contract, based upon the general terms, conditions, plans and specifications for the project, or on the terms of such subcontractor's or supplier's written bid, is presented by the Contractor.
- (2) The listed DBE becomes bankrupt or insolvent.

- (3) The listed DBE fails or refuses to perform his subcontract or furnish the listed materials.
- (4) The Contractor stipulated that a bond was a condition of executing a subcontract and the listed DBE subcontractor fails or refuses to meet the bond requirements of the Contractor.
- (5) The work performed by the listed subcontractor is substantially unsatisfactory and is not in substantial accordance with the plans and specifications, or the subcontractor is substantially delaying or disrupting the progress of the work.
- (6) It would be in the best interest of the State.

The Contractor shall not be entitled to any payment for such work or material unless it is performed or supplied by the listed DBE or by other forced (including those of the Contractor) pursuant to prior written authorization of the Engineer.

If a trucking broker, who is not a DBE but was listed for DBE credit in the Contractor's DBE information, fails to pay at least 20 percent to the DBEs listed on the broker's "certified roster", the broker will no longer be eligible for DBE credit for one year.

If a DBE trucking broker was listed for DBE credit in the Contractor's DBE information on the basis of the broker's signed agreements with DBE truckers that the trucking will be performed by certified DBE truckers and if all the revenue paid by the broker is not paid to the DBEs listed on the broker's "certified roster", the broker will no longer be eligible for 100 percent DBE credit for one year.

The Contractor shall include the above information in the agreements made with trucking brokers so that brokers will be aware that they may become ineligible for DBE credit.

The Contractor shall submit monthly documentation to the Engineer that shows the amount paid to DBE truckers under trucking brokers listed in the Contractor's DBE information. The records must confirm that no less than 20 percent was paid to DBE truckers by brokers who are not DBEs and that all the revenue paid by DBE brokers was paid to DBE truckers if the Contractor indicated in the DBE information that the broker had signed agreements with DBE truckers that the trucking will be performed by DBE truckers.

PART III – SUBMISSION OF DBE INFORMATION, AWARD, AND EXECUTION OF CONTRACT

SP-3-1.01 GENERAL – The bidder's attention is directed to the provisions in Section 2, "Award and Execution of Contract", of the Standard Specifications and these special provisions for the requirements and conditions concerning submittal of DBE information, award, and execution of contract.

The required DBE information shall be submitted on the "DBE INFORMATION" form.

It is the bidder's responsibility to meet the goal for DBE participation or to provide information to establish that, prior to bidding, the bidder made good faith efforts to do so.

SP-3-1.01A DBE INFORMATION – If DBE information is not submitted with the bid, the apparent successful bidder (low bidder) and the second low bidder shall submit DBE information to the Department no later than close of business on the fourth day, not including Saturdays, Sundays and legal holidays, following bid opening.

DBE information sent by certified mail and postmarked on or before the third day, not including Saturdays, Sundays and legal holidays, following bid opening will be accepted even if it is received after said fourth day following bid opening. Failure to submit the required DBE information by the time specified will be grounds for finding the bid or proposal non-responsible. Other bidders need not submit DBE information unless requested to do so by the Department. When such request is made, the DBE information of such bidders shall be submitted so the information is received by the Department no later than close of business on the third day, not including Saturdays, Sundays and legal holidays, after said notification, unless a later time is authorized by the Department.

The bidders DBE information shall establish that the DBE goal will be met or that a good faith effort to meet the goal has been made.

Bidders are cautioned that even though their submittal indicates they will meet the stated DBE goal, their submittal should also include their good faith efforts information along with their DBE goal information to protect their eligibility for award of the contract in the event the Department, in its review, finds that the goal has not been met.

The information to show that the DBE goal will be met shall include the names of DBEs to be used, with a complete description of work or supplies to be provided by each and the dollar value of each such DBE transaction. When 100 percent of the contract item of work is not to be performed or furnished by a DBE, a description of the exact portion of said work to be performed or furnished by that DBE shall be included in the DBE information, including the planned location of said work. (Note: DBE subcontractors to whom the bidder proposes to subcontract portion of the work in an amount in excess of ½ of one percent of his total bid or \$10,000, whichever is greater, must have been named in the bid. – See section entitled “Required Listing of Proposed Subcontractors” in Section 2 of these Standard Specifications).

The information necessary to establish the bidder’s good faith efforts to meet the DBE goal may include:

- (1) The names and dates of advertisement of each newspaper, trade paper, and minority- focus paper in which a request for DBE participation for this project was placed by the bidder.
- (2) The names and dates of notices of all certified DBEs solicited by direct mail for this project and the dates and methods used for following up initial solicitations to determine with certainty whether the DBEs were interested.
- (3) The items of work for which the bidder requested sub bids or materials to be supplied by DBEs, the information furnished interested DBEs in the way of plans, specifications and requirements for the work, and any breakdown of items of work into economically feasible units to facilitate DBE participation. Where there are DBEs available for doing portions of the

work normally performed by the bidder with his own forces, the bidder will be expected to make portions of such work available for DBEs to bid on.

- (4) The names of DBEs who submitted bids for any of the work indicated in (3) above which were not accepted, a summary of the bidder's discussions and/or negotiations with them, the name of the subcontractor or supplier that was selected for that portion of work, and the reasons for the bidder's choice. If the reason for rejecting a DBE bid was price, give the price bid by the rejected DBE and the price bid by the selected subcontractor or supplier. Since the utilization of available DBEs is expected, only significant price differences will be considered as cause for rejecting such DBE bids.
- (5) Assistance that the bidder has extended to DBE's identified in (4) above to remedy the deficiency in their sub-bids.
- (6) Any additional data to support a demonstration of good faith effort, such as contacts with DBE assistance agencies

SP-2-35.00 AWARD OF CONTRACT—The award of contract, if it be awarded, will be to the total lowest responsible bidder whose proposal complies with all the requirements prescribed.

PART IV CONSTRUCTION – MATERIALS, METHODS, SPECIFICATIONS, AND PAYMENT REQUIREMENTS

It is the intent of these General Provisions, Standard Provisions, Project Specifications, Special Provisions, and the plans referred to herein and other documents comprising the contract for the Contractor to provide for and include all labor, materials, equipment, plant, tools, transportation, insurance, bonds, sales taxes, permits, temporary protection, traffic control, watchmen, superintendence and other work necessary to construct and complete all work specified herein, including all addenda and change orders. No separate payment will be made for any item that is not specifically set forth in the Schedule of Bid Items. All costs not specified, therefore, shall be included in the prices named in the Schedule of Bid Items and under various items of work.

SP-3-2.00 MOBILIZATION

Mobilization shall conform to the provisions in Section 11, "Mobilization", of the Standard Specifications and these Special Specifications.

As part of mobilization, the Contractor shall also provide a single place (job board, etc.) to place all required federal forms, Cal/OSHA and EEO labor compliance posters, all permits, all safety items, and any and all paperwork that must be posted in public view.

The lump sum contract price paid for mobilization shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals for mobilization for the entire project and no additional compensation will be allowed therefore. This includes any remobilization due to phasing of work.

SP-3-3.00 – TRAFFIC CONTROL SYSTEM

Traffic control shall conform to the provisions in sections 7-1.02 "Load Limitations," 7-1.06, "Safety and Health Provisions," Section 7-1.08, "Public Convenience", Section 7-1.09, Public Safety", and Section 12-3.04 "Portable Delineators" of the Standard Specifications, the Manual of Traffic Controls, the Section of these contract documents entitled "Insurance – Hold Harmless", and these special provisions. Nothing in these special provisions shall be construed as relieving the Contractor from the responsibilities specified in Section 7-1.09.

Dust control shall be considered as part of the traffic control system and shall be in compliance with Section 10, "Dust Control" of the standard specifications except that no extra work will be paid when the engineer orders the application of water for the purpose of controlling dust caused by public traffic or the contractors operation. Dust control is the contractor's responsibility throughout construction even when no work is taking place.

All existing traffic control signs and street name signs shall be maintained in visible locations except as directed by the Engineer and where they conflict with the project.

Sufficient lighting will be required for all work performed when sufficient sunlight is not present.

No payment for extra work will be allowed for work performed as specified in Section 12-2.02 (flagging

costs) of the standard specifications. Flagging costs will be borne entirely by the Contractor

It is the Contractor's responsibility to provide for the safe passage for vehicles traveling to residences and business location within the limits of the project.

Public notification shall be considered part of the traffic control system. The contractor shall provide written notices to all affected residents and businesses at least seven days prior to when the traffic control will change. The Contractor shall be responsible for writing, copying, and distributing these notices. The notice shall be reviewed and approved by the Engineer.

All traffic control signs shall be either covered or removed when not required by the nature of work or if no present hazard to the motorist exists.

The Contractor shall be responsible for developing a traffic control plan for the work. A civil or traffic engineer licensed in the State of California shall sign the plan(s). The plan(s) shall address, at a minimum, how the different phases of a) concrete removal and replacement, b) pavement reconstruction, and c) pavement overlay will be addressed. The civil or traffic engineer shall determine if K-rail is required at any location. If so, this cost shall be the responsibility of the Contractor at no additional cost to the City. Please refer to NIB-5, Item # 30. When work can be done per the W.A.T.C.H. Manual, no traffic control plan is required; however, Contractor is to submit the details he intends to use. Arrow boards are required for all lane closures.

Two thru minimum 12' wide paved lanes (one in each direction), including left turn access to intersections and driveways must be maintained at all times. If in the opinion of the City Engineer this is not safe, flagman or other hours for construction may be considered at no additional cost to City. When in the opinion of City Engineer this is not possible, work must take place during evening hours at no additional cost to the City.

Areas shall not be cold-milled more than 6 calendar days prior to receiving an A.C. Leveling Coarse (or final cap if no leveling coarse is placed).

Areas shall be capped within 15 calendar days of A.C. Leveling Coarse being placed. Striping or tabs, need to be in place before opening lanes back to traffic.

There shall be no asphalt grinding or excavation creating a "Lip" greater than 1.0 inch left open to traffic. When lips greater than 1.0 inch exist, the lip shall be ramped with cold patch or other approved materials. This applies to all locations, including along gutter lips, manholes, etc.

Full compensation, except as otherwise provided herein, for conforming to the requirements of this section shall be paid for on a lump sum basis for traffic control system for the entire project and no additional compensation will be allowed thereof.

Traffic control signs and materials shall be maintained at all times including after hours, weekends and holidays.

SP-3-4.00 – SPECIAL SIGNS

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The Contractor shall furnish and erect two sided Special Sign at the locations designed by the Director of Community Services in accordance with the Standard Plans and these Special Provisions.

These signs will be in addition to any regulatory signs or signs needed for standard traffic control. These signs will be part of the traffic control plan. The contractor shall install the sign 7 days prior to start of field construction. For bidding purposes, the signs shall be assumed to be 5'X8' and shall include project name, start and completion date, City Name, City seal, City Council Names, and the City Manager Name, The contractor shall submit the sign layout to the City 15 days prior to the start of the construction for review and approval. The contractor shall install the sign on 2 wood posts at project site at a location approved by the City.

The signs shall be professionally manufactured and installed in accordance with Section 56-2 of the Standard Specifications, and Standard Plans RS1 through RS4, and the Caltrans Publication, "Standard Alphabet of Highway Signs".

Signs shall be manufactured using 3/4" plyglaze or equivalent support material, 4" minimum lettering size, 1" border, and reflective sheeting conforming to FHWA FP-85 Type IIA or AASHTO M268 Type III.

Compensation for work under this item shall be considered to be included in and paid for in the lump sum bid price Traffic Control System bid item and shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, for furnishing, erecting, maintaining, and removing the signs and no additional compensation will be allowed therefore.

SP-3-5.00 – RECORD DRAWINGS

The Contractor shall keep one clean set of bond originals to note any changes which take place during construction. These changes to the original plans and/or specifications shall be noted at the appropriate locations with the appropriate changes indicated in red pencil or ink. The Contractor shall note in large letters "RECORD DRAWINGS" on the Title Sheet of the plans. The job will not be finalized by the Engineer until these record drawings have been completed to the satisfaction of the Engineer. The changes shall be noted on the plans as the changes occur. The record drawings shall be submitted to the Resident Engineer, and become the property of the City at conclusion of the project. Such record drawings shall include one (1) paper copy and one (1) electronic copy one media approved by the Director of Community Services or his designee.

Full compensation for maintaining and compiling the record drawings shall be considered to be included in other items of work and no additional compensation will be allowed.

SP-3-6.00 – WATER POLLUTION CONTROL

The Contractor shall carry out the water pollution control as indicated in the Storm Water Pollution Prevention Plan, the Erosion and Sediment Control Plan, the Standard Specifications, these Special Provisions, and as directed by the Engineer. The Contractor shall also comply with all and every water pollution requirement as set by the regulatory agencies.

Water pollution control work shall conform to the provisions in Section 7-1.01G, "Water Pollution of the Standard Specifications and these Special Provisions.

Water pollution control work shall conform to the requirements in the "Storm Water Pollution Prevention Plan (SWPPP) and Water Pollution Control Program (WPCP) Preparation Manual" and the "Construction Site Best Management Practices (BMPs) Manual," and addenda thereto issued up to and including the date of advertisement of the project, hereafter referred to respectively as the "Preparation Manual" and the "Construction Site BMP Manual," and collectively as the "Manuals. Copies of the Manuals may be obtained from the Department of Transportation, Material Operations Branch, Publication Distribution Unit, 1900 Royal Oaks Drive, Sacramento, California 95815, Telephone: (916) 445-3520. Copies of the Manuals may also be obtained from the Department's Internet Web Site at: <http://www.dot.ca.gov/hq/construc/stormwater.html>. Copies of the Permits are available for review at the Department of Transportation, District 8, Environmental / Technical Branch, 464 West 4th Street, San Bernardino, California.

The Contractor shall know and fully comply with the applicable provisions of the Manuals, Permits, and Federal, State, and local regulations that govern the Contractor's operations and storm water discharges from both the project site and areas of disturbance outside the project limits during construction. The Contractor shall maintain copies of the Permits at the project site and shall make the Permits available during construction.

Unless arrangements for disturbance or use of areas outside the project limits are made by the City and made part of the contract, it is expressly agreed that the City assumes no responsibility for the Contractor or property owner with respect to any arrangements made between the Contractor and property owner. The Contractor shall implement, inspect and maintain all necessary water pollution control practices to satisfy all applicable Federal, State, and Local laws and regulations that govern water quality for areas used outside of the highway right-of-way or areas arranged for the specific use of the Contractor for this project. Installing, inspecting, and maintaining water pollution control practices on areas outside the road right-of-way not specifically arranged for and provided for by the City for the execution of this contract will not be paid for.

The Contractor shall be responsible for the costs and for liabilities imposed by law as a result of the Contractor's failure to comply with the provisions set forth in this section "Water Pollution Control (Storm Water Pollution Prevention Plan)", including but not limited to, compliance with the applicable provisions of the Manuals, Permits and Federal, State and local regulations. Costs and liabilities include, but are not limited to, fines, penalties, and damages whether assessed against the State or the Contractor, including those levied under the Federal Clean Water Act and the State Porter Cologne Water Quality Act.

In addition to the remedies authorized by law, money due to Contractor under the contract, in an amount determined by the City, may be retained by the City until disposition has been made of the costs and liabilities.

When a regulatory agency or other third party identifies a failure to comply with the permit or any other local, State, or Federal requirement, the Engineer may retain money due to Contractor, subject to the following:

- A. The City will give the Contractor 30 day's notice of the City's intention to retain funds from partial payments which may become due to the Contractor prior to acceptance of the contract. Retention of funds from payments made after acceptance of the contract may be made without prior notice to the Contractor.
- B. No retention of additional amounts out of partial payments will be made if the amount to be retained does not exceed the amount being withheld from partial payments pursuant to Section 9-1.06, "Partial Payments" of the Standard Specifications.

If the City has retained funds and it is subsequently determined that the City is not subject to the costs and liabilities in connection with the matter for which the retention was made, the City shall pay for interest on the amount retained for the period of the retention.

Conformance with the provisions of this section "Water Pollution Control (Storm Water Pollution Prevention Plan)" shall not relieve the Contractor from the Contractor's responsibilities, as provided in Section 7, "Legal Relations and Responsibility", of the Standard Specifications.

The Contractor shall notify the Director of Community Services immediately upon request from the regulatory agencies to enter, inspect, sample, monitor or otherwise access the project site or the Contractor's records pertaining to water pollution control work.

The cost for water pollution control for the entire project will be paid by lump sum. The Contractor will be responsible for the payment of any fines without reimbursement from the City.

SP-3-7.00 – AREAS FOR CONTRACTOR'S USE

Attention is directed to the provisions in Section 7-1.19, "Rights in Land and Improvements", of the Standard Specifications and these Special Provisions.

The road right of way shall be used only for purposes that are necessary to perform the required work. The Contractor shall not occupy the right of way, or allow others to occupy the right of way, for purposes which are not necessary to perform the required work unless approved otherwise by the City Engineer.

No City-owned parcels adjacent to the right of way are available for the exclusive use of the Contractor within the contract limits. The Contractor shall secure, at the Contractor's own expense, areas required for plant sites, storage of equipment or materials, or for other purposes, which cannot be safely placed within the area approved by the Engineer.

The Contractor shall remove equipment, materials, and rubbish from the work areas and other City owned property which the Contractor occupies. The Contractor shall leave the areas in a presentable condition in conformance with the provisions in Section 4-1.02, "Final Cleaning Up", of the Standard Specifications.

The Contractor shall secure, at the Contractor's own expense, areas required for plant sites, storage of

equipment or materials or for other purposes, if sufficient area is not available to the Contractor within the limits available for use by the City.

SP-3-8.00 – MAINTENANCE OF ROAD

During the time of construction the Contractor shall be responsible for the maintenance of the road within the proposed project limits whether work has begun on that section of road or not. Compensation for work under this item shall be included in other items of work.

SP-3-9.00 – PRESERVATION OF PROPERTY

Attention is directed to Section 7-1.11, "Preservation of Property", of the Standard Specifications and these Special Provisions.

Existing trees, shrubs and other plants, that are not to be removed as shown on the plans or specified in these Special Provisions, and are injured or damaged by reason of the Contractor's operations, shall be replaced by the Contractor. The minimum size of tree replacement shall be 24-inch box and the minimum size of shrub replacement shall be No. 15 container. Replacement ground cover plants shall be from flats and shall be from cuttings and shall be planted 12-inch on center. Replacement planting shall conform to the requirements in Section 20-4.07, "Replacement", of the Standard Specifications. The Contractor shall water replacement plants to conformance with the provisions in Section 20-4.06, "Watering", of the Standard Specifications. Damaged or injured plants shall be removed and disposed of outside the road right of way in conformance with the provisions in Section 7-1.13 of the Standard Specifications.

Replacement planting of injured or damaged trees, shrubs, and other plants shall be completed prior to start of the plant establishment period. Replacement planting shall conform to the provisions in Section 20-4.05, "Planting", of the Standard Specifications.

The Contractor is also responsible for replacing any damaged sprinklers or related improvements. The Contractor shall trim any and all trees, shrubs, and other plants that may be in conflict with traffic or the Contractor's operations.

Replacement planting of injured or damaged trees, shrubs and other plants shall be completed not less than 20 working days prior to acceptance of the contract. Replacement plants shall be watered as necessary to maintain the plants in a healthy condition. The cost to perform the above shall be included in other bid items unless is specified otherwise.

SP-3-10.00 – UTILITY VERIFICATIONS AND POTHOLING

Attention is directed to Section 8-1.10, "Utility and Non-Highway Facilities", and Section 15, "Existing Highway Facilities", of the Standard Specifications and these Special Provisions.

Attention is directed to the existence of certain underground facilities that may require special precautions be taken by the Contractor to protect the health, safety and welfare of workers and of the public. Facilities requiring special precautions include, but are not limited to existing utilities.

The Contractor shall notify the Engineer and the appropriate regional notification center for operators of subsurface installations at least 2 working days, but not more than 14 calendar days, prior to performing any excavation or other work close to any underground pipeline, conduit, duct, wire or other structure. Regional notification centers include, but are not limited to, the following:

Notification Center	Telephone Number
Underground Service Alert-Southern California (USA)	1-800-227-2600

The Contractor is responsible to physically locate and identify all facilities (including utilities) within project limits. These shall include potholing. All underground facilities within 4.0' (vertical) of the existing finished surface shall be potholed by the Contractor. These utilities may be shown on plans or are marked in the field. Contractor is hereby notified and shall use all appropriate cautions when working near utilities.

Some of the existing utilities may be in conflict with the project. If this is the case, the contractor shall coordinate his work with that of the utility. No additional compensation will be paid to the Contractor for any delay or loss of efficiency due to having to coordinate his work with that of the utilities. Utility verifications and potholing shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals (including coordination), shall be paid for under other items of work unless is specified otherwise and no additional compensation will be allowed thereof.

SP-3-11.00 – DEMOLITION, ROADWAY EXCAVATION, AND EARTHWORK

Earthwork shall conform to the provisions in Section 16, "Clearing and Grubbing", Section 17, "Watering", Section 18, "Dust Pallative", Section 19, "Earthwork", Section 20, "Erosion Control and Highway Planting", and Section 22, "Finishing Roadway", of the standard specifications and these special provisions.

This item shall include all earthwork in the project including, but not limited to, all clearing and grubbing, all import, export, grading, compaction, shoulder grading, ditch excavation and all earthwork not specifically noted elsewhere in the specifications. This item shall also include all clearing and grubbing and all removal of asphalt concrete (except for cold-planing of asphalt concrete if addressed elsewhere in the bid schedule).

This item shall include all removals and demolition as shown on the plans and those removals necessary to project completion but not specifically called out on the plans or in the schedule of bid items.

Demolition, roadway excavation, and earthwork (including pavement removal and site grading) for the entire project will be paid under various bid items when not specified in the schedule of bid items and shall include full compensation for furnishing all labor, materials, tools, equipment and incidentals and for doing all work and no additional compensation will be allowed thereof.

SP-3-12.00 – SUBGRADE PREPARATION

The subgrade shall be prepared per the Standard Specifications and these special provisions. The top 1.0 feet of subgrade shall be moisture conditioned, processed, and compacted to a minimum relative compaction of 95% or as recommended by soil engineer.

It is critical to not damage the existing utilities during construction. To this end, the City has reviewed record drawings and have included existing utility information on the civil plans. It should be emphasized that even though this information is being provided, it is the Contractor's responsibility to protect the utilities during construction and to ensure that the existing utilities do not conflict with the proposed improvements. It is possible that all existing utilities may not be shown on the civil plans.

If areas are encountered that the Contractor believes should be determined to be "unsuitable material", the Contractor shall notify the Engineer. If the Engineer determines that the material is "unsuitable" it shall then be removed and disposed of and paid for as extra work provided in Section 4- 1.03D.

The grade tolerance for the subgrade grading plane at any point shall not vary more than 0.02' (1/4- inch) below or 0.06' (3/4-inch) above the grade established by the Engineer.

Compensation for work under this item shall be included in various items of work unless specified.

SP-3-13.00 – AGGREGATE BASE

Aggregate base shall be Class II and shall conform to the provisions in Section 26, "Aggregate Bases" of the Standard Specifications, these special provisions and the geotechnical engineer's reports contained within these specification package when provided. In addition to meeting all the requirements for Class II Aggregate Base of the State's standard specifications, the material shall also have a minimum unit weight of 125 pcf as determined by California Impact Test Method 216F or ASTM D1557-00. The Class II Aggregate Base shall meet the grading requirement for 3/4-inch maximum.

The Contractor shall have the proposed base certified by an independent testing laboratory to meet Caltrans standards (including R-values) and the minimum unit weight requirement. This certification, along with the data, shall be submitted to the Engineer for review, at the preconstruction meeting. This certification will not release the Contractor from having the base tested by the Engineer to meet specifications during construction.

The maximum thickness of any lift of base shall be 8.0 inches. Compensation for work under this item shall be included in various items of work unless specified. And shall include full compensation for furnishing all labor, materials, tools, equipment and incidentals, and for doing all work involved in constructing aggregate base complete in place and no additional compensation will be allowed therefore. Payment will be in accordance with Sections 26-1.06 and 26-1.07 of the standard specifications. Certified weight tickets must be submitted with each truck of base.

SP-3-14.00 – MINOR CONCRETE

Minor concrete shall comply with Section 90 "Portland Cement Concrete" of the standard Specifications and these special provisions except that no fly ash is allowed. References to Section 90-2.01 "Portland Cement" of the standard specifications shall mean Section 90-2.01 "Cement" of the standard specifications. Any concrete accelerators used to speed construction shall be at the Contractor's expense and no payment will be made. All concrete used for driveways and cross gutters shall be sufficiently strong to allow them to be opened to traffic within 72 hours of placement.

All minor concrete items (including, but no limited to, sidewalks, curb and gutter, driveways, access ramps and cross gutters) shall be built per Riverside County Improvement Standards and Specifications except as modified herein and on the plans. All minor concrete must meet the latest ADA requirements. Minimum sidewalk thickness is a true 4.0 inches, and minimum cross gutter and driveway thickness is 8.0 inches.

Handicap access ramps shall be bid per each and shall include all work from the BCR to the ECR including, but not limited to, all concrete curb and gutter, type D curb at back, sidewalk, scoring, grading to conform to existing area, and any and all work to make the ramp meet ADA requirements.

Payment for minor concrete shall be per unit contract price as defined in the bid schedule for each minor concrete item. Payment shall also include the removal of any concrete items if this is not addressed elsewhere in the bid schedule. The price shall also include any required saw-cutting, removal and replacement of any items needed to provide room for the form boards, and shall include full compensation for all labor, materials, tools, equipment and incidentals for minor concrete complete-in-place. Any and all landscaping and irrigation replacement and adjustment needed for concrete work shall also be included here if not included elsewhere in the bid schedule. All base underneath the minor concrete items will be paid for in the "Class 2 Aggregate Base" item unless specified otherwise.

SP-3-15.00 – SIGNING, STRIPING AND PAVEMENT MARKING

All work shall be performed in accordance with the provisions in Section 82, "Markers and Delineators", Section 84, "Traffic Stripes and Pavement Marking", Section 85, "Pavement Markers" of the Standard Specifications and these Special Provisions.

All permanent striping shall be paint and all permanent markings shall be thermoplastic. Work shall also include any signing, installation of raised pavement markers (RPMS), and delineators as shown on the plans.

Temporary striping such as "tabs" and "tape" can be used when the temporary striping and pavement markings will be in use for less than seven calendar days. All temporary striping to be in place greater than or equal to seven calendar days shall be paint unless approved otherwise by the Engineer. Temporary stop limit lines shall be paint or eight-inch wide white traffic tape. "Black-out" of existing striping shall be kept to a minimum. Existing striping shall be removed when in conflict and in no case shall existing striping that is "blacked-out" be allowed to stay in the field without being removed for more than 24 hours.

Where striping joins existing striping, the Contractor shall begin and end the transition from the existing striping pattern into or from the new striping pattern a sufficient distance to ensure continuity of the striping plans.

The signing shall include removing and/or relocating all existing signs as necessary and the installation of new signals and poles. All signing work shall meet County of Riverside and Caltrans specifications.

Payment for all signing, striping and pavement markings shall be paid under various bid items when not specified in the schedule of bid items and include full compensation for all temporary and permanent striping and pavement markings for furnishing all labor materials, tools, equipment and incidentals in place and no additional compensation will be allowed therefore. This price shall also include all signing, delineators, paint, thermoplastic, and RPMS unless specifically called out to be paid for in a different item.

SP-3-16.00 – PROTECT IN PLACE OR REMOVE AND REPLACE

RELOCATE OR ADJUST TO GRADE SIGNS, TREES, UTILITY BOXES, IRRIGATION LINES, VALVES, M.H., METERS, VALVES, MAIL BOXES, SMALL BLOCK WALL, ETC.

PAYMENT – Protecting, relocating, or removing and replacing, relocating and adjusting to grade all valves, signs, telephone and Edison pedestals, pull boxes, poles, Edison vaults and sewer m.h., f.h., storm, G.T.E., communication manholes, pipes, traffic signal boxes, fencing, mail boxes, and delineators; will be paid for and included in various items of work unless specified elsewhere and completed in accordance with the Contract Documents or as directed by the Engineer. The price bid shall include full compensation for furnishing all labor, tools, equipment, materials, and incidentals and for doing all work involved in such items. The price shall also include removal and/or replacement of irrigation lines, water main, sewer lines, valves, trees, etc. The price shall include adjustment to grade (raise or lower) all valves, manholes, covers, meters and protection of all existing utilities and any tree trimming needed. Mailboxes shall be relocated to eight feet from edge of pavement or as otherwise directed by the Engineer. If the mail box and/or post is in too poor of a condition it shall be replaced at the Contractor's expense. This shall include payment for all items mentioned above not specifically referenced elsewhere in the specifications.

SP-3-17.00 – WEED REMOVAL

The Contractor shall remove all weeds that are growing through cracks from the street, growing between the concrete curb and gutter, and between the back of sidewalk and back of curb.

All weeds shall be sprayed with a herbicide mixture of either Hyvar mixed with Roundup or Pratatol mixed with Roundup, or approved equal, between seven (7) to twenty one (21) days prior to removing the weeds. The herbicide mixture shall contain Blazon, or approved equal, a purple dye to easily confirm the herbicide has been applied.

Payment for weed removal shall be included in other items of work.

SP-3-18.00 – ADJUST MANHOLES, VALVES

Adjusting of sewer manholes shall be done per the Standard Specifications, Eastern Municipal Water District (EMWD) Specifications and other utility owners standards, and these Special Provisions.

The sewer manholes and utility valves shall be adjusted (up or down) so that the street can be paved without interference from the existing manholes. After final paving the manholes shall then be raised to grade. The manholes may need to be raised or lowered.

Water meters and air vacuums shall be relocated outside of the roadway per EMWD Standards and Specifications.

EMWD requires an EMWD inspector to observe all work on EMWD facilities. This inspection must be coordinated one (1) week in advance by calling EMWD @ 951-928-3777, extension 4480.

Adjust or relocate sewer manholes, utility valves, watermeters, air vacuums, etc. shall be included in various items of work unless specified and shall include full compensation for furnishing all labor, materials, tools, equipment, insurance requirements, license requirements, and incidentals and for doing all work whether the facilities shall be raised, lowered, or relocated and no additional compensation shall be allowed therefore. Work shall also include coordinating the work with the City of Perris Water Department and/or EMWD and meeting their requirements.

SP-3-19.00 – CONSTRUCTION STAKING

Contractor shall be responsible for providing survey and construction staking to complete the job. The surveyor shall be licensed in the State of California and provide "As Built" drawings at the end of the project. Compensation for work under this item shall be included in the lump sum bid price of Construction Survey and Staking, including payment of prevailing wage and other required benefits.

MOTHERS LANGUAGE MEMORIAL:

**LOCATION:
PERRIS LIBRARY
163 E. San Jacinto Ave.
City of Perris**

**CLIENT:
101 North "D" Street
Perris CA 92570
(951) 943-6100**

**PLANS BY:
EVERETT SMITH DESIGNS**

**PERRIS, CA. 92570
951-323-2187**

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PART 1 - GENERAL

1.01 RELATED DOCUMENTS:

The provisions of The "Greenbook" Standard Specifications for Public Works Construction shall apply except as modified herein.

1.02 SCOPE OF WORK:

Project Description: The Scope of work generally consists of the installation of a New Mothers Language Memorial and miscellaneous related improvements as required by the plans and specifications.

The Work of this Section shall consist of furnishing all labor, materials, equipment, appliances and services necessary for the execution and completion of all Mobilization Work as shown on the Plans and as described in the Specifications including, but not necessarily limited to, the following:

- Preparatory operations including, but not limited to those efforts necessary for the movement of personnel, equipment, supplies, and incidentals to the Work site;
- All other operations which must be performed or costs incurred prior to beginning Work on the site;
- Provision and installation of Construction Fence per Technical Specification Section 02445
Temporary Chainlink Fence;
- Provision of temporary utilities;
- Secure all required permits;
- Obtain temporary construction water & electrical service
- Submittals per Special Provisions Section 2-5.3.3 Shop Drawings and Submittals and Technical Specifications Section 01300 Submittals.

1.03 SUBMITTALS:

As a part of mobilization, all submittals as specified in various individual Sections of the Specifications shall be submitted for approval by the City in the format specified in Technical Specifications Section 01300 Submittals and within the time-frames specified in Special Provisions Section 2-5.3.3 Shop Drawings and Submittals. Submittals shall include all Materials Lists, Catalog Cuts, Shop Drawings, material and color samples, and Construction Schedule all as specified.

PART 2 - MATERIALS

2.01 TEMPORARY UTILITIES:

The permanent potable domestic water meter is already in place and available for use on the Project. Contractor shall furnish temporary water (if need exceeds safe rate of flow through existing water meter), and power complete with connecting piping, wiring, lamps, meters and similar equipment as required for the Work. Install, maintain, and remove temporary lines upon completion of the Work. All expenses in connection with temporary services and facilities shall be paid for by Contractor.

PART 3 - EXECUTION

3.01 GENERAL:

- A. Payment: The price of this item is included in the various items of work and shall include but not limited to all activities, equipment, supplies, and incidentals to the project site; for the establishment of all offices,

buildings and other facilities necessary for the work on this project; and for all other work and operations of the Contractor's forces which must be performed or cost incurred, prior to the beginning of work on the various contract items on the project site under the Contract. No separate payment will be made for mobilization, and no further compensation will be allowed therefore.

3.02 CLEAN-UP:

Contractor shall provide trash receptacles for collecting debris, shall remove debris from the job site at regular intervals not less than weekly and shall dispose of same in a legal manner.

END OF SECTION

SECTION 01045 - CUTTING AND PATCHING

I. GENERAL

The provisions of the Standard Specifications for Public Works Construction (Green Book), latest adopted edition, apply except as modified herein.

A. Related Work Specified Elsewhere:

Summary of Work: Section 01010
Earthwork and Grading: Section 02200
Site Drainage: Section 02720
Site Utilities: Section 02600
Concrete: Division 3

B. Description:

Execute cutting (including excavating), fitting or patching of work required to:

Make several parts fit properly;
Uncover work to provide for ill-timed work;
Remove and replace defective work;
Remove and replace work not conforming to the Contract Documents;
Remove samples of installed work as required for testing;
Install specified work in existing construction;
Properly join work by others.

In addition to contract requirements, upon written instructions of the Agency Representative:

Uncover work to provide for City Representative's observation of covered work;
Remove samples of installed materials for testing;
Remove work to provide for alteration of existing work.

Do not endanger any work by cutting or altering work or any part of it.

C. Submittals:

Prior to cutting which affects structural safety of work or work of another Contractor, submit written notice to the Agency Representative requesting consent to proceed with cutting, including:

Identification of the work;
Description of affected work;
Necessity for cutting;
Effect on other work, on structural integrity of the project;
Description of proposed work.
Designate:
Scope of cutting and patching;
Contractor and trades to execute work;
Products proposed to be used;
Extent of refinishing;
Alternatives to cutting and patching;
Designation of party responsible for cost of cutting and patching.

Prior to cutting and patching done on instruction of Agency Representative, submit cost estimate.

Should conditions of work or schedule indicate change of materials or methods, submit written recommendations to City Representative, including:

Conditions indicating change;

Recommendations for alternative materials or methods;

Submittals as required for substitutions.

Submit written notice to Agency Representative, designating time work will be uncovered, to provide for observation.

D. Payment for Costs:

Costs caused by ill-timed or defective work, or work not conforming to Contract Documents, including costs for additional services of the DESIGN TEAM shall be borne by Contractor.

Work done on instructions of the City Representative, other than defective or non-conforming work shall be borne by City.

II. PRODUCTS

Materials for replacement of work removed shall comply with specifications for type of work to be done.

III. EXECUTION

A. Inspection:

Inspect existing conditions of work, including elements subject to movement or damage during cutting and patching or excavating and back-filling.

After uncovering work, inspect conditions affecting installation of new products.

B. Preparation:

Before cutting provide shoring, and support as required to maintain structural integrity of project; provide protection for other portions of project; and provide protection from the elements.

C. Performance:

Execute fitting and adjustment of products to provide finished installation complying with specified tolerances and finishes.

Execute cutting and demolition by methods which will prevent damage to other work, and will provide proper surfaces to receive installation of repairs and new work.

Execute excavating and backfilling as specified in Section 02200 - Earthwork and Grading.

Restore work which has been cut or removed; install new products to provide completed work conforming to Contract Documents.

Refinish entire surfaces as necessary to provide an even finish:

Continuous surfaces - to nearest intersections.

Assembly - entire refinishing.

END OF SECTION

SECTION 01200 - PROJECT MEETINGS

I. GENERAL

The provisions of the Standard Specifications for Public Works Construction (Green Book), latest adopted edition, apply except as modified herein.

A. Related Requirements Specified Elsewhere:

Summary of Work: Section 01010
Construction Schedules: Section 01310
Shop Drawings, Project Data, and Samples: Section 01340
Project Record Documents: Section 01720

B. Pre-Construction Meeting:

Schedule after insurance documents are approved. The contractor shall provide insurance documents in a timely manner per City of Perris special provisions.

Minimum Attendance:

Prime Contractor
Major Subcontractors
DESIGN TEAM
Utility Representatives
City Building and Safety Department
City Engineer

C. Progress Meetings:

Schedule regular meetings at work site as determined by City. Hold called meetings as progress of work dictates.

The Contractor and any or all of its subcontractors shall attend these meetings as directed by the City Representative.

END OF SECTION

SECTION 01 30 00 - ADMINISTRATIVE REQUIREMENTS

PART 1 - GENERAL

SCHEDULE 0 - SECTION INCLUDES

- i. Administration of Contract: Provide administrative requirements for the proper coordination and completion of work including the following:
 1. Supervisory personnel.
 2. Preconstruction conference.
 3. Project meetings, minimum of two per month; prepare and distribute minutes.
- ii. Reports: Submit daily and special reports.
- iii. Work Schedule: Submit progress schedule, updated monthly.
- iv. Submittal Schedule: Prepare submittal schedule, coordinate with progress schedule.
- v. Schedule of Values: Submit schedule of values.
- vi. Schedule of Tests: Submit schedule of required tests including payment and responsibility.
- vii. Perform Surveys: Lay out the work and verifying locations during construction. Perform final site survey.
- viii. Emergency Contacts: Submit and post a list of emergency telephone numbers and address for individuals to be contacted in case of emergency.
- ix. Record Documents: Submit record drawings and specifications; to be maintained and annotated by Contractor as work progresses.

SCHEDULE 1 - SUBMITTALS

1. Types of Submittals: Provide types of submittals listed in individual sections and number of copies required below.
 - 1.1 Shop drawings, reviewed and annotated by the Contractor - 4 copies.
 - 1.2 Product data - 4 copies.
 - 1.3 Samples - 2, plus extra samples as required to indicate range of color, finish, and texture to be expected.
 - 1.4 Inspection and test reports - 4 copies.
 - 1.5 Warranties - 4 copies.
 - 1.6 Survey data - 4 copies.
 - 1.7 Closeout submittals - 4 copies.
 - 1.8 Project photographs - 12 digital images each month submitted on CD. Submit cumulative CD at each subsequent submittal. Label each image with date.
2. Submittal Procedures: Comply with project format for submittals. Comply with submittal procedures established by DESIGN TEAM including DESIGN TEAM's submittal and shop drawing stamp. Provide required resubmittals if original submittals are not approved. Provide distribution of approved copies including modifications after submittals have been approved.
3. Samples and Shop Drawings: Samples and shop drawings shall be prepared specifically for this project. Shop drawings shall include dimensions and details, including adjacent construction and related work. Note special coordination required. Note any deviations from requirements of the Contract Documents.
4. Warranties: Provide warranties as specified; warranties shall not limit length of time for remedy of damages Owner may have by legal statute. Contractor, supplier or installer responsible for performance of warranty shall sign warranties.

END OF SECTION

SECTION 01310 - CONSTRUCTION SCHEDULE

I. GENERAL

The provisions of the Standard Specifications for Public Works Construction (Green Book), latest adopted edition, apply except as modified herein.

A. Related Requirements Specified Elsewhere:

Summary of Work: Section 01010

Products: Individual Sections - Divisions 2-16.

Provide projected construction schedule for entire work. Revise periodically.

B. Form of Schedule:

Horizontal bar chart with separate horizontal bar column for each trade or operation. Identify each column by distinct delineation. Identify the first work day of each week. Allow space for updating. Identify each part separately unless all work is concurrent.

C. Content of Schedule:

Provide complete sequence of construction by activity.

Shop drawings, project data and samples;

Submittal date and date review copies required.

Decision dates;

Product substitutions;

Selection of finishes.

Product procurement and delivery dates;

Dates for beginning and completion of each element of construction, including equipment installation dates;

Testing of equipment on systems.

Show projected percentage of completion for each item of work as of first day of each month.

Provide sub-schedules to define critical portions of entire schedule.

D. Updating:

Show all changes occurring since previous submittal of schedule.

Indicate progress of each activity; show completion dates.

Include major changes in scope, modified activities, revised projections, and other identifiable changes.

Provide description of current and anticipated delay factors and their impact.

E. Submittals:

Submit initial schedule within 15 days after date of Notice to Proceed. Agency Representative will review schedule and return review copy within 10 days after receipt.

If required, resubmit within 7 days after return of review copy.

Submit periodically updated schedules accurately depicting progress to first day of each month.

Submit 6 copies to City Representative.

F. Distribution:

Distribute copies of reviewed schedules to job site file, subcontractors, and other concerned parties, with instructions to coordinate.

END OF SECTION

SECTION 01340 - SHOP DRAWINGS, PROJECT DATA AND SAMPLES

I. GENERAL

The provisions of the Standard Specifications for Public Works Construction (Green Book), latest adopted edition, apply except as modified herein.

A. Submit:

Submit to the City shop drawings, project data and samples required by specification sections.

B. Related Requirements Specified Elsewhere:

General Conditions
Construction Schedules: Section 01310
Summary of Work: Section 01010
Project Closeout: Section 01700
Products and Materials: Section 01600

C. Construction Schedule:

Designate dates for submission and dates reviewed shop drawings, project data and samples will be needed for each product.

II. SHOP DRAWINGS

Original drawings, prepared by Contractor, subcontractor, supplier or distributor which illustrate some portion of the work, showing fabrication, layout, setting or erection details.

Furnished at Contractor's expense by Contractor.

Prepared by qualified detailer.

Identify details by reference to sheet and detail numbers on Contract Drawings.

Minimum sheet size: 8 1/2" by 11".

A. Reproduction for Submittals:

Reproducible bond paper with three bond prints.

III. PROJECT DATA

A. Manufacturer's Standard Schematic Drawings:

Modify to delete information which does not apply.
Supplement standard information where applicable to work.

B. Manufacturer's Catalog Sheets, Brochures, Diagrams, Schedules, Performance Charts, Illustrations and other Standard Descriptive Data:

Clearly mark each copy to identify pertinent information.
Show dimensions and clearances required.
Show performance characteristics and capacities.
Show wiring diagrams and controls.

IV. SAMPLES

Physical examples to illustrate materials, equipment or workmanship, and to establish standards by which completed work is judged.

A. Office Samples:

Of size and quantity to clearly illustrate:

Functional characteristics of product or material, with integrally related parts and attachment devices.
Full range of color samples.

After review, samples may be used in construction project.

B. Field Samples and Mock-Ups:

Erect at project site at location acceptable to Engineer/DESIGN TEAM.
Construct complete, including work of all trades required in finished work.

V. CONTRACTOR'S RESPONSIBILITIES

Review shop drawings, project data and samples prior to submission.
Verify field measurements, field construction criteria, catalog numbers and similar data.
Coordinate each submittal with requirements of work and of Contract Documents.

A. Responsibility for Errors and Omissions in Submittals:

Not relieved by Landscape DESIGN TEAM's review of submittals.

B. Responsibility for Deviations in Submittals from Contract Documents:

Not relieved by Landscape/DESIGN TEAM's review unless Landscape/DESIGN TEAM gives written acceptance of specific deviations.

Notify Agency in writing at time of submission of deviations in submittals from requirements of Contract Documents.

Begin no work requiring submittals until return of submittals with Landscape/DESIGN TEAM's stamp and signature indicating review.

Distribute copies after DESIGN TEAM's review.

VI. SUBMISSION REQUIREMENTS

Schedule all submittals not later than 30 days after Award of Contract.

The City will not be responsible for delays to the Contractor for any submittal not received within the specific time.

Submit 6 sets of shop drawings, catalogs, samples, etc. for City's retention, one copy for DESIGN TEAM, and one copy for consultants (if require).

Transmittal letter shall be in duplicate, containing date, project title and number, Contractor's name and address, the number of each shop drawing, project data and sample submitted, notification of deviations from Contract Documents, and other pertinent data.

Submittal shall include:

Date and revision date;

Project title, number, park name or names.

Names of : Agency, Contractor, Subcontractor, Supplier, Manufacturer, separate detailer, where pertinent;

Identification of material;

Relation to adjacent structure or materials;
Field dimensions, clearly identified;
Specification section number;
Applicable standard, such as ASTM # or Federal Specification;
Space for Landscape DESIGN TEAM's stamp;
Identification of deviations from Contract Documents;
Contractor's stamp, initialed or signed, certifying review of submittal, verification of field measurements and compliance with Contract Documents.

VII. RESUBMISSION

A. Shop Drawings:

Revise initial drawings as required and resubmit as specified for initial submittal.

Indicate on drawings any changes which have been made other than those requested by the DESIGN TEAM.

B. Project Data and Samples:

Submit new datum and samples as required for initial submittal.

VIII. DISTRIBUTION AFTER REVIEW

Distribute stamped copies of shop drawings and project data to:

Contractor's file
Job site file
Record Documents file
Subcontractor
Supplier
Fabricator.

A. Samples:

Distribute as directed.

END OF SECTION

SECTION 01370 - SCHEDULE OF VALUES

I. GENERAL

The provisions of the Standard Specifications for Public Works Construction (Green Book), latest adopted edition, apply except as modified herein.

A. Related Requirements Specified Elsewhere:

Project meetings: Section 01200
Construction schedule: Section 01310

B. Submit to City:

Schedule of Values, at least 20 days prior to first progress payment estimate. Upon Agency Representative's request, support values given with substantiating data. Quantities of designated materials.

C. Schedule of Values:

Used only as a basis for Progress Payment.

II. FORM OF SUBMITTAL

Typewritten on 8 1/2" x 11" white bond paper.

Use Table of Contents of this Specification for format for listing costs of work for Sections under Divisions 2 through 16.

Identify each line item with number and title.

III. PREPARING SCHEDULE OF VALUES

Itemize separate line item cost for work required by each section of this specification. Break to indicate total installed cost, with overhead and profit. Round off figures to nearest dollar. Make sum of total costs of all items listed in schedule equal to total Contract sum.

IV. REVIEW AND RESUBMITTAL

After review by City Representative, revise and resubmit schedule as required. Resubmit revised schedules in same manner.

END OF SECTION

SECTION 01410 - TESTING

I. GENERAL

The provisions of the Standard Specifications for Public Works Construction (Green Book), latest adopted edition, apply except as modified herein.

A. Related Requirements Specified Elsewhere:

Inspections and testing required by laws, ordinances, rules, regulations or orders of public authorities: General Conditions.

Certification of products: Respective specification sections.

Cutting and Patching: Section 01045

Project Closeout: Section 01700

Soil Testing: Section 02200

Landscape Planting: Per drawings.

Tests and Standards: Pertinent sections.

B. Independent Testing Laboratory:

Agency will employ and pay for services of an Independent Testing Laboratory to perform soil, concrete, and related testing services.

Contractor will employ and pay for services of an Independent Testing Laboratory, approved by the Agency, to perform agronomic soil test and other testing services required by the specifications.

Employment of Testing Laboratory will in no way relieve Contractor of its obligation to perform work in accord with contract.

II. LABORATORY DUTIES; LIMITATIONS OF WARRANTY

Cooperate with Agency and Contractor; provide qualified personnel promptly on notice.

Perform specified inspections, sampling and testing of materials and methods of construction. Comply with specified standards. Ascertain compliance with requirements of Contract Documents.

Notify Engineer and Contractor promptly of irregular ties or deficiencies of work observed during performance of services.

Submit promptly 5 copies of reports of inspections and tests to Agency for further distribution.

Perform additional services as required by Agency.

No authority to release, revoke, alter or enlarge on requirements of Contract Documents; approve or accept any portion of the work; perform any duties of the Contractor.

III. CONTRACTOR'S RESPONSIBILITIES

Cooperate with Laboratory personnel, provide access to work, arrange access to manufacturer's operations.

Provide Laboratory preliminary representative samples of materials to be tested, in required quantities.

Furnish copies of mill test reports. Casual labor and facilities for access to work to be tested; to obtain and handle samples at the site; to facilitate inspection and tests; for Laboratory's exclusive use for storage and curing of test samples.

Notify Laboratory sufficiently in advance of operations to allow for its assignment of personnel and scheduling of tests.

Arrange with Laboratory and pay for additional inspections, sampling and testing required for the Contractor's convenience and when initial tests indicate work does not comply with Contract Documents.

Coordinate requests for services through City employed Testing Laboratory through Agency Representative.

END OF SECTION

SECTION 01420 - INSPECTION OF WORK

I. GENERAL

The provisions of the Standard Specifications for Public Works Construction (Green Book), latest adopted edition, apply except as modified herein.

A. Inspection:

The City will inspect and approve all installations and operations. All submittals to, and communication between, the Agency and the Contractor related to the work of this Contract shall be directed to the Agency Representative.

B. Notice:

The Contractor shall give the Agency Representative or an authorized representative a twenty-four (24) hour notice prior to work inspections required elsewhere in these specifications or by public agencies.

The work shall be ready for inspection at the scheduled times arranged by the Contractor. If, in the Agency Representative's sole judgment, the work is not ready and the inspection must be rescheduled, the Contractor shall be notified, shall reschedule the inspection, and shall provide twenty-four (24) hours notice of the rescheduled inspection.

In order to allow for inspection, and in addition to any inspection required by the City Building and/or Safety Department or any inspection required elsewhere in these specifications, the Contractor shall notify the responsible agency sufficiently in advance of the permanent concealment of any materials or work.

If any work is concealed or performed without the prior notice specified above, then the work shall be subject to such tests or exposure as may be necessary to prove to the Agency Representative or responsible agency that the materials used and the work done are in conformity with the plans and specifications. All labor and equipment necessary for exposing and testing shall be furnished by the Contractor at his expense. The Contractor shall replace, at his own expense, any materials or work damaged by exposure or testing.

Any inspection or approval by any representative or agent of the Agency will not relieve the Contractor of the responsibility of incorporating in the work only those materials which conform to the specifications, and any non-conforming materials shall be removed from the project site whenever identified.

C. Deputy Inspection:

The contractor shall provide and pay for all deputy inspections if needed.

D. Final Inspection:

Upon the completion of the work, the Contractor shall notify the Agency Representative seven (7) days in advance of when he desires a final inspection of the work. Engineer will make such inspection as soon thereafter as possible.

E. Defective Work:

No work which is defective in its construction or deficient in any of the requirements of the specifications shall be considered as accepted. The Contractor shall correct any imperfect work whenever discovered, before the final acceptance of the work.

F. Inspection Overtime:

The Contractor shall compensate the Agency, either upon receipt of a bill therefor or by deduction from the final amount due the Contractor, for all hours worked by the Inspector or other authorized Agency employees on Saturdays, Sundays, or legal holidays at one and one-half (1 1/2) times the employees basic rate of pay, plus current rate for overhead.

END OF SECTION

SECTION 01500 - TEMPORARY FACILITIES AND CONTROLS

I. GENERAL

The provisions of the Standard Specifications for Public Works Construction (Green Book), latest adopted edition, apply except as modified herein.

The Contractor shall be responsible for all specific safety requirements promulgated by any governmental authority, including the requirements of the Occupational Safety and Health Act of 1970 (OSHA) and CAL OSHA.

II. TEMPORARY UTILITIES

A. Light, Power and Water:

Furnish temporary water, light and power, complete with connecting piping, wiring, lamps, meters and similar equipment as required for the work. Install, maintain, and remove temporary lines upon completion of the work. All expenses in connection with temporary services and facilities shall be paid by the Contractor.

After the Notice of Completion has been filed, the City will be responsible for payment of water and electric bills rendered for utility service through the respective permanent meters.

Any and all refunds of monies resulting from the extension of any utility service shall accrue to the Agency, irrespective of the time that refunds are made or of the manner in which payment was made for the extension.

III. ACCESS AND FACILITIES

A. Access:

Provide and maintain an adequate access to the site of the project. Also provide temporary roads if any are required for prosecution of the work.

B. Temporary Fencing:

Contractor shall erect a temporary chain link fence around the entire perimeter of the construction and storage areas for his own security. Location and limits of fencing shall be approved by the City at initial site meeting. Fence shall be a minimum 8'-0" in height and shall have appropriate access gates. Fence shall have a good appearance. At completion of project (or sooner), Contractor shall remove fence from property with City permission.

C. The contractor shall provide a class 'A' field office complete with temporary non-pay telephone and fax machine

D. The contractor shall provide and maintain chemical toilets and wash stations, at least one for each sex. Toilets shall be disabled accessible.

E. The contractor shall provide access to existing electrical switch gear during construction and shall provide a temporary location for existing court lighting switches in a secured location away from construction activities as directed by city staff. Tennis court and site lighting must remain operational at all times during construction. During the disconnection and connection of power by Edison or anyone else for the installation of new metering and other equipment, the contractor shall provide, at his own expense, a 480V generator to maintain operation of the lights.

G. Storage Sheds:

Provide and maintain on the premises, where directed, watertight storage sheds for all materials which might be damaged by weather, including storage facilities for concrete test samples or other material samples required for the work.

IV. TEMPORARY SIGNBOARDS

A. Identification Sign:

Provide and maintain an identification sign in a prominent location approved by the City Representative. Signs shall be constructed of 3/4" exterior marine plywood, 4' x 8', with 1" x 4" D.F. stiffeners around all edges. Sign shall be mounted 3 feet above grade on 4" x 4" posts and adequately braced to withstand wind pressures.

Sign shall be constructed by a professional sign painter.

Sign colors shall be as selected by the DESIGN TEAM. Paints shall be exterior grade to maintain high quality appearance throughout construction period.

Contractor shall be responsible for layout of sign subject to approval of the Agency Representative. Sign shall contain the following:

(PROJECT NAME, CLIENT)
COUNCIL MEMBERS' NAMES
UNDER CONSTRUCTION. SCHEDULED OPENING DATE

V. FIRE PROTECTION

Provide general temporary fire protection for the work under this contract.

VI. TRASH REMOVAL AND CLEANING

Provide trash receptacles for collecting debris. Remove debris from job site at regular intervals.

END OF SECTION

SECTION 01600 - PRODUCTS AND MATERIALS

I. GENERAL

The provisions of the Standard Specifications for Public Works Construction (green Book), latest adopted edition, apply except as modified herein.

A. Work Included:

Transportation and storage.
Products list.
"Or equal" and reference to trade names.
Contractor's options.
Substitutions.

B. Related Requirements Specified Elsewhere:

Schedule of Values: Section 01700.
Shop Drawings, Project Data and Samples: Section 01340.
Testing: Section 01410.
Inspection: Section 01420.

II. HANDLING

A. Transportation and Storage:

Products or materials to be incorporated in the work shall be transported, handled, and stored in such a manner as to assure the preservation of their quality and fitness for the work and to facilitate inspection.

III. PRODUCTS LIST

Within 30 days after award of Contract, submit to Engineer five (5) copies of complete list of all products which are proposed for installation.

Tabulate list by each specification section. For products specified under reference standards, include with listing of each product:

Name and address of manufacturer;
Trade name;
Model or catalog designation;
Manufacturer's data:
 Performance and test data
 Reference standards

IV. "OR EQUAL" AND REFERENCE TO TRADE NAMES

Whenever in the specifications any material or process is indicated or specified by patent or proprietary name or by name of manufacturer, such specifications shall be deemed to be used for the purpose of facilitating description of the material or process desired and shall be deemed to be followed by the words "or equivalent". However, if the material, process, or article offered by the Contractor is not, in the opinion of the Engineer, equal to that specified, then the Contractor must furnish the material, process or article specified, or one which in the opinion of the Agency Representative is the equal thereof in all essential characteristics.

If the Agency Representative shall decide to accept for use in the project a material which is not the equal of that specified, authority for the substitution shall be made in the manner

described for "Extra Work and Changes", with appropriate monetary allowance for the difference in value.

V. CONTRACTOR'S OPTIONS

For products specified only by reference standards, select any product meeting standards, by any manufacturer.

For products specified by naming several products or manufacturers, select any product and manufacturer named.

For products specified by naming one or more products, but indicating the option of selecting equivalent products by stating "or equal" after specified product, Contractor must submit request, as required for substitution, for any product not specifically named.

VI. SUBSTITUTIONS

A. General:

The Contractor may offer any material or process which he believes to be equal in all essential characteristics to that so indicated or specified; and it shall be incumbent upon the Contractor to furnish sufficient evidence to the City Representative to support his claim of equality. Said offer and supporting evidence must be submitted and approved by the City within 30 calendar days after the Award of Contract or Contractor will be deemed to have waived his right to offer substitute materials and processes.

B. Submittal:

Submit five (5) copies of request for substitution. Include in request:
Complete data substantiating compliance of proposed substitution with Contract Documents.

For products:

Product identification, including manufacturer's name and address.

Manufacturer's literature:

Product description

Performance and test data

Reference standards

Samples.

Name and address of similar projects on which product was used, and date of installation.

For construction methods:

Detailed description of proposed method.

Drawings illustrating methods.

Itemized comparison of proposed substitution with product or method specified.

Data relating to changes in construction schedule.

Relation to separate contracts.

Accurate cost data on proposed substitution in comparison with product or method specified.

C. Contractor Warrants:

It has personally investigated proposed product or method, and determined that it is equal or superior in all respects to that specified.

It will provide the same guarantee for substitution as for product or method specified.

It will coordinate installation of accepted substitution into work, making such changes as may be required for work to be complete in all respects.

It waives all claims for additional costs related to substitution which consequently becomes apparent.

Cost data is complete and includes all related costs under its contract, but excludes:

Costs under separate contracts.
Landscape DESIGN TEAM's re-design.

D. Limitations:

Substitutions will not be considered if:

They are indicated or implied on shop drawings or project data submittals without formal request submitted within 30 calendar days of award;

Acceptance will require substantial revision of Contract Documents.

Delays in delivery of specified materials will not be considered justification for substitutions.

END OF SECTION

SECTION 01700 - PROJECT CLOSEOUT

The provisions of the Standard Specifications for Public Works Construction (Green Book), latest adopted edition, apply except as modified herein.

I. NOTICE

At least five (5) working days notice shall be required for final inspection; such notices shall be given to the City Representative.

II. REMOVAL OF PLANT AND CLEAN-UP

Upon completion of the work, the Contractor shall remove all its plant, tools, materials, and other articles from the property of the Agency. Should it fail to take prompt action to this end, the Agency, at its option and without waiver of such other rights as I may have, may on seven (7) days notice treat them as abandoned property. The Contractor shall also sweep all floors broom clean, clean all exterior work and windows and remove all rubbish from the property of the Agency.

III. DAMAGE

Damage to existing utilities, trees, pavements or other property caused by the Contractor shall be restored to original condition or better at the Contractor's expense, prior to final inspection.

IV. GUARANTEES

All guarantees required by the following Division of these Specifications shall be presented in writing to the Agency prior to final acceptance of the work and shall be in addition to the requirements set forth in the Special Provisions of these Specifications.

V. RECORD DOCUMENTS

Submit to the Agency prior to final acceptance all record documents required by the other Divisions of these Contract Documents.

END OF SECTION

SECTION 01720 - PROJECT RECORD DOCUMENTS

I. GENERAL

The provisions of the Standard Specifications for Public Works Construction (Green Book), latest adopted edition, apply except as modified herein.

A. Related Requirements Specified Elsewhere:

Project Meetings: Section 01200.
Construction Schedules: Section 01310.
Shop Drawings, Project Data, and Samples: Section 01340.
Products and Materials: Section 01600.
Project Closeout: Section 01700.

II. MAINTENANCE OF DOCUMENTS

Maintain at job site, one copy of:

Contract Drawings;
Specifications;
Addenda;
Reviewed Shop Drawings;
Change Orders;
Other Modifications to Contract;
Field Test Records;
Construction Schedules;
"As-Built" Drawings.

A. Storage:

Maintain documents in clean, dry, legible condition.

B. Use and Availability:

Not for construction purposes.
Available at all times for inspection by Engineer.

III. RECORDING

A. General:

Provide red ballpoint pen for all marking.
Label each document "PROJECT RECORD" in large, printed letters.
Keep record documents current.
Do not permanently conceal any work until required information has been recorded.
These drawings shall be up-to-date and so certified by the Project Inspector at each progress payment request submittal.

B. Marking:

Contract Drawings. Legibly mark to record actual construction:

Depths of various elements of foundation in relation to finish floor elevation;
Horizontal and vertical location of underground utilities and appurtenances referenced to permanent surface improvements;
Location of internal utilities and appurtenances concealed in construction referenced to visible and accessible features of structure;

Field changes of dimension and detail;
Changes made by Change Order or Field Order;
Details not on original contract drawings.

Specifications and Addenda. Legibly mark up each section to record:

Manufacturer, trade name, catalog number, and supplier of each product and item of equipment actually installed;
Changes made by Change Order or Field Order;
Other matters not originally specified.

Shop Drawings. Maintain as record documents; legibly annotate drawings to record changes made after review.

"As-Built" Drawings. Agency will furnish the Contractor with one set of ozalid transparencies and one set of blue line prints showing all work required for the use of the Contractor as "as-built" drawings. The Contractor shall clearly mark on each set as specified above.

IV. SUBMITTAL

At completion of project, deliver record documents to Engineer. Accompany submittal with transmittal letter, in duplicate, containing:

Date;
Project title and number;
Contractor's name and address;
Title and number of each record document;
Certification that each document as submitted is complete and accurate;
Signature of Contractor or its authorized representative.

NOTE: Prior to final payment, Contractor shall submit all Record Documents for review, correct all deficiencies, obtain required approvals, and deliver all approved Record Documents to the Engineer.

END OF SECTION

SECTION 02100 - SITE PREPARATION

I. GENERAL

The provisions of the Standard Specifications for Public Works Construction, Section 300, latest adopted edition, apply except as modified herein.

A. Scope:

Protection of all improvements to remain.

Protection of all light poles, fire hydrants, and other utilities to remain.

Protection of trees indicated on drawings to remain.

Clearing and grubbing of the site of work.

Removal and disposal of all deleterious materials.

Furnishing, developing, applying and providing watering equipment as required for the project.

Demolition and removal from the site of all materials, as shown on the drawings and as required for the new work, including the following:

(1) All structures, appurtenances, footings and improvements.

(2) All concrete as shown and/or as needed for grading operations and other improvements.

Removal and disposal of any additional items not specifically mentioned herein which may be found within the work limits.

Electrical removals.

Special handling and disposal of any hazardous materials (including asbestos & lead) (See Appendix 4).

B. Related Work Specified Elsewhere:

Earthwork and grading: Section 02200.

Landscape work: See Landscape Drawings.

Electrical work: Section 16010.

Irrigation systems: See Irrigation Drawings.

C. Acceptance of Site:

Contractor shall accept the site and the character of the work as they exist on the first day of work under this contract. All existing conditions are not necessarily shown on the drawings or noted herein and can be determined only by actual examination of the sites and adjoining premises by the Contractor.

D. Responsibility and Coordination:

Contractor shall secure and maintain all required permits and licenses, and pay all fees necessary to legally complete the work of this section.

Contractor shall notify utility companies for all utilities to be cut off, modified or relocated, and shall maintain and protect all active utilities.

E. Protection and Safety:

Conform to all requirements of CAL OSHA "Construction Safety Orders" of the State of California Division of Industrial Safety, and applicable ordinances of the County of Orange and City of Fullerton.

Contractor shall provide signs in necessary places to exclude persons, except those connected with the work, from entering the working area. Contractor is responsible for preventing unauthorized persons from entering work area.

Protect the project site and adjacent properties from dirty water, mud and water accumulated due to Contractor's operations, rainfall runoff or water that enters the project site from any other source.

F. Salvage Materials:

All salvage material remaining on the site after official notification of vacation by the City shall be property of the Contractor, except as noted on the plans and herein.

II. EXECUTION

A. General Removal Work:

Demolition and removal work shall be carefully performed to avoid damage to existing facilities as indicated on the plans to remain.

All removal work (except as noted) shall be disposed of off-site, in legal manner, at Contractor's expense.

B. Site Clearance and Disposal:

Clear the site to be improved of grass, weed growth, rubbish, debris, pavement, concrete, inactive or abandoned facilities (verified by the Agency), etc., that are to be removed for construction of improvements to the limits and depths shown on the plans.

Abandoned underground facilities (verified by the Agency), roots three inches in diameter, rocks and broken masonry larger than four inches in any dimension shall be removed to a minimum depth of 12" below finish grade.

Miscellaneous inactive or abandoned underground facilities located 12 inches or more below finish grade may be removed with Agency approval.

Miscellaneous active lines within 12 inches of finish grade that are uncovered during the grading operations shall be protected.

All deleterious materials within the limits of the work shall be disposed of off the site by the Contractor, who shall make all necessary arrangements and pay all related costs.

C. Utilities:

Active utilities shall be protected by and at expense of the Contractor. Keep any required utility in operating condition during entire period of work, including irrigation system for landscape maintenance.

Inactive or abandoned utilities shall be disconnected, removed, and plugged or capped subject to the local governing ordinances.

Should the Contractor encounter any existing underground utilities not shown on the drawings, he shall at once notify the Agency Representative who will determine further procedure.

D. Debris Burning:

Burning of debris will not be permitted in any circumstances

E. Sawcut Paving:

The Contractor shall carefully saw cut existing concrete or a.c. paving in the location shown on the drawings, and shall carefully remove the designated portion without damage to facilities to remain.

F. Special Handling and Disposal of Any Toxic Wastes:

Existing improvements are to be demolished on the project. Refer to Appendix 4 for the lead and asbestos report obtained by the city. Contractor shall be responsible for all abatement as indicated in the report.

G. Turf Eradication:

Existing turf shall be killed and removed with the following procedure:

Apply Roundup herbicide to areas as per manufacturer's recommendations. Do not water for two days.

Wait for next seven days.

Apply second application Roundup herbicide.

Do not water field after the second application.

Wait seven days and rotorill to depth of six to eight inches, with soil amendments as per planting specifications.

Finish grading shall be as per specifications (Section 02200).

END OF SECTION

SECTION 02110 - SITE CLEARING

PART 1 - GENERAL

1. RELATED DOCUMENTS
 - A. Drawings and general provisions of the Contract, including General Conditions and Division 01 Specifications Sections, apply to this Section.
 - B. Erosion Control Plans and Storm Water Pollution Control Plan (SWPPP).
2. SUMMARY
 - A. This Section includes the following:
 - B. Removing existing trees, shrubs, groundcovers, plants and grass within the limits of grading indicated.
 - C. Remove riprap and dirt stockpiles as indicated on the Drawings.
 - D. Clearing and grubbing.
 - E. Stripping and stockpiling topsoil.
 - F. Temporary erosion and sedimentation control measures.
 - G. Related Sections include the following:
 - i. Division 02 Section "Demolition for Remodeling" of existing structures and site features.
 - ii. Division 31 for soil materials, excavating, backfilling, and site grading.
3. SUBMITTALS
 - A. Photographs or videotape, sufficiently detailed, of existing conditions of trees and plantings, adjoining construction, and site improvements that might be misconstrued as damage caused by site clearing.
 - B. Record drawings, according to Division 01 identifying and accurately locating capped utilities and other subsurface structural, electrical, and other utility conditions.
4. PROJECT CONDITIONS
 - A. Traffic: Minimize interference with adjoining roads, streets, walks, and other adjacent occupied or used facilities during site-clearing operations.
 - i. Do not close or obstruct streets, walks, or other adjacent occupied or used facilities without permission from Owner and authorities having jurisdiction.
 - ii. Provide alternate routes around closed or obstructed traffic ways if required by authorities having jurisdiction.

- B. Utility Locator Service: Notify utility locator service for area where Project is located before site clearing.
- C. Do not commence site clearing operations until temporary erosion and sedimentation control measures are in place.

PART 2 - PRODUCTS

Not Used.

PART 3 - EXECUTION

1. PREPARATION

- A. Locate and clearly flag trees and vegetation to remain or to be relocated.
- B. Locate and clearly flag trees and vegetation to remain or to be relocated.
- C. Protect existing site improvements to remain from damage during construction.
- D. Restore or replace damaged improvements to their original condition, as acceptable to Owner.
- E. Protect and maintain benchmarks and survey control points from disturbance during construction.

2. TEMPORARY EROSION AND SEDIMENTATION CONTROL

- A. Provide temporary erosion and sedimentation control measures to prevent soil erosion and discharge of soil-bearing water runoff or airborne dust to adjacent properties and walkways, according to requirements of authorities having jurisdiction.
- B. Inspect, repair, and maintain erosion and sedimentation control measures during construction until notice of completion is issued by the Owner and received by the Contractor.
- C. Remove erosion and sedimentation controls and restore and stabilize areas disturbed during removal, as directed by the Owner.
- D. Refer to Erosion Control Plans and Project SWPPP, if required or provided.

3. TREE PROTECTION

- A. Erect and maintain temporary fencing around tree protection zones before starting site clearing. Remove fence when construction is complete.
 - i. Do not store construction materials, debris, or excavated material within fenced area.
 - ii. Do not permit vehicles, equipment, or foot traffic within fenced area.
 - ii. Maintain fenced area free of weeds and trash.
- B. Do not excavate within tree protection zones, unless otherwise indicated.

- C. Where excavation for new construction is required within tree protection zones, hand clear and excavate to minimize damage to root systems. Use narrow-tine spading forks, comb soil to expose roots, and cleanly cut roots as close to excavation as possible.
 - i. Cover exposed roots with burlap and water regularly.
 - ii. Temporarily support and protect roots from damage until they are permanently redirected and covered with soil.
 - iii. Coat cut faces of roots more than 1-1/2 inches in diameter with an emulsified asphalt or other approved coating formulated for use on damaged plant tissues.
 - iv. Backfill with soil as soon as possible.
- D. Repair or replace trees and vegetation indicated to remain that are damaged by construction operations, in a manner approved by the Owner.
 - i. Employ an arborist, licensed in jurisdiction where Project is located, to submit details of proposed repairs and to repair damage to trees and shrubs.
 - ii. Replace trees that cannot be repaired and restored to full-growth status, as determined by DESIGN TEAM.

4. UTILITIES

- A. Existing Utilities: Do not interrupt utilities serving facilities occupied by Owner or others unless permitted under the following conditions and then only after arranging to provide temporary utility services according to requirements indicated:
 - i. Notify Owner not less than two days in advance of proposed utility interruptions.
 - ii. Do not proceed with utility interruptions without Owner's written permission.
- B. Excavate for and remove underground utilities indicated to be removed.

5. CLEARING AND GRUBBING

- A. Remove obstructions, trees, shrubs, grass, and other vegetation within the limits of grading indicated.
 - i. Do not remove trees, shrubs, and other vegetation indicated to remain or to be relocated.
 - ii. Cut minor roots and branches of trees indicated to remain in a clean and careful manner where such roots and branches obstruct installation of new construction.
 - iii. Grind stumps and remove roots, obstructions, and debris extending to a depth of 18 inches below exposed subgrade.
 - iv. Use only hand methods for grubbing within tree protection zone.
- B. Remove existing riprap and dirt stockpiles indicated on the drawings.

C. Fill depressions caused by clearing and grubbing operations with satisfactory soil material unless further excavation or earthwork is indicated, or as otherwise directed by the Owner.

i. Place fill material in horizontal layers not exceeding a loose depth of 8 inches loose thickness, and compact each layer to a density equal to adjacent original ground, or as directed by the Owner.

6. SITE IMPROVEMENTS

A. Remove existing above- and below-grade improvements as indicated and as necessary to facilitate new construction.

7. DISPOSAL

A. Disposal: Remove surplus soil material, stockpiled materials unsuitable topsoil, obstructions, cleared and grubbed materials, and waste materials including trash and debris, and legally dispose of them off Owner's property.

END OF SECTION

SECTION 02200 - EARTHWORK AND GRADING

I. GENERAL

The provisions of Standard Specifications for Public Works Construction, latest adopted edition, Sections 300 and 301, apply except as modified herein.

A. Scope of Work:

Rough grading as shown on the plans, including overexcavation, imported fill, placement and compaction.
Finish grading of the site.
Excavation and backfill for all footings, structures, walls, etc. and compaction.
Stockpiling and placing topsoil.
Soil compaction as required.
Soil testing as required.
Protective measures.
Dust and noise abatement.
Engineered fill under structures.
Obtaining construction water.

B. Related Work Specified Elsewhere:

Removal and Demolition Work: Section 02100.
Trenching, excavation and backfill for any Mechanical, Plumbing, Drainage, or Electrical (pertinent utility sections).
Surveying (Special Conditions)
Landscape Planting: Section 02900.

C. Testing:

No soil testing is required for this project.

D. Water:

Contractor shall make arrangements with the City of Fullerton Water Engineering Department, to obtain construction water.

II. EXECUTION

D. Balanced Cut and Fill:

It is the design intent of this project to accomplish all grading without the import or export of soils except as specified. Plans have been prepared to reflect a balanced cut and fill operation as close as feasible.

Designing for an exact balance is neither possible, or practical. Variances in degrees of compaction, backfill requirements and volumes of import base materials cannot be precisely forecast without prior knowledge of construction methods or unforeseen site conditions. However, native landscape materials usually reflect some deviation from actual elevations.

Recognizing these limitations, the plans identify those areas that have critical grade requirements, i.e., walk gradients, building pads, drainage swales and game courts or parking lot drainage patterns. Where possible and practical the contouring and/or gradients within these balance areas should simulate the form depicted in the grading plans yet conform with the functional requirements of the planned facility. Appearance and functional capability will be the governing factors.

The Contractor shall immediately notify the Agency Representative of any apparent excess or deficiency of material required to achieve the intent of the plans and specifications and submit a proposed method of borrow or disposal as necessary. The Agency Representative and the Landscape DESIGN TEAM shall review and approve the Contractor's proposed method prior to any grading action by the Contractor.

E. Topsoil:

The best on-site topsoil throughout the project area shall be removed to a depth of six inches from all construction areas. The stripped material shall be stockpiled in such locations as may be available at or near projected grades and protected from erosion. Topsoil shall be the best on-site soil with all rocks one inch (1") and larger removed.

Topsoil shall be a minimum of six inches (6") depth in all turf areas, unless otherwise specified.

No topsoil placement is required on non-turf slopes or planting areas unless noted otherwise.

Should the Contractor choose to import topsoil from off-site (Class A topsoil), as an alternative to that specified, all import of material and export of excess soil created by importing top soil shall be accomplished at no additional cost to the City.

F. Topsoil Placement:

Areas to receive topsoil shall be ripped twelve inches (12") deep and surface rock one inch (1") and larger removed before placing topsoil.

G. Rough Grading:

The site shall be graded to the limit lines and elevations shown on the drawings with such allowances as may be required for the construction of walks, and other intended site improvements. Tolerance for rough grading is 1/10th of a foot, plus or minus, at building pads and paved areas. At all other areas, functional use and appearance shall be the governing factors as determined by the DESIGN TEAM.

H. Unsuitable Materials:

Unsuitable soils, large rocks or boulders, broken concrete/asphalt and other deleterious material shall not be buried on site. This removal shall be considered Unclassified Excavation and payment will be processed in accordance with the Green Book.

I. Fill:

Fill shall be placed in level layers not to exceed six inches in depth and mechanically compacted using optimum amount of moisture to achieve a 95% minimum degree of compaction.

J. Excavation:

The Contractor shall make all necessary excavation for footings and slabs and do any additional excavation necessary to provide ample room for installation of concrete forms where required.

Footings may be poured in trenches against undisturbed soil where approved by Soils Engineer.

Bottom of excavations shall be level, free from loose material and brought to the indicated or required levels in undisturbed earth. All excavations shall be kept free from standing water. The Contractor shall do all pumping or draining that may be necessary in carrying on the work.

Should excavations for footings, through error, be excavated to a greater depth than indicated or required, such additional depth shall be filled with concrete, as specified for footings, at the Contractor's expense. Excavations that have been dug wider than required, shall be formed to conform with plans and specifications. Filling with concrete can only be accepted with the approval of the Agency Representative.

K. Finish Grading:

Finish grades shall slope to drain without water pockets or irregularities and shall conform to the intent of all plans and sections - after thorough settlement and compaction of the soil. Finish grades shall meet all existing or established controls of sidewalks, curbs and walls and shall be of uniform slope and grade between points of fixed elevations or elevation controls and from such points to established grades. Tolerance for finish grading is 1/10 foot, plus or minus, adjacent to fixed elevations or gradients. At all other areas, functional use and appearance shall be the governing factor.

L. Backfilling:

After the foundations and walls have been placed, forms removed, and concrete or masonry work approved, the excavation shall be backfilled with earth to the required grade.

Select site material shall be used for backfill and shall be free from large stones and clods. Material shall be approved by the Soils Engineer.

Backfill shall be deposited in layers of 6" thickness.

Layers of backfill shall be moistened with water, the amount to be rigidly controlled to insure optimum moisture conditions for the type of fill material used. Excess water causing saturated earth beneath footings will not be permitted.

Backfill shall be compacted by suitable means to 95% density.

All trenches for other work shall be backfilled in accordance with this section, and may be tested at the discretion of the Soils Engineer.

M. Protective Measures:

All excavations shall be protected and guarded against danger of life, limb and property.

Existing improvements and trees within contract limits or areas of activity shall be properly protected.

N. Dust and Noise Abatement:

During the entire period of construction, site areas shall be kept sprinkled.

III. QUALITY CONTROL

A. Survey:

See "Surveying" amendment to Special Provision, Section 2-9 Surveying.

B. Conflicts:

In the event of conflict between the requirements of this Specification Section, the Standard Specifications, and the Soil and Foundation Investigation Report, the document highest in precedence shall control. The precedence shall be:

1. Geotechnical Engineering Report.
2. Specification Section 02200.
3. Standard Specifications for Public Works Construction (SSPWC).

C. Trenching:

Trenching for site electrical, water service and irrigation mains and laterals shall not commence until rough grading for the entire site has been substantially completed and confirmed with Agency Representative (also see pertinent utility sections).

END OF SECTION

SECTION 02660 - DOMESTIC WATER SERVICE AND SANITARY SEWER

I. GENERAL

The provisions of the Standard Specifications for Public Works Construction (Green book), latest adopted edition, apply except as modified herein.

A. Scope:

Install all site sanitary sewer pipe and domestic water pipe as shown on the site utility plan (sheet P-1.0) and the plumbing plans. Scope of work includes the removal of existing water and sewer pipe and appurtenances that occur where new utilities are to be installed and the abandonment and backfill of existing utility lines outside of the area of work per City and industry standards.

B. Related Documents:

Section 15400: Plumbing

II. MATERIALS AND INSTALLATION

A. Sanitary Sewer Pipe:

Sanitary sewer pipe shall conform to Section 207-8 of the Standard Specifications, and per City of Perris standards.

B. Water Supply Lines:

Install in accordance with the drawings, and Section 306 of the Standard Specifications for Public Works Construction, and per City of Perris standards.

III. DEMOLITION OF EXISTING UTILITIES

Existing sewer and/or water lines and appurtenances located within the construction trenches of the proposed new sewer and water lines are to be removed. Existing water and sewer lines outside of the construction trenches are to be abandoned. Cut and crimp water lines to be abandoned. Backfill abandoned sewers with 2 sack sand slurry.

The contractor shall reconnect any existing connections, laterals, etc. that may service other locations/devices on site to the new sewer and water lines. The contractor shall provide all materials, labor, and equipment as required to complete the work.

END OF SECTION

SECTION 02720 - DRAINAGE

I. GENERAL

A. Reference Document:

The provisions of the Standard Specifications for Public Works Construction, latest adopted edition, apply except as modified herein.

B. Scope:

Furnish and install drain line system as shown on the drawings, including material, labor, equipment and services required for construction of a complete system including, but not limited to, the following:

Protective measures.

Drain lines.

Inlet and outlet storm water curb openings.

II. MATERIALS

A. Storm Drain Piping:

Shall be reinforced concrete pipe conforming to Section 207-2 of the Standard Specifications.

B. Corrugated Metal Pipe:

Shall be corrugated steel pipe, galvanized, conforming to Section 207-11.2 of the Standard Specifications.

C. PVC Plastic Storm Drain Pipe:

Shall be unplasticized PVC plastic pipe conforming to Section 207-17 of the Standard Specifications.

D. Perforated Drain Pipe:

Shall be ABS type, installed as detailed and all as per local code requirements.

E. Concrete:

As per Section 201.

F. Catch Basins:

Manufactured by Brooks as noted on drawings, or approved equivalent. Covers shall have steel frames embedded in concrete box. Grates shall be of galvanized steel unless noted otherwise meeting H20-44 loading standards. Grates shall be approved for bicycle use.

G. Drainage Fabric:

Drainage fabric shall be 100% polypropylene fibers which are mechanically interlocked by needle punching and heat bonding. Drainage Fabric #4545 or equal. Available through Amoco Construction Fabric (1-800-437-6600).

III. INSTALLATION

Pipe shall be installed as per Section 306 of the Standard Specifications except as modified herein.

Concrete construction shall conform to Section 303.

Maximum length of open trench as per Section 306-1.1.2.

END OF SECTION

SECTION 031000

CONCRETE FORMWORK

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes:
1. Forms for cast-in-place concrete.
 2. Shoring, bracing, accessories and form coating.
- B. Work installed but furnished in other Sections:
1. Inserts, bolts, anchors and other items furnished by other trades for installation in formed concrete.
- C. Related work:
1. Division 3 for concrete
 2. Division 3 for forms for precast structural or DESIGN TEAMural concrete.
 3. Division 4 for false work and shoring of masonry.
- D. References
1. ACI 117, specifications for tolerances for construction and concrete materials.
 2. ACI 347, Guide to Formwork for Concrete.
 3. APA Design/Construction Guide, Concrete Forming.

1.2 SYSTEM DESCRIPTION

- A. Design requirements:
1. ENGINEER, fabricate, assemble and install concrete formwork to meet or exceed the criteria indicated and specified, to conform to the profiles indicated and to other requirements of the Contract Documents, to satisfy the requirements of the authorities having jurisdiction, and to provide a watertight, structurally sound, self-draining assembly.
 2. If required by the authorities having jurisdiction, prepare and submit reviewed shop drawings, specifications, calculations and any other supporting data required for review and approval, and pay fees incurred, prior to beginning installation.
 3. ENGINEERING calculations for these assemblies shall bear the signature and seal of a California-licensed professional ENGINEER.

1.3 SUBMITTALS

- A. Submit manufacturer's product data, specifications, typical installation details and other data as necessary to demonstrate compliance with the specified requirements for form facing materials, including coatings, release agents, ties, joint sealant or tape, and accessories.
- B. Shop drawings: For concrete permanently exposed to view, submit large scale, dimensioned drawings showing materials, profiles, joints, finishes, methods of fabrication and anchorage details.
 - 1. Provide elevation drawings of each concrete plane to be remain exposed.
 - a. Show tie placement, panel layout, construction joint and other pertinent details.
 - b. Show locations of openings and control joints.
 - 2. Coordinate shop drawings with the work of other trades that are part of, or will be incorporated into, the work of this section. Indicate work to be performed by other trades, including adjacent and abutting materials to which this work is to be secured.
 - 3. Drawings shall be complete for each specific area of Project when submitted.
 - 4. Shoring and re-shoring: Indicate proposed schedule and sequence of stripping formwork, shoring removal, and re-shoring installation and removal.
- C. Samples: Submit full-size samples of proposed ties and plugs for concrete permanently exposed to view.
- D. Records. Keep an accurate record of the dates of all form removal and furnish copies to the DESIGN TEAM.

1.4 QUALITY ASSURANCE

- A. Grading: Provide lumber and plywood grade-marked by a grading agency acceptable to the authorities having jurisdiction.
- B. Qualifications:
 - 1. Professional ENGINEER qualifications: California licensed professional ENGINEER and experienced in providing ENGINEERING services of the kind required.
 - 2. Installer's qualifications: Firm and individuals with a minimum of 3 consecutive years experience in the fabrication and erection of concrete formwork on projects similar in material, design, complexity and extent to this Project, and whose work has resulted in applications with a record of successful in-service performance.
- C. Mockup: As specified in Section 033000.

1.5 HANDLING

- A. Store materials outdoors, off the ground on pallets, protected with breathing type covers.
- B. Handling: Handle form facing materials to prevent damages that could be transferred to finished concrete work.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Forms for exposed concrete surfaces - general: Plywood, metal, metal-framed/plywood-faced, or FRP which will provide continuous, flat or curved as applicable, smooth exposed concrete surfaces. Furnish in largest practicable sizes to minimize number of joints and to conform to joint system shown on Drawings, where indicated.
 - 1. Type:
 - a. For smooth concrete to remain exposed without further treatment: Smooth-Formed Finished Concrete: Form-facing panels that will provide continuous, true, and smooth concrete surfaces. Furnish in largest practicable sizes to minimize number of joints.
 - 1) Plywood, metal, or other approved panel materials.
 - 2) Exterior-grade plywood panels, suitable for concrete forms, complying with DOC PS 1, and as follows:
 - 3) High-density overlay, Class 1 or better.
 - 4) Medium-density overlay, Class 1 or better; mill-release agent treated and edge sealed.
 - 5) Structural 1, B-B (Concrete Form), Class 1 or better; mill oiled and edge sealed.
 - b. For concrete surfaces to be sacked and rubbed: DOC PS-1 "B-B (Concrete Form) Plyform," Class I, Exterior Grade or better, mill-oiled and edge-sealed, with each piece bearing legible inspection trademark.
 - c. Elsewhere where concrete will remain exposed, with or without a mechanical finish: Overlaid plywood complying with DOC PS-1 "A-C or B-B High Density Overlaid Concrete Form," Class I, Exterior Grade or better, mill-oiled and edge-sealed, with each piece bearing legible inspection trademark.
 - B. Forms for concealed concrete surfaces: Plywood, lumber, metal, or other acceptable material. Provide lumber dressed on at least 2 edges and one side for tight fit.
 - C. Forms for cylindrical columns and supports:
 - 1. Metal, fiberglass-reinforced plastic, or paper or fiber tubes.

2. Provide paper or fiber tubes of laminated piles with water-resistant adhesive and wax-impregnated exterior for weather and moisture protection.
 3. Provide units with sufficient wall thickness to resist wet concrete loads without deformation.
 4. Unless otherwise indicated, provide forms or form liners that will leave type leaving no marks in concrete after de-forming, Sonotube "Finish Free" by Sonoco, "Commercial" by Sonoco, Spiral Paper Tube and Core or equal, one piece length for full height. Provide one piece plastic liner for exposed tube formed columns.]
- D. Form ties and spreaders:
1. Factory-fabricated, removable or snap-off metal or glass-fiber-reinforced plastic form ties with plastic cones to provide a minimum 1 in. breakback, designed to resist lateral pressure of fresh concrete on forms and to prevent spalling of concrete on removal.
 2. Furnish units that will leave no corrodible metal closer than 1 in. to the plane of exposed concrete surface.
 3. Furnish ties that, when removed, will leave holes no larger than 1 in. in diameter in concrete surface.
 4. Furnish ties with integral water-barrier plates to walls indicated to receiving damp-proofing or waterproofing.
 5. For concrete to remain exposed to view use "A-3 Standard Snap Tie" with A-2 Plastic Cones by Dayton Superior, "ST-1" Series Snap Ties by Meadow Burke, or equal.
 6. Do not use wire ties, wood spreaders, or embedded types in which embedded portion is less than 1-1/2-inch from exterior face of concrete.
- E. Foam filler: ASTM C 578, Type IV, 1.8-lb/cu. feet density.
- F. Chamfer strips: Extruded PVC, with a 3/4-inch diagonal faces unless otherwise indicated, by Greensteak Group, Inc., Barker Steel LLC, or equal, or oiled softwood shapes with the same profile.
- G. Form coatings: Commercial formulation form-coating compounds that will not bond with, stain, or adversely affect concrete surfaces and will not impair subsequent treatments of concrete surfaces; one of the following, or equal; do not use form oil.
1. Formshield WB by the Euclid Chemical Co.
 2. Clean Strip J-1-A by Dayton Superior Construction Chemicals.
 3. J-3 Light by Dayton Superior Construction Chemicals.
 4. Magic Kote VOC by Dayton Superior Construction Chemicals.
 5. Durogard Plus by WR Meadows.
 6. Debond by L & M Construction Chemicals Inc.
- H. Prefabricated construction joint keyways: Key-Loc by Form-A-Key Products Div. of Cardinal Manufacturing Co., BoMetals Inc., or equal, complete with all accessories.

- I. Form voids: One of the following types.
 1. Corrugated fiberboard by SureVoid Products, Inc., or Deslauriers, Inc. or equal.
 2. Expanded polystyrene foam blocks complying with ASTM D 6817, with a minimum compressive strength of 15 psi, Thermal Star X-Grade by Atlas EPS, Geofoam by AMF Corp. or equal.
 - a. Provide in accordance with the manufacturer's standard specifications with related and required manufacturer's hardware and adhesives

2.2 FORMWORK REQUIREMENTS

- A. General:
 1. The design and construction of forms and shoring are the contractor's responsibility, but shall comply with specified requirements.
 2. Form contact surfaces shall be clean, free from dents, holes and other imperfections.
 3. Establish and maintain benchmarks, lines and controls necessary to achieve specified tolerances.
 4. Take an accurate survey of the form location just prior to concrete pour.
- B. Earth bank:
 1. Except for exterior face of wall footings and grade beams that must be formed, earth banks may be used to form footings and grade beams if the soil is firm, neatly trimmed, and will retain concrete in the required size and shape.
 2. Increase the concrete coverage as required by the authorities having jurisdiction when concrete is cast against earth.
- C. Wood forms:
 1. Construct with plywood panels as large as practicable where, because of their height, walls and columns have a horizontal form joint, the horizontal joint shall align throughout the floor, or area unless accepted otherwise by DESIGN TEAM.
 2. For concrete permanently exposed to view, fill voids and imperfections in form contact surfaces with body putty sanded flush and smooth and seal joints between panels with compound paste specifically designed to seal forms, or other approved material, to prevent concrete leakage.
 3. Provide sharp, clean corners at form intersecting planes, without visible edges and offsets. Back joints with additional studs or girts.
 4. Form recesses and projections with smooth finish materials, and install in forms with sealed joints to prevent displacement.
 5. Drill holes accurately in forms to fit ties used. Prevent leakage of concrete around tie holes. Do not drive ties through undersized or improperly prepared holes.
 6. Kerf backside of wood inserts used for forming keyways, reglets, recesses and similar treatments, to allow wood to swell without spalling concrete, and to assure easy removal.

- D. Metal forms:
 - 1. Provide sections of metal forms that fasten tightly and interlock securely.
 - 2. Cut or drill forms for attaching sleeves or other items to be embedded in concrete.
 - 3. Provide precisely cut openings required by trades.
- E. Re-use of forms:
 - 1. Form materials may be re-used if they produce finished surfaces equal to finished surfaces where new form materials are used.
 - 2. Before reuse, thoroughly clean, recondition in every respect, suitable for their re-use purpose.
- F. Tolerances: To obtain cast-in-place concrete not exceeding the tolerances specified in Section 033000, except support form facing material to limit deflection to L/360 between supports for concrete exposed to view, and L/270 for all other concrete.
- G. High density insulation filler:
 - 1. Use boards of maximum thickness to achieve insulation depth.
 - 2. Where required, apply adhesive to layers of insulation to prevent movement during concrete placement.
 - 3. After boards are installed, protect until concrete topping is prepared and placed.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine conditions and measurements affecting the work of this Section at site.
- B. Correct detrimental conditions to the proper and timely completion of this work before proceeding with installation.

3.2 FORMWORK INSTALLATION

- A. Construction:
 - 1. Comply with the applicable provisions of ACI 347, Guide to Formwork for Concrete, and APA Design/Construction Guide "Concrete Forming."
 - 2. Rigidly support and construct forms to the lines, surfaces and profiles necessary to produce concrete to the design indicated.
 - 3. Construct forms to be removable without prying against concrete.
 - 4. Make forms tight, without cracks or holes, to prevent leakage of mortar or loss of fine particles from concrete.
 - 5. Cover or fill holes that are not used, and cracks that have opened up, flush with adjacent surfaces.

- B. Wales and studs:** Provide wales and studs of adequate size and spacing to prevent form failure and to obtain concrete within the tolerances specified.
- C. Ties and spreaders:** Place ties as indicated on approved shop drawings, spaced and aligned as indicated, in plumb columns and level rows. Do not permit wood, other than built-in treated bucks or nailing blocks, to permanently remain in forms.
- D. Form contact surfaces:** As specified above, except that the plywood form facing material specified must be used for concrete permanently exposed to view. Forms for all other concrete may be constructed of plywood, fiberglass, plastic, or steel.
1. To eliminate joint offsets, block plywood edges that do not occur at bearing points.
 2. Do not expose plywood edges to concrete.
- E. Special features:**
1. Corners: Form exposed corners between beams and columns to produce a square, smooth, solid joint without paste leakage.
 - a. Except where chamfers are indicated, miter or cope corners accurately and attach securely to the form facing material with adhesive or nails driven flush with the item being fastened. Avoid hammer marks. Provide sharp, clean corners, without visible edges or offsets at intersecting planes. Back joints with extra studs or girts to maintain square intersections.
 - b. Install chamfer strips in corners of all other forms, unless otherwise indicated. Miter chamfer strip at changes in direction.
 - c. Corners that will be concealed in the Work may be formed either square or chamfered.
 2. Concrete details: Form offsets, keys, reglets, seats, pockets, anchorages, moldings, chamfers, blocking, screeds, drips, bulkheads and other required features as indicated or as necessary to receive or engage the work of other trades.
 3. Openings, chases and recesses: Form as indicated or necessary to receive, pass and clear other work.
 - a. Verify sizes and locations with other trades before forming. Closely coordinate the location of boxes, cans and sleeves furnished by other trades.
 - b. Seal edges of cutouts and holes in plywood.
- F. Form release agent:** Thoroughly clean forms and coat with release agent prior to initial use (except when mill-oiled) and before each reuse.
1. Apply form coating before reinforcement and embeds are placed.

2. Apply form coating in accordance with its manufacturer's instructions and coverage rates. Do not over-apply.
 3. Provide a coating of uniform thickness. Do not allow excess form coating material to accumulate in forms or to come into contact with in-place concrete against which fresh concrete will be placed.
 4. Coat steel forms with a non-staining rust preventive material. Rust-stained steel formwork is not acceptable.
- G. Tolerances: Limit concrete surface irregularities, designated by ACI 347R as abrupt or gradual, as follows.
1. Class A, 1/8-inch
 2. Class B, 1/4-inch
 3. Class C, 1/2-inch
 4. Class D, 1-inch

3.3 FORMWORK REMOVAL

- A. Remove forms after concrete has developed sufficient strength to not be damaged by form removal operation and to safely sustain its own weight and superimposed loads, as determined by testing field-cured concrete cylinders, but not sooner than specified in ACI 347, Paragraph 3.6.2.3 and no less than 12 hours per CBC 1906A.2.
- B. Take care when removing forms that concrete surfaces are not marred or gouged, that corners are true, sharp and unbroken. Do not pry against concrete when removing forms.
- C. Cut off nails flush on concealed surfaces. Cutback tie wires and nails in exposed concrete surfaces at least 1-1/2-inches. Remove rod and cone ties and separators or similar devices and pull inward away from finished surfaces.
- D. Where used, remove rod and cone ties and separators or similar devices and pull.

3.4 REUSING FORMS

- A. Clean and repair surfaces of forms to be reused in the Work. Split, frayed, delaminated, or otherwise damaged form-facing material will not be acceptable for exposed surfaces. Apply new form-release agent.
- B. When forms are reused, clean surfaces, remove fins and laitance, and tighten to close joints. Align and secure joints to avoid offsets. Do not use patched forms for exposed concrete surfaces unless approved by DESIGN TEAM.

3.5 SHORES AND RESHORES

- A. Contractor shall ENGINEER shoring to comply with ACI 318 and ACI 301 for design, installation, and removal of shoring and reshoring.
1. Do not remove shoring or reshoring until measurement of slab tolerances is complete.
 2. In multistory construction, extend shoring or reshoring over a sufficient number of stories to distribute loads in such a manner that no floor or member will be excessively loaded or will induce tensile stress in concrete members without sufficient steel reinforcement.
 3. Plan sequence of removal of shores and reshore to avoid damage to concrete. Locate and provide adequate reshoring to support construction without excessive stress or deflection.

END OF SECTION

SECTION 032000

CONCRETE REINFORCING

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes:

1. Reinforcing steel for cast-in-place concrete.
2. Supplementary parts and components, such as clips, fasteners, chairs, tie wires, and other miscellaneous accessories required for a complete installation.

B. Related work:

1. Division 4 for reinforcing steel for masonry.

C. Codes:

1. City of Perris City Building Code 2014, Section 1906
2. Standard Specifications for Public Works Construction 2012 Edition

D. Standards

1. ACI-301 - Specifications for Structural Concrete for Buildings.
2. ACI-315 - Details and Detailing of Concrete Reinforcement.
3. ACI-318 - Building Code Requirements for Reinforced Concrete.
4. ASTM A82 - 16-gage Cold Drawn Steel Wire for Concrete Reinforcement.
5. ASTM A185 - Welded Steel Wire Fabric for Concrete Reinforcement, sizes as noted on the Contract Drawings.
6. ASTM A497 - Welded Deformed Steel Wire Fabric for Concrete Reinforcement.
7. ASTM A615 - Deformed and plain Billet-Steel Bars for Concrete Reinforcement grades as called for on the Contract Drawings.
8. ASTM A706 - Low-Alloy Steel deformed bars for Concrete Reinforcement.
9. AWS.D1.4 - Structural Welding Code Reinforcing Steel.
10. CRSI - Manual of Practice.
11. CRSI-93 - Recommended Practice for Placing Reinforcing Bars.

1.2 CRSI-92 - Recommended Practice for Placing Bar Supports, Specifications and Nomenclature.SUBMITTALS

A. Shop drawings:

1. Submit shop drawings prepared by a California-registered licensed professional Structural or Civil ENGINEER showing fabrication, bending, and placement of concrete reinforcing.
2. Submit bar drawings and schedules with the corresponding placing diagrams.
 - a. Comply with ACI SP-66.
 - b. Indicate bar schedules, stirrup spacing, diagrams of bent bars, and arrangement of concrete reinforcing.

- c. Include special reinforcing required for openings through concrete structures.
 - 3. Drawings shall be complete for any specific area of Project when submitted.
- B. Certificates: Submit copies of mill reports and test data for reinforcing steel sampled prior to starting this work.
 - 1. Mill reports shall contain the steel source, description, heat number, yield point, ultimate tensile strength, elongation percentage, bend test and chemical analysis.
 - a. If the reports show material is satisfactory no tests will be required.
 - b. For foreign steel, perform testing as specified below by a testing laboratory acceptable to the authorities having jurisdiction.
 - c. Certification from any other sources is not acceptable.
 - 2. Ensure material delivered for use is that represented by mill reports.
 - 3. Obtain copies of mill reports, examine them, certify whether the material represented complies with Specifications requirements, and make distribution of reports as required. Report chemical composition of each heat, as determined by ladle analysis.
- C. LEED Submittals:
 - 1. Product Data for Credit MR 4: For products having recycled content, documentation indicating percentages by weight of postconsumer and preconsumer recycled content. Include statement indicating cost for each product having recycled content.
- D. Test reports: Submit test data for reinforcing steel sampled and tested prior to starting this work.
 - 1. Where materials proposed for use cannot be identified, pay for an approved testing laboratory to make one series of tests (tensile and bend) from each 2.5 tons, or fraction thereof, of each size and kind of reinforcing steel.
 - 2. Include minimum 2 samples of sufficient length to allow tests to be made on the as-rolled bar.
- E. Welding qualifications: Qualify procedures and personnel according to AWS D1.4, Structural Welding Code - Reinforcing Steel.

1.3 HANDLING

- A. Delivery:
 - 1. Deliver reinforcing to the site bundled, tagged and marked; handle to prevent damage to material.
 - 2. Use metal tags indicating size, length and other markings shown on placement drawings. Maintain tags after bundles are broken.
- B. Storage:
 - 1. Electrode storage: Comply with the combined recommendations of AWS and the electrode manufacturer for storage of electrodes. Do not use electrodes that have been wetted.
 - 2. Store epoxy-coated bars on protective cribbing. Maintain tags after bundles are broken.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Reinforcing steel: ASTM A 615, Grade indicated on Drawings and for reinforcing to be welded use bars complying with ASTM A 706, Grade 60.
1. Where galvanized bars are indicated, bars shall also comply with ASTM A 767, Class II (2 oz./sq. ft.) and shall be galvanized after fabrication.
 2. Where epoxy-coated bars are indicated, bars shall also comply with ASTM A 775.
- B. Welded wire mesh: ASTM A 185. Provide in flat sheets, not rolls.
- C. Column spirals: Plain, cold-drawn wire, ASTM A 82 or hot-rolled rods for spirals, ASTM A 615, including supplementary requirements S-1.
- D. Synthetic fiber: Basis of design is for "Fibrasol F" fibrillated polypropylene fibers, complying with ASTM C 1116, Type III, 1/2 to 1-inch lengths, by Axim Concrete Technologies. Other acceptable materials/manufacturers include the following:
1. "Fibermesh InForce e3" by SI Concrete Systems.
 2. "Fiberstrand 100" by The Euclid Chemical Co.
 3. "Grace MicroFiber" by W. R. Grace & Co.
- E. Welding electrodes: AWS A5.1 E70XX Series, low hydrogen, having a minimum yield point of 60,000 psi.
- F. Tie wire:
1. ASTM A 82, 16-gage (minimum) annealed steel wire.
 2. Use tie wires complying with ASTM A 884 for tying epoxy-coated bars.
- G. Supports for reinforcing: Provide bolsters, chairs, spacers, and other devices for spacing, supporting, and fastening reinforcing bars and welded wire mesh in place. Use wire-bar-type supports complying with Concrete Reinforcing Steel Institute (CRSI) specifications.
1. Slabs-on-grade: Provide supports with sand plates or horizontal runners where base material will not support chair legs, or precast concrete block chairs with embedded wire ties.
 2. Exposed concrete surfaces: Where legs of supports are in contact with forms, provide supports with legs that are plastic protected (CRSI, Class 1) or stainless steel protected (CRSI, Class 2).
 3. Over waterproof membranes and vapor retarder: Provide precast concrete chairs to prevent puncturing of membrane.
- H. Recycled content of steel products: Postconsumer recycled content plus one-half of preconsumer recycled content not less than 25 percent.
- I. Splice sleeves: Conforming to ICC Report ES ER-3967.
1. Acceptable manufacturers:
 - a. Erico, Inc.: Lenton Coupler.

- b. Splice Sleeve North America; NMB Splice Sleeve.
 - c. Richmond Screw Anchor Co.; Rebar Splicing System.
 - d. Dywidag Systems International; Extruded Coupler Splice.
2. Description: Steel sleeves conforming to requirements of National Research Board Report No. NRB-217, published by the Council of American Building Officials of Homewood, IL. Identify each splice sleeve by the size and type imprinted on the sleeve.

2.2 FABRICATION

- A. General: Except as modified by the Contract Documents, comply with Chapter 7 of CRSI Manual of Standard Practice for fabrication of reinforcing steel except that supports of epoxy-coated bars shall rest on coated wire bar supports, or on bar supports made of dielectric material.
- B. Bending and forming:
 - 1. Fabricate steel bars, wire and welded wire mesh to sizes, lengths and gages indicated.
 - 2. Accurately form to shapes by methods that will not damage the materials or the coating on epoxy-coated bars
 - 3. Heating of reinforcing for bending is not permitted.
- C. Tolerances: Comply with ACI 117.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine conditions and measurements affecting the work of this Section at site.
- B. Correct conditions detrimental to the proper and timely completion of this work before proceeding with installation.

3.2 PREPARATION

- A. Clean reinforcing of loose mill scale, excessive rust, oil, and other coating that might destroy or reduce its bond before placing it.

3.3 PLACING

- A. Place reinforcing under the continuous inspection of the onsite Deputy Inspector.
- B. Placing: Comply with the listed reference standards as applicable. Do not install bars with unscheduled kinks or bends.
- C. Spacing of reinforcing: Space reinforcing to maintain proper distance and clearance between parallel bars and between bars and forms.
- D. Floor system reinforcing: Do not place until concrete in walls and columns has been placed and forms and projecting steel have been thoroughly cleaned.

- E. Splices:
1. Do not splice reinforcing bars except where indicated.
 2. At lapped splices, bars shall be in contact, unless noted otherwise on the Drawings, and shall be firmly wired together before placing concrete.
 3. Extend stubs and dowels required to receive and engage subsequent work a sufficient length to develop the strength of the bar.
 4. Place dowel and stub bars in the forms and secure against displacement during placing of concrete.
- F. Welded wire mesh reinforcing:
1. Straighten and cut to required size where required and lay flat in place.
 - a. Lap welded wire mesh one full mesh plus 2 inches.
 - b. Securely wire together and to other reinforcing at approximately 24 inches o.c.
 2. In concrete slabs-on-grade, extend welded wire mesh to within one inch of expansion, construction and contraction joints. As concrete is placed, chair welded wire mesh to ensure proper embedment at position indicated.
 3. In concrete slabs on steel deck, extend welded wire mesh through construction joints 12 inches minimum. Lift welded wire mesh as concrete is placed to ensure proper embedment at position indicated.
- G. Clearance: Maintain clear distances between reinforced steel and face of concrete indicated on the Drawings.
- H. Sleeved splices: install spliced sleeves only where indicated in accordance with manufacturer's instructions.

3.4 WELDING

- A. Welding:
1. Use only ASTM 706 steel where welding is proposed. Perform welding, where shown or approved, by the direct electric arc process in accordance with AWS D1.4 using specified low-hydrogen electrodes.
 2. Preheat 6 in. each side of joint. Protect joints from drafts during the cooling process; accelerated cooling is prohibited.
 3. Do not tack weld bars.
 4. Clean metal surfaces to be welded of all scale and foreign material. Clean welds each time electrode is changed and chip burned edges before placing welds. When wire brushed, the completed welds must exhibit uniform section, smooth welded metal, feather edges without undercuts or overlays, freedom from porosity and clinkers, and good fusion and penetration into the base metal.
 5. Cut out welds or parts of welds found defective with chisel and replace with proper welding.
 6. Prequalification of welds shall be in accordance with Code.
- B. Welded splices: Use full penetration butt welds made by the electric-arc method unless indicated otherwise.

1. Use only welders who have passed the AWS standard qualification tests within the previous year and have an active City of Perris City Department of Building and Safety Certification.
 2. Weld splices shall develop 125 percent of the specified yield strength of the reinforcing bars, or of the smaller bar in transition splices.
 3. Clean bars of oil, grease, dirt and other foreign substances, and flame-dry before welding.
 4. Prepare ends of bars in compliance with AWS D1.4.
 5. Preheat bars before welding.
- C. Welding Inspection. All welding must be continuously inspected by a City of Perris City Department of Building and Safety Certified Inspector. Where welding is done in excess of the maximum permitted by ASTM A 775, clean the damaged area and touchup with repair material complying with ASTM A 775.

END OF SECTION

SECTION 033000

CAST-IN-PLACE CONCRETE

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes cast-in-place concrete, including formwork, reinforcement, concrete materials, mixture design, placement procedures, and finishes.
- B. Related Requirements:
 - 1. Section 033300 "DESIGN TEAMural Concrete" for general building applications of specially finished formed concrete.
 - 2. Section 035300 "Concrete Topping" for emery- and iron-aggregate concrete floor toppings.
 - 3. Section 312000 "Earth Moving" for drainage fill under slabs-on-grade.
 - 4. Section 321313 "Concrete Paving" for concrete pavement and walks.
 - 5. Section 321316 "Decorative Concrete Paving" for decorative concrete pavement and walks.
 - 6. Section 031000 Concrete Formwork
 - 7. Section 032000 Concrete Reinforcement
 - 8. Section 042200 Concrete Unit Masonry
 - 9. Section 033450 Concrete Finishing
 - 10. Section 033700 Concrete Curing
- C. Codes and Standards
 - 1. City of Perris City Building Code 2014, Section 1906
 - 2. Standard Specifications for Public Works Construction 2012 Edition
 - 3. ACI 301 - Specifications for Structural Concrete for Buildings.
 - 4. ACI 318 - Building code for reinforced concrete.
 - 5. Concrete reinforcing steel institute "Manual of Standard Practice."
 - 6. Concrete curing should conform to quality as specified in Specifications for Public Works Construction 2012 and latest Amendments thereto.

1.2 DEFINITIONS

- A. Cementitious Materials: Portland cement alone or in combination with one or more of the following: blended hydraulic cement, fly ash, slag cement, other pozzolans, and silica fume; materials subject to compliance with requirements.
- B. W/C Ratio: The ratio by weight of water to cementitious materials.
- C. Exposed Concrete: All concrete that is visible in the finished work, including concrete to be painted
- D. Unexposed Concrete: All concrete that is concealed in the finished work, including plastered surfaces and attic/utility spaces.

1.3 ACTION SUBMITTALS

- A. **Product Data:** Within 30 calendar days after the Contractor has received the City's "Notice to Proceed", submit:
 - 1. **Materials list** of items proposed to be provided under this Section.
 - 2. **Manufacturer's specifications and other data** needed to provide compliance with the specified requirements
- B. **Mix Design:** Submit to the City ENGINEER for review and approval. Distribute approved mix designs to testing laboratory, batch plant ; job-site and Governmental Agency having jurisdiction. Mix design shall be signed by a licensed California Structural or Civil ENGINEER or Inspector and shall include curing method contractor intends to use. Indicate amounts of mixing water to be withheld for later addition at Project site. **Steel Reinforcement Shop Drawings:** Placing Drawings that detail fabrication, bending, and placement. Include bar sizes, lengths, material, grade, bar schedules, stirrup spacing, bent bar diagrams, bar arrangement, splices and laps, mechanical connections, tie spacing, hoop spacing, and supports for concrete reinforcement.
- C. **Construction Joint Layout:** Indicate proposed construction joints required to construct the structure.
 - 1. **Location of construction joints** is subject to approval of the DESIGN TEAM.
- D. **Samples:** For waterstops and vapor retarder.

1.4 INFORMATIONAL SUBMITTALS

- A. **Qualification Data:** For Installer, manufacturer, and testing agency.
- B. **Welding certificates.**
- C. **Material Certificates:** For each of the following, signed by manufacturers:
 - 1. **Cementitious materials.**
 - 2. **Admixtures.**
 - 3. **Form materials and form-release agents.**
 - 4. **Steel reinforcement and accessories.**
 - 5. **Fiber reinforcement.**
 - 6. **Waterstops.**
 - 7. **Curing compounds.**
 - 8. **Floor and slab treatments.**
 - 9. **Bonding agents.**
 - 10. **Adhesives.**
 - 11. **Vapor retarders.**
 - 12. **Semirigid joint filler.**
 - 13. **Joint-filler strips.**
 - 14. **Repair materials.**
- D. **Load Tickets:** In addition to the Contractor's copy, deliver a legible copy of each load ticket from the producer to the inspector. Load ticket shall state quantities of all material in each load and shall be signed by weigh master. The inspector shall record on each copy, the slump and location where placed on the job. Maintain tickets at job-site.
- E. **Material Test Reports:** For the following, from a qualified testing agency:

1. **Aggregates:** Include service record data indicating absence of deleterious expansion of concrete due to alkali aggregate reactivity.
- F. **Formwork Shop Drawings:** Prepared by or under the supervision of a qualified professional ENGINEER, detailing fabrication, assembly, and support of formwork.
1. **Shoring and Reshoring:** Indicate proposed schedule and sequence of stripping formwork, shoring removal, and reshoring installation and removal.
- G. **Floor surface flatness and levelness measurements** indicating compliance with specified tolerances.
- H. **Field quality-control reports.**
- I. **Minutes of preinstallation conference.**

1.5 QUALITY ASSURANCE

- A. **Installer Qualifications:** A qualified installer who employs on Project personnel qualified as ACI-certified Flatwork Technician and Finisher and a supervisor who is an ACI-certified Concrete Flatwork Technician.
- B. **Manufacturer Qualifications:** A firm experienced in manufacturing ready-mixed concrete products and that complies with ASTM C 94/C 94M requirements for production facilities and equipment.
1. **Manufacturer certified according to NRMCA's "Certification of Ready Mixed Concrete Production Facilities."**
- C. **Testing Agency Qualifications:** An independent agency, acceptable to authorities having jurisdiction, qualified according to ASTM C 1077 and ASTM E 329 for testing indicated.
1. **Personnel conducting field tests shall be qualified as ACI Concrete Field Testing Technician, Grade 1, according to ACI CP-1 or an equivalent certification program.**
 2. **Personnel performing laboratory tests shall be ACI-certified Concrete Strength Testing Technician and Concrete Laboratory Testing Technician, Grade I. Testing agency laboratory supervisor shall be an ACI-certified Concrete Laboratory Testing Technician, Grade II.**
- D. **Quality Control:**
1. **Do not commence placement of concrete until mix designs have been reviewed and approved by the Project Manager or Inspector and all governmental agencies having jurisdiction, and until copies are at the job-site, the batch plant, and the Department of Building and Safety**
 2. **Testing stated in Part 3 of this Section shall apply.**
 3. **Mix Design: Submit to the Project Manager or Inspector for review and approval. Distribute approved mix design(s) to Testing Laboratory, Batch Plant, job-site and Governmental Agency having jurisdiction. Mix design shall be signed by a licensed ENGINEER or Inspector and shall include curing method contractor intends to use.**
- E. **Welding Qualifications:** Qualify procedures and personnel according to AWS D1.4/D 1.4M.

- F. **Batch Plant Inspections:** Required for all structural concrete. Inspection shall be by a City's Construction Administration's material control inspector. The inspector shall be present at the beginning of each day of batching and shall perform the following: The contractor shall notify the inspector at least 24 hours in advance of mixing time.
 1. Check plant and equipment quality.
 2. Check identity of materials.
 3. Check aggregate grading, characteristics and water content.
 4. Verify mix designs being used.
 5. Check proportioning and loading of concrete materials
 6. Issue certifications of quality and quantity of materials as batched
 7. After verification of above, return to the job-site for placement inspection.

- G. **Continuous Placement Inspection:** Required for all structural concrete and to be performed by an LADBS certified deputy inspector approved by the Project Manager. The inspector shall perform the following procedures:
 1. Verify condition and adequacy of forms and reinforcement placement.
 2. Insure that concrete is of required quality and consistency.
 3. Insure that all requirements and conditions of concrete placement are met.
 4. Make slump tests and secure cylinders
 5. Provide written reports at regular intervals reporting concrete practices.

- H. **Mockups:** Cast concrete slab-on-grade and formed-surface panels to demonstrate typical joints, surface finish, texture, tolerances, floor treatments, and standard of workmanship.
 1. Build panel approximately 200 sq. ft. for slab-on-grade and 100 sq. ft. for formed surface in the location indicated or, if not indicated, as directed by DESIGN TEAM.
 2. Subject to compliance with requirements, approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

1.6 PRECONSTRUCTION TESTING

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

1.7 DELIVERY, STORAGE, AND HANDLING

- A. **Steel Reinforcement:** Deliver, store, and handle steel reinforcement to prevent bending and damage. Avoid damaging coatings on steel reinforcement.
- B. **Waterstops:** Store waterstops under cover to protect from moisture, sunlight, dirt, oil, and other contaminants.

1.8 FIELD CONDITIONS

- A. **Cold-Weather Placement:** Comply with ACI 306.1 and as follows. Protect concrete work from physical damage or reduced strength that could be caused by frost, freezing actions, or low temperatures.
 1. When average high and low temperature is expected to fall below 40 deg F for three successive days, maintain delivered concrete mixture temperature within the temperature range required by ACI 301.

2. Do not use frozen materials or materials containing ice or snow. Do not place concrete on frozen subgrade or on subgrade containing frozen materials.
 3. Do not use calcium chloride, salt, or other materials containing antifreeze agents or chemical accelerators unless otherwise specified and approved in mixture designs.
- B. Hot-Weather Placement: Comply with ACI 301 and as follows:
1. Maintain concrete temperature below 90 deg F at time of placement. Chilled mixing water or chopped ice may be used to control temperature, provided water equivalent of ice is calculated to total amount of mixing water. Using liquid nitrogen to cool concrete is Contractor's option.
 2. Fog-spray forms, steel reinforcement, and subgrade just before placing concrete. Keep subgrade uniformly moist without standing water, soft spots, or dry areas.

PART 2 - PRODUCTS

2.1 CONCRETE, GENERAL

- A. ACI Publications: Comply with the following unless modified by requirements in the Contract Documents:
1. ACI 301.
 2. ACI 117.

2.2 FORM-FACING MATERIALS

- A. Smooth-Formed Finished Concrete: Form-facing panels that provide continuous, true, and smooth concrete surfaces. Furnish in largest practicable sizes to minimize number of joints.
1. Plywood, metal, or other approved panel materials.
 2. Exterior-grade plywood panels, suitable for concrete forms, complying with DOC PS 1, and as follows:
 - a. High-density overlay, Class 1 or better.
 - b. Medium-density overlay, Class 1 or better; mill-release agent treated and edge sealed.
 - c. Structural 1, B-B or better; mill oiled and edge sealed.
 - d. B-B (Concrete Form), Class 1 or better; mill oiled and edge sealed.
 3. Overlaid Finnish birch plywood.
- B. Rough-Formed Finished Concrete: Plywood, lumber, metal, or another approved material. Provide lumber dressed on at least two edges and one side for tight fit.
- C. Forms for Cylindrical Columns, Pedestals, and Supports: Metal, glass-fiber-reinforced plastic, paper, or fiber tubes that produce surfaces with gradual or abrupt irregularities not exceeding specified formwork surface class. Provide units with sufficient wall thickness to resist plastic concrete loads without detrimental deformation.
- D. Pan-Type Forms: Glass-fiber-reinforced plastic or formed steel, stiffened to resist plastic concrete loads without detrimental deformation.

- E. Void Forms: Biodegradable paper surface, treated for moisture resistance, structurally sufficient to support weight of plastic concrete and other superimposed loads.
- F. Chamfer Strips: Wood, metal, PVC, or rubber strips, 3/4 by 3/4 inch, minimum.
- G. Rustication Strips: Wood, metal, PVC, or rubber strips, kerfed for ease of form removal.
- H. Form-Release Agent: Commercially formulated form-release agent that does not bond with, stain, or adversely affect concrete surfaces and does not impair subsequent treatments of concrete surfaces.
 - 1. Formulate form-release agent with rust inhibitor for steel form-facing materials.
- I. Form Ties: Factory-fabricated, removable or snap-off glass-fiber-reinforced plastic or metal form ties designed to resist lateral pressure of fresh concrete on forms and to prevent spalling of concrete on removal.
 - 1. Furnish units that leave no corrodible metal closer than 1 inch to the plane of exposed concrete surface.
 - 2. Furnish ties that, when removed, leave holes no larger than 1 inch in diameter in concrete surface.
 - 3. Furnish ties with integral water-barrier plates to walls indicated to receive dampproofing or waterproofing.

2.3 STEEL REINFORCEMENT

- A. Reinforcing Bars: ASTM A 615/A 615M, Grade 60, deformed.
- B. Low-Alloy-Steel Reinforcing Bars: ASTM A 706/A 706M, deformed.
- C. Galvanized Reinforcing Bars: ASTM A 615 Grade 60
- D. Plain-Steel Wire: ASTM A 1064/A 1064M, as drawn.
- E. Deformed-Steel Wire: ASTM A 1064/A 1064M.
- F. Plain-Steel Welded-Wire Reinforcement: ASTM A 1064/A 1064M, plain, fabricated from as-drawn steel wire into flat sheets.

2.4 REINFORCEMENT ACCESSORIES

- A. Joint Dowel Bars: ASTM A 615/A 615M, Grade 60, plain-steel bars, cut true to length with ends square and free of burrs.
- B. Bar Supports: Bolsters, chairs, spacers, and other devices for spacing, supporting, and fastening reinforcing bars and welded-wire reinforcement in place. Manufacture bar supports from steel wire, plastic, or precast concrete according to CRSI's "Manual of Standard Practice," of greater compressive strength than concrete and as follows:
 - 1. For concrete surfaces exposed to view, where legs of wire bar supports contact forms, use CRSI Class 1 plastic-protected steel wire or CRSI Class 2 stainlesssteel bar supports.

2. For epoxy-coated reinforcement, use epoxy-coated or other dielectric-polymer-coated wire bar supports.
3. For zinc-coated reinforcement, use galvanized wire or dielectric-polymer-coated wire bar supports.

2.5 CONCRETE MATERIALS

- A. Source Limitations: Obtain each type or class of cementitious material of the same brand from the same manufacturer's plant, obtain aggregate from single source, and obtain admixtures from single source from single manufacturer.
- B. Cementitious Materials:
 1. Portland Cement: ASTM C 150/C 150M, Type I for lightweight filled deck and drag beams, Type V for all foundations: slab, grade beams, footings.
 2. Fly Ash: ASTM C 618, Class F
 3. Slag Cement: ASTM C 989/C 989M, Grade 100 or 120.
 4. Silica Fume: ASTM C 1240, amorphous silica.
- C. Normal-Weight Aggregates: ASTM C 33/C 33M, Class 1N coarse aggregate or better, graded. Provide aggregates from a single source with documented service record data of at least 10 years' satisfactory service in similar applications and service conditions using similar aggregates and cementitious materials.
 1. Maximum Coarse-Aggregate Size: 3/4 inch nominal.
 2. Fine Aggregate: Free of materials with deleterious reactivity to alkali in cement.
- D. Lightweight Aggregate: ASTM C 330/C 330M, 3/4-inch nominal maximum aggregate size.
- E. Air-Entraining Admixture: ASTM C 260/C 260M.
- F. Chemical Admixtures: Certified by manufacturer to be compatible with other admixtures and that do not contribute water-soluble chloride ions exceeding those permitted in hardened concrete. Do not use calcium chloride or admixtures containing calcium chloride.
 1. Water-Reducing Admixture: ASTM C 494/C 494M, Type A.
 2. Retarding Admixture: ASTM C 494/C 494M, Type B.
 3. Water-Reducing and Retarding Admixture: ASTM C 494/C 494M, Type D.
 4. High-Range, Water-Reducing Admixture: ASTM C 494/C 494M, Type F.
 5. High-Range, Water-Reducing and Retarding Admixture: ASTM C 494/C 494M, Type G.
 6. Plasticizing and Retarding Admixture: ASTM C 1017/C 1017M, Type II.
- G. Color Pigment: ASTM C 979/C 979M, synthetic mineral-oxide pigments or colored water-reducing admixtures; color stable, nonfading, and resistant to lime and other alkalis.
 1. Color: As selected by DESIGN TEAM from manufacturer's full range.
- H. Water: ASTM C 94/C 94M and potable.

2.6 CONCRETE MIXTURES, GENERAL

- A. Prepare design mixtures for each type and strength of concrete, proportioned on the basis of laboratory trial mixture or field test data, or both, according to ACI 301.
 - 1. Use a qualified independent testing agency for preparing and reporting proposed mixture designs based on laboratory trial mixtures.
- B. Cementitious Materials: Follow the requirements set forth in the Standard Specifications for Public Works Construction 2012 Edition
- C. Color Pigment: Add color pigment to concrete mixture according to manufacturer's written instructions and to result in hardened concrete color consistent with approved mockup.

2.7 CONCRETE MIXTURES FOR BUILDING ELEMENTS

- A. Slab on grade, Grade beams, and Footings: Normal-weight concrete.
 - 1. Mix design per Standard Specifications for Public Works Construction 2012 Edition for concrete with moderate sulfate exposure, Use 658-CME-4500P
 - 2. Minimum Compressive Strength: 4500 psi at 28 days
 - 3. Slump Limit: 4 inches, plus or minus 1 inch.
- B. Concrete Toppings: Light-weight concrete.
 - 1. Mix design per Standard Specifications for Public Works Construction 2012 Edition, Use 565-C-3250P (LWT)
 - 2. Minimum Compressive Strength: 3250 psi at 28 days
 - 3. Maximum W/C Ratio: 0.45
- C. Drag Beam on top of CMU: Normal-Weight Concrete
 - 1. Mix design per Standard Specifications for Public Works Construction 2012 Edition, Use 560-C-3250
 - 2. Minimum Compressive Strength: 3250 psi at 28 days
 - 3. Slump Limit: 4 inches, plus or minus 1 inch.

2.8 FABRICATING REINFORCEMENT

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

2.9 CONCRETE MIXING

- A. Ready-Mixed Concrete: Measure, batch, mix, and deliver concrete according to ASTM C 94/C 94M and ASTM C 1116/C 1116M, and furnish batch ticket information.
 - 1. When air temperature is between 85 and 90 deg F, reduce mixing and delivery time from 1-1/2 hours to 75 minutes; when air temperature is above 90 deg F, reduce mixing and delivery time to 60 minutes.

- B. Project-Site Mixing: Measure, batch, and mix concrete materials and concrete according to ASTM C 94/C 94M. Mix concrete materials in appropriate drum-type batch machine mixer.
1. For mixer capacity of 1 cu. yd. or smaller, continue mixing at least 1-1/2 minutes, but not more than 5 minutes after ingredients are in mixer, before any part of batch is released.
 2. For mixer capacity larger than 1 cu. yd., increase mixing time by 15 seconds for each additional 1 cu. yd..
 3. Provide batch ticket for each batch discharged and used in the Work, indicating Project identification name and number, date, mixture type, mixture time, quantity, and amount of water added. Record approximate location of final deposit in structure.

PART 3 - EXECUTION

3.1 FORMWORK INSTALLATION

- A. Design, erect, shore, brace, and maintain formwork, according to ACI 301, to support vertical, lateral, static, and dynamic loads, and construction loads that might be applied, until structure can support such loads.
- B. Construct formwork so concrete members and structures are of size, shape, alignment, elevation, and position indicated, within tolerance limits of ACI 117.
- C. Limit concrete surface irregularities, designated by ACI 347 as abrupt or gradual, as follows:
- D. Retain surface classes, usually two or more, in two subparagraphs below. See discussion in "Formwork" Article in the Evaluations. Coordinate with rough- and smooth-formed finishes in "Finishing Formed Surfaces" Article.
- E. Class A, 1/8 inch for smooth-formed finished surfaces.
- F. Class B, 1/4 inch for rough-formed finished surfaces.
- G. Construct forms tight enough to prevent loss of concrete mortar.
- H. Construct forms for easy removal without hammering or prying against concrete surfaces. Provide crush or wrecking plates where stripping may damage cast-concrete surfaces. Provide top forms for inclined surfaces steeper than 1.5 horizontal to 1 vertical.
1. Install keyways, reglets, recesses, and the like, for easy removal.
 2. Do not use rust-stained steel form-facing material.
- I. Set edge forms, bulkheads, and intermediate screed strips for slabs to achieve required elevations and slopes in finished concrete surfaces. Provide and secure units to support screed strips; use strike-off templates or compacting-type screeds.
- J. Provide temporary openings for cleanouts and inspection ports where interior area of formwork is inaccessible. Close openings with panels tightly fitted to forms and securely braced to prevent loss of concrete mortar. Locate temporary openings in forms at inconspicuous locations.

- K. Chamfer exterior corners and edges of permanently exposed concrete.
- L. Form openings, chases, offsets, sinkages, keyways, reglets, blocking, screeds, and bulkheads required in the Work. Determine sizes and locations from trades providing such items.
- M. Clean forms and adjacent surfaces to receive concrete. Remove chips, wood, sawdust, dirt, and other debris just before placing concrete.
- N. Retighten forms and bracing before placing concrete, as required, to prevent mortar leaks and maintain proper alignment.
- O. Coat contact surfaces of forms with form-release agent, according to manufacturer's written instructions, before placing reinforcement.

3.2 EMBEDDED ITEM INSTALLATION

- A. Place and secure anchorage devices and other embedded items required for adjoining work that is attached to or supported by cast-in-place concrete. Use setting drawings, templates, diagrams, instructions, and directions furnished with items to be embedded.
 - 1. Install anchor rods, accurately located, to elevations required and complying with tolerances in Section 7.5 of AISC 303.
 - 2. Install reglets to receive waterproofing and to receive through-wall flashings in outer face of concrete frame at exterior walls, where flashing is shown at lintels, shelf angles, and other conditions.
 - 3. Install dovetail anchor slots in concrete structures as indicated.

3.3 VAPOR-RETARDER INSTALLATION

- A. Sheet Vapor Retarders: Place, protect, and repair sheet vapor retarder according to ASTM E 1643 and manufacturer's written instructions.
 - 1. Lap joints 6 inches and seal with manufacturer's recommended tape.
- B. Bituminous Vapor Retarders: Place, protect, and repair bituminous vapor retarder according to manufacturer's written instructions.

3.4 STEEL REINFORCEMENT INSTALLATION

- A. General: Comply with CRSI's "Manual of Standard Practice" for fabricating, placing, and supporting reinforcement.
 - 1. Do not cut or puncture vapor retarder. Repair damage and reseal vapor retarder before placing concrete.
- B. Clean reinforcement of loose rust and mill scale, earth, ice, and other foreign materials that reduce bond to concrete.
- C. Accurately position, support, and secure reinforcement against displacement. Locate and support reinforcement with bar supports to maintain minimum concrete cover. Do not tack weld crossing reinforcing bars.

1. Weld reinforcing bars according to AWS D1.4/D 1.4M, where indicated.
- D. Set wire ties with ends directed into concrete, not toward exposed concrete surfaces.
- E. Install welded-wire reinforcement in longest practicable lengths on bar supports spaced to minimize sagging. Lap edges and ends of adjoining sheets at least one mesh spacing. Offset laps of adjoining sheet widths to prevent continuous laps in either direction. Lace overlaps with wire.
- F. Epoxy-Coated Reinforcement: Repair cut and damaged epoxy coatings with epoxy repair coating according to ASTM D 3963/D 3963M. Use epoxy-coated steel wire ties to fasten epoxy-coated steel reinforcement.
- G. Zinc-Coated Reinforcement: Repair cut and damaged zinc coatings with zinc repair material according to ASTM A 780/A 780M. Use galvanized-steel wire ties to fasten zincoated steel reinforcement.

3.5 JOINTS

- A. General: Construct joints true to line with faces perpendicular to surface plane of concrete.
- B. Construction Joints: Install so strength and appearance of concrete are not impaired, at locations indicated or as approved by DESIGN TEAM.
 1. Place joints perpendicular to main reinforcement. Continue reinforcement across construction joints unless otherwise indicated. Do not continue reinforcement through sides of strip placements of floors and slabs.
 2. Form keyed joints as indicated. Embed keys at least 1-1/2 inches into concrete.
 3. Locate joints for beams, slabs, joists, and girders in the middle third of spans. Offset joints in girders a minimum distance of twice the beam width from a beamgirder intersection.
 4. Locate horizontal joints in walls and columns at underside of floors, slabs, beams, and girders and at the top of footings or floor slabs.
 5. Space vertical joints in walls as indicated. Locate joints beside piers integral with walls, near corners, and in concealed locations where possible.
 6. Use a bonding agent at locations where fresh concrete is placed against hardened or partially hardened concrete surfaces.
 7. Use epoxy-bonding adhesive at locations where fresh concrete is placed against hardened or partially hardened concrete surfaces.
- C. Contraction Joints in Slabs-on-Grade: Form weakened-plane contraction joints, sectioning concrete into areas as indicated. Construct contraction joints for a depth equal to at least one-fourth of concrete thickness as follows:
 1. Grooved Joints: Form contraction joints after initial floating by grooving and finishing each edge of joint to a radius of 1/8 inch. Repeat grooving of contraction joints after applying surface finishes. Eliminate groover tool marks on concrete surfaces.
 2. Sawed Joints: Form contraction joints with power saws equipped with shatterproof abrasive or diamond-rimmed blades. Cut 1/8-inch-wide joints into concrete when cutting action does not tear, abrade, or otherwise damage surface and before concrete develops random contraction cracks.

- D. Isolation Joints in Slabs-on-Grade: After removing formwork, install joint-filler strips at slab junctions with vertical surfaces, such as column pedestals, foundation walls, grade beams, and other locations, as indicated.
 - 1. Extend joint-filler strips full width and depth of joint, terminating flush with finished concrete surface unless otherwise indicated.
 - 2. Terminate full-width joint-filler strips not less than 1/2 inch or more than 1 inch below finished concrete surface where joint sealants, specified in Section 079200 "Joint Sealants," are indicated.
 - 3. Install joint-filler strips in lengths as long as practicable. Where more than one length is required, lace or clip sections together.
- E. Doweled Joints: Install dowel bars and support assemblies at joints where indicated. Lubricate or asphalt coat one-half of dowel length to prevent concrete bonding to one side of joint.

3.6 CONCRETE PLACEMENT

- A. Before placing concrete, verify that installation of formwork, reinforcement, and embedded items is complete and that required inspections are completed.
- B. Do not add water to concrete during delivery, at Project site, or during placement unless approved by DESIGN TEAM.
- C. Before test sampling and placing concrete, water may be added at Project site, subject to limitations of ACI 301.
 - 1. Do not add water to concrete after adding high-range water-reducing admixtures to mixture.
- D. Deposit concrete continuously in one layer or in horizontal layers of such thickness that no new concrete is placed on concrete that has hardened enough to cause seams or planes of weakness. If a section cannot be placed continuously, provide construction joints as indicated. Deposit concrete to avoid segregation.
 - 1. Deposit concrete in horizontal layers of depth not to exceed formwork design pressures and in a manner to avoid inclined construction joints.
 - 2. Consolidate placed concrete with mechanical vibrating equipment according to ACI 301.
 - 3. Do not use vibrators to transport concrete inside forms. Insert and withdraw vibrators vertically at uniformly spaced locations to rapidly penetrate placed layer and at least 6 inches into preceding layer. Do not insert vibrators into lower layers of concrete that have begun to lose plasticity. At each insertion, limit duration of vibration to time necessary to consolidate concrete and complete embedment of reinforcement and other embedded items without causing mixture constituents to segregate.
- E. Deposit and consolidate concrete for floors and slabs in a continuous operation, within limits of construction joints, until placement of a panel or section is complete.
 - 1. Consolidate concrete during placement operations, so concrete is thoroughly worked around reinforcement and other embedded items and into corners.
 - 2. Maintain reinforcement in position on chairs during concrete placement.
 - 3. Screed slab surfaces with a straightedge and strike off to correct elevations.
 - 4. Slope surfaces uniformly to drains where required.

5. Begin initial floating using bull floats or darbies to form a uniform and open-textured surface plane, before excess bleedwater appears on the surface. Do not further disturb slab surfaces before starting finishing operations.

3.7 FINISHING FORMED SURFACES

- A. **Rough-Formed Finish:** As-cast concrete texture imparted by form-facing material with tie holes and defects repaired and patched. Remove fins and other projections that exceed specified limits on formed-surface irregularities.
 1. Apply to concrete surfaces not exposed to public view
- B. **Smooth-Formed Finish:** As-cast concrete texture imparted by form-facing material, arranged in an orderly and symmetrical manner with a minimum of seams. Repair and patch tie holes and defects. Remove fins and other projections that exceed specified limits on formed-surface irregularities.
 1. Apply to concrete surfaces exposed to public view .
- C. **Rubbed Finish:** Apply the following to smooth-formed-finished as-cast concrete where indicated:
 1. **Smooth-Rubbed Finish:** Not later than one day after form removal, moisten concrete surfaces and rub with carborundum brick or another abrasive until producing a uniform color and texture. Do not apply cement grout other than that created by the rubbing process.
 2. **Grout-Cleaned Finish:** Wet concrete surfaces and apply grout of a consistency of thick paint to coat surfaces and fill small holes. Mix 1 part portland cement to 1-1/2 parts fine sand with a 1:1 mixture of bonding admixture and water. Add white portland cement in amounts determined by trial patches, so color of dry grout matches adjacent surfaces. Scrub grout into voids and remove excess grout. When grout whitens, rub surface with clean burlap and keep surface damp by fog spray for at least 36 hours.
 3. **Cork-Floated Finish:** Wet concrete surfaces and apply a stiff grout. Mix 1 part portland cement and 1 part fine sand with a 1:1 mixture of bonding agent and water. Add white portland cement in amounts determined by trial patches, so color of dry grout matches adjacent surfaces. Compress grout into voids by grinding surface. In a swirling motion, finish surface with a cork float.
- D. **Related Unformed Surfaces:** At tops of walls, horizontal offsets, and similar unformed surfaces adjacent to formed surfaces, strike off smooth and finish with a texture matching adjacent formed surfaces. Continue final surface treatment of formed surfaces uniformly across adjacent unformed surfaces unless otherwise indicated.

3.8 FINISHING FLOORS AND SLABS

- A. **General:** Comply with ACI 302.1R recommendations for screeding, restraightening, and finishing operations for concrete surfaces. Do not wet concrete surfaces.
- B. **Scratch Finish:** While still plastic, texture concrete surface that has been screeded and bull-floated or darbied. Use stiff brushes, brooms, or rakes to produce a profile amplitude of 1/4 inch in one direction.

1. Apply scratch finish to surfaces indicated
- C. Float Finish: Consolidate surface with power-driven floats or by hand floating if area is small or inaccessible to power-driven floats. Restraighten, cut down high spots, and fill low spots. Repeat float passes and restraightening until surface is left with a uniform, smooth, granular texture.
1. Apply float finish to surfaces indicated
- D. Trowel Finish: After applying float finish, apply first troweling and consolidate concrete by hand or power-driven trowel. Continue troweling passes and restraighten until surface is free of trowel marks and uniform in texture and appearance. Grind smooth any surface defects that would telegraph through applied coatings or floor coverings.
1. Apply a trowel finish to surfaces indicated
 2. Finish surfaces to the following tolerances, according to ASTM E 1155, for a randomly trafficked floor surface:
 - a. Specified overall values of flatness, F(F) 25; and of levelness, F(L) 20; with minimum local values of flatness, F(F) 17; and of levelness, F(L) 15.
 - b. Specified overall values of flatness, F(F) 35; and of levelness, F(L) 25; with minimum local values of flatness, F(F) 24; and of levelness, F(L) 17; for slabs-on-grade.
 - c. Specified overall values of flatness, F(F) 30; and of levelness, F(L) 20; with minimum local values of flatness, F(F) 24; and of levelness, F(L) 15; for suspended slabs.
 - d. Specified overall values of flatness, F(F) 45; and of levelness, F(L) 35; with minimum local values of flatness, F(F) 30; and of levelness, F(L) 24.
 3. Finish and measure surface, so gap at any point between concrete surface and an unlevelled, freestanding, 10-ft.-long straightedge resting on two high spots and placed anywhere on the surface does not exceed 1/8 inch.
- E. Trowel and Fine-Broom Finish: Apply a first trowel finish to surfaces indicated While concrete is still plastic, slightly scarify surface with a fine broom.
1. Comply with flatness and levelness tolerances for trowel-finished floor surfaces.
- F. Broom Finish: Apply a broom finish to exterior concrete platforms, steps, ramps, and elsewhere as indicated.
1. Immediately after float finishing, slightly roughen trafficked surface by brooming with fiber-bristle broom perpendicular to main traffic route. Coordinate required final finish with DESIGN TEAM before application.

3.9 MISCELLANEOUS CONCRETE ITEM INSTALLATION

- A. Filling In: Fill in holes and openings left in concrete structures after work of other trades is in place unless otherwise indicated. Mix, place, and cure concrete, as specified, to blend with in-place construction. Provide other miscellaneous concrete filling indicated or required to complete the Work.

- B. Curbs: Provide monolithic finish to interior curbs by stripping forms while concrete is still green and by steel-troweling surfaces to a hard, dense finish with corners, intersections, and terminations slightly rounded.
- C. Equipment Bases and Foundations:
 - 1. Coordinate sizes and locations of concrete bases with actual equipment provided.
 - 2. Construct concrete bases specified per plan, and extend base not less than 6 inches in each direction beyond the maximum dimensions of supported equipment unless otherwise indicated or unless required for seismic anchor support.
 - 3. Minimum Compressive Strength: 4500 psi at 28 days.
 - 4. Install dowel rods to connect concrete base to concrete floor. Unless otherwise indicated, install dowel rods on 18-inch centers around the full perimeter of concrete base.
 - 5. For supported equipment, install epoxy-coated anchor bolts that extend through concrete base and anchor into structural concrete substrate.
 - 6. Prior to pouring concrete, place and secure anchorage devices. Use setting drawings, templates, diagrams, instructions, and directions furnished with items to be embedded.
 - 7. Cast anchor-bolt insert into bases. Install anchor bolts to elevations required for proper attachment to supported equipment.
- D. Steel Pan Stairs: Provide concrete fill for steel pan stair treads, landings, and associated items. Cast-in inserts and accessories as shown on Drawings. Screed, tamp, and trowel finish concrete surfaces.

3.10 CONCRETE PROTECTING AND CURING

- A. General: Protect freshly placed concrete from premature drying and excessive cold or hot temperatures. Comply with ACI 306.1 for cold-weather protection and ACI 301 for hotweather protection during curing.
- B. Evaporation Retarder: Apply evaporation retarder to unformed concrete surfaces if hot, dry, or windy conditions cause moisture loss approaching 0.2 lb/sq. ft. x h before and during finishing operations. Apply according to manufacturer's written instructions after placing, screeding, and bull floating or darbying concrete, but before float finishing.
- C. Formed Surfaces: Cure formed concrete surfaces, including underside of beams, supported slabs, and other similar surfaces. If forms remain during curing period, moist cure after loosening forms. If removing forms before end of curing period, continue curing for remainder of curing period.
- D. Unformed Surfaces: Begin curing immediately after finishing concrete. Cure unformed surfaces, including floors and slabs, concrete floor toppings, and other surfaces.
- E. Cure concrete according to ACI 308.1, by one or a combination of the following methods:
 - 1. Moisture Curing: Keep surfaces continuously moist for not less than seven days with the following materials:
 - a. Water.
 - b. Continuous water-fog spray.
 - c. Absorptive cover, water saturated, and kept continuously wet. Cover concrete surfaces and edges with 12-inch lap over adjacent absorptive covers.

2. **Moisture-Retaining-Cover Curing:** Cover concrete surfaces with moisture-retaining cover for curing concrete, placed in widest practicable width, with sides and ends lapped at least 12 inches, and sealed by waterproof tape or adhesive. Cure for not less than seven days. Immediately repair any holes or tears during curing period, using cover material and waterproof tape.
 - a. Moisture cure or use moisture-retaining covers to cure concrete surfaces to receive floor coverings.
 - b. Moisture cure or use moisture-retaining covers to cure concrete surfaces to receive penetrating liquid floor treatments.
 - c. Cure concrete surfaces to receive floor coverings with either a moisture-retaining cover or a curing compound that the manufacturer certifies does not interfere with bonding of floor covering used on Project.
3. **Curing Compound:** Apply uniformly in continuous operation by power spray or roller according to manufacturer's written instructions. Recoat areas subjected to heavy rainfall within three hours after initial application. Maintain continuity of coating and repair damage during curing period.
 - a. **Removal:** After curing period has elapsed, remove curing compound without damaging concrete surfaces by method recommended by curing compound manufacturer unless manufacturer certifies curing compound does not interfere with bonding of floor covering used on Project.
4. **Curing and Sealing Compound:** Apply uniformly to floors and slabs indicated in a continuous operation by power spray or roller according to manufacturer's written instructions. Recoat areas subjected to heavy rainfall within three hours after initial application. Repeat process 24 hours later and apply a second coat. Maintain continuity of coating and repair damage during curing period.

3.11 LIQUID FLOOR TREATMENT APPLICATION

- A. **Penetrating Liquid Floor Treatment:** Prepare, apply, and finish penetrating liquid floor treatment according to manufacturer's written instructions.
- B. **Sealing Coat:** Uniformly apply a continuous sealing coat of curing and sealing compound to hardened concrete by power spray or roller according to manufacturer's written instructions.

3.12 JOINT FILLING

- A. Prepare, clean, and install joint filler according to manufacturer's written instructions.
- B. Remove dirt, debris, saw cuttings, curing compounds, and sealers from joints; leave contact faces of joints clean and dry.
- C. Install semirigid joint filler full depth in saw-cut joints and at least 2 inches deep in formed joints. Overfill joint and trim joint filler flush with top of joint after hardening.

3.13 CONCRETE SURFACE REPAIRS

- A. **Defective Concrete:** Repair and patch defective areas when approved by DESIGN TEAM. Remove and replace concrete that cannot be repaired and patched to DESIGN TEAM's approval.
- B. **Patching Mortar:** Mix dry-pack patching mortar, consisting of 1 part portland cement to 2-1/2 parts fine aggregate passing a No. 16 sieve, using only enough water for handling and placing.
- C. **Repairing Formed Surfaces:** Surface defects include color and texture irregularities, cracks, spalls, air bubbles, honeycombs, rock pockets, fins and other projections on the surface, and stains and other discolorations that cannot be removed by cleaning.
 - 1. Immediately after form removal, cut out honeycombs, rock pockets, and voids more than 1/2 inch in any dimension to solid concrete. Limit cut depth to 3/4 inch. Make edges of cuts perpendicular to concrete surface. Clean, dampen with water, and brush-coat holes and voids with bonding agent. Fill and compact with patching mortar before bonding agent has dried. Fill form-tie voids with patching mortar or cone plugs secured in place with bonding agent.
 - 2. Repair defects on surfaces exposed to view by blending white portland cement and standard portland cement so that, when dry, patching mortar matches surrounding color. Patch a test area at inconspicuous locations to verify mixture and color match before proceeding with patching. Compact mortar in place and strike off slightly higher than surrounding surface.
 - 3. Repair defects on concealed formed surfaces that affect concrete's durability and structural performance as determined by DESIGN TEAM.
- D. **Repairing Unformed Surfaces:** Test unformed surfaces, such as floors and slabs, for finish and verify surface tolerances specified for each surface. Correct low and high areas. Test surfaces sloped to drain for trueness of slope and smoothness; use a sloped template.
 - 1. Repair finished surfaces containing defects. Surface defects include spalls, popouts, honeycombs, rock pockets, crazing and cracks in excess of 0.01 inch wide or that penetrate to reinforcement or completely through unreinforced sections regardless of width, and other objectionable conditions.
 - 2. After concrete has cured at least 14 days, correct high areas by grinding.
 - 3. Correct localized low areas during or immediately after completing surface finishing operations by cutting out low areas and replacing with patching mortar. Finish repaired areas to blend into adjacent concrete.
 - 4. Correct other low areas scheduled to receive floor coverings with a repair underlayment. Prepare, mix, and apply repair underlayment and primer according to manufacturer's written instructions to produce a smooth, uniform, plane, and level surface. Feather edges to match adjacent floor elevations.
 - 5. Correct other low areas scheduled to remain exposed with a repair topping. Cut out low areas to ensure a minimum repair topping depth of 1/4 inch to match adjacent floor elevations. Prepare, mix, and apply repair topping and primer according to manufacturer's written instructions to produce a smooth, uniform, plane, and level surface.
 - 6. Repair defective areas, except random cracks and single holes 1 inch or less in diameter, by cutting out and replacing with fresh concrete. Remove defective areas with clean, square cuts and expose steel reinforcement with at least a 3/4-inch clearance all around. Dampen concrete surfaces in contact with patching concrete and apply bonding agent. Mix patching concrete of same materials and mixture as

original concrete, except without coarse aggregate. Place, compact, and finish to blend with adjacent finished concrete. Cure in same manner as adjacent concrete. 7. Repair random cracks and single holes 1 inch or less in diameter with patching mortar. Groove top of cracks and cut out holes to sound concrete and clean off dust, dirt, and loose particles. Dampen cleaned concrete surfaces and apply bonding agent. Place patching mortar before bonding agent has dried. Compact patching mortar and finish to match adjacent concrete. Keep patched area continuously moist for at least 72 hours

- E. Perform structural repairs of concrete, subject to DESIGN TEAM's approval, using epoxy adhesive and patching mortar.
- F. Repair materials and installation not specified above may be used, subject to DESIGN TEAM's approval.

3.14 FIELD QUALITY CONTROL

- A. Special Inspections: Engage a City of Perris City Deputy special inspector and qualified testing and inspecting agency to perform field tests and inspections and prepare test reports.
- B. Testing Agency: Engage a qualified testing and inspecting agency to perform tests and inspections and to submit reports.
- C. Inspections:
 - 1. Steel reinforcement placement.
 - 2. Steel reinforcement welding.
 - 3. Headed bolts and studs.
 - 4. Verification of use of required design mixture.
 - 5. Concrete placement, including conveying and depositing.
 - 6. Curing procedures and maintenance of curing temperature.
 - 7. Verification of concrete strength before removal of shores and forms from beams and slabs.
- D. Concrete Tests: Testing of composite samples of fresh concrete obtained according to ASTM C 172/C 172M shall be performed according to the following requirements:
 - 1. Testing Frequency: Obtain one composite sample for each day's pour of each concrete mixture exceeding 5 cu. yd., but less than 25 cu. yd., plus one set for each additional 50 cu. yd. or fraction thereof.
 - 2. Testing Frequency: Obtain at least one composite sample for each 100 cu. yd. or fraction thereof of each concrete mixture placed each day.
 - a. When frequency of testing provides fewer than five compressive-strength tests for each concrete mixture, testing shall be conducted from at least five randomly selected batches or from each batch if fewer than five are used.
 - 3. Slump: ASTM C 143/C 143M, one test at point of placement for each composite sample, but not less than one test for each day's pour of each concrete mixture. Perform additional tests when concrete consistency appears to change.
 - 4. Air Content: ASTM C 231/C 231M, pressure method, for normal-weight concrete; ASTM C 173/C 173M, volumetric method, for structural lightweight concrete; one test for each composite sample, but not less than one test for each day's pour of each concrete mixture.

5. Concrete Temperature: ASTM C 1064/C 1064M, one test hourly when air temperature is 40 deg F and below or 80 deg F and above, and one test for each composite sample.
 6. Unit Weight: ASTM C 567/C 567M, fresh unit weight of structural lightweight concrete; one test for each composite sample, but not less than one test for each day's pour of each concrete mixture.
 7. Compression Test Specimens: ASTM C 31/C 31M.
 - a. Cast and laboratory cure two sets of two standard cylinder specimens for each composite sample.
 - b. Cast and field cure two sets of two standard cylinder specimens for each composite sample.
 8. Compressive-Strength Tests: ASTM C 39/C 39M; test one set of two laboratory-cured specimens at 7 days and one set of two specimens at 28 days.
 - a. Test one set of two field-cured specimens at 7 days and one set of two specimens at 28 days.
 - b. A compressive-strength test shall be the average compressive strength from a set of two specimens obtained from same composite sample and tested at age indicated.
 9. When strength of field-cured cylinders is less than 85 percent of companion laboratory-cured cylinders, Contractor shall evaluate operations and provide corrective procedures for protecting and curing in-place concrete.
 10. Strength of each concrete mixture will be satisfactory if every average of any three consecutive compressive-strength tests equals or exceeds specified compressive strength and no compressive-strength test value falls below specified compressive strength by more than 500 psi.
 11. Test results shall be reported in writing to DESIGN TEAM, concrete manufacturer, and Contractor within 48 hours of testing. Reports of compressive-strength tests shall contain Project identification name and number, date of concrete placement, name of concrete testing and inspecting agency, location of concrete batch in Work, design compressive strength at 28 days, concrete mixture proportions and materials, compressive breaking strength, and type of break for both 7- and 28-day tests.
 12. Nondestructive Testing: Impact hammer, sonoscope, or other nondestructive device may be permitted by DESIGN TEAM but will not be used as sole basis for approval or rejection of concrete.
 13. Additional Tests: Testing and inspecting agency shall make additional tests of concrete when test results indicate that slump, air entrainment, compressive strengths, or other requirements have not been met, as directed by DESIGN TEAM. Testing and inspecting agency may conduct tests to determine adequacy of concrete by cored cylinders complying with ASTM C 42/C 42M or by other methods as directed by DESIGN TEAM.
 14. Additional testing and inspecting, at Contractor's expense, will be performed to determine compliance of replaced or additional work with specified requirements.
 15. Correct deficiencies in the Work that test reports and inspections indicate do not comply with the Contract Documents.
- E. Measure floor and slab flatness and levelness according to ASTM E 1155 within 24 hours of finishing.

3.15 PROTECTION OF LIQUID FLOOR TREATMENTS

- A. Protect liquid floor treatment from damage and wear during the remainder of construction period. Use protective methods and materials, including temporary covering, recommended in writing by liquid floor treatments installer.

END OF SECTION

SECTION 03320-CONCRETE DENSIFIER AND CHEMICAL HARDENER - BUILDING

I. GENERAL

A. WORK INCLUDED IN THIS SECTION:

1. Concrete densifier and chemical hardener

B. RELATED WORK SPECIFIED ELSEWHERE:

1. Concrete degreaser - Section 03910

C. SUBMITTALS:

1. Comply with Section 01340 - Submittals.
2. Submit manufacturer's product data and application instructions.

D. DELIVERY, STORAGE, AND HANDLING

1. **Delivery:** Deliver materials to site in manufacturer's original unopened containers and packaging, with labels clearly identifying product name and manufacturer.
2. **Storage:** Store materials in a clean, dry area in accordance with manufacturer's instructions. Keep containers sealed until ready for use. Keep from freezing.
3. **Handling:** Protect materials during handling and application to prevent damage or contamination.

E. ENVIRONMENTAL REQUIREMENTS

1. Do not apply concrete densifier and chemical hardener when concrete temperature is below 35 degrees F (2 degrees C) or above 135 degrees F (57 degrees C).

II. PRODUCTS

A. MANUFACTURER:

1. W.R. Meadows, Inc. (800) 342-5976 or equal.

B. MATERIALS:

1. Seal Tight Liqui-Hard Concrete Densifier and Chemical Hardener Compound.
 - a. VOC Content: Meets maximum VOC content of 400 g/l. for concrete protective coatings as required by US EPA DESIGN TEAM Mural Coatings Rule.

III. EXECUTION

A. EXAMINATION:

1. Examine concrete surfaces to receive concrete densifier and chemical hardener. Notify DESIGN TEAM if surfaces are not acceptable. Do not begin surface preparation or application until unacceptable conditions have been corrected.

B. SURFACE PREPARATION:

1. Prepare surfaces in accordance with manufacturer's instructions.

2. **New Concrete:** Wait a minimum of 72 hours after placement of concrete before applying concrete densifier and chemical hardener. Ensure surface is dry and free of dirt, dust, oil, grease, residue, curing compounds, sealers, waxes, contaminants, and laitance.
3. **Existing Concrete:** Ensure surface is dry, structurally sound, and free of dirt, dust, oil, grease, residue, curing compounds, sealers, waxes, contaminants, and laitance. Repair holes, cracks, and deteriorated areas.

C. APPLICATION:

1. Apply concrete densifier and chemical hardener in accordance with manufacturer's instruction.
2. Ensure application equipment is clean and free of previously used materials.
3. Do not dilute concrete densifier and chemical hardener.

D. PROTECTION:

1. Protect horizontal surfaces from foot traffic for a minimum of 12 hours after application of concrete densifier and chemical hardener.

SECTION 03910-CONCRETE DEGREASER - BUILDING

I. GENERAL

A. WORK INCLUDED IN THIS SECTION:

1. Concrete degreaser and stripper.

B. RELATED WORK SPECIFIED ELSEWHERE:

1. Concrete Densifier and Chemical Hardener - Section 03310

C. SUBMITTALS:

1. Comply with Section 01340 - Submittals.
Submit manufacturer's product data and application instructions.

D. DELIVERY, STORAGE, AND HANDLING

1. **Delivery:** Deliver materials to site in manufacturer's original unopened containers and packaging, with labels clearly identifying product name and manufacturer.
2. **Storage:** Store materials in a clean, dry area in accordance with manufacturer's instructions. Keep containers sealed until ready for use. Keep from freezing.
3. **Handling:** Protect materials during handling and application to prevent damage or contamination.

E. ENVIRONMENTAL REQUIREMENTS

1. Do not apply concrete densifier and chemical hardener when concrete temperature is below 35 degrees F (2 degrees C) or above 135 degrees F (57 degrees C).

II. PRODUCTS

A. MANUFACTURER:

1. W.R. Meadows, Inc. (800) 342-5976 or equal.

B. MATERIALS:

1. Concrete Degreaser and Stripper: Seal Tight Ultrite Degreaser
 - a. **Description:** Biodegradable, heavy-duty, concrete degreaser and stripper.
 - b. **Appearances:** Clear, light yellow
 - c. **pH:** 10.9
 - d. **Flash Point:** 130 degrees F (54 degrees C)
 - e. **Stability:** Stable
 - f. **Solubility in Water:** Excellent
 - g. **Rinsability with Water:** Excellent

III. EXECUTION

A. EXAMINATION:

1. Examine concrete surfaces to receive concrete degreaser and stripper. Notify DESIGN TEAM if surfaces are not acceptable. Do not begin surface preparation or application until unacceptable conditions have been corrected.

B. APPLICATION:

1. Apply concrete degreaser and stripper in accordance with manufacturer's instruction.
2. Do not dilute concrete degreaser and stripper.
3. Use degreaser and stripper to remove dirt, tire marks, oil, grease, hydraulic fluid, other contaminants, curing compounds, and concrete sealers.
4. Do not allow degreaser and stripper to dry out on surface.
5. Use only on concrete and masonry surfaces. Do not use on painted surfaces.
6. Do not allow degreaser and stripper in as applied form to splash or spill onto adjacent surfaces or sun off concrete.

SECTION 042200

CONCRETE UNIT MASONRY

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Concrete masonry units.
2. Decorative concrete masonry units.
3. Pre-faced concrete masonry units.
4. Mortar and grout.
5. Steel reinforcing bars.
6. Masonry-joint reinforcement.
7. Embedded flashing.
8. Miscellaneous masonry accessories.
9. Masonry-cell fill.

B. Products Installed but not Furnished under This Section:

1. Cast-stone trim in concrete unit masonry.

C. Related Requirements:

1. Section 033000 "Cast-in-Place Concrete" for installing dovetail slots for masonry anchors.
2. Section 051200 "Structural Steel Framing" for installing anchor sections of adjustable masonry anchors for connecting to structural steel frame.
3. Section 071900 "Water Repellents" for water repellents applied to unit masonry assemblies.
4. Section 076200 "Sheet Metal Flashing and Trim" for exposed sheet metal flashing and for furnishing manufactured reglets installed in masonry joints.
5. Section 089516 "Wall Vents" for wall vents (brick vents).
6. Section 323223 "Segmental Retaining Walls" for dry-laid, concrete unit retaining walls.

D. Codes and Regulations

1. Perform work in accordance with requirements of chapter 21 of City of Perris City Building Code and hereinafter referenced Code Section Numbers.
2. ACI 530-11 Building Code Requirements and Specification for Masonry Structures

1.2 DEFINITIONS

A. CMU(s): Concrete masonry unit(s).

B. Reinforced Masonry: Masonry containing reinforcing steel in grouted cells.

1.3 ACTION SUBMITTALS

- A. Product Data: For each type of product.
- B. Shop Drawings: For the following:
 - 1. Masonry Units: Show sizes, profiles, coursing, and locations of special shapes.
 - 2. Reinforcing Steel: Detail bending, lap lengths, and placement of unit masonry reinforcing bars. Comply with ACI 315. Show elevations of reinforced walls.
 - 3. Fabricated Flashing: Detail corner units, end-dam units, and other special applications.
- C. Samples for Initial Selection: 2 Full size pieces of each size of block and texture proposed for use
 - 1. Decorative CMUs, in the form of small-scale units.
 - 2. Pre-faced CMUs.
 - 3. Colored mortar.
 - 4. Weep holes/vents.
- D. Samples for Verification: For each type and color of the following:
 - 1. Exposed CMUs.
 - 2. Pre-faced CMUs.
 - 3. Pigmented and colored-aggregate mortar. Make Samples using same sand and mortar ingredients to be used on Project.

1.4 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For testing agency.
- B. Material Certificates: For each type and size of the following:
 - 1. Masonry units.
 - a. Include data on material properties, material test reports substantiating compliance with requirements.
 - b. For masonry units used in structural masonry, include data and calculations establishing average net-area compressive strength of units.
 - 2. Integral water repellent used in CMUs.
 - 3. Cementitious materials. Include name of manufacturer, brand name, and type.
 - 4. Mortar admixtures.
 - 5. Preblended, dry mortar mixes. Include description of type and proportions of ingredients.
 - 6. Grout mixes. Include description of type and proportions of ingredients.
 - 7. Reinforcing bars.
 - 8. Joint reinforcement.
 - 9. Anchors, ties, and metal accessories.
- C. Mix Designs: For each type of mortar and grout. Include description of type and proportions of ingredients.

1. Include test reports for mortar mixes required to comply with property specification. Test according to ASTM C 109/C 109M for compressive strength, ASTM C 1506 for water retention, and ASTM C 91/C 91M for air content.
 2. Include test reports, according to ASTM C 1019, for grout mixes required to comply with compressive strength requirement.
- D. **Statement of Compressive Strength of Masonry:** For each combination of masonry unit type and mortar type, provide statement of average net-area compressive strength of masonry units, mortar type, and resulting net-area compressive strength of masonry determined according to TMS 602/ACI 530.1/ASCE 6.
- E. **Cold-Weather and Hot-Weather Procedures:** Detailed description of methods, materials, and equipment to be used to comply with requirements.

1.5 QUALITY ASSURANCE

- A. **Testing Agency Qualifications:** Qualified according to ASTM C 1093 for testing indicated.
- B. **Sample Panels:** Build sample panels to verify selections made under Sample submittals and to demonstrate aesthetic effects. Comply with requirements in Section 014000 "Quality Requirements" for mockups.
1. Build sample panels for each type of exposed unit masonry construction in sizes approximately 36 inches long by 36 inches high by full thickness.
 2. Build sample panels facing south.
 3. Where masonry is to match existing, build panels adjacent and parallel to existing surface.
 4. Protect approved sample panels from the elements with weather-resistant membrane.
 5. Approval of sample panels is for color, texture, and blending of masonry units; relationship of mortar and sealant colors to masonry unit colors; tooling of joints; aesthetic qualities of workmanship; and other material and construction qualities specifically approved by DESIGN TEAM in writing.
 - a. Approval of sample panels does not constitute approval of deviations from the Contract Documents contained in sample panels unless DESIGN TEAM specifically approves such deviations in writing.
- C. **Mockups:** Build mockups to verify selections made under Sample submittals, to demonstrate aesthetic effects, and to set quality standards for materials and execution.
1. Build mockup of typical wall area as shown on Drawings.
 2. Build mockups for each type of exposed unit masonry construction typical exterior and interior walls in sizes approximately 72 inches long by 72 inches high by full thickness, including face and backup wythes and accessories.
 - a. Include a sealant-filled joint at least 16 inches long in each exterior wall mockup.
 - b. Include lower corner of window opening at upper corner of exterior wall mockup. Make opening approximately 12 inches wide by 16 inches high.
 - c. Include through-wall flashing installed for a 24-inch length in corner of exterior wall mockup approximately 16 inches down from top of mockup, with a 12-inch length of flashing left exposed to view (omit masonry above half of flashing).

3. Protect accepted mockups from the elements with weather-resistant membrane.
4. Approval of mockups is for color, texture, and blending of masonry units; relationship of mortar and sealant colors to masonry unit colors; tooling of joints; and aesthetic qualities of workmanship.
 - a. Approval of mockups is also for other material and construction qualities specifically approved by DESIGN TEAM in writing.
 - b. Approval of mockups does not constitute approval of deviations from the Contract Documents contained in mockups unless DESIGN TEAM specifically approves such deviations in writing.
5. Subject to compliance with requirements, approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Store masonry units on elevated platforms in a dry location. If units are not stored in an enclosed location, cover tops and sides of stacks with waterproof sheeting, securely tied. If units become wet, do not install until they are dry.
- B. Store cementitious materials on elevated platforms, under cover, and in a dry location. Do not use cementitious materials that have become damp.
- C. Store aggregates where grading and other required characteristics can be maintained and contamination avoided.
- D. Deliver preblended, dry mortar mix in moisture-resistant containers. Store preblended, dry mortar mix in delivery containers on elevated platforms in a dry location or in covered weatherproof dispensing silos.
- E. Store masonry accessories, including metal items, to prevent corrosion and accumulation of dirt and oil.

1.7 FIELD CONDITIONS

- A. Protection of Masonry: During construction, cover tops of walls, projections, and sills with waterproof sheeting at end of each day's work. Cover partially completed masonry when construction is not in progress.
 1. Extend cover a minimum of 24 inches down both sides of walls, and hold cover securely in place.
- B. Do not apply uniform floor or roof loads for at least 12 hours and concentrated loads for at least three days after building masonry walls or columns.
- C. Stain Prevention: Prevent grout, mortar, and soil from staining the face of masonry to be left exposed or painted. Immediately remove grout, mortar, and soil that come in contact with such masonry.
 1. Protect base of walls from rain-splashed mud and from mortar splatter by spreading coverings on ground and over wall surface.
 2. Protect sills, ledges, and projections from mortar droppings.

3. Protect surfaces of window and door frames, as well as similar products with painted and integral finishes, from mortar droppings.
 4. Turn scaffold boards near the wall on edge at the end of each day to prevent rain from splashing mortar and dirt onto completed masonry.
- D. Cold-Weather Requirements: Do not use frozen materials or materials mixed or coated with ice or frost. Do not build on frozen substrates. Remove and replace unit masonry damaged by frost or by freezing conditions. Comply with cold-weather construction requirements contained in TMS 602/ACI 530.1/ASCE 6.
1. Cold-Weather Cleaning: Use liquid cleaning methods only when air temperature is 40 deg F and higher and will remain so until masonry has dried, but not less than seven days after completing cleaning.
- E. Hot-Weather Requirements: Comply with hot-weather construction requirements contained in TMS 602/ACI 530.1/ASCE 6.

1.8 Warranty

- A. Upon completion of the work of this section and as a condition of its acceptance, deliver to the project manager or inspector two (2) copies of a written warranty signed by the contractor, the water repellent coating application subcontractor and the water repellent coating manufacturer, under which"
1. The three parties mutually agree to maintain the water repellent coated surface free from the penetration of water for a period of two years following date of substantial completion, and
 2. The water repellent coating manufacturer agrees to provide water repellent coating materials as required for that purpose for a period of five (5) years following date of substantial completion; and
 3. These warranty services will be provided at no additional cost to the city.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Source Limitations for Masonry Units: Obtain exposed masonry units of a uniform texture and color, or a uniform blend within the ranges accepted for these characteristics, from single source from single manufacturer for each product required.
1. ANGELUS BLOCK CO., INC., (909) 350-0244
 2. BASALITE, (209) 833-3670
 3. ORCO BLOCK CO., INC., (909) 685-1521
 4. RCP BLOCK AND BRICK, INC., (619) 460-7250
- B. Source Limitations for Mortar Materials: Obtain mortar ingredients of a uniform quality, including color for exposed masonry, from single manufacturer for each cementitious component and from single source or producer for each aggregate.

2.2 PERFORMANCE REQUIREMENTS

- A. Provide structural unit masonry that develops indicated net-area compressive strengths at 28 days.
 - 1. Determine net-area compressive strength of masonry from average net-area compressive strengths of masonry units and mortar types (unit-strength method) according to TMS 602/ACI 530.1/ASCE 6.
 - 2. Determine net-area compressive strength of masonry by testing masonry prisms according to ASTM C 1314.

2.3 UNIT MASONRY, GENERAL

- A. Masonry Standard: Comply with TMS 602/ACI 530.1/ASCE 6 except as modified by requirements in the Contract Documents.
- B. Defective Units: Referenced masonry unit standards may allow a certain percentage of units to contain chips, cracks, or other defects exceeding limits stated. Do not use units where such defects are exposed in the completed Work.
- C. Fire-Resistance Ratings: Comply with requirements for fire-resistance-rated assembly designs indicated.
 - 1. Where fire-resistance-rated construction is indicated, units shall be listed and labeled by a qualified testing agency acceptable to authorities having jurisdiction.

2.4 CONCRETE MASONRY UNITS

- A. Shapes: Provide shapes indicated and as follows, with exposed surfaces matching exposed faces of adjacent units unless otherwise indicated.
 - 1. Provide special shapes for lintels, corners, jambs, sashes, movement joints, headers, bonding, and other special conditions.
 - 2. Provide square-edged units for outside corners unless otherwise indicated.
- B. Integral Water Repellent: Provide units made with integral water repellent for exposed units.
 - 1. Integral Water Repellent: Liquid polymeric, integral water-repellent admixture that does not reduce flexural bond strength. Units made with integral water repellent, when tested according to ASTM E 514/E 514M as a wall assembly made with mortar containing integral water-repellent manufacturer's mortar additive, with test period extended to 24 hours, shall show no visible water or leaks on the back of test specimen.
- C. CMUs: ASTM C 90.
 - 1. Unit Compressive Strength: Provide units with minimum average net-area compressive strength of 2150 psi
 - 2. Density Classification: Normal weight
 - 3. Size (Width): Manufactured to dimensions 3/8 inch less-than-nominal dimensions.
 - 4. Exposed Faces: Provide color and texture matching the range represented by DESIGN TEAM's sample.

5. Faces to Receive Plaster: Where units are indicated to receive a direct application of plaster, provide textured-face units made with gap-graded aggregates.

2.5 -MASONRY LINTELS

- A. General: Provide one of the following:
- B. Masonry Lintels: Prefabricated or built-in-place masonry lintels made from bond beam CMUs matching adjacent CMUs in color, texture, and density classification, with reinforcing bars placed as indicated and filled with coarse grout. Cure precast lintels before handling and installing. Temporarily support built-in-place lintels until cured.

2.6 MORTAR AND GROUT MATERIALS

- A. Portland Cement: ASTM C 150/C 150M, Type II. Provide natural color or white cement as required to produce mortar color indicated.
 1. Alkali content shall not be more than 0.1 percent when tested according to ASTM C 114.
- B. Hydrated Lime: CITY OF PERRIS CITY BUILDING CODE SECTION 2103A, ITEM 3
- C. Portland Cement-Lime Mortar: Type "S" proportioned as set forth in 2103A.10 of section 2103A of City of Perris City Building Code or as noted on the contract drawing complying with section 201-5.1 of the "standard specification" with amount of water for a plastic workable mix. Mortar shall be integrally colored as approved by the project manager or inspector.
 1. Mixing time: Machine mixed for at least 3 minutes.
 2. Time of use: Within 30 minutes after leaving the mixer. Any mixture not so used to be discarded. Retempering not permitted.
- D. Masonry Grout: City of Perris City Building Code, Section 2103A.12 proportioned as set forth in Sec. 2103A.12.2 using fine aggregates in grout space where least cell dimension is 4 inches or more. Grout strength as noted on the contract drawings.
 1. Fluid consistency as required for pouring in place without segregation of ingredients.
 2. Mix by machine for at least 3 minutes and use within 30 minutes after leaving the mixer. Discard grout not used.
- E. Aggregate for Mortar: ASTM C 144.
 1. For mortar that is exposed to view, use washed aggregate consisting of natural sand or crushed stone.
 2. For joints less than 1/4 inch thick, use aggregate graded with 100 percent passing the No. 16 sieve.
 3. White-Mortar Aggregates: Natural white sand or crushed white stone.
 4. Colored-Mortar Aggregates: Natural sand or crushed stone of color necessary to produce required mortar color.
- F. Aggregate for Grout: ASTM C 404.
- G. Epoxy Pointing Mortar: ASTM C 395, epoxy-resin-based material formulated for use as pointing mortar for glazed or pre-faced masonry units (and approved for such use by

manufacturer of units); in color indicated or, if not otherwise indicated, as selected by DESIGN TEAM from manufacturer's colors.

- H. Water-Repellent Admixture: Liquid water-repellent mortar admixture intended for use with CMUs containing integral water repellent from same manufacturer.
- I. Water: Potable.

2.7 REINFORCEMENT

- A. Uncoated Steel Reinforcing Bars: ASTM A 615/A 615M or ASTM A 996/A 996M, Grade 60.

2.8 MORTAR AND GROUT MIXES

- A. General: Do not use admixtures, including pigments, air-entraining agents, accelerators, retarders, water-repellent agents, antifreeze compounds, or other admixtures unless otherwise indicated.
 - 1. Do not use calcium chloride in mortar or grout.
 - 2. Use portland cement-lime mortar unless otherwise indicated.
 - 3. For exterior masonry, use portland cement-lime mortar.
 - 4. For reinforced masonry, use portland cement-lime mortar.
 - 5. Add cold-weather admixture (if used) at same rate for all mortar that will be exposed to view, regardless of weather conditions, to ensure that mortar color is consistent.
- B. Preblended, Dry Mortar Mix: Furnish dry mortar ingredients in form of a preblended mix. Measure quantities by weight to ensure accurate proportions, and thoroughly blend ingredients before delivering to Project site.
- C. Mortar for Unit Masonry: Comply with ASTM C 270, Proportion Specification. Provide the following types of mortar for applications stated unless another type is indicated. Before retaining mortar types in subparagraphs below, see Appendix X1 in ASTM C 270 and BIA Technical Notes 8A and 8B for recommendations; coordinate with requirements for masonry compressive strengths.
 - 1. For masonry below grade or in contact with earth, use Type S.
 - 2. For reinforced masonry, use Type S
 - 3. For mortar parge coats, use Type S
 - 4. For exterior, above-grade, load-bearing and nonload-bearing walls and parapet walls; for interior load-bearing walls; for interior nonload-bearing partitions; and for other applications where another type is not indicated, use Type N.
 - 5. For interior nonload-bearing partitions, Type O may be used instead of Type N.
- D. Pigmented Mortar: Use colored cement product[or select and proportion pigments with other ingredients to produce color required. Do not add pigments to colored cement products].
 - 1. Pigments shall not exceed 10 percent of portland cement by weight.
 - 2. Pigments shall not exceed 5 percent of masonry cement or mortar cement by weight.
 - 3. Mix to match DESIGN TEAM's sample.

4. Application: Use pigmented mortar for exposed mortar joints with the following units:
 - a. Decorative CMUs.
 - b. Pre-faced CMUs.
 - c. Cast-stone trim units.
- E. Colored-Aggregate Mortar: Produce required mortar color by using colored aggregates and natural color or white cement as necessary to produce required mortar color.
 1. Mix to match DESIGN TEAM's sample.
 2. Application: Use colored-aggregate mortar for exposed mortar joints with the following units:
 - a. Decorative CMUs.
 - b. Pre-faced CMUs.
 - c. Cast-stone trim units.
- F. Grout for Unit Masonry: Comply with ASTM C 476.
 1. Use grout of type indicated or, if not otherwise indicated, of type (fine or coarse) that will comply with TMS 602/ACI 530.1/ASCE 6 for dimensions of grout spaces and pour height.
 2. Proportion grout in accordance with ASTM C 476, Table 1 but not less than 2000 psi.
 3. Provide grout with a slump of 8 to 11 inches as measured according to ASTM C 143/C 143M.
- G. Epoxy Pointing Mortar: Mix epoxy pointing mortar to comply with mortar manufacturer's written instructions.
 1. Application: Use epoxy pointing mortar for exposed mortar joints with pre-faced CMUs.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.
 1. For the record, prepare written report, endorsed by Installer, listing conditions detrimental to performance of the Work.
 2. Verify that foundations are within tolerances specified.
 3. Verify that reinforcing dowels are properly placed.
 4. Verify that substrates are free of substances that would impair mortar bond.
- B. Before installation, examine rough-in and built-in construction for piping systems to verify actual locations of piping.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION, GENERAL

- A. Build chases and recesses to accommodate items specified in this and other Sections.
- B. Leave openings for equipment to be installed before completing masonry. After installing equipment, complete masonry to match construction immediately adjacent to opening.
- C. Use full-size units without cutting if possible. If cutting is required to provide a continuous pattern or to fit adjoining construction, cut units with motor-driven saws; provide clean, sharp, unchipped edges. Allow units to dry before laying unless wetting of units is specified. Install cut units with cut surfaces and, where possible, cut edges concealed.

3.3 TOLERANCES

- A. Dimensions and Locations of Elements:
 - 1. For dimensions in cross section or elevation, do not vary by more than plus 1/2 inch or minus 1/4 inch.
 - 2. For location of elements in plan, do not vary from that indicated by more than plus or minus 1/2 inch.
 - 3. For location of elements in elevation, do not vary from that indicated by more than plus or minus 1/4 inch in a story height or 1/2 inch total.
- B. Lines and Levels:
 - 1. For bed joints and top surfaces of bearing walls, do not vary from level by more than 1/4 inch in 10 feet, or 1/2-inch maximum.
 - 2. For conspicuous horizontal lines, such as lintels, sills, parapets, and reveals, do not vary from level by more than 1/8 inch in 10 feet, 1/4 inch in 20 feet, or 1/2-inch maximum.
 - 3. For vertical lines and surfaces do not vary from plumb by more than 1/4 inch in 10 feet, 3/8 inch in 20 feet, or 1/2-inch maximum.
 - 4. For conspicuous vertical lines, such as external corners, door jambs, reveals, and expansion and control joints, do not vary from plumb by more than 1/8 inch in 10 feet, 1/4 inch in 20 feet, or 1/2-inch maximum.
 - 5. For lines and surfaces, do not vary from straight by more than 1/4 inch in 10 feet, 3/8 inch in 20 feet, or 1/2-inch maximum.
 - 6. For vertical alignment of exposed head joints, do not vary from plumb by more than 1/4 inch in 10 feet, or 1/2-inch maximum.
 - 7. For faces of adjacent exposed masonry units, do not vary from flush alignment by more than 1/16 inch.
- C. Joints:
 - 1. For bed joints, do not vary from thickness indicated by more than plus or minus 1/8 inch, with a maximum thickness limited to 1/2 inch.
 - 2. For exposed bed joints, do not vary from bed-joint thickness of adjacent courses by more than 1/8 inch.
 - 3. For head and collar joints, do not vary from thickness indicated by more than plus 3/8 inch or minus 1/4 inch.
 - 4. For exposed head joints, do not vary from thickness indicated by more than plus or minus 1/8 inch.

3.4 LAYING MASONRY WALLS

- A. Lay out walls in advance for accurate spacing of surface bond patterns with uniform joint thicknesses and for accurate location of openings, movement-type joints, returns, and offsets. Avoid using less-than-half-size units, particularly at corners, jambs, and, where possible, at other locations.
- B. Bond Pattern for Exposed Masonry: Unless otherwise indicated, lay exposed masonry in running bond; do not use units with less-than-nominal 4-inch horizontal face dimensions at corners or jambs.
- C. Stopping and Resuming Work: Stop work by stepping back units in each course from those in course below; do not tooth. When resuming work, clean masonry surfaces that are to receive mortar, remove loose masonry units and mortar, and wet brick if required before laying fresh masonry.
- D. Built-in Work: As construction progresses, build in items specified in this and other Sections. Fill in solidly with masonry around built-in items.
- E. Fill space between steel frames and masonry solidly with mortar unless otherwise indicated.
- F. Where built-in items are to be embedded in cores of hollow masonry units, place a layer of metal lath, wire mesh, or plastic mesh in the joint below, and rod mortar or grout into core.
- G. Fill cores in hollow CMUs with grout 24 inches under bearing plates, beams, lintels, posts, and similar items unless otherwise indicated.
- H. Build nonload-bearing interior partitions full height of story to underside of solid floor or roof structure above unless otherwise indicated.
 - 1. Install compressible filler in joint between top of partition and underside of structure above.
 - 2. Fasten partition top anchors to structure above and build into top of partition. Grout cells of CMUs solidly around plastic tubes of anchors and push tubes down into grout to provide 1/2-inch clearance between end of anchor rod and end of tube. Space anchors 48 inches o.c. unless otherwise indicated.
 - 3. Wedge nonload-bearing partitions against structure above with small pieces of tile, slate, or metal. Fill joint with mortar after dead-load deflection of structure above approaches final position.
 - 4. At fire-rated partitions, treat joint between top of partition and underside of structure above to comply with Section 078443 "Joint Firestopping."

3.5 MORTAR BEDDING AND JOINTING

- A. Lay hollow CMUs as follows:
 - 1. Bed face shells in mortar and make head joints of depth equal to bed joints.
 - 2. Bed webs in mortar in all courses of piers, columns, and pilasters.
 - 3. Bed webs in mortar in grouted masonry, including starting course on footings.
 - 4. Fully bed entire units, including areas under cells, at starting course on footings where cells are not grouted.

- B. Lay solid CMUs with completely filled bed and head joints; butter ends with sufficient mortar to fill head joints and shove into place. Do not deeply furrow bed joints or slush head joints.
- C. Set cast-stone trim units in full bed of mortar with full vertical joints. Fill dowel, anchor, and similar holes.
 - 1. Clean soiled surfaces with fiber brush and soap powder and rinse thoroughly with clear water.
 - 2. Wet joint surfaces thoroughly before applying mortar.
 - 3. Rake out mortar joints for pointing with sealant.
- D. Rake out mortar joints at pre-faced CMUs to a uniform depth of 1/4 inch and point with epoxy mortar to comply with epoxy-mortar manufacturer's written instructions.
- E. Tool exposed joints slightly concave when thumbprint hard, using a jointer larger than joint thickness unless otherwise indicated.
- F. Cut joints flush for masonry walls to receive plaster or other direct-applied finishes (other than paint) unless otherwise indicated.
- G. Cut joints flush where indicated to receive waterproofing unless otherwise indicated.

3.6 CONTROL AND EXPANSION JOINTS

- A. General: Install control- and expansion-joint materials in unit masonry as masonry progresses. Do not allow materials to span control and expansion joints without provision to allow for in-plane wall or partition movement.
- B. Form control joints in concrete masonry as follows
 - 1. Fit bond-breaker strips into hollow contour in ends of CMUs on one side of control joint. Fill resultant core with grout, and rake out joints in exposed faces for application of sealant.
 - 2. Install preformed control-joint gaskets designed to fit standard sash block.
 - 3. Install interlocking units designed for control joints. Install bond-breaker strips at joint. Keep head joints free and clear of mortar, or rake out joint for application of sealant.
 - 4. Install temporary foam-plastic filler in head joints, and remove filler when unit masonry is complete for application of sealant.

3.7 LINTELS

- A. Provide masonry lintels where shown and where openings of more than 12 inches for brick-size units and 24 inches for block-size units are shown without structural steel or other supporting lintels.
- B. Provide minimum bearing of 8 inches at each jamb unless otherwise indicated.

3.8 FLASHING

- A. General: Install embedded flashing at ledges and other obstructions to downward flow of water in wall where indicated.
- B. Install flashing as follows unless otherwise indicated:
1. Prepare masonry surfaces so they are smooth and free from projections that could puncture flashing. Where flashing is within mortar joint, place through-wall flashing on sloping bed of mortar and cover with mortar. Before covering with mortar, seal penetrations in flashing with adhesive, sealant, or tape as recommended by flashing manufacturer.
 2. At lintels, extend flashing a minimum of 6 inches into masonry at each end. At heads and sills, extend flashing 6 inches at ends and turn up not less than 2 inches to form end dams.
 3. Interlock end joints of ribbed sheet metal flashing by overlapping ribs not less than 1-1/2 inches or as recommended by flashing manufacturer, and seal lap with elastomeric sealant complying with requirements in Section 079200 "Joint Sealants" for application indicated.
 4. Install metal drip edges and sealant stops with ribbed sheet metal flashing by interlocking hemmed edges to form hooked seam. Seal seam with elastomeric sealant complying with requirements in Section 079200 "Joint Sealants" for application indicated.
 5. Install metal drip edges beneath flexible flashing at exterior face of wall. Stop flexible flashing 1/2 inch back from outside face of wall, and adhere flexible flashing to top of metal drip edge.
 6. Install metal flashing termination beneath flexible flashing at exterior face of wall. Stop flexible flashing 1/2 inch back from outside face of wall, and adhere flexible flashing to top of metal flashing termination.
 7. Cut flexible flashing off flush with face of wall after masonry wall construction is completed.
- C. Install single-wythe CMU flashing system in bed joints of CMU walls where indicated to comply with manufacturer's written instructions. Install CMU cell pans with upturned edges located below face shells and webs of CMUs above and with weep spouts aligned with face of wall. Install CMU web covers so that they cover upturned edges of CMU cell pans at CMU webs and extend from face shell to face shell.
- D. Install reglets and nailers for flashing and other related construction where they are shown to be built into masonry.

3.9 REINFORCED UNIT MASONRY INSTALLATION

- A. Temporary Formwork and Shores: Construct formwork and shores as needed to support reinforced masonry elements during construction.
1. Construct formwork to provide shape, line, and dimensions of completed masonry as indicated. Make forms sufficiently tight to prevent leakage of mortar and grout. Brace, tie, and support forms to maintain position and shape during construction and curing of reinforced masonry.
 2. Do not remove forms and shores until reinforced masonry members have hardened sufficiently to carry their own weight and other loads that may be placed on them during construction.
- B. Placing Reinforcement: Comply with requirements in TMS 602/ACI 530.1/ASCE 6.

- C. Grouting: Do not place grout until entire height of masonry to be grouted has attained enough strength to resist grout pressure.
 - 1. Comply with requirements in TMS 602/ACI 530.1/ASCE 6 for cleanouts and for grout placement, including minimum grout space and maximum pour height.
 - 2. Limit height of vertical grout pours to not more than 64 inches

3.10 FIELD QUALITY CONTROL

- A. Testing and Inspecting: Owner will engage special inspectors to perform tests and inspections and prepare reports. Allow inspectors access to scaffolding and work areas as needed to perform tests and inspections. Retesting of materials that fail to comply with specified requirements shall be done at Contractor's expense.
- B. Inspections: Special inspections according to Level B in TMS 402/ACI 530/ASCE 5.
 - 1. Begin masonry construction only after inspectors have verified proportions of site-prepared mortar.
 - 2. Place grout only after inspectors have verified compliance of grout spaces and of grades, sizes, and locations of reinforcement.
 - 3. Place grout only after inspectors have verified proportions of site-prepared grout.
- C. Testing Prior to Construction: One set of tests.
- D. Testing Frequency: One set of tests for each 5000 sq. ft. of wall area or portion thereof.
- E. Concrete Masonry Unit Test: For each type of unit provided, according to ASTM C 140 for compressive strength.
- F. Mortar Aggregate Ratio Test (Proportion Specification): For each mix provided, according to ASTM C 780.
- G. Mortar Test (Property Specification): For each mix provided, according to ASTM C 780. Test mortar for mortar air content and compressive strength.
- H. Grout Test (Compressive Strength): For each mix provided, according to ASTM C 1019.
- I. Prism Test: For each type of construction provided, according to ASTM C 1314 at 7 days and at 28 days.

3.11 REPAIRING, POINTING, AND CLEANING

- A. Remove and replace masonry units that are loose, chipped, broken, stained, or otherwise damaged or that do not match adjoining units. Install new units to match adjoining units; install in fresh mortar, pointed to eliminate evidence of replacement.
- B. Pointing: During the tooling of joints, enlarge voids and holes, except weep holes, and completely fill with mortar. Point up joints, including corners, openings, and adjacent construction, to provide a neat, uniform appearance. Prepare joints for sealant application, where indicated.
- C. In-Progress Cleaning: Clean unit masonry as work progresses by dry brushing to remove mortar fins and smears before tooling joints.

- D. Final Cleaning: After mortar is thoroughly set and cured, clean exposed masonry as follows:
1. Remove large mortar particles by hand with wooden paddles and nonmetallic scrape hoes or chisels.
 2. Test cleaning methods on sample wall panel; leave one-half of panel uncleaned for comparison purposes. Obtain DESIGN TEAM's approval of sample cleaning before proceeding with cleaning of masonry.
 3. Protect adjacent stone and nonmasonry surfaces from contact with cleaner by covering them with liquid strippable masking agent or polyethylene film and waterproof masking tape.
 4. Wet wall surfaces with water before applying cleaners; remove cleaners promptly by rinsing surfaces thoroughly with clear water.
 5. Clean concrete masonry by applicable cleaning methods indicated in NCMA TEK 8-4A.

3.12 MASONRY WASTE DISPOSAL

- A. Salvageable Materials: Unless otherwise indicated, excess masonry materials are Contractor's property. At completion of unit masonry work, remove from Project site.
- B. Waste Disposal as Fill Material: Dispose of clean masonry waste, including excess or soil-contaminated sand, waste mortar, and broken masonry units, by crushing and mixing with fill material as fill is placed.
1. Crush masonry waste to less than 4 inches in each dimension.
 2. Mix masonry waste with at least two parts of specified fill material for each part of masonry waste. Fill material is specified in Section 312000 "Earth Moving."
 3. Do not dispose of masonry waste as fill within 18 inches of finished grade.
- C. Masonry Waste Recycling: Return broken CMUs not used as fill to manufacturer for recycling.
- D. Excess Masonry Waste: Remove excess clean masonry waste that cannot be used as fill, as described above or recycled, and other masonry waste, and legally dispose of off Owner's property.

END OF SECTION

SECTION 051200

STRUCTURAL STEEL FRAMING

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Structural steel.
2. Prefabricated building columns.
3. Field-installed shear connectors.
4. Grout.

B. Related Requirements:

1. Section 051213 "DESIGN TEAMurally Exposed Structural Steel Framing" for additional requirements for DESIGN TEAMurally exposed structural steel.
2. Section 053100 "Steel Decking" for field installation of shear connectors through deck.
3. Section 055000 "Metal Fabrications" for steel lintels and shelf angles not attached to structural-steel frame, miscellaneous steel fabrications, and other steel items not defined as structural steel.
4. Section 099113 "Exterior Painting" and Section 099123 "Interior Painting" and Section 099600 "High-Performance Coatings" for surface-preparation and priming requirements.
5. Section 133419 "Metal Building Systems" for structural steel.

C. Applicable Code:

1. City of Perris City Building Code and applicable Amendments.
2. American Institute of Steel Construction (A.I.S.C.) Code of Standard Practice for Steel Buildings and Bridges.
3. American Welding Society (AWS) - "Code D1-1 Structural Welding Code".

D. Applicable Standards:

1. A.I.S.C. Specifications for Design, Fabrication and Erection of Structural Steel for Buildings.
2. Research Council on Riveted and Bolted Structural Joints (R.C.R.B.S.J.) of Foundation Specifications for "Structural Joints Using ASTM A325(SPECIFICATIONFOR STRUCTURAL BOLTS, STEEL, HEAT TREATED, 120/1 05 KSI, MINIMUM TENSILE STRENGTH) Bolts".

1.2 DEFINITIONS

- A. Structural Steel: Elements of the structural frame indicated on Drawings and as described in AISC 303, "Code of Standard Practice for Steel Buildings and Bridges."

SECTION 05010 - MISCELLANEOUS METALS - BUILDING

I. GENERAL

The provisions of the Standard Specifications for Public Works Construction (SSPWC) latest adopted edition, apply except as modified herein.

A. Scope:

Furnish materials and perform labor required to execute this work as indicated on the drawings, as specified, and as necessary to complete the Contract, including, but not limited to, these major items:

1. The extent of miscellaneous metal fabrications is shown on Drawings and includes items fabricated from iron and steel shapes, sheet goods, plates, bars, strips, tubes, pipes, and castings.
2. Items include, but are not limited to:
 - a. Columns and miscellaneous structural members.
 - b. Bollards.
 - c. Angles and plates.
 - d. Miscellaneous supports (concealed or exposed) for other finishes, equipment or construction.
 - e. Shapes, sleeves, anchors, connectors, plates, backing plates, supports and fastenings required, but which are not specified in other sections.
 - f. Woven wire panel.
 - g. Prime coating ungalvanized steel items.
 - h. Welding.
3. Inserts and Anchorages: Furnish inserts and anchoring devices which must be set in concrete or built into other construction for installation of miscellaneous metal work. Provide setting drawings, templates, instructions and directions for installation of anchorage devices. Coordinate delivery with other work to avoid delay.

B. Related Work Specified Elsewhere:

Setting of items to be embedded in concrete or masonry. Sections 03300 & 04200
Finish Hardware, Section 08710.
Finish Painting, Section 09900.
Prefabricated metal items - Pertinent sections.

C. General Requirements:

Field Conditions. Verify drawing dimensions with actual field conditions. Inspect related work and adjacent surfaces. Report to the owner and DESIGN TEAM all conditions which prevent proper execution of this work.

Shop Drawings. Submit six (6) sets in accordance with Sections 01340 and 05120, showing in complete detail all information required for fabrication, finishing and installation of this work.

Codes. Materials and work shall conform to the governing Building Code. In case of conflict between these specifications and the Building Code, the more stringent shall govern.

General. Examine all drawings and specifications and include all miscellaneous metal which is specified in other sections. Provide all connections, anchors, bolts, and other fastenings as required. Do all cutting, punching, drilling and tapping required for proper assembly of the work.

Delivery. Ensure that items to be set in concrete or masonry are delivered at the proper time.

Shop Assembly: Preassemble items in shop to greatest extent possible to minimize field splicing and assembly. Disassemble units only as necessary for shipping and handling limitations. Clearly mark units for reassembly and coordinated installation.

D. Work Furnished but Installed by Others:

Furnish connections and connectors necessary for the completion of the work of other sections of these specifications.

E. Quality Assurance:

Material quality standards and testing procedures shall be in accordance with the American Society for Testing Materials, hereinafter referred to as ASTM. All ASTM standards and testing procedures shall be the latest requirements.

All fabrication and erection of steel work shall be in conformance with the requirements of the American Institute of Steel Construction (AISC).

All welding and built-up welded members shall conform to the requirements of the American Welding Society (AWS).

Tests and Inspections: See Section 01410.

Tests and Inspections shall be made by a testing laboratory approved by the Structural Engineer.

The cost of sampling and testing shall be borne by the owner.

One tension and one bend test shall be made for each size and shape of steel designated in the Test and Inspection Request Form.

Prepare and distribute test reports as required by Section 01410.

Additional tests of material shall be made when, and as directed by the Structural Engineer. Cost of these tests shall be borne by the owner.

Inspection of welding designated on the Test and Inspection Request Form shall be made by an Inspector approved by the Structural Engineer who shall certify that the welding is in compliance with these drawings and specifications. The Contractor shall provide access to the work for inspection purposes, and shall notify the Inspector when work is to be performed. The cost of this inspection shall be borne by owner.

F. Submittals:

Submit six sets of shop drawings of work specified herein and as shown on drawings & details.

Fabrication and/or erection prior to receipt of Structural Engineer's approval is at Contractor's sole risk. All shop and fabrication drawings shall be referenced to the applicable sections or details on the Contract Drawings. Shop drawings not so referenced will be rejected.

G. Warranty

1. All fabrications and assemblies under this section of specifications shall be warranted for two (2) years from date of Owner acceptance from defects in materials, products and workmanship - shop and field labor.

a. At the option of the Owner, repair or remove and replace all such defective materials and products at no additional cost to Owner during the warranty period, and at the convenience of the Owner. There shall be no prorations.

H. Refer to the structural general notes on sheets S-1 of the drawings. Also refer to additional notes on the DESIGN TEAMural plans and details.

II. EXECUTION

A. Materials and Components

1. Metal Surfaces, General: For fabrication of miscellaneous metal work which will be exposed to view, use only materials which are smooth and free of surface blemishes including pitting, seam marks, roller marks, rolled trade names and roughness.

a. Wherever metal is to be corrosion-resistant and is to be in contact with treated wood, metal shall be stainless steel or steel shall be G185 finish in conformity with E2-94 of the American Wood Preserver' Association. This standard shall take precedence to other finishes as specified hereafter.

2. Malleable Iron Casting; Conform to ASTM A47.

3. Welding Rods: Conform to requirements of AWS for intended use & ASTM E70XX.

4. Steel Plates, Shapes and Bars: ASTM A 36 and A992.

5. Steel Tubing: Hot-formed, seamless, ASTM A 501 or cold-formed, ASTM A 500.

6. Structural Steel Sheet: Hot-rolled, ASTM A 570; or cold-rolled ASTM A611, Class 1; of grade required for design loading.
7. Galvanized Structural Steel Sheet: ASTM A 446, of grade required for design loading.
8. Steel Pipe: ASTM A 53; Type S; Grade B; black finish unless galvanizing is required; standard weight (Schedule 40), unless otherwise shown or specified.
9. Brackets, Flanges and Anchors: Cast or formed metal of the same type material and finish as supported rails, unless otherwise indicated.
10. Concrete Inserts: Threaded or wedge type, galvanized ferrous castings, either malleable iron ASTM A 47 or cast steel ASTM A 27. Provide bolts, washers and shims as required, hot-dip galvanized, ASTM A 153.
11. Fasteners: provide zinc-coated fasteners for exterior use or where built into exterior walls. Select fasteners for the type, grade and class required.
 - a. Bolts and Nuts: Regular hexagon head type, ASTM A 325.
 - b. Lag Bolts: Square head type, FS FF-B-561.
 - c. Machine Screws: Cadmium plated steel, FS FOF-S-92.
 - d. Wood Screws: Flat head carbon steel, FS FF-S-1 I .
 - e. Plain Washers: Round, carbon steel, FS FF-W-92.
 - f. Lock Washers: Helical spring type carbon steel, FS FF-W-84.
 - g. Masonry Anchorage Devices: Expansion shields, FS FF-S-325.
12. Non-Metallic, Non-Shrink Grout: CE-CRD-C621, factory pre-mixed grout. Provide one of the following:
 Masterflow 713; Chemrex, Inc.
 Five Star Grout; U.S. Group Corp.
 Upeon; Upeo Chem. Div., USM Corp.
13. Proprietary Support Framing System for Other Finishes, Equipment or Construction System: Provide Unistrut Metal Framing products.
 - a. For exposed use in wet, potentially wet, or elevated moisture conditions: Provide Type 304 Stainless Steel.
 - b. For permanently concealed use in wet, potentially wet, or elevated moisture conditions: Provide Type 316 Stainless Steel.
 - c. For all other conditions, concealed or exposed: Provide hot-dipped galvanized.
14. Paint:
 - a. Shop Primer for Ferrous Metal: Manufacturer's or Fabricator's standard, fast-curing, lead-free, "universal" primer; selected for good resistance to normal atmospheric corrosion, for compatibility with finish paint systems indicated and for capability to provide a

sound foundation for field-applied topcoats despite prolonged exposure; complying with performance requirements of FS Tr-P-645.

- b. Coordinate selection of metal primer with finish paint requirements specified in Division 9.
- c. Galvanizing Repair Paint: Organic zinc rich paint complying with DOD-P-ZI035 or SPCC Paint-20, with dry film containing not less than 94% zinc dust by weight.
- d. Bituminous Paint: Cold-applied asphalt mastic complying with SPCC-Paint 12 except containing no asbestos fibers

B. Fabrication

- 1. Use materials of size and thickness shown or, if not shown, of required size and thickness to produce strength and durability in finished product. Work to dimensions shown or accepted on shop drawings, using proven details of fabrication and support. Use type of materials shown or specified for various components of work.
- 2. Use hot-rolled steel bars for work fabricated from bar stock, unless shown or specified to be fabricated for cold-finished or cold-rolled stock.
- 3. Supply as part of this Section, miscellaneous small parts of material thinner than 10 gage, or items specifically called out in this section, when such supply is a normal and accepted part of the work.
- 4. Form exposed work true to line and level with accurate angles and surfaces and straight sharp edges. Ease exposed edges to a radius of approximately 1/32 inch unless otherwise shown. Form bent metal corners to smallest radius possible without causing grain separation or otherwise impairing work.
- 5. Weld corners and seams continuously, complying with AWS recommendations. At exposed connections, grind exposed welds smooth and flush, to match and blend with adjoining surfaces.
- 6. Form exposed connections with hairline joints, flush and smooth, using concealed fasteners wherever possible. Use exposed fasteners of type shown or, if not shown, Phillips flat-head countersunk screws or bolts.
- 7. Provide type of anchorage show. Coordinate with supporting structure. Fabricate and space anchoring devices as shown and as required to provide adequate support for intended use.
- 8. Cut, reinforce, drill and tap miscellaneous metal work as required to receive finish hardware and similar items.
- 9. Fabricate joints which will be exposed to weather in a manner to exclude water or provide weep holes where water may accumulate.
- 10. Galvanizing: All steel items and fabrications (including trellis/shade fabrication) shall be galvanized and where items of Work may be specified to be galvanized. Typically galvanize steel items and fabrications which are as follows:

- a. Exterior steel lintels supporting masonry, and all other building components and fabricated items which are located on the exterior ambient side of the building and in areas subject to elevated water, moisture, or humidity conditions (defined as greater than 70 percent RH on a sustained basis), as follows:
 - 1. ASTM A 123 for galvanizing rolled, pressed and forged steel shapes, plates, bars and strip 1/8 inch thick and heavier.
 - 2. ASTM A 386 for galvanizing assembled steel products. Do galvanizing after fabrication with work assembled in as large sections as can be handled.
 - 3. ASTM A 153 for galvanizing iron and steel hardware.
 - 4. Hot dip galvanize all ferrous metal work after fabrication.
 - b. All building components exposed to exterior ambient conditions.
 - c. All exterior to-be-concealed building components receiving subsequent finishing or other construction.
 - d. Wherever metal is to be corrosion-resistant and is to be in contact with treated wood, metal shall be stainless steel or steel shall be G185 finish in conformity with E12-94 of the American Wood Preservers' Association.
 - e. Use galvanizing repair paint acceptable to DESIGN TEAM following assembly of parts requiring field welding of components and parts.
11. Shop Painting: Shop paint miscellaneous metal work, except members or portions of members to be embedded in concrete or masonry, surfaces and edges to be field welded, and galvanized surfaces, unless otherwise specified.
- a. Remove scale, rust and other deleterious materials before applying shop coat. Clean off heavy rust and loose mill scale in accordance with SPCC SP-2 "Hand Tool Cleaning", or SPCC SP-3 "Power Tool Cleaning" or SPCC SP-7 "Brush-Off Blast Cleaning".
 - b. Remove oil, grease and similar contaminants in accordance with SPCC SP-1 "Solvent Cleaning".
 - c. Immediately after surface preparation, brush or spray on primer in accordance with manufacturer's instructions, and at a rate to provide uniform dry film thickness of 1.0 mils for each coat. Use painting methods which will result in full coverage of joints, comers, edges and exposed surfaces.
 - d. Apply one shop coat to fabricated metal items, except apply 2 coats of paint to surfaces inaccessible after assembly or erection. Change color of second coat to distinguish it from the first.

C. Miscellaneous Metal Fabrications

- 1. Manufacture or fabricate items to sizes, shapes and dimensions required. Furnish malleable iron washers for heads and nuts which bear on wood structural connections; elsewhere, furnish steel washers.

2. Hot dip galvanize all exterior metal work after fabrication unless otherwise indicated. All projections, barbs, and icicles shall be removed after galvanizing.
3. Rough Hardware: Furnish bent or otherwise custom fabricated bolts, plates, anchors, hangers, dowels and other miscellaneous steel and iron shapes as required for framing and supporting woodwork and countertops, and for anchoring or securing woodwork and countertops to concrete or other structures. Furnish fabricated steel (ASTM A 36) shapes, plates and bars, welded into assemblies of types and sizes indicated. Straight bolts and other stock rough hardware items are specified in Division 6 sections.
 - a. Finish fabricated assemblies intended for exterior or potentially elevated moisture or water-use, with hot-dip zinc coating (ASTM A 153), including bolts and other fasteners.
4. Miscellaneous Framing and Supports: Provide miscellaneous steel framing and supports which are not a part of structural steel framework, as required to complete work.
 - a. Fabricate miscellaneous units to sizes, shapes and profiles shown or, if not shown, of required dimensions to receive adjacent other work to be retained by framing. Except as otherwise shown, fabricate from structural steel shapes and plates and steel bars, of welded construction using mitered joints for field connection. Cut, drill and tap units to receive hardware and similar items.
 - b. Equip units with integrally welded anchor straps for casting into poured concrete or building into masonry wherever required. Furnish inserts if units must be installed after concrete is placed. Except as otherwise shown, place anchors 24 inches o.c. and provide minimum anchor units of 1-1/4 x 1/4 x 8 inch steel straps.
5. Miscellaneous Steel Trim, Provide shapes and sizes as required for profiles shown. Except as otherwise noted, fabricate units from structural steel shapes and plates and steel bars, with continuously welded joints and smooth exposed edges. Provide cutouts, fittings and anchorages as required for coordination of assembly and installation of other work. Galvanize miscellaneous steel trim where indicated.
6. Steel Guard Posts: Round galvanized pipe, concrete filled, diameters shown on drawings, or if not shown, 6 inches.
7. Trash Enclosure Gate: Fabricate frame from square thick-wall steel tubes, with fully welded connections. Bolted connections will not be acceptable. Provide shallow box-type corrugated siding panels, minimum 16 gage.
 - a. Hinges: Extra-heavy-duty paint-grade strap hinges, minimum 4 per gate leaf.
 - b. Wheels: Provide each leaf with 3 inch diameter rubber wheel to support outer edge of gate. Truck for wheels shall be fabricated from 1/8 inch steel formed, and supply with permanently lubricated ball-bearings.
 - c. Supply each gate leaf with a cane bolts for positive closure and fastening such that gate can be locked. Include lock hasp on each

bolting mechanism. Each gate must be capable of being locked independently and together.

- d. All fasteners shall be tamper-resistant.
- e. Complete assembly (except wheels) shall be shop primed and ready for field finishing.

8. Decorative Metal Wall Panels: Provide Chelsea No. 24-15 Victorian embossed metal panels manufactured by Chelsea Decorative Metal Company (713-721-9200), or other approved. Finish shall be as selected by DESIGN TEAM.

D. Items Embedded in Concrete:

Provide bolts, eyebolts, dowels, anchors, plates, inserts, and other miscellaneous items that are to be installed in forms before concrete pouring, or for building into masonry, as indicated. Examine and check the drawings for the number type and location of such items.

E. Installation:

Install all items plumb, level and square, securely and rigidly attached to supporting construction and as detailed.

F. Description of Items:

Those items which are standard or stock design which are sufficiently detailed or described on the drawings to permit their fabrication and installation are not covered herein even though they may be included in the scope.

Channel jambs for wood gates, straps, anchors and plates for timbers.

1. Wire mesh panels:

Fabric: as shown on drawings.

Frames: as shown on drawings.

G. Welding:

All welding shall conform to requirements of the Committee for Standard Tests for Welds of the American Welding Society. All welding shall be electric arc process. Welds exposed in finish work shall be filled out flush, ground and dressed. Welders for structural shall be certified.

H. Inspection of Welding:

Inspection of all welding shall be done under the direct supervision of an approved and licensed welding inspector. Steel fabricator shall notify the welding inspector prior to and shall not commence any welding without the welding inspector present. The owner shall be furnished a report by the welding inspector verifying that the welds conform to the drawings and specifications. (See Inspector of Work - Section 01420.)

III. Execution

A. Preparation

1. Coordinate anchorages, setting drawings, diagrams, templates, instructions, and directions for installation of anchorages, such as concrete inserts, anchor bolts and miscellaneous items having integral anchors, which are to be embedded in concrete or masonry construction. Coordinate delivery of such items to project site.

B. Installation

1. **Fastening to In-Place Construction:** Provide anchorage devices and fasteners where necessary for securing miscellaneous metal fabrications to in-place construction, including threaded fasteners for concrete and masonry inserts, toggle bolts, through-bolts, lag bolts, wood screw and other connectors as required.
2. **Cutting and Fitting:** Perform cutting, drilling and fitting required for installation of miscellaneous metal fabrications. Fit exposed connections accurately together to form tight hairline joints. Weld connections which are not to be left as exposed joints, but cannot be shop welded because of shipping size limitations. Grind joints smooth and touch-up shop paint coat. Do not weld, cut or abrade the surfaces of exterior units which have been not-dip galvanized after fabrication, and are intended for bolted or screwed field connections.
3. **Placement:** Set work accurately in location, alignment and elevation, plumb, level, true and free of rack, measured from established lines and levels. Provide temporary bracing or anchors in formwork for items which are to be built into concrete, masonry or similar construction.
4. **Field Welding:** Comply with AWS Code for procedures of manual shielded metal-arc welding, appearance and quality of welds made, and methods used in correcting welding work.
5. **Corrosion Protection:** Coat concealed surfaces of aluminum that will come into contact with grout, concrete, masonry, wood, or dissimilar metals with a heavy coat of bituminous paint or zinc chromate primer.
6. **Touch-up Painting:** Immediately after erection, clean field welds, bolted connections, and abraded areas of shop paint, and paint exposed areas with same material as used for shop painting. Apply by brush or spray to provide a minimum dry film thickness of 2.0 mils.
7. **Repair of Galvanized Surfaces:** Repair areas damaged by welding, cutting or during handling, transport or erection in accordance with ASTM A 780 by application of multiple coats of galvanizing repair paint, to dry film thickness of 8 mils.

SECTION 05120 - STRUCTURAL STEEL - BUILDING

The provisions of the Standard Specifications for Public Works Construction (SSPWC) latest adopted edition apply except as modified herein.

I. GENERAL

A. Scope:

Furnish materials and perform labor required to execute this work as indicated on the drawings, as specified, and as necessary to complete the Contract, including but not limited to these major items:

All structural steel framing, and support members including plates and channels;
Furnishing of anchor bolts, base plates, expansion plates, shear stud connectors.

B. Related Work Specified Elsewhere:

Setting of anchor bolts. Section 03300 and 04200
Miscellaneous metal work; Section 05010

C. References

1. ASTM A53 - Hot-Dipped, Zinc-coated Welded and Seamless Steel Pipe.
2. ASTM A108 - Steel Bars, Carbon, Cold-Finished, Standard Quality.
3. ASTM A123 - Zinc (Hot Dipped Galvanized) Coatings on Iron and Steel Products.
4. ASTM A153 - Zinc Coating (Hot Dip) on Iron and Steel Hardware.
5. ASTM A307 - Carbon Steel Externally Threaded Standard Fasteners.
6. ASTM A325 - High Strength Bolts for Structural Steel Joints.
7. ASTM A500 - Cold-Formed Welded and Seamless Carbon Steel Structural Tubing in Round and Shapes.
8. ASTM A501 - Hot-Formed Welded and Seamless Carbon Steel Structural Tubing.
9. ASTM A992 - Standard Specification for Steel for Structural Shapes for Use in Building Framing.
10. AWS A2.0 - Standard Welding Symbols.
11. AWS D1.1 - Structural Welding Code.
12. AISC - Specification for the Design, Fabrication and Erection of Structural Steel for Buildings.
13. AISC - Specification for DESIGN TEAMural Exposed Structural Steel.
14. SSPC - Steel Structures Painting Council.

D. Submittals

1. Submit under provisions of Section 01340.
2. Shop Drawings:
 - a. Indicate profiles, sizes, spacing, and locations of structural members, openings, attachments and fasteners.
 - b. Connections not detailed.
 - c. Cambers loads.
 - d. Indicate welded connections with AWS A2.0 welding symbols. Indicate net weld lengths.
 - e. Shop drawings shall be prepared by and submitted with the wet-signature of a professional structural engineer currently licensed in the State of the project work.
3. **Manufacturer's Mill Certificate:** Submit under provisions of Section 01 45 00 certifying that products meet or exceed specified requirements.
4. **Mill Test Reports:** Submit under provisions of Section 01 45 00 Manufacturer's Certificates, indicating structural strength, destructive and non-destructive test analysis.
5. **Welder' Certificates:** Submit under provisions of Section 01 45 00 Manufacturer's Certificates, certifying welders employed on the Work, verifying AWS qualifications within the previous 12 months.

E. Quality Assurance

1. Fabricate structural steel members in accordance with AISC-Specification for the Design, Fabrication and Erection of Structural Steel for Buildings.
2. Maintain one current copy of document on site at all times.

F. Qualifications

1. **Fabricator:** Company specializing in performing the work of this Section with minimum five years documented experience.
2. **Erector:** Company specializing in performing the work of this Section with minimum five years documented experience.
3. Design connections not detailed on the Drawings under direct supervision of a Professional Structural Engineer experienced in design of this work and licensed at the place where the Project is located.

G. Field Measurements

1. Verify in writing that field measurements are as shown on shop drawings.

H. Testing and Inspections

1. Independent Laboratory shall check structural steel erection for compliance with AISC Specifications including Section 8 or the "Structural Joints Using ASTM A325 or A490 Bolts", latest Edition. Coordinate erection and testing to facilitate construction.
2. Inspection will be required of a random selection of 10 percent of all high strength shop and field bolting. To be acceptable, 95 percent of all bolts inspected shall comply with Section 8 of the AISC. If the bolting fails to meet these requirements, bolts shall be reworked and additional testing of 50 percent of all bolts shall be performed until the above requirements are met. Additional testing shall not be at Owner expense.
3. Testing laboratory shall perform visual inspection on 10 percent of all fabricated pieces prior to shipping and on all field work (as applicable) at the site as follows:
 - a. Beam/Column Moment Connection Welds..... 100 Percent
 - b. Beam to Column/Ended Plate welds and Brace welds..... 100 Percent
 - c. Joist Girder to Column/Beam Welds 50 Percent
 - d. Joist to Beam/Embedded Plate Welds: 10 Percent
 - e. Edge Angle to Beam/Joist Welds 10 Percent
 - f. Miscellaneous Framing Welds:..... 10 Percent

To be accepted, 85 percent of all visual welds shall be inspected in accordance with AWS D1.1. If the welds fail to meet these requirements, the welds shall be reworked and additional visual inspections of 100 percent of all welds shall be made until above requirements are met. Additional testing and inspections shall not be at Owner expense.

4. Perform ultrasonic testing in accordance with AWS D1/1 on 100 percent of all partial and full penetration welds (if applicable).

II. MATERIAL

A. Materials:

New tested stock of domestic manufacture complying with standard specifications hereinafter referenced. If foreign material is used, it shall meet or exceed the requirements of all authorities having jurisdiction.

B. Structural Steel:

Conform to ASTM A36 unless noted otherwise on Drawings.

C. Structural Glide Flange Shapes:

Conform to ASTM A992.

SECTION 050513 SHOP-APPLIED COATINGS FOR METAL

[SECTION 050513 - SHOP-APPLIED COATINGS FOR METAL]
[SECTION 05080 - FACTORY-APPLIED METAL COATINGS]

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Shop-applied coatings for DESIGN TEAMural metals.
- B. Related Sections:

1. Division 05 Section "Decorative Metal".

2. Division 05 Section "Decorative Formed Metal".

1.2 SUBMITTALS

A. Product Data: For each type of coating product specified.

B. Samples for Selection: For each color, gloss specified.

D. Samples for Verification: For each coating product, for each color, gloss, and texture specified, on specified substrate.

E. Product test reports.

F. Qualifications: For shop-applied coatings Applicator.

G. Maintenance data.

H. Warranty: Sample of special warranty.

1.3 QUALITY ASSURANCE

A. Applicator Qualifications: Coating manufacturer's [approved] [certified] Applicator who is equipped, trained and approved for application of coatings required for this Project, and is approved to provide warranty specified in this Section.

1.4 DELIVERY, STORAGE, AND HANDLING

A. Deliver, unload, and store shop-coated items so that they remain free of damage or deformation. Package and protect items during shipping and handling. Protect stored items from water; stack to facilitate drainage. Keep shop-coated items out of contact with materials that may adversely affect the coating.

B. Protect shop-coated items with protective covering until installed.

1.5 COORDINATION

A. Coordinate submittal and selection procedures for items to receive shop-applied coatings. Where items are indicated to match coatings selected for other items, adjust formulations as required to achieve match. Submit samples for verification indicating compliance with matching requirements.

1.6 WARRANTY

A. Coating Warranty: Coating Applicator's warranty in which Applicator agrees to repair finish or replace coated items that demonstrate deterioration of shop-applied finishes within warranty period indicated.

1. Exposed Coating: Deterioration includes but is not limited to:

- a. Color fading in excess of 5 Delta E Hunter units per ASTM D 2244.
- b. Peeling, checking, or cracking of coating adhesion to metal.
- c. Chalking in excess of a No. 8 per ASTM D 4214, when tested per Method D 659.
- d. Corrosion of substrate in excess of a No. 6 on cut edges and a No. 8 on field surfaces, when measured per ASTM D 1654.

2. Warranty Period: [10] [20] [25] [30] years from date of Substantial Completion.

[05 05 13] [05080] SHOP-APPLIED COATINGS FOR METAL

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Basis-of-Design Product: Provide shop-applied coatings manufactured by _____
[or comparable products of another manufacturer approved by DESIGN TEAM prior to bid].

2.2 APPROVED COATING APPLICATORS

A. Acceptable Applicators: Provide shop-applied coatings applied by one of the following
[manufacturer-approved] [manufacturer-certified] applicators:

1. <Insert list of acceptable applicators>.

2.3 POWDER COATING MATERIALS - EXTRUSIONS

A. Powder Coatings, Fluoropolymer, meeting performance requirements of AAMA 2605:

1. Product: PPG Industries, Inc., Duranar Powder Coating.
2. Pencil Hardness, ASTM D 3363: F, minimum.
3. Salt Spray Resistance, ASTM G 85: 2,000 hours.
4. Humidity Resistance, ASTM D 2247: 4,000 hours.
5. Dry Film Thickness, ASTM D 7901: 0.20-0.30 mil primer coat plus 1.5 to 2.5 mil Duranar Powder Topcoat, 1.7 mil total, minimum thickness.

B. Powder Coatings, Fluoropolymer, meeting performance requirements of AAMA 2605:

1. Product: PPG Industries, Inc., Corafon Powder Coating.
2. Pencil Hardness, ASTM D 3363: F, minimum.
3. Salt Spray Resistance, ASTM G 85: 2,000 hours.
4. Humidity Resistance, ASTM D 2247: 4,000 hours.
5. Dry Film Thickness, ASTM D 7901: [2.0] mil, minimum thickness.

C. Powder Coatings, Polyester, meeting performance requirements of AAMA 2604:

1. Product: PPG Industries, Inc., Envirocron 04 Ultra-Durable Powder Coating.
2. Pencil Hardness, ASTM D 3363: H – 2H.
3. Salt Spray Resistance, ASTM B 117: 3,000 hours.
4. Humidity Resistance, ASTM D 2247: 3,000 hours.
5. Dry Film Thickness, ASTM D 7901: [2.0] mil, minimum thickness.

2.8 FINISHES

A. Pretreatment: Mechanically clean and chemically pretreat fabricated items in accordance with coating manufacturer's requirements and AAMA requirements for finish indicated.

B. Application: Apply primer and finish coats in accordance with coating manufacturer's requirements for finish indicated.

2.9 SHOP-APPLIED COATINGS SCHEDULE

A. High-Performance Organic Finish for Aluminum Extruded Items: [2-coat] [3-coat] fluoropolymer finish: [AAMA 2604] [AAMA 2605].

1. Coated Items: <Insert list of extruded items to receive high-performance organic finish>.

2. Color: [Match custom sample] [As selected from manufacturer's full range] [As designated or scheduled] <Insert color>.

3. Gloss: [Low, less than 20] [Medium, 20 - 79] [High, 80 and above] [As selected from manufacturer's full range] [As designated or scheduled].

B. Powder-Coat Finish for [Aluminum Extruded Items] AAMA [2604] [2605] [and] [Steel Items Fabricated from Shapes and Plates]:

1. Coated Items: <Insert list of extruded items to receive high-performance organic finish>.

2. Color: [Match custom sample] [As selected from manufacturer's full range] [As designated or scheduled] <Insert color>.

3. Gloss: [Low, less than 20] [Medium, 20 - 79] [High, 80 and above] [As selected from manufacturer's full range] [As designated or scheduled].

4. Surface: [Smooth] [Rough texture, glossy surface] [Fine texture] [As selected from manufacturer's full range] [As designated or scheduled].

PART 3 - EXECUTION

3.1 INSTALLATION

A. Refer to individual specifications sections for installation requirements for items receiving shop-applied coatings.

3.2 PROTECTION

A. Remove protective wrap from coated items at time of installation.

[END OF SECTION 05 05 13]

[END OF SECTION 05080]

SECTION 099650

ANTI - GRAFFITI COATINGS

PART 1 - GENERAL

1.1 SUMMARY

- A. This Section includes surface preparation and application of anti-graffiti coatings to the following vertical surfaces.

1. Concrete.
2. Concrete masonry units.
3. Metal panel siding.

1.2 DEFINITIONS

- A. General: Standard coating terms defined in ASTM D 16 apply to this Section.

1.3 SUBMITTALS

- A. Product Data: For each anti-graffiti coating system specified.

1. Material List: An inclusive list of required coating materials. Indicate each material and cross-reference the specific coating, finish system, and application. Identify each material by manufacturer's catalog number and general classification.
2. Manufacturer's Information: Technical information including label analysis and instructions for handling, storing, and applying each coating material.
3. Certification by anti-graffiti coating manufacturer that products supplied comply with VOC regulations of SCAQMD.

- B. LEED Submittals: Provide special submittals conforming to Section 018113 - Sustainable Design Requirements for the following:

1. LEED Credit MR Cost Data: Provide special materials cost data breakdown data.
2. Product Certificates for Credit MR 5: For products and materials required to comply with requirements for regional materials, certificates indicating location of material manufacturer and point of extraction, harvest, or recovery for each raw material. Include statement indicating distance to Project, cost for each regional material, and fraction by weight that is considered regional. Include statement indicating location of manufacturer and point of extraction, harvest, or recovery for each raw material used in regionally extracted and manufactured materials. Indicate distance to Project and fraction by weight of each regionally manufactured material that is regionally extracted.
3. Product Data for Credit EQ 4.2: For paints and coatings, including printed statement of VOC content.

4. Laboratory Test Reports for Credit EQ 4.2: For paints and coatings, documentation indicating that they meet the testing and product requirements of the California Department of Public Health's "Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions from Indoor Sources Using Environmental Chambers."
 - C. Samples for Verification: Furnish samples on the same materials to which coating will be applied on. Indicate satin or flat finish. Coat one-half of each Sample, with the other half non-coated.
 - D. Qualification Data: For Applicator.
 - E. Material Certificates: For each anti-graffiti coating material, signed by manufacturers.
 - F. Product Test Reports: Based on evaluation of comprehensive tests by a qualified testing agency for each anti-graffiti coating material indicating compliance of anti-graffiti coatings with requirements based on comprehensive testing within the last two years of current product formulations.
 - G. Maintenance Material: Furnish five gallons of each product specified.
- 1.4 QUALITY ASSURANCE
- A. Applicator Qualifications: A firm or individual experienced in applying anti-graffiti coating systems similar in material and extent to those indicated for this Project, whose work has resulted in applications with a record of successful in-service performance.
 - B. Source Limitations: Obtain products from one manufacturer.
 - C. Benchmark Samples (Mockups): Provide full-coat benchmark finish samples for each type of coating on each substrate required. Comply with procedures specified in PDCA P5. Duplicate finish of approved sample submittals.
 1. Apply anti-graffiti coating per manufacturer's application instructions as directed by the DESIGN TEAM to substrate material that matches actual job conditions. Determine the acceptability of appearance and optimum coverage rate required for application.
 2. After sample treatment has cured in accordance with manufacturers recommendations, verify the substrate is coated with sufficient material to produce the desired appearance, color and graffiti protection.
 3. Approved benchmark samples will be used to evaluate coating systems.
 4. Obtain DESIGN TEAM's approval of benchmark samples before starting application of coatings.
- 1.5 DELIVERY, STORAGE, AND HANDLING
- A. Deliver materials to Project site in manufacturer's original, unopened packages and containers bearing manufacturer's name and label, and the following information:
 1. Product name or title of material.
 2. Manufacturer's stock number and date of manufacture.
 3. Contents by volume, for pigment and vehicle constituents.
 4. Thinning instructions (if permitted).
 5. Application instructions.

6. Color name and number.
7. Handling instructions and precautions.
8. VOC content.

- B. Store materials not in use in tightly covered containers in a well-ventilated area at a minimum ambient temperature of 45 deg F. Maintain storage containers in a clean condition, free of foreign materials and residue. Protect anti-graffiti coating materials from freezing. Keep storage area neat and orderly. Remove oily rags and waste daily.

16 PROJECT CONDITIONS

- A. Apply coatings only when temperature of surfaces to be coated and surrounding air temperatures are between 50 and 90 deg F, unless otherwise permitted by manufacturer's written instructions.
- B. Do not apply coatings in rain, fog, or mist; when relative humidity exceeds 85 percent; or at temperatures less than 5 deg F above the dew point; or to damp or wet surfaces. Allow wet surfaces to dry thoroughly and attain temperature and conditions specified before starting or continuing coating operation.

PART 2 - PRODUCTS

2.1 ANTI-GRAFFITI COATING MATERIALS, GENERAL

- A. **Material Compatibility:** Provide anti-graffiti finish-coat materials and related materials that are compatible with one another and substrates indicated under conditions of service and application, as demonstrated by manufacturer based on testing and field experience.
- B. **Material Quality:** Provide manufacturer's best-quality anti-graffiti coating materials that are factory formulated, comply with requirements in FS TT-C-555, and are recommended by manufacturer for the application indicated. Material containers not displaying manufacturer's product identification are not acceptable.

2.2 MANUFACTURERS

- A. **Available Manufacturers:** Subject to compliance with requirements, provide one of the following non-sacrificial, anti-graffiti coating products:
1. SEI Graffiti Proofer Anti-Stick GPA 200.
 2. ChemMasters, Duraguard 100WB.
 3. Rainguard International, VandlGuard.
 4. Wearlon 711/722 Clear Anti-Graffiti Coating.
 5. Monochem Premashield Premium.
 6. Or equal.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates and conditions, with Applicator present, for compliance with requirements for coating application. Comply with procedures specified in PDCA P4.
 - 1. Proceed with coating application only after unsatisfactory conditions have been corrected and surfaces are thoroughly dry.
 - 2. Start of coating application will be construed as Applicator's acceptance of surface conditions.
- B. Coordination of Work: Review other Sections in which other materials are specified to ensure compatibility of total system for various substrates. Notify DESIGN TEAM about anticipated problems when using coatings specified over substrates prepared by others.

3.2 PREPARATION

- A. General: Remove hardware and hardware accessories, plates, machined surfaces, light fixtures, and similar items already installed that are not to be coated. If removal is impractical or impossible because of size or weight of item, provide surface-applied protection before surface preparation and coating. After completing coating operations, reinstall items removed, using workers skilled in trades involved.
- B. Cleaning: Before applying coatings or other surface treatments, clean substrates of substances that could impair bond of coating systems. Remove oil and grease before cleaning. Schedule cleaning and coating application so dust and other contaminants from cleaning process will not fall on wet, newly coated surfaces.
- C. Protect shrubs, metal, wood trim, glass, asphalt and other building hardware during application from over-spray.
- D. Surface Preparation: Clean and prepare surfaces to be coated according to manufacturer's written instructions for particular substrate conditions and as specified. Cementitious Surfaces: Prepare concrete surfaces to receive anti-graffiti coatings. Remove efflorescence, chalk, dust, dirt, release agents, grease, oils, and similar impediments to good adhesion by water blasting followed by a clear water rinse.
 - 1. Remove mildew and neutralize surfaces according to manufacturer's written instructions before patching materials are applied.
 - 2. Roughen as required to remove glaze. Use abrasive blast-cleaning methods if recommended by coating manufacturer.
 - 3. If hardeners or sealers have been used to improve concrete curing, use mechanical methods for surface preparation.
 - 4. Determine alkalinity and moisture content of surfaces to be coated by performing appropriate tests. If surfaces are sufficiently alkaline to cause finish paint to blister and burn, correct this condition before application. Do not apply coatings over surfaces where moisture content exceeds that permitted in manufacturer's written instructions.

- E. **Material Preparation:** Mix and prepare materials according to coating manufacturer's written instructions.
1. Maintain containers used in mixing and applying anti-graffiti coatings in a clean condition, free of foreign materials and residue.
 2. Stir materials before application to produce a mixture of uniform density. Stir as required during application. If surface film forms, do not stir film into material. If necessary, remove film and strain coating material before using.

3.3 APPLICATION

- A. **General:** Apply anti-graffiti coatings according to manufacturer's written instructions. Use applicators and techniques best suited for substrate and type of material being applied.
1. Surfaces to receive anti-graffiti coating are indicated on Drawings.
 2. Do not apply over conditions detrimental to formation of a durable coating film, such as dirt, rust, scale, grease, moisture, and scuffed surfaces.
 3. Do not apply sacrificial graffiti coating until all joint sealants have been installed and cured.
 4. Do not allow anti-graffiti coating to flow onto glass, metal, and other adjacent finish surfaces.
- B. **Application Procedures:** Apply sacrificial graffiti coating on surfaces indicated for treatment using airless paint spray equipment. Comply with manufacturer's written instructions, unless otherwise indicated. Apply a second spray coating, repeating first application. Comply with manufacturer's written instructions for limitations on drying time between coats. Consult manufacturer's technical representative if written instructions are not applicable to Project conditions.
- C. **Completed Work:** Match approved samples for color, texture, and coverage. Remove, refinish, or recoat work not complying with specified requirements.

3.4 FIELD QUALITY CONTROL

- A. Owner reserves the right to invoke the following test procedure at any time and as often as Owner deems necessary during coating operations:
1. Engage a qualified independent testing agency to sample coating material being used. Samples of material delivered to Project will be taken, identified, sealed, and certified in presence of Contractor.
 2. Testing agency Shall perform appropriate tests for the following characteristics as required by Owner:
 - a. Elongation.
 - b. Accelerated weathering.
 - c. Low-temperature flexibility.
 - d. Moisture-vapor transmission.
 - e. Wind-driven rain resistance.
 - f. Minimum solids content by volume.

3. Owner may direct Contractor to stop coating application if test results show materials being used do not comply with requirements. Contractor shall remove noncomplying materials from Project site, pay for testing, and recoat surfaces coated with rejected materials. If necessary, Contractor may be required to remove rejected materials from previously coated surfaces if, on recoating with specified materials, the two coatings are not compatible.

3.5 CLEANING

- A. Cleanup: At end of each workday, remove rubbish, empty cans, rags, and other discarded materials from Project site. After completing coating work, clean glass and spattered surfaces. Remove spattered coatings by washing, scraping, or other methods, being careful not to scratch or damage adjacent finished surfaces.

3.6 PROTECTION

- A. Protect work of other trades from damage whether being coated or not. Correct damage by cleaning, repairing, replacing, and recoating as approved by DESIGN TEAM. Leave in an undamaged condition.
- B. Provide "Wet Paint" signs to protect newly coated finishes. Remove temporary protective wrappings provided by others to protect their work after completing coating operations. After construction activities of other trades are complete, touch up and restore damaged or defaced coated surfaces. Comply with procedures specified in PDCA P1.

END OF SECTION

SECTION 260526
GROUNDING

PART 1: GENERAL

1.01 Provide required grounding.

1.02 SYSTEM DESCRIPTION

- A. All metallic objects on the premises that enclose electrical conductors or that are likely to be energized by electrical currents shall be effectively grounded.
- B. All metal equipment parts such as enclosures, raceways, and equipment grounding conductors and all earth grounding electrodes shall be solidly joined together into a continuous electrically conductive system.
- C. All metallic systems shall be solidly interconnected to the electrical system as provided by the service entrance and for each grounded separately derived system that is installed.
- D. A separately derived A.C. source shall be grounded to the equipment grounding conductor and to a separate made electrode
- E. Electrical continuity to ground metal raceways and enclosures, isolated from equipment ground by use of non-metallic conduit or fittings, shall be provided by a green insulated grounding conductor of approved size within each raceway connected to isolated metallic raceways, or enclosures at each end. Each flexible conduit shall be provided with a green insulated grounding conductor of approved size. In addition to using metallic conduits as ground, provide a ground wire sized per code in every conduit.
- F. Cold water or other utility piping systems shall not be used as the only source of grounding electrodes. Grounding electrodes shall be "made electrodes" specified as follows:
 - 1. Grounding electrodes as specified in Part 2 of this Specification.
 - 2. Concrete enclosed electrode, which is made up of at least 20'-0" of #4 AWG, minimum size, copper conductor, encased by at least 2" of concrete, located within or near bottom of a concrete foundation, or footing, which is in direct contact with earth. Footing rebar must be connected to copper wire using approved connections. An external electrode as specified in Article 2.01, Paragraph B of this Specification Section must be installed and connected to foundation or footing rebar.
- G. Non-current-carrying metal parts of high voltage equipment enclosure, signal and power conduits, switchboard and panelboard enclosures, motor frames, equipment cabinets, and metal frames of buildings shall be permanently and effectively grounded.
- H. Metallic or semi-conducting shields, and lead sheaths of cables operating at high voltage, shall be permanently and effectively grounded at each splice and termination.
- I. Neutral of service conductors shall be grounded as follows:
 - 1. Neutral shall be grounded at only one point within school site for that particular service. Preferable location of grounding point shall be at service switchboard, or main switch.
 - 2. Equipment and conduit grounding conductors shall be bonded to that grounding point.

3. If other buildings on campus are served from a switchboard or panelboard in another building, power supply is classified as a feeder and not as a service.
 4. Equipment grounding conductor is carried from switchboard to each individual building. At building, grounding conductor is bonded with power equipment enclosures, metal frames of building, etc., to "made electrode" for that building.
 5. Neutral of feeder shall not be grounded.
- J. If there is a distribution transformer at a building, secondary neutral conductor shall be grounded to "made electrode" serving building.
 - K. Within every building, main switchboard or panel, shall be bonded to a 1" or larger cold water line with a 1" conduit with one #6 wire. Metallic piping systems (gas, fire sprinkler, etc.) shall be bonded to cold water line with 3/4" conduit with one #8 wire.

PART 2: PRODUCTS

2.01 YARD BOXES

- A. Yard boxes shall be precast concrete and shall be approximately 14" wide, 19" long, and 12" deep (outside dimensions), or larger, if necessary, to obtain required clearances. Boxes shall be equipped with bolt-down, checkered, cast iron covers and a cast iron frame cast into box. Yard boxes shall be Brooks 36 or approved equal.

2.02 ELECTRODES

- A. "Made" electrodes shall be approved copper-clad steel ground rods, minimum 3/4" diameter, 10'-0" long.

2.03 GROUND ENHANCEMENT MATERIAL

- A. Ground enhancement material as manufactured by Erico Electrical Products shall be used packed inside a 3" diameter hole around ground rod. Manufacturer's installation instructions must be followed for each ground rod installation.

PART 3: EXECUTION

3.01 ELECTRICAL DEVICES

- A. Grounding electrodes shall be located in nearest usable planting area, where not otherwise indicated on Drawings, and each electrode shall terminate within a concrete yard box installed flush with finish grade. In planting areas, concrete yard box shall be 2" above planting surfaces.
- B. If concrete enclosed electrode is used, grounding wire shall terminate to a suitable copper plate with grounding lugs.
- C. Grounding rods shall be driven to a depth of not less than 8'-0". A permanent ground enhancement material as manufactured by Erico Electrical Products shall be used at each ground rod to improve grounding effectiveness. The manufacture's guidelines shall be used for each installation.
- D. Grounding electrodes shall have a resistance to ground of not more than 5 ohms.

- E. When using grounding rods, if resistance to ground exceeds 5 ohms, 2 or more rods connected in parallel shall be provided to meet grounding resistance requirement.
- F. Ground rods shall be separated from one another by not less than 10'-0"
- G. Parallel grounding rods shall be connected together with approved fittings and approved grounding conductors in galvanized rigid steel conduit, buried not less than 12" below finish grade.
- H. Electrical Contractor shall include in his bid, cost of services of an approved independent testing laboratory, to test grounding resistance of all made electrodes, ground rods, and bonding of building steel, water pipes, gas pipes and other utility piping. Tests to be performed are as follows:
 - 1. Visually and mechanically examine ground system connections for completeness and adequacy.
 - 2. Perform "fall of potential" tests on each ground rod or ground electrode where suitable locations are available per IEEE Standard No. 81, Section 8.2.1.2. Where suitable locations are not available, measurements will be referenced to a known dead earth or reference ground.
 - 3. Perform the two point method test per IEEE No. 81, Section 8.2.1.1 to determine ground resistance between ground rod and building steel, and utility piping - such as water, gas and panelboard grounds. Metal railings at building entrances and at handicapped ramps shall also be tested.
 - 4. Test shall be conducted in presence of the District Electrical Inspector.
- I. Three copies of test results shall be submitted to the District Electrical Inspector. Test results shall be submitted on an official form from the independent testing laboratory showing project location, test ENGINEER, test conditions, test equipment data, ground system layout or diagram, and final test results.

END OF SECTION

SECTION 260533
CONDUIT

PART 1: GENERAL

1.01 RELATED DOCUMENTS

- A. Addenda, Alternates, Drawings and general provisions of Contract, including General and Supplementary Conditions and Division-1 Specifications collectively apply to work of this Section.

1.02 DESCRIPTION

- A. Work includes but is not limited to the following:
 - 1. Rigid metal conduit and fittings.
 - 2. Intermediate metal conduit and fittings.
 - 3. Electrical metallic tubing and fittings.
 - 4. Flexible metal conduit and fittings.
 - 5. Liquidtight flexible metal conduit and fittings.
 - 6. Non-metallic conduit and fittings.

PART 2: PRODUCTS

2.01 RIGID STEEL CONDUIT AND FITTINGS

- A. Rigid Steel Conduit: Hot dipped galvanized inside and out, galvanized threads, mild steel, zinc coated, inside and outside protective coating. Standard lengths: 10'-0".
- B. Bushings: Threaded insulated metallic type except sizes 1" and smaller may be non-metallic type. Setscrew bushings are not acceptable.
- C. Couplings, elbows, bends and other fittings: Same material and finish as rigid steel conduit. All shall be threaded type.

2.02 RIGID ALUMINUM CONDUIT AND FITTINGS

- A. Conduit: Extruded from 6063-T24 alloy of maximum 1/10% copper content and containing lubricating inside liners; rigid threaded type.
- B. Bushings: Insulated metallic except that sizes 1" and smaller may be non-metallic.

2.03 INTERMEDIATE METAL CONDUIT (IMC) AND FITTINGS

- A. Conduit: Galvanized steel, zinc coated, protective coating inside and out.
- B. Fittings and Conduit Bodies: Use fittings and conduit bodies specified above for rigid steel conduit.

- C. Conduit: May be used in lieu of rigid steel conduit where permitted by code, except in concrete, underground, runs longer than 100 feet for all power feeders with conduit greater than 2 inches.

2.04 ELECTRICAL METALLIC TUBING (EMT) AND FITTINGS

- A. Conduit: Hot dipped galvanized or sherardized inside and out, zinc coated with protective enamel coating inside. Provide bushings at ends of conduits.
- B. Connectors: Steel, insulated, bused tap-on or wrench tightened compression type. (Couplings similar) Indentor or screw type not acceptable.
- C. Conduit: May be used in lieu of rigid steel conduit where permitted by code, except exposed, in concrete and for runs more than 100' for all power feeders with conduit greater than 2 inches.

2.05 FLEXIBLE METAL CONDUIT AND FITTINGS

- A. Conduit: Steel single strip, hot dipped galvanized on all 4 sides prior to fabrication. Flexible aluminum conduit will not be allowed.
- B. Connectors: Die cast with ridges that thread into conduit. (Binding screw type connectors are not acceptable.)
- C. Conduit: May be used in lieu of rigid steel conduit where specifically indicated; at connections to vibrating equipment; at drops to light fixtures from J-boxes; at locations judged by DESIGN TEAM impractical to use rigid conduit. Maximum length for any application shall be 6 feet.

2.06 LIQUIDTIGHT FLEXIBLE CONDUIT AND FITTINGS

- A. Conduit: Steel, single strip, hot dipped galvanized on 4 sides prior to fabrication.
- B. Connectors: Insulated, special Appleton "STN" Series.
- C. Jacket: Liquidtight, polyvinyl chloride plastic.
- D. Conduit: Use for final connection to motor terminal boxes and transformers. Use at exterior locations, damp locations, wet locations and for flex connections in kitchen, restrooms and similar areas

2.07 PLASTIC CONDUIT AND FITTINGS

- A. Conduit: Extruded, virgin polyvinyl chloride compound, Schedule 40, heavy wall, in 10'-0" lengths with couplings.
- B. Fittings: Non-threaded type couplings.
- C. Conduit: May be used underground only. Vertical elbows and risers of all sizes shall be rigid steel with 20 mil bonded PVC coating.

2.08 CONDUIT SUPPORTS

- A. Conduit Clamps, Straps, and Supports: Steel or malleable iron. Clamps: Unistrut Nos. P111 thru P1124, Kindorf No. C105. Straps: One or two hole as required.

- B. Conduit hangers, racks and trapezes: Steel, threaded rods, channel iron "U" shaped racks equal to "Unistrut".
 - C. Individual conduit hangers: Steel, threaded rods with malleable iron split rings.
 - D. Hanger rods: 3/8" minimum diameter for 2" and smaller conduit, factory made. 1/2" minimum for 2-1/2" and larger conduit.
 - E. Wire supports: 12 gauge zinc coated iron tie wire, or 16 gauge galvanized double annealed steel tie wire.
- 2.09 CONDUIT ROOF JACKS AND FLASHING
- A. Roof Jacks:
 1. For Single Conduits Through Roof: Stonemen Stormtite Series #1100-4; seamless 4 pound lead flashing assembly, 8" skirt, steel reinforced varipitch boot; caulk type cast iron counterflashing sleeve, with vandalproof set screws, and Perma-seal waterproofing compound.
 2. Sleeves for Conduits: Sleeves shall be adjustable type, of 26 gage galvanized iron, Adjust-to Crete Co. Adjust-to-Crete, or Jet Line Products Inc. Jet-Line, or equal.
 3. Where conduit enters a building through a concrete foundation below grade, or ground water level, or where it is necessary to seal around a conduit where it passes through a concrete floor or wall, provide O-Z/Gedney Type FSK Thru Wall and Floor Seal, or equal.
- 2.10 CONDUIT PULLING CORDS
- A. Pull Wire: No. 12 galvanized iron or nylon pull wire rated 250 pounds tensile strength.
- 2.11 CONDUIT FITTINGS, ELLS AND BUSHINGS
- A. Special conduit fittings: Crouse-Hinds "Condulets" or Appleton "Unilets".
 - B. Ells: Same quality, same finish and same make as conduit.
 - C. Bushings: Thomas & Betts or approved equal.
 - D. Seismic separations and expansion joints: OZ type "AX" complete with bonding strap and clamps. At exterior locations use OZ type "EX".
- 2.12 CONDUIT SEALS AND SEALING COMPOUND
- A. Vertical seals: Crouse Hinds type "EYD" or Appleton type "SF".
 - B. Horizontal Seals: Crouse Hinds type "EYS" or Appleton type "ESU".
 - C. Sealing compound: Crouse Hinds "CHICO" or Appleton "APELCO".
 - D. Fireproofing Compound: Dow Corning No. 3-6548 RTV or equal by 3M Company or Nelson.
- 2.13 UNDERGROUND SPACERS FOR PVC CONDUIT

- A. Spacers: PVC, interlocking type, intermediate and base styles.
 - B. Sizes: For 2" to 4" conduit.
 - C. Manufacturer: Carlon or approved equal.
- 2.14 SPECIAL UNDERGROUND COUPLINGS FOR PVC CONDUIT
- A. Expansion couplings: PVC type to expand up to 4".
 - B. Couplings: Socket type for joining PVC conduit.
 - C. Adapters: Socket type at one end for PVC conduit and threaded female type at other end for metallic connection.
- 2.15 PLASTIC CONDUIT CEMENT
- A. Solvent weld cement: Fast drying, brush-on type.
- 2.16 MC CABLE
- A. Metal Clad (MC) cable system is not allowed.

PART 3: EXECUTION

- 3.01 CONDUIT SIZING, ARRANGEMENT, AND SUPPORT
- A. Arrange conduit to maintain headroom and present a neat appearance.
 - B. Unless indicated otherwise, conceal conduit within or behind finished walls and ceiling.
 - C. Route exposed conduit and conduit above accessible ceilings parallel and perpendicular to walls and adjacent piping.
 - D. Maintain minimum 6 inch clearance between conduit and piping. Maintain 12 inch clearance between conduit and heat sources such as flues, steam pipes, and heating appliances.
 - E. Arrange conduit supports to prevent distortion of alignment by wire pulling operations. Fasten conduit using galvanized straps, lay-in adjustable hangers, clevis hangers, or bolted split stamped galvanized hangers.
 - F. Group conduit in parallel runs where practical and use conduit rack constructed of steel channel with conduit straps or clamps. Provide space for 25 percent additional conduit.
 - G. Do not fasten conduit with wire or perforated pipe straps. Remove all wire used for temporary conduit support during construction, before conductors are pulled.
 - H. Do not support conduit from any equipment subject to vibration. Support from structural members only.
 - I. Structural Considerations for Conduit Routing:
 - 1. Where conduits are to pass through or will interfere with any Structural member, or where notching, boring or cutting of the structure is necessary, or where special openings are required through walls, floors, footings, or other buildings elements, to

accommodate the electrical work, such work shall conform to State Building Code.

2. Where conduits are terminated in groups at panelboards, switchboards and signal cabinets, etc., provide templates or spacers to hold conduits in proper position and to preserve alignment. Conduits terminating at signal cabinets shall enter cabinets in following approved locations only: Conduits entering top, side, and bottom of cabinets shall be aligned in a single row, centered 2" from rear of cabinet; conduits entering back of cabinet shall be aligned in a single row centered 2" from top of cabinet. Conduits shall not be spaced closer than 3" on centers.
3. 1" and smaller conduits above metal lath ceilings shall be tied to ceiling channels. 1-1/4" conduits above metal lath ceilings shall be rigidly suspended with pipe hangers or pipe racks or shall be secured to superstructure with factory made pipe straps. Conduits in metal lath or steel stud partitions, shall be tied to furring channels or studs. In ceiling spaces and in partitions, tie wires shall be spaced not more than 5'-0" apart, shall hold conduit tight against channels and studs at point of tie and shall not bear any of weight of conduit. Tie wire shall be #16 gage galvanized double annealed steel tie wire.
4. Where auxiliary supports, saddles, brackets,, etc., are required to meet special conditions they shall be made rigid and secure before conduit is attached thereto.
5. Conduit in ceiling spaces, in stud walls and under floors shall be supported with factory made pipe straps or shall be suspended with pipe hangers or pipe racks. Pipe straps shall be attached to and shall hold conduit tight at point of support against ceiling and floor joists, rafters, and wall studs, or 2" x 4" headers fitted between joists or wall studs.
6. Conduits installed on exposed steel trusses and rafters shall be fastened with factory made conduit straps or clamps which shall hold conduit tight against supporting member at point of support.
7. Conduits under buildings shall be strapped with factory made conduit straps to underside of concrete floor or joists, or wood floor joists, or shall be suspended with pipe hangers or pipe racks. Conduits under building shall not rest on ground but shall be suspended from building or shall be buried below surface of ground. 1" and larger conduits under buildings shall be suspended with conduit hangers or racks.
8. Pipe hangers for individual conduits shall be factory made, consisting of a pipe ring and threaded suspension rod. Pipe ring shall be malleable iron, split and hinged, and shall securely hold conduit, or shall be springable wrought steel. Rings shall be bolted to or interlocked with suspension rod socket. Rods shall be 3/8" for 2" conduit hangers and smaller and shall be 1/2" for 2-1/2" conduit hangers and larger.
9. Pipe racks for groups of parallel conduits and for supporting total weights not exceeding 500 pounds shall be trapezed type and shall consist of a cross channel, Steel City Kindorf #B-900, Unistrut #P-1000 suspended with a 3/8" minimum diameter steel rod at each end. Each rod shall be fastened with nuts, top and bottom to cross channel and with a square washer on top of channel. Each conduit shall be clamped to top of cross channel with conduit clamps, Steel City Kindorf #C-105 or Unistrut Nos. P-1111 through P-1124. Conduits shall not be stacked one on top of another, but a maximum of 2 tiers maybe on same rack providing an additional cross channel is installed. Where a pipe rack is to be longer than 18", or if weight it is to support exceeds 500 pounds, submit details of installation to the DESIGN TEAM for approval.

10. Factory-made pipe straps shall be one or 2-hole formed galvanized clamps, heavy duty type, except where otherwise specified.
11. Hangers straps, rods, or pipe supports under concrete shall be attached to inserts set at time concrete is poured. Under wood use bolts, lag bolts, or lag screws; under steel joists or trusses use beam clamps.

3.02 CONDUIT INSTALLATION

- A. Cut conduit square using a saw or pipe cutter; de-burr cut ends.
- B. Bring conduit to the shoulder of fittings and couplings and fasten securely.
- C. Use conduit hubs or sealing locknuts for fastening conduit to cast boxes, and for fastening conduit to sheet metal boxes in damp or wet locations.
- D. Install no more than equivalent of two 90- degree bends between boxes for conduits 2" diameter and larger, three for conduit under 2" diameter. Locate pull boxes as required.
- E. Use conduit bodies to make sharp changes in direction, as around beams.
- F. Use hydraulic one-shot conduit bender or factory elbows for bends in conduit larger than 2 inch size.
- G. Avoid moisture traps where possible; where unavoidable, provide junction box with drain fitting at conduit low point.
- H. Support rigid, intermediate and thin wall conduit at 8'-0" maximum on centers and 3'-0" from junction boxes.
- I. Support flexible and liquidtight flexible conduit at 4'-0" maximum on centers and 12" from junction boxes.
- J. PVC conduit: Use underground only. Encase in 3" concrete (2000 psi) envelope except under building.
- K. Provide No. 12 AWG insulated conductor or suitable pull string in empty conduit, except sleeves and nipples.
- L. Install expansion-deflection joints where conduit crosses building expansion or seismic joints.
- M. Where conduit penetrates fire-rated walls and floors, seal opening around conduit with UL listed fire barrier, "3M" caulk or equal.
- N. Route conduit to roof mounted devices and equipment through roof jacks. Provide flashing/roof jacks for all new and existing conduits which penetrate roof to appropriate Roofing Section(s) for installation.
- O. Run conduit to equipment on roof concealed in attic space. Penetrate roof at equipment locations only.
- P. For conduits to roof mounted HVAC equipment, penetrate roof with roof jacks outside footprint of HVAC units. Do not penetrate roof inside HVAC units.
- Q. Do not use aluminum conduit below grade, cast in concrete or in masonry in contact with earth.

- R. Conduit underground may be rigid conduit and in these conditions shall be given two heavy coatings of a suitable primer and a single half lapped layer of protective plastic tape. Primer and tape shall be "Scotchrap" No. 50 tape. Primer and tape shall be "Scotchrap" Primer or Trantex V-10 tape and Dutch Brand Primer. Primer and tape shall be in strict accordance with manufacturer's instructions. As an alternate, conduit and fittings shall have a PVC bonded coating (40 mil thickness minimum) by Occidental Coating Company.
- S. Where conduit is installed underground, under slabs on grade, exposed to weather or in wet locations, make joints liquidtight and gastight.
- T. For underground or underslab conduit, apply a heavy coat of Pabco P & B No. 2 paint to all surfaces within 6" each side of fittings and to areas where wrenches or other tools have been applied. On exposed conduit, repair scratches and other defects with galvanizing repair stick, Enterprise Galvanizing "Galvabar".
- U. Cut threads on rigid conduit to standard taper and to a length such that all bare metal exposed by threading operation will be completely covered by couplings or fittings used. In addition, cut lengths of thread such that all joints will become secure and wrench tight just preceding point where conduit ends would butt together in couplings and where conduit ends would butt into ends or shoulders of other fittings. Securely tighten all threaded connections.
- V. Encase all underground primary and secondary electric service conduits in concrete envelopes with a minimum 3" cover all around from end-to-end. Provide concrete with a compressive strength of not less than 2,000 psi at 28 days of age. Provide red concrete encasement for systems over 600-volt. Space multiple conduit not less than 3" apart. Use factory made conduits spacers to stagger connections or couplings for neater installation. Tie conduit to spacers and anchor system to prevent dislodgement. Provide personnel to inspect during pouring to prevent displacement of conduit.
- W. Make joints in rigid conduit installed in concrete or masonry liquid-and-gas-tight, with red lead and oil, or other approved joint compound and engage not less than five threads.
- X. Keep bends and offsets in conduit runs to an absolute minimum. Replace all deformed, flattened or kinked conduit. Provide large radius factory made bends or power bend rigid metal conduit of 1-1/4" trade size or larger.
- Y. Place sleeves for electrical conduit passing through walls, beams or slabs before concrete is poured (exception-floor slabs on earth). Where conduit passes through suspended floor slabs, outside of chases, sleeves shall be standard weight black steel pipe extending 1-1/2" above the finished floor level. Sleeves at other locations shall be either lightweight galvanized steel tube, or galvanized sheet steel, with a minimum thickness of 24 USSG. Clearance between conduit and sleeves shall be not less than 1/2". Sleeves through outside walls below grade shall be caulked tight. Caulk with oakum and mastic to obtain watertight joint.
- Z. Penetration Membrane: Where penetration cannot be avoided, cut and re-seal membrane at point of penetration.
- AA. Provide minimum 3/4" conduit size underground.
- BB. Run exposed conduit parallel with or at right angles to building line, beams, or ceilings. Place symmetrical bends or metal boxes at changes in direction or taps.
- CC. Stub from each panel which is flush mounted in a wall, from top of panel a minimum of 3-3/4" conduits to nearest ceiling space or other accessible locations and cap for future use. Tag to

indicate panel origination.

- DD. Independently support conduit rising from floor for motor connections if over 24" above floor. Support shall not be a motor or duct work which may transmit vibrations.
- EE. Provide pull wire in all conduit runs indicated as conduit only (C.O.).
- FF. Do not run conduit closer than 12" to any hot water pipe, steam pipe, heater flue or vent.
- GG. Terminate conduit stub-ups through floor for connection to equipment of junction boxes in couplings flush with top of concrete slab floor.
- HH. Within building, bury underground conduit a minimum of 6" below bottom of slab.
- II. Use rigid metal conduit where legally required, where exposed to weather, where located in unheated areas, or where subject to mechanical injury, here defined as exposed conduit less than 7'-6" above floor in areas accessible to anyone other than authorized operating or maintenance personnel.
- JJ. Where a conduit from one structure crosses to another structure, e.g., from a building to an arcade or from one arcade to another arcade, use a section of liquid-tight flex conduit at the crossing with sufficient slack to allow the two structures to move during an earthquake without breaking the conduit. For stub up to relocatable buildings, provide liquid-tite flex from stub up to first box on back of building.
- KK. Provide PVC deflection - expansion joint fittings where underground run passes through expansion joint or is necessary for seismic conditions.
- LL. Provide a green insulated ground wire in all flexible conduit runs regardless of length.
- MM. Wipe plastic conduit (PVC) clean before joining. Apply even coat of cement to entire area to be inserted into fitting. Let joint cure for 20 minutes minimum. Use approved solvent-weld cement specifically manufactured for purpose. Threading of PVC conduit is prohibited.
- NN. Install an equipment ground (green) insulated conductor in each non-metallic conduit.
- OO. Do not install PVC conduit above grade for any reason. Seal both ends of all PVC conduit runs at each junction box or conduit interruption with sealant. Seal steel conduit risers to panelboards, switchboards, or pullboxes from underground PVC conduit runs.
- PP. Flash and counterflash all conduit runs passing through roof.
- QQ. Use electrical metallic tubing above grade in dry locations only and where not subject to mechanical injury or otherwise prohibited. Concrete and masonry in contact with earth are not considered dry locations.
- RR. Use liquid tight flexible conduit for final connections to motors and vibrating equipment. Use flexible conduit where required for equipment servicing for connections to recessed lighting fixtures from nearby accessible junction boxes, and for concealed runs in dry locations where structural conditions prevent use of other types of conduit.
- SS. For conduits for computer cables and coax cables, use large radius bends. Do not use j-box or pull box to change direction. Install boxes at straight conduit sections only and sweep conduit to make turns. Do not use conduit fittings to change directions.

TT. Minimum radius for conduits designated for computer LAN wiring, coax cable wiring, data wiring, fibre-optics wiring, and TV cable wiring shall be as follows:

3/4"C	-	12"
1"C	-	12"
1-1/4"C	-	18"
2"C	-	24"
2-1/2"C	-	24"
3"C	-	30"
3-1/2"C	-	30"
4"C	-	30"
5"C	-	36"
6"C	-	42"

UU. Size all conduits as legally required or larger where indicated or preferred. Where portions of a conduit run are increased in size, for whatever reason, make all remaining portions in that run same size.

VV. Mark all underground conduit stub-outs with a 6 inch square by 2 foot deep concrete block with an embedded brass nameplate indicating the origin of conduit.

WW. Do not cut concrete, masonry or structural members except where approved by DESIGN TEAM.

XX. Underground Requirements:

1. Except for branch circuit conduits and auxiliary system branch circuits within a building, all conduits installed underground shall be entirely encased in concrete (2000 psi), 3" thick on all sides with multiple conduits spaced not less than 3" apart, except where otherwise specified. Provide approved conduit spacers as required to prevent any deflection of conduits when concrete is placed and to preserve position and alignment of conduits in concrete. Conduits shall be tied to spacers. Anchors shall be installed to prevent floating of conduits during pouring of concrete. Red concrete shall be used to encase conduits of systems operating above 600 volts. To protect conduits from underground to surface wall mounted panels, terminal cabinets, etc., encase conduits in 3" high concrete curb.
2. Assemble sections of conduit with approved fittings and stagger all joints. Cut ends of conduit shall be reamed to remove all rough edges. Joints in all conduits shall be made liquid-tight. All bends at risers shall be completely below surface where possible.
3. Two or more conduit runs in a common trench shall be separated by at least 3" of concrete. Conduit runs installed in a common trench with other utility lines and water, gas, sew lines, shall be separated from such lines by at least 12" horizontally. Power conduits shall be separated from low voltage signal conduits by 6" of concrete.
4. Slope underground conduits between two pull boxes towards one of the boxes to avoid water and moisture trap. For underground conduits coming out of a building, slope conduits towards the first pull boxes. Take care to install underground conduits such that water cannot travel through underground pull boxes and conduits back into a building. Prevention method shall include but not limited to installing pull boxes with draining provision where conduits enter building, sealing both ends of each conduit water tight, etc.
5. Provide electronic markers to identify conduit stub locations at property lines, as

required by electric service utility company.

6. All underground conduit systems for use by service utility company shall meet all requirements of utility company.

3.03

EXCAVATION AND BACKFILL

- A. Include all excavation and backfilling required for work under this Section.
 1. Bury underground conduit at least 27 inches below finished grade to top of conduit encasement.
 2. Underground branch circuit conduit, within building limits, 6" below bottom of slab unless specifically indicated otherwise in these specifications.
 3. After installation of work has been inspected and approved, backfill trenches with clean earth, moistened and layer tamped to same compaction density as specified for both building and site locations under "Earthwork".
- B. Locate existing underground pipes by use of electronic locating devices and exercise utmost care in excavation work. Contractor is responsible for satisfactory repair of any underground utility line damaged as result of his excavation.
- C. Trenches or any other excavation required for installation of electrical work, which are outside of barricaded working area, shall be barricaded at all times with continuous portable barricades. At completion of work, remove barricades from site. Backfill trenches and excavations outside of barricaded working area immediately after approval of conduit work by Inspector.
- D. Where asphalt concrete has been cut, backfill up to existing grade.
- E. Do not start excavations until approval is obtained from Inspector.

END OF SECTION

SECTION 260534
BOXES

PART 1: GENERAL

1.01 RELATED DOCUMENTS

- A. Addenda, Alternates, Drawings and general provisions of Contract, including General and Supplementary Conditions and Division-1 Specifications collectively apply to work of this Section.

1.02 DESCRIPTION

- A. Work includes but is not limited to the following:
 - 1. Wall and ceiling outlet boxes.
 - 2. Pull and junction boxes.
 - 3. Sealant.
- B. Related Work:
 - 1. Section 260100 - Basic Materials and Methods.
 - 2. Section 260533 - Conduit
 - 3. Section 262726 - Wiring Devices.

PART 2: PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS-OUTLET BOXES

- A. Raco
- B. Steel City
- C. Bowers

2.02 OUTLET BOXES

- A. Sheet Metal Outlet Boxes: One piece galvanized, pressed steel, knockout type, 4-11/16" sq. by 2-1/8" deep in all locations unless otherwise indicated or required.
- B. Cast Boxes: Aluminum, or Cast ferrous alloy, deep type, gasketed cover, threaded hubs.
- C. Where Wiremold type box have to be used, e.g., on existing concrete wall, provide proper box such that the total depth of a box including the device mounted on the box, will not exceed 4 inches.

2.03 ACCEPTABLE MANUFACTURERS-FLOOR BOXES

- A. Hubbell

B. Walker Parkersburg

C. Steel City

2.04 PULL AND JUNCTION BOXES

- A. Interior and non-weatherproof boxes shall be constructed of blue or galvanized steel with ample laps, spot welded, and shall be rigid under torsional and deflecting forces. Boxes shall have auxiliary angle iron framing where necessary to ensure rigidity. Covers shall be fastened to box with a sufficient number of brass machine screws to ensure continuous contact all around. Flush type boxes shall be drilled and tapped for cover screws at Site if boxes are not installed plumb. All surfaces of pull and junction boxes and covers shall be given one coat of metal primer, and one coat of aluminum paint.
- B. Weatherproof pull and junction boxes shall conform to foregoing for interior boxes with following modifications: Cover of flush mounting boxes shall have a weather-tight gasket cemented to and trimmed even with cover all around. Surface or semi-flush mounting pull and junction boxes shall be UL approved as rain-tight and shall be complete with threaded conduit hubs. All exposed portions of boxes shall be galvanized and finished with a prime coat and coat of baked-on gray enamel.
- C. All junction and pull-boxes shall be rigidly fastened to the structure and shall not depend on conduits for support.
- D. Underground Concrete Pull Boxes:
1. Precast Concrete Pull Boxes. Concrete pull boxes shall be traffic type, reinforced for HS20-44 Traffic bridge loading, precast concrete. Pull boxes with inside dimensions 2'-0"x 3'-0" x 3'-0"D shall consist of a base section, top ring and cover. Base section shall have a minimum of two 10"x10" knockouts in each 3'-0" side, and one 20"x20" knockout in each 2'-0" side. Pull boxes with inside dimension 4'-0 x 4'-0"x 4'- 0"D or larger shall consist of a base section, mid section, topping, and cover. Base section shall have a minimum of two 8"x 16" knockouts on each of two opposite sides, and one 20" x 20" knockout on each of the other two opposite sides. All pull boxes shall have a minimum of 6" diameter sump knockout, and 1" diameter ground rod knockout.
In each pull box, furnish and install cable racks on walls. Each rack shall be equipped with 3 porcelain cable holders on a vertical steel mounting bar. Each pull box shall have 3/4" diameter pull irons. Covers shall be traffic type consisting of steel safety plate bolted to frame. Covers shall be marked "Electrical", "Power" "Telephone", "Signal" or "Ground", as required. Pull boxes shall be as manufactured by Quickset, or approved equal. Knockout requirements as stated above is minimum requirement.
Contractor is responsible for providing pull boxes with the proper knockouts to accept the conduits as shown on the drawings. Depth of pull boxes as shown is the minimum requirement. Provide deeper pull boxes as required to accommodate conduits and minimum conduit cover requirements. All conduits must enter pull boxes in a straight horizontal line.
 2. Provide end bells in all duct entrances. Terminate each metal conduit with insulated bushing having grounding terminal, O.Z. Type "Big"
 3. Place pulling irons on opposite walls and below horizontal centerlines of ducts and bricked-up openings, and in bottom. Install pulling irons with each end hooked around a reinforcing bar.
 4. Remove floor drain knockout and provide a depth of 24 inches of crushed rocks below

box extending a minimum of 12 inches beyond all 4 sides.

5. Identify all power and signal cables by tagging in all manholes and pull boxes. Tie securely to cables with nylon cord or insulated type TW wire. Tie so that turns of wires do not form a closed electrical circuit, loop wires all around pull box perimeter at least one time to allow for slack in the wire run. All cables, power or signal must be supported by the cable racks. Cables shall not be resting on the bottom of a pull box.
 6. Top of steel plate shall have a minimum co-efficient of static friction of 0.5 for either wet or dry conditions, when tested for any shoe sole material. Testing and certification of the friction factor shall be conducted by an independent testing laboratory approved by the ENGINEER, under the direction of a registered Civil or Quality ENGINEER. Testing shall conform to ASTM D1047 or F489 or F609, or other procedure approved by the ENGINEER.
 7. Where flexible conduits or boxes are used within a concrete pull box to separate systems, such conduits and boxes shall be non-metallic type.
- E. Underground utility boxes shall be reinforced concrete with non-setting shoulders to prevent settlement following installation. Boxes shall be furnished with cast iron cover with finger hole, size as indicated on Drawings. Utility boxes shall be as manufactured by Quickset, or approved equal.
 - F. Manholes, vaults and pull-boxes required by utility company, and installed by Electrical Contractor, shall meet all requirements of utility company.
 - G. Cast Metal Boxes for Outdoor and Wet Location Installations: Type 4 and Type 6, flat-flanged, surface-mounted junction box, UL listed as rain-tight. Galvanized cast iron OR Cast aluminum box and cover with ground flange, neoprene gasket, and stainless steel cover screws.

2.05 ACCEPTABLE MANUFACTURERS-SEALANT

- A. Crouse Hinds "CHICO"
- B. Permacel
- C. Ductseal

2.06 ACCEPTABLE MANUFACTURERS - FIRE PROOFING SEALANT

- A. Dow Corning
- B. 3M Company
- C. Nelson

PART 3: EXECUTION

3.01 COORDINATION OF BOX LOCATIONS

- A. Provide electrical boxes as shown on Drawings, and as required for splices, taps, wire pulling, equipment connections, and code compliance.
- B. Electrical box locations shown on Contract Drawings are approximate unless dimensioned. Verify exact location of floor boxes and outlets in offices and work areas with Owner's

representative prior to rough-in.

- C. Locate and install boxes to allow access.
- D. Locate and install to maintain headroom and to present a neat appearance.

3.02 OUTLET BOX INSTALLATION

- A. Unless otherwise noted on plan or specifically allowed by the ENGINEER, conceal all boxes flush in wall or in ceiling space above drop ceiling. In finished areas and where it is not possible to conceal conduits and boxes, for example, on existing concrete wall, provide Wiremold type metallic surface raceways and boxes.
- B. Do not install boxes back-to-back in walls. Provide minimum 6 inch separation, except provide minimum 24 inch separation in acoustic-rated walls.
- C. Provide knockout closures for unused openings.
- D. Support boxes independently of conduit except for cast box that is connected to two rigid metal conduits, both supported within 12 inches of box.
- E. Use multiple-gang boxes where more than one device are mounted together; do not use sectional boxes. Provide barriers to separate wiring of different voltage systems.
- F. Install boxes in walls without damaging wall insulation.
- G. Coordinate mounting heights and locations of outlets mounted above counters, benches, and backsplashes.
- H. Position outlets to locate lighting fixtures as shown on reflected ceiling plans.
- I. In inaccessible ceiling areas, position outlets and junction boxes within 6 inches of recessed lighting fixture, to be accessible through lighting fixture ceiling opening.
- J. Provide recessed outlet boxes in finished areas; secure boxes to interior wall and partition studs. Accurately position to allow for surface finish thickness. Use stamped steel stud bridges for flush outlets in hollow stud wall, and adjustable steel channel fasteners for flush ceiling outlet boxes. Install plaster rings to interface with equipment to be mounted thereon.
- K. Align wall-mounted outlet boxes for switches, thermostats, and similar devices.
- L. Provide cast outlet boxes in exterior locations and wet locations. Provide cast bell-boxes at interior locations where box is exposed to view. (do not use regular 4/s or handy box with exposed knockouts and unfinished appearances for these interior exposed applications).
- M. Where boxes are installed in fire rated ceiling or walls, be responsible for preserving integrity of fire rating as required.
- N. In fire-rated wall, use 4" square deep boxes. Do not aggregate more than 100 square inches of boxes for any 100 square feet of wall or partitions. Separate outlet boxes on opposite sides of walls or partition by a minimum horizontal distance of 24 inches. Where the separation cannot be achieved due to site condition, provide 2-hour rated fire-proof material behind boxes to maintain fire rating of walls.

3.03 PULL AND JUNCTION BOX INSTALLATION

- A. Locate pull boxes and junction boxes above accessible ceilings or in unfinished areas.
- B. Support pull and junction boxes independent of conduit.

END OF SECTION

SECTION 260553
ELECTRICAL IDENTIFICATION

PART 1: GENERAL

1.01 RELATED DOCUMENTS

- A. Addenda, Alternates, Drawings and general provisions of Contract, including General and Supplementary Conditions and Division-1 Specifications collectively apply to work of this Section.

1.02 DESCRIPTION

- A. Work includes but is not limited to the following:
 - 1. Nameplates.
 - 2. Wire and cable markers.
- B. Related Work:
 - 1. Section 260100 - Basic Materials and Methods.
 - 2. Section 260533 - Conduit.
 - 3. Section 260519 - Wire and Cable -Rated 600 Volt.
 - 4. Section 260534 - Boxes.
 - 5. Section 260923 - Contactors and Time Switches.
 - 6. Section 262413 - Service Switchboards and Distribution Sections.
 - 7. Section 262816 - Disconnect Switches.
 - 8. Section 260526 - Grounding.
 - 9. Section 262416 - Panelboards.

PART 2: PRODUCTS

2.01 MATERIALS

- A. Nameplates: Engraved three-layer laminated plastic, white letters on a black background.
- B. Wire Markers: Cloth markers, split sleeve or tubing type.

PART 3: EXECUTION

3.01 INSTALLATION

- A. Degrease and clean surfaces to receive nameplates.
- B. Install nameplates parallel to equipment lines.

- C. Secure nameplates to equipment fronts using screws or rivets. Secure nameplate to outside face of panelboard doors.
- D. Embossed tape will not be permitted for any application.

3.02 WIRE IDENTIFICATION

- A. Provide wire markers on each conductor in panelboard gutters, pull boxes, and at load connection. Identify with branch circuit or feeder number for power and lighting circuits, and with control wire number as indicated on schematic and interconnection diagrams or equipment manufacturer's shop drawings for control wiring.

3.03 NAMEPLATE ENGRAVING SCHEDULE

- A. Provide nameplates of minimum letter height as scheduled below.
- B. Panelboards, Switchboards, and Distribution Sections: 1/4 inch identifying equipment designation; 1/8 inch identifying voltage rating and source. Provide nameplates on load centers furnished with relocatable buildings. Nameplates for relocatable buildings shall match description on circuit breakers or switches at switchboards or panelboards feeding the buildings.
- C. Individual Circuit Breakers, Switches, Motor Starters in Panelboards, and Distribution Sections: 1/8 inch identifying circuit and load served, including location.
- D. Individual Circuit Breakers, fused and non-fused disconnect Switches, and Motor Starters: 1/8 inch identifying load served.
- E. Emergency Power Units: 1/4 inch identifying equipment designation; 1/8 inch identifying incoming and outgoing voltages.
- F. Exterior metal pull boxes: 1/4 inch identifying systems in boxes.
- G. Terminal Cabinets: 1/4 inch identifying systems.

3.04 MARK CONDUCTOR RUNS

- A. Apply markers after conductors installed in conduits.
- B. Apply in panelboards and in junction boxes.
- C. Mark feeders in panelboards, switchboards and distribution sections.

3.05 MARK JUNCTION BOXES

- A. Mark covers of junction boxes with non-erasable marker to indicate circuit numbers or systems contained within boxes.
- B. Mark fire alarm boxes with red marker and identifying as "FA".
- C. Paint fire alarm conduits red at intervals such that conduits can be clearly identified for fire alarm system.

3.06 RELOCATABLE BUILDINGS

- A. Provide nameplate on each load center that is supplied with each relocatable building. Refer to single line diagram for inscription.
- B. Provide a typewritten circuit directory inside the cover of each load center supplied with each relocatable building.

END OF SECTION

SECTION 260930
LIGHTING CONTROL SYSTEM

PART 1 - GENERAL

1.01 SUMMARY

- A. The work covered in this section is subject to all of the requirements in the General Conditions of the Specifications. Contractor shall coordinate all of the work in this section with all of the trades covered in other sections of the specification to provide a complete and operable system. All Labor, materials, appliances, tools, equipment, facilities, transportation and services necessary for and incidental to performing all operations in connection with furnishing, delivery and installation of the work of this Section.

1.02 DESCRIPTION OF WORK

- A. Furnish and install a complete system for the control of lighting and other equipment as indicated on the plans, detailed in the manufacturer submittal and as further defined herein.
- B. The system shall include but not be limited by the following list: Pre-wired, microprocessor controlled relay panels with electrically held, electronically latched relays panels controlled via a complete list of communications based accessories including digital switches, digital photocells, digital SmartBreaker panelboards, Digital Time Clock (DTC) and interface cards to dimming systems, building automation systems, thermostats, and any contact closure or analog based device. The type of lighting control equipment and wiring specified in this section is covered by the description: Microprocessor Controlled Digital Relay Lighting Control system with RS 485 Bus communications. Requirements are indicated elsewhere in these specifications for work including, but not limited to, raceways and electrical boxes and fittings required for installation of control equipment and wiring. They are not the work of this section.

1.03 SUBMITTALS

- A. Section 260100 - Shop Drawing Requirements.
- B. Shop Drawings: Submit dimensioned drawings of lighting control system and accessories including, but not necessarily limited to, relay panels, switches, DTC, photocells and other interfaces. Shop drawings to indicate exact location of each device. Plans are diagrammatical. EC to verify all lighting control material requirements from approved shop drawings.
- C. Product Data: Submit for approval 6 copies of manufacturer's data on the specific lighting control system and components. Submittal shall be in both electronic and hard copy formats. To prevent departures from approved system operation, electronic file submitted shall be able to be directly downloaded to the specified system at manufacturer facility. Submit a complete bill of materials with part numbers, description and voltage specifications.
- D. One Line Diagram: Submit a one-line diagram of the system configuration indicating the type, size and number of conductors between each component if it differs from that illustrated in the riser diagram in these specifications. Submittals that show typical riser diagrams are not acceptable.

1.04

QUALITY ASSURANCE

- A. Products shall be manufactured by Lighting Control & Design, Los Angeles, CA, 800.345.4448 or approved equal. Such firms shall be regularly engaged in manufacture of lighting control equipment and ancillary equipment, of types and capacities required, whose products have been in satisfactory use in similar service for not less than 5 years. Any product other than those listed in this specification must be pre-approved a minimum of two weeks before bid time. No exceptions.
- B. Control wiring shall be in accordance with the NEC requirements for Class 2 remote control systems, Article 725 and manufacturer specification.
- C. A licensed electrician shall functionally test each system component after installation, verify proper operation and confirm that all relay panel and switch wiring conform to the wiring documentation. The Electrical Contractor (EC) is required to phone LC&D a minimum of 7 days before turnover for system checkout. At time of LC&D contact, all components to include phone line to modem must be installed, powered and operational.
- D. Comply with NEC and all local and state codes as applicable to electrical wiring work.
- E. Lighting control panels shall be UL 916 Listed. LCPs controlling emergency circuits shall be ETL listed to UL 924. Emergency source circuits controlled in normal operation by a relay panel shall fully comply with NEC 700-9(b). Electrical contractor to verify compliance.
- F. The lighting control system shall also be listed or approved by all national, state and local energy codes to include but not limited to California Title 24 and ASHRAE 90.1-2001.

1.05

MAINTENANCE MATERIALS

- A. Division 1 - Execution Requirements: Spare parts and maintenance products.
- B. Provide 4 spare relays per LCP, except for Micro panels.
- C. Provide CD version of manufacturers operating software to include graphical interface software.
- D. Provide 2 extra sets of as-built and operating manuals.

1.06

SUBSTITUTIONS

- A. Substitutions are permitted as voluntary alternates. Base bid must reflect the specified equipment.
- B. A product must go through the following process before being approved as a substitution:
 - 1. A list of substitutions shall be provided to the owner as an attachment to the bid form. Submit along with bill of material, CD of proposed operating system, and a one line diagram of the system configuration proposed indicating the type, size and number of conductors between each component if it differs from that illustrated in the riser diagram in these specifications.
 - 2. The list will be reviewed by the owner and the ENGINEER to determine whether the equipment meet the project needs. A \$500 retainer will be submitted with the list of voluntary alternates to cover this meeting. If the owner and ENGINEER agree that this meeting is not required, then the \$500 will be returned to the contractor.

3. The retainer is for evaluation of the alternate. The retainer is to be used to cover the time spent in this evaluation. The fee will be collected based on time spent in evaluation, not on whether the alternate is accepted. All unused portions will be returned to the contractor with an invoice marked "paid" by the ENGINEER, DESIGN TEAM, and/or owner.

PART 2 - PRODUCTS

2.01 MATERIAL AND COMPONENTS

A. Relay Panels: Panels shall be made up of the following components:

1. NEMA rated enclosure with screw cover or hinged door. Rain tight or oil tight and other NEMA rated versions available.
2. 16 AWG steel barrier shall separate the high voltage and low voltage compartments of the panel and separate 120v and 277v.
3. LCP input power shall be capable of accepting 120v or 277v without rewiring
4. Control electronics in the low voltage section shall be capable of driving 2 to 48 relays, control any individual or group of relays, provide individual relay overrides, provide a master override for each panel, store all programming in non-volatile memory, after power is restored return system to current state, provide programmable blink warn timers for each relay and every zone, and be able to control Normally Open (NO) or Normally Closed (NC) relays.
5. Lighting control system shall be digital and consist of a Master LCP with up to 48 individual relays, Slave LCPs with up to 48 individual relays in each panel, a Micro LCP with up to 4 individual relays, digital switches, digital interface cards and if required, SmartBreaker panelboards (see interfaces). All system components shall connect and be controlled via a single Category 5, 4 twisted pair cable with RJ45 connectors, providing real time two-way communication with each system component. Analog systems are not acceptable.
6. Lighting control system shall have the capability to output 4 independent 0v to 10v signals in a Micro LCP. Micro LCP shall be digital and be able to control up to 4 independent 20a fluorescent lighting circuits. Each circuit shall have an adjustable fade rate and take inputs from a wall device, DTC system controller or a digital photocell. Each Micro LCP shall be capable of powering low voltage occupancy sensors (150ma at 24v) without the adding a power pack.

B. Standard Output relays

1. Electrically held, electronically latched SPST relay.
2. Relays shall be individually replaceable. Relay terminal blocks shall be capable of accepting two (2) #10AWG wires on both the line and the load side. Systems that do not allow for individual relay replacement or additions are not acceptable.
3. Rated at 20 Amp, 277VAC Ballast, Tungsten, HID, 1 HP at 120 Vac, 2 HP at 240 Vac.

4. Relays to be rated for 250,000 operations minimum at 20a lighting load, use Zero Cross circuitry and be Normally Closed (NCZC). All incandescent circuits shall be energized by use of a Normally Closed SoftStart™ (NCSS) relay rated at 100,000 operations at full 20a load. No exceptions.
5. Optional relay types available shall include: Normally Open (NO) relay rated for 100,000 operations, a 600v 2-pole NO and NC and a Single Pole, Double Throw (SPDT) relay.

C. Switches

1. All switches shall be digital and communicate via RS 485. Contact closure style switches shall not be acceptable. Any switch button function shall be able to be changed locally (at the DTC or a PC) or remotely, via modem, Internet or Ethernet.
2. Switches shall be available in 1 through 6-button version with engraveable buttons, red LED annunciation for each button and a constantly On green LED locator.
3. Switches may be programmed to be Momentary ON, Momentary OFF, Toggle or Maintained. These functions shall be able to be changed locally (at the DTC or a PC) or remotely, via modem.
4. Contractor to verify all switch types and quantities per plans and specifications.
5. Accessories available to include digital key switch and digital key enable switch.

D. DTC - Digital Electronic Time Clock

1. A Digital Time Clock (DTC) shall control and program the entire lighting control system and supply all time functions and accept interface inputs.
2. DTC shall be capable of up to 32 schedules. Each schedule shall consist of one set of On and Off times per day for each day of the week and for each of two holiday lists. The schedules shall apply to any individual relay or group of relays.
3. The DTC shall be capable of controlling up to 126 digital devices on a single bus and capable of interfacing digitally with other individual busses using manufacturer supplied interface cards.
4. The DTC shall accept control locally using built in button prompts and use of a 8 line 21-letter display or from a computer or modem via an on-board RS 232 port. All commands shall be in plain English. Help pages shall display on the DTC screen.
5. The DTC shall be run from non-volatile memory so that all system programming and real time clock functions are maintained for a minimum of 15 years with loss of power.
6. Pre-installed Unity™ lighting control software shall provide via local or remote PC a visual representation of each device on the bus, show real time status and the ability to change the status of any individual device, relay or zone. System shall be capable of running optional Unity GX lighting control software, which shall provide for directly importing vector based graphics. No exceptions.

7. Pre-Installed modem that allows for remote programming from any location using a PC. Modem to include all necessary software for local or remote control.
8. DTC shall provide system wide timed overrides. Any relay, group or zone that is overridden On, before or after hours, shall automatically be swept Off by the DTC a maximum of 2 hours later.

E. Interfaces: For future expansion capability, system to have available all of the following interfaces. Verify and install only those interfaces indicated on the plans.

1. A dry contact input interface card that provides 14 programmable dry contact closure inputs. Use shielded cable to connect input devices to interface card.
2. Interface card providing digital communication from one system bus to another system bus, allowing up to 12,000 devices to communicate.
3. An exterior (PCO) or interior (PCI) photocell that provides readout on the DTC screen in number values analogous to foot-candles. Each photocell shall provide a minimum of 14 trigger points. Each trigger can be programmed to control any relay or zone. Each trigger shall be set through programming only. Photocells which require the use of setscrews or which must be programmed at the photocell control card shall be not acceptable.
4. An interface card that allows the DTC to control up to 32 digital XCI brand thermostats. Programming of thermostats to be able to done locally (at the DTC or a PC) or remotely, via modem, Internet or Ethernet.
5. A voice prompted telephone override interface module. Interface module shall accept up to 3 phone lines and allow up to 3 simultaneous phone calls. Voice prompted menu and up to 999 unique pass codes shall be standard with each interface module.
6. Software pre-installed to run Unity GX Graphical Interface Software. Unity GX software shall provide via local or remote PC a visual representation of a specific area or the total area of the project. GX full graphic pages shall be designed to the owner's specifications. Owner to provide to manufacturer all necessary files and criteria. Provide ____ GX pages.
7. Direct digital interface to SmartBreaker panelboards. Relay panel and SmartBreaker panelboard circuits shall appear on the system software as similar, yet distinct, items and maintain all functions and features of the system software.
8. Direct digital interface to DMX 512 based systems. DMX interface shall provide 14 global commands, each of which can be modified locally or remotely using lighting controls manufacturer supplied software. DMX interface shall be integral to the system bus and shall connect and be controlled via a single Category 5, 4 twisted pair cable, providing real time response from the lighting control system to DMX commands.
9. Direct digital interface to building automation systems using DDC protocols such as BACnet and Metasys (N2) that accept on/off commands, time schedules and report status of all relays in all panels in real time.

2.02

MODES OF OPERATIONS

- A. DTC - Digital Electronic Time Clock: DTC shall control any relay or group of relays by the following modes: ON only, OFF only, Maintained, Maintained with timer and OFF sweep warning (Blink warn), Maintained with timer (No blink warning). Timers adjustable from 1 minute to 4 hours. When the scheduled program in the DTC is ON the associated timers are disabled. When the scheduled program in the DTC is off and a relay or zone is overridden, the DTC will put that relay or zone into the timer mode and automatically sweep off at the end of the programmed timer period. All DTC settings, schedules, photocell trip points, temperature settings, longitude and latitude, time zone offset to sunrise and sunset and any other owner settings shall be able to be changed though software locally (at the DTC or a PC) or remotely, via modem, Internet or Ethernet. No exceptions.
- B. Switches: All system switches shall be digital and daisy chained on a single category 5, 4 twisted pair cable with all LCPs. Any switch button shall be able to control any relay or group of relays anywhere on the system in the following modes: ON, OFF, Mixed (Some relays ON some OFF), Toggle (first push ON, next OFF etc.) Maintain. Timer ON with a time set from 1 minute to 4 hours. Timer ON with Off sweep warning, (Blink warning 5 min or as programmed prior to OFF sweep.) Timer ON with Horn Warning (Horn output turns ON for the warning 5 min or as programmed prior to OFF sweep.) Any switch function shall be able to be changed locally (at the DTC or a PC) or remotely, via modem, Internet or Ethernet. Any relay, group or zone that is overridden On, before or after hours, shall automatically be swept Off by the DTC at the programmed time later. Digital switches shall have an optional enable/disable function.

PART 3 - EXECUTION

3.01 EQUIPMENT INSTALLATION

- A. Mount relay control cabinets adjacent to respective lighting panelboard. Cabinet shall be surface or flush mount, per plans. Wiring between relay control cabinet and panelboards to be per local codes and acceptable industry standards. Under no circumstances will any extra be authorized for payment to the EC or GC due to the EC's lack of knowledge or understanding of any and all prevailing codes or specified manufacturer's installation requirements. Neatly lace and rack wiring in cabinets. During construction process, protect all interior components of each relay panel and each digital switch from dust and debris. Any damage done to electronic components due to non-protection shall be the sole responsibility of the installing contractor.
- B. Switches: Provide outlet boxes, single or multi-gang, as shown on the plans for the low voltage digital switches. Mount switches as per plans. Supply faceplates per plans and specifications. EC is specifically responsible to supply and install the required low voltage cable, Category 5, 4 twisted pair, with RJ45 connectors and snagless boots (commonly referred to as Cat 5 patch cable) between all switches and panels. Field-test all Cat 5 patch cable with a recognized cable tester. All low voltage wire to be run in conduit, per local codes.
- C. Wiring
1. Do not mix low voltage and high voltage conductors in the same conduit. No exceptions.
 2. Ensure low voltage conduits or control wires do not run parallel to current carrying conduits.
 3. Place manufacturer supplied "terminators" at each end of the system bus per manufacturers instructions.

4. Neatly lace and rack wiring in cabinets.
5. Plug in Category 5 patch cable, that has been field tested with a recognized cable tester, at the indicated RJ45 connector provided at each lighting control device, per manufacturers instructions.
6. Use Category 5 patch cable for all system low voltage connections. Additional conductors may be required to compensate for voltage drop with specific system designs. Contact LC&D or refer to the GR2400 manual for further information. Use shielded cable for dry contact inputs to lighting control system.
7. Do not exceed 4000ft-wire length for the system bus.
8. All items on the bus shall be connected in sequence (daisy chained). Star and spur topologies are not acceptable.
9. The specified lighting control system shall be installed by the electrical contractor who shall make all necessary wiring connections to external devices and equipment, to include photocell. EC to wire per manufacturer instructions.

3.02 DOCUMENTATION

- A. Each relay shall have an identification label indicating the originating branch circuit number and panelboard name as indicated on the drawings. Each line side branch circuit conductor shall have an identification tag indicating the branch circuit number.
- B. Provide a point-to-point wiring diagram for the entire lighting control system. Diagram must indicate exact mounting location of each system device. This accurate "as built" shall indicate the loads controlled by each relay and the identification number for that relay, placement of switches and location of photocell. Original to be given to owner, copies placed inside the door of each LCP.

3.03 SERVICE AND SUPPORT

- A. Start Up: EC shall contact LC&D at least 7 days before turnover of project. LC&D will remotely dial into the lighting control system, run diagnostics and confirm system programming. EC shall be available at the time of dial in to perform any corrections required by LC&D. EC is responsible for coordinating with GC and the owner the installation of a dedicated telephone line or a shared phone line with A/B switch. Phone jack to be mounted within 12" of Master LCP. Label jack with phone number. EC to connect phone line from jack to Master LCP.
- B. Telephone factory support shall be available at no additional cost to the EC or Owner both during and after the warranty period. Factory to pre-program the lighting control system per plans and approved submittal, to the extent data is available. The specified manufacturer, at no added cost, shall provide additional remote programming via modem as required by the EC or Owner for the operation life of the system. Upon request manufacturer to provide remote dial up software at no added cost to system owner. No exceptions.
- C. Provide a factory technician for on-site training of the owners representatives and maintenance personnel. Coordinate timing with General Contractor. Provide ___ days of factory on-site training.

3.04 CLEANING

- A. Division 1 - Execution Requirements: Final cleaning.
- B. Remove dirt and debris from all LCP enclosures.
- C. Clean photocell lens as recommended by manufacturer.
- D. Clean all switch faceplates.

END OF SECTION

SECTION 262413
SERVICE SWITCHBOARDS AND DISTRIBUTION SECTIONS

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. Addenda, Alternates, Drawings and general provisions of Contract, including General and Supplementary Conditions and Division-1 Specifications collectively apply to work of this Section.

1.02 DESCRIPTION

- A. Work includes but is not limited to the following:
1. Main Switchboard.
 2. Distribution Sections.
- B. Related Work:
1. Section 260100 - Basic Materials and Methods.
 2. Section 260553 - Electrical Identification.
 3. Section 262713 - Service Entrance
 4. Section 260526 - Grounding

1.03 SUBMITTALS

- A. Include front and side views of enclosures with overall dimensions shown; conduit entrance locations and requirements; nameplate legends; size and number of bus bars per phase, neutral, and ground; switchboard instrument details; instructions for handling and installation of switchboard; and electrical characteristics including voltage, frame size and trip ratings, withstand ratings.

1.04 OPERATION AND MAINTENANCE DATA

- A. Submit operation and maintenance data.
- B. Include spare parts data listing; source and current prices of replacement parts and supplies; and recommended maintenance procedures and intervals.

1.05 DELIVERY, STORAGE, AND HANDLING

- A. Store in a clean, dry space. Maintain factory wrapping or provide an additional heavy canvas or heavy plastic cover to protect units from dirt, water, construction debris, and traffic.
- B. Handle in accordance with manufacturer's written instructions. Lift only with lugs provided for purpose. Handle carefully to avoid damage to switchboard internal components, enclosure, and finish.

1.06 SPARE PARTS

- A. Fuses: Furnish to Owner three spare fuses of each type and rating installed.
- B. Fuse Pullers: Furnish two fuse pullers to Owner.

PART 2 - PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS

- A. Cutler Hammer.
- B. General Electric.
- C. Square-D.
- D. ITE.

2.02 SWITCHBOARD AND DISTRIBUTION SECTION CONSTRUCTION AND RATINGS

- A. Service Switchboard: One or more standardized vertical sections bolted together to form one dead front, dead rear, completely enclosed, rigid, free standing assembly. All bussing and equipment accessible from front. Switchboard shall contain all protective devices and equipment with necessary interconnections, instrumentation and control wiring, terminal blocks and mechanical solderless connectors for terminals as required to perform intended functions.
Switchboard: Designed, factory assembled, wired, tested and inspected in accordance with NEMA, IEEE, ASA standards for Class II. All components shall bear applicable U.L. labels.
- B. Underground Pull Section: Bussed and with landing lugs as required by Power Company.
- C. Metering Section: Provisions for utility company's current transformers, test blocks and meters per their requirements.
- D. Distribution Sections: Floor standing, dead front, dead rear, with all bussing and equipment accessible from front, constructed in accordance with feeder diagram and approved shop drawings. Each section of switchboards shall bear Underwriters' label and manufacturer's label and shall comply with all applicable codes and ordinances. Manufacture in accordance with NEMA, IEEE and ASA standards.
- E. Where spaces are indicated, busses extended full length of section complete with mounting holes for installation for future equipment. Each section same height and depth.
- F. All Busses: Drilled and tapped.
- G. All circuit breakers, switches, and other interior equipment: Mounted to framework. No equipment mounted to front plates.
- H. Design of all current carrying devices or parts: Conform to latest standards specified in related section of IEEE standards except as these characteristics may be modified herein.
- I. Constructed of code gauge steel. Holes, supports, studs and openings standardized to enable interchange of interior and front cover units. Sections fabricated with right angle corners and plumb edges and surfaces.

- J. Enclosures: Parkerized or bonderized as a unit after all welding has been completed, then painted with rust-resisting primer coat of paint. Back of enclosure and interior; finished with a coat of light gray baked enamel. Front, top and exposed sides finished with a scratch resistant silver gray hammertone finish.
- K. Wiring Gutters: Extend full depth of front to back.
- L. Bus bars, connection bars and wiring: Arranged so that maximum accessibility is provided for cable connections.
- M. Consideration given to arrangement of cables so they may be connected in an orderly manner. Electrical clearance between parts of opposite polarity and between live parts and ground shall conform to National Electric Code.
- N. Bus Bars, Main Switchboard and all Distribution Sections: 98% minimum conductivity copper. Current density shall not exceed 1000 ampere per square inch. Rated as shown on drawings.
- O. Bus bars sized so as to limit temperature rise to 65 degrees above 40 degrees centigrade ambient in accordance with latest U.S.A. standards.
- P. Bus supports: Cables shall not be used in lieu of bus bars, riser busses, connecting busses or bus jumpers; adequately supported. Bus bars of a length greater than 15" but less than 30" shall be supported with not less than one intermediate insulated support (Underwriters approved) unless bar is taped with one layer of varnished cambric tape, half lapped, and one layer of friction tape, half lapped, and entire taping thoroughly varnished with approved insulation varnish. Bus bars of a length greater than 30" shall have not less than two insulated supports; sufficient supports shall be provided so that distance between supports shall not exceed width of switchboard sections in which they are used.
- Q. Ground Bus: A ground bus shall extend throughout length of switchboard assembly. Each housing of assembly shall be grounded directly to this bus.
- R. Each switch: Hinged cover with interlocking to prevent opening in "on" position. Circuit protective devices: Quick-make, quick-break fused switches with sufficient load break capacity to properly coordinate with fuses provided for safe operation. Switch shall have means to defeat interlock for inspection purposes. Switches up to and including 600 amperes shall be equipped with de-ionizing arc quenchers, high pressure spring loaded fuse holders and rotary action operating handle which will accept three standard padlocks to lock switch in either "on" or "off" position. Fuse Clips: Designed to accommodate Class "R" rejection type, current limiting fuses with 200,000 A.I.C.
- S. Molded Case Circuit Breakers: Bolt-on, quick-make, quick-break with integral thermal and instantaneous magnetic trip in each pole. Trip and frame sizes as noted on drawings. Short circuit current ratings as noted on drawings. Trip rating on breaker handle and provisions for pad-locking. Where noted on the drawings, current limiting type circuit breakers shall be provided.
- T. Practices: Connections between bus bars made by drilling and tapping bus bars and attaching switch units, or circuit breakers or jumper bars with capscrews. Connections; arranged so that individual switches from fifteen (15) to six hundred (600) amperes may be removed or added without interference to continuous operation of either entire section or individual adjacent circuit breaker or switch unit in same section.
- U. Service Switchboard: Approved by local serving utility company and with provisions for utility company's current transformers, test blocks and meters.

- V. Switchboard shall be by "Original Equipment Manufacturer" that also manufactures switches and circuit breakers.
- W. Switchboard supplier shall provide "Flash Hazard" warning signs per NEC.

PART 3 - EXECUTION

3.01 INSTALLATION

- A. Install switchboard in locations shown on Drawings, in accordance with manufacturer's written instructions.
- B. Tighten accessible bus connections and mechanical fasteners after placing switchboard and distribution sections.
- C. Install fuses in each switch.
- D. Provide landing lugs in pull section to accommodate service conductors.
- E. Rigidly secure and bolt switchboard and distribution sections to concrete slab and other building structural system in approved manner to meet seismic requirements.
- F. Coordinate with other trades and ensure that no pipes or ducts are installed in the space within 6 feet above top of switchboards. Be responsible also that all doors from electrical rooms swing out from room.

3.02 FIELD QUALITY CONTROL

- A. Inspect completed installation for physical damage, proper alignment, seismic anchorage, and grounding.
- B. Check tightness of accessible bolted bus joints using a calibrated torque wrench. Tightness shall be in accordance with manufacturer's recommended values.

3.03 ADJUSTING AND CLEANING

- A. Adjust all operating mechanisms for free mechanical movement.
- B. Touch up scratched or marred surfaces to match original finish.
- C. Adjust trip and time delay settings to values as instructed by ENGINEER.

3.04 IDENTIFICATION

- A. Provide black and white bakelite nameplates identifying function of each circuit breaker, panelboard, fused switch, etc.
- B. Equipment supplier shall provide "Flash Hazard" warning signs as required by the NEC.

3.05 TESTING

- A. Visual and Mechanical Inspection

1. Documentation of equipment nameplate data.
2. Inspection for physical damage, electrical, and mechanical condition.
3. Inspection for proper alignment, anchorage, required area clearances and grounding.
4. Inspection all doors, panels, and sections for paint, dents, scratches, fit, and missing hardware.
5. Inspection for proper identification of protective devices and switches.
6. Physical testing of interlocks to assure proper function as follows:
 - Attempt closure on locked-open devices.
 - Attempt to open locked-closed devices.
 - Make key exchange with devices operated in off-normal positions.
 - Verification that excess keys are removed from equipment.
7. Verification of tightness of accessible bolted bus joint connections by calibrated torque-wrench method.
8. Cleaning of interior and insulator surfaces. Inspection of insulators for evidence of physical damage or contaminated surfaces.
9. Inspection of proper operation of space heaters and thermostat settings.
10. Inspection of control power transformers for physical damage. Verification that primary and secondary fuse ratings or circuit breakers match transformer rating. Verification of correct functioning of the draw out disconnecting and grounding contacts and interlocks as applicable.
11. Verification that filters are in place and/or vents are clear.

B. Electrical Tests

1. Measurement of insulation resistance of each bus section phase-to-phase and phase-to-ground.
2. Resistance testing through all bus joints with a digital low resistance ohmmeter. Any joints that cannot be directly measured due to permanently installed insulation wrap are measured from the closest accessible connection.
3. Over-potential testing on each bus section phase-to-ground for one minute.
4. Phasing checks on double-ended switchgear to insure correct bus phasing from each source
5. Verification of correct function of control power transfer relays located in switchgear with multiple power sources.

C. A Molded Case Circuit Breakers

1. Visual and Mechanical Inspection
 - a. Documentation of equipment nameplate data.
 - b. Inspection of circuit breaker for physical damage.
 - c. Verification of circuit breaker smooth operation.
 - d. Verification of tightness of accessible bolted connections and/or cable connections by calibrated torque-wrench method.
 - e. Removal of cover on unsealed breakers for internal inspection and cleaning.
2. Electrical Tests
 - a. Measurement of contact resistance by millivolt drop method at trip unit rated current or by digital low resistance ohmmeter method.
 - b. Measurement of long-time delay by primary current injection at three times long-time pickup current.
 - c. Measurement of instantaneous pickup current by primary current injection.
 - d. Verification of trip unit reset operation.
 - e. Insulation resistance testing from pole-to-pole and from each pole-to-ground with breaker closed and across open contacts of each phase.
 - f. Dialing of final settings in accordance with coordination study supplied for the project.
 - g. Verification of correct operation of auxiliary features.

- D. Test ground fault protection of main circuit breaker.
- E. Employ the service of an independent testing company to perform the above tests. Submit test data to DESIGN TEAM.

3.06 COORDINATION STUDY AND ARC FLASH ANALYSIS

- A. Contractor shall submit short-circuit and coordination studies signed and stamped by a registered electrical ENGINEER. Studies shall be in accordance with IEEE guidelines. Contractor shall submit two copies of each study for DESIGN TEAM-ENGINEER review prior to ordering and installing any equipment.
- B. Provide coordination study from the main service disconnect to the last branch circuit protective devices including transformers secondary protective devices. Study shall be recorded on log paper. Adjustable circuit protective devices shall be set based on the coordination study. A final written record of protective device settings shall be provided to DESIGN TEAM-ENGINEER.
- C. Provide "Arc Flashing" study of entire electrical system from main service switchboard to the last panelboard. Provide "Flash Hazard" warning signs on all switchboards and panelboards.

END OF SECTION

SECTION 262726
WIRING DEVICES

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. Addenda, Alternates, Drawings and general provisions of Contract, including General and Supplementary Conditions and Division-1 Specifications collectively apply to work of this Section.

1.02 DESCRIPTION

- A. Work includes but is not limited to the following:
1. Wall Switches
 2. Receptacles.
 3. Device plates and box covers.
- B. Related Work:
1. Section 260100 - Basic Materials and Methods.
 2. Section 260534 - Boxes.
 3. Section 260553 - Electrical Identification.
 4. Section 260526 - Grounding.

PART 2 - PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS - WALL SWITCHES

- A. Harvey Hubbell Company.
- B. Pass and Seymour.
- C. Leviton.

2.02 WALL SWITCHES

- A. Wall switches for Lighting Circuit AC general use snap switch with toggle handle, rated 20 amperes and 120/277 volts AC. Handle: White or color as selected by DESIGN TEAM, plastic. Decorator spec grade.

2.03 ACCEPTABLE MANUFACTURERS - RECEPTACLES

- A. Harvey Hubbell Company.
- B. Pass and Seymour.
- C. Leviton.

2.04 RECEPTACLES

- A. Convenience and Straight-blade Receptacles: NEMA Configuration 5-15R: Decorator Spec Grade, White.
- B. Convenience and Straight-Blade Receptacles: NEMA configuration 5-20R: Decorator Spec Grade, White.
- C. GFI Receptacles: Duplex convenience receptacle with integral ground fault current interrupter, NEMA 5-20R, Decorator Spec Grade, White. Unit shall comply with UL 2003 GFCI requirements including lockout action.
- D. Receptacles: Highest specification grade.
- E. Split wired half controlled receptacle: NEMA 5-20R, 20 amp, Pass & Seymour 26352CH-W or equal.

2.05 ACCEPTABLE MANUFACTURERS - WALL PLATES (Match manufacturer of Device)

- A. Harvey Hubbell Company.
- B. Pass and Seymour.
- C. Leviton.
- D. TayMac.
- E. Match manufacturer of switches and receptacles.

2.06 WALL PLATES

- A. Interior Device Plates: Sierra Electric .040 stainless steel to suit device; multi-gang where required; blank plates at junction boxes and capped outlets.
- B. Weatherproof Cover Plates: Receptacles in wet locations shall be installed with an outlet enclosure clearly marked "Suitable for Wet Locations While In Use". There must be a gasket between the enclosure and the mounting surface, and between the cover and base to assure a proper seal. The enclosure must employ stainless steel mounting hardware and enclosure shall be recessed where possible and by TayMac Corporation or equal.
- C. Highest specification grade.

PART 3 - EXECUTION

3.01 INSTALLATION

- A. Install wall switches 48 inches above floor to top of wall box, "OFF" position down. Verify mounting height with DESIGN TEAM prior to installation.
- B. Install convenience receptacles 18 inches above floor, or as noted on drawings, grounding

pole on bottom.

- C. Install specific-use receptacles at heights shown on Contract Drawings.
- D. Install galvanized steel plates on outlet boxes and junction boxes in unfinished areas, above accessible ceilings, and on surface-mounted outlets in non-public places.
- E. Install devices and wall plates flush and level.
- F. Provide etched plates with 3/16" high black letters for:
 - 1. Outlets where voltage is other than 120 volt.
 - 2. When switch controls device other than lighting fixture.
 - 3. When switch is located out of sight of unit being controlled.
 - 4. Lock switches.
 - 5. Where more than one switch occurs under a common plate.
 - 6. Air Distribution System control switches.
- G. Install plates with all four edges in continuous contact with finished wall surfaces without use of mats or similar devices.
- H. Provide blank cover plates for all boxes as required.
- I. In Kitchen, all 15A and 20A 115V receptacles shall be GFI type.

END OF SECTION

SECTION 262813

FUSES

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. Addenda, Alternates, Drawings and general provisions of Contract, including General and Supplementary Conditions and Division-1 Specifications collectively apply to work of this Section.

1.02 DESCRIPTION

- A. Work includes but is not limited to the following:
 - 1. Fuses.
- B. Related Work:
 - 1. Section 260100 - Basic Materials and Methods.
 - 2. Section 262816 - Disconnect Switches.

PART 2 - PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS - FUSES

- A. Bussmann
- B. Gould-Chase Shawmut

2.02 FUSES

- A. Fuses, 600 amperes or less: Dual-element with a minimum time delay of 10 seconds at 500% rating; current limiting; interrupting capacity of 200,000 amperes RMS symmetrical.
- B. Fuses: Of same manufacturer, of sizes shown on Drawings, of required size for proper operation of equipment protected.
- C. Fuses, 250 volt: LPN-RK, Class "RK".
- D. Fuses, 600 volt: LPS-RK, class "RK".

2.03 SPARE FUSES

- A. Furnish 3 spare fuses of each type and each size.

PART 3 - EXECUTION

3.01 INSTALLATION

- A. Install fuses in switches and other equipment requiring fuses.

- B. Do not ship equipment from factory with fuses installed.
- C. Verify that correct size fuses are installed in switch. Verify that all three fuses in a three-pole switch and two fuses in a two-pole switch are exactly of same amperage and voltage ratings.

3.02 TESTS

- A. Operate system with fuses in place after approval by inspecting authority.
- B. Replace immediately any defective fuse and/or correct any and all deficiencies discovered through blown fuses.

END OF SECTION

SECTION 262816
DISCONNECT SWITCHES

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. Addenda, Alternates, Drawings and general provisions of Contract, including General and Supplementary Conditions and Division-1 Specifications collectively apply to work of this Section.

1.02 DESCRIPTION

- A. Work includes but is not limited to the following:
 - 1. Disconnect switches.
 - 2. Enclosures.
- B. Related Work
 - 1. Section 260100 - Basic Materials and Methods.
 - 2. Section 262813 - Fuses.
 - 3. Section 260553 - Electrical Identification.

1.03 SUBMITTALS

- A. Include outline drawings with dimensions, and equipment ratings for voltage, capacity and horsepower.

PART 2 - PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS - DISCONNECT SWITCHES

- A. General Electric.
- B. Cutler Hammer.
- C. Square "D" Company.

2.02 DISCONNECT SWITCHES

- A. Fusible Switch Assemblies: Heavy duty, quick-make, quick-break, load interrupter enclosed knife switch with externally operable handle interlocked to prevent opening front cover with switch in "ON" position. Handle lockable in "OFF" position. Fuse Clips: Designed to accommodate Class R fuses, current limiting, 200,000 A.I.C.
- B. Nonfusible Switch Assemblies: Heavy duty quick-make, quick-break, load interrupter enclosed knife switch with externally operable hand interlocked to prevent opening front cover with switch in "ON" position. Handle lockable in "OFF" position.
- C. Enclosures: NEMA Type 1 or NEMA Type 3R as indicated on Drawings.

- D. Fusible and Nonfusible Switch Enclosures: Assembled with defeatable door interlocks that prevent door from opening when operating handle is in "ON" position.

PART 3 - EXECUTION

3.01 INSTALLATION

- A. Install disconnect switches where indicated on Drawings.
- B. Install fuses in fusible disconnect switches.
- C. Install "Caution" sticker on inside of switch door indicating exact type of fuses to be installed therein.
- D. Verify that size, type and rating of fuses installed in each switch is correct and that all fuses in any one individual switch are the exactly same.

3.02 IDENTIFICATION

- A. Provide screwed-on bakelite nameplate.
- B. See Section 260553 for nameplate data.

END OF SECTION

SECTION 263100
PHOTOVOLTAIC SYSTEMS

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. Addenda, Alternates, Drawings and general provisions of Contract, including General and Supplementary Conditions and Division-1 Specifications collectively apply to work of this Section.

1.02 WORK INCLUDED

- A. These specifications cover Photovoltaic (PV) System (s) requirements including, but not limited to equipment, hardware, software, documentation, labor, materials, and supervision required for the installation of grid-connected PV systems.
- B. Section Includes, but is not limited to the following:
 - 1. Infrastructure, wiring, connections, and testing.
 - 2. Self ballasted solar panels and panel arrays.
 - 3. Disconnects.
 - 4. DC combiners.
 - 5. Inverters.
 - 6. Monitoring equipment and Control software.
 - 7. Metering equipment and interfacing with utility company meter.
 - 8. Identifications and signs.
 - 9. Training.

1.03 RELATED REQUIREMENTS:

- A. Section 260100: Basic Materials and Methods.
- B. Section 260519: Wire and Cable-Rated 600 Volt.
- C. Section 260526: Grounding and Bonding.
- D. Section 260533: Conduits.

1.04

REFERENCES

- A. Installation, inspections and tests shall be in accordance with the most current applicable codes and standards.
1. ANSI Z21.83 - Solar Photovoltaic Performance and Safety.
 2. ANSI C2-1999 - National Safety Code.
 3. AMSE PTC 50 - Solar Photovoltaic Performance.
 4. ASCE 7-05 - Standard for Minimum Design Loads for Buildings and Other Structures, Chapter 13.
 5. CBC - California Building Code.
 6. CEC - California Electrical Code.
 7. DSA-IR 18 - Division of the State DESIGN TEAM Interpretation of Regulations Document 16-A.
 8. IEEE 929-2000 - Recommended Practice for Utility Interface of Photovoltaic Systems.
 9. IEEE 1262-195 - Recommended Practice for Qualification of Photovoltaic (PV) Modules and Panels.
 10. IEEE 1537 - Standards for Interconnecting Distributed Resources with Electric Power Systems.
 11. NFPA72 - National Fire Code.
 12. NFPA 853 - Solar Photovoltaic near Buildings.
 13. NRTL - Nationally Recognized Testing Laboratory.
 14. UL 1703 - Flat-Plate Photovoltaic Modules and Panels.
 15. UL 1741 - Standard for Static Inverters and Charge Controllers for Use in Photovoltaic Systems
 16. LADWP Solar Program Guidelines.

1.05

SUBMITTALS

- A. Shop Drawings shall include but not be limited to:
1. Site plan showing infrastructure layouts, PV arrays locations, and identifiable features.
 2. Riser diagram:
 - a. Connection to utility AC disconnects and main electrical switchboard.

- b. Indicate conduits, power and communication wires, and combiners, disconnects, inverters, meters, etc.
 - c. Provide PV system(s) power production calculations and total system(s) rating.
3. Complete point to point PV System interconnection diagram(s):
 - a. Identify DC and AC components.
 - b. Indicate conduit and wire characteristics, sizes and quantities.
 - c. Indicate conduit fills and voltage drops.
 - d. Provide combiner box schedule.
 - e. Provide bill of materials.
4. Floor plans and roof plans showing HVAC equipment, PV arrays, inverters, combiner boxes, disconnects, edge zones, electrical equipment room, roof access hatches, skylights, etcetera.
 - a. Indicate system(s) interface connections.
 - b. Provide AC and DC wiring plans.
 - c. Provide electrical equipment room layouts and equipment elevation details.
5. Assembly Details. Provide as minimum the following details:
 - a. Array attachment details.
 - b. Support details and spacing dimensions.
 - c. Deflector attachment details.
 - d. Module to module wiring diagrams.
 - e. DC wire tray attachment and DC combiner mounting details.
 - f. Data acquisition System (DAS) wiring details.
 - g. Roof mounted conduit supports and roof penetrations.
 - h. Grounding details.
 - i. Warning typical signs details.
 - 1) Utility lockable AC disconnects sign.
 - 2) Interactive system point of interception sign.
 - 3) DC switches warning sign.

- 4) Solar array warning sign.
6. Operations and Maintenance Manuals.
7. As-built submittal drawings.
8. Installation Instructions of each control device.
9. PC monitoring Workstation.
10. Software licenses and electronic keys.
11. Supplemental local or factory training schedule for post warranty support.
12. A complete list of recommended spare parts with pricing for the Owner's use in keeping the PV system downtime to a minimum.
13. Composite CD ROM with AutoCAD drawings in a "dwg." format.

1.06

QUALITY CONTROL

- A. The Contractor shall have a California Solar or Electrical Contractor's license.
 1. Components and interconnection wiring shall be installed by state certified electricians. Contractor or Installer's electricians shall be certified in accordance with Labor Code sections 3099, and 3099.2 and section 209.0 of the California Code of Regulations.
- B. Contractor shall have adequate experience installing systems of similar size and complexity.
 1. Qualifications of Installer: Minimum five years experience installing products and systems of similar scope and complexity.
 2. Installer shall have completed at least five projects of equivalent scope and complexity.
 3. Installer shall submit certification from the equipment manufacturer indicating that installer is an authorized representative of the equipment manufacturer and is trained on the installations of the specified PV system products.
 4. Installer shall maintain a fully equipped service organization capable of furnishing repair service to the equipment.
 5. Installer shall furnish a letter from manufacturer of equipment certifying equipment has been installed according to factory standards and that system is operating properly.
 6. Contractor shall have completed and commissioned a minimum of five service agreements that provide similar support services to those needed for this project.
- C. Materials and equipment installed shall be new and listed as an approved technology by the California Energy Commission (CEC) Emerging Technology Buydown Program.

- D. The installer shall provide the system components required by code and for the safety of the Owner's service personnel.
- E. System components shall operate per industry standards.
- F. If PV modules using Cadmium are included, then the environmental impact of the Cadmium usage must be disclosed to the Owner, including any special maintenance requirements, and proper disposal or recycling of modules at the end of their useful life. Modules containing Cadmium must comply with the EPA Landfill Disposal Requirements. Any additional costs related to PV modules containing Cadmium must be clearly identified. The Owner may choose at its discretion to reject any Cadmium containing modules.

1.07 WARRANTY

- A. System shall be warranted in accordance with state regulations for photovoltaic systems.
 - 1. The PV System Equipment Manufacturer shall provide a ten year material warranty at 90 percent of its rated power, and 20 years at 80 percent of its rated power.
 - 2. System warranties and materials, fabrication and execution guaranties shall be in effect during the Solar License Agreement.
- B. System components (other than PV modules) shall be guaranteed against defects in materials, fabrication and execution for a minimum of three years from date of system acceptance. Provide labor and materials to repair, reprogram, or replace components at no charge to the Owner during the warranty period. Corrective work or system modifications shall be updated on user documentation and archived software disks.
 - 1. Warranty shall include annual on-site inspection, including: system testing (operating current of each electrical system), system adjustments and routine maintenance
 - 2. Repair or replacement of defective parts.
 - 3. System performance monitoring and historical data access for customer via secure website. Data is required to include: system energy and power production, ambient temperature, wind speed, and insolation.
 - a. The system shall be connected ahead of the facilities computer network firewall. Provide necessary work, materials and installation to connect the system to the MPOE.
 - 4. Daily system monitoring by vendor, including reporting of problems to customer and dispatch of resources for expeditious resolution of problems.
 - 5. The maintenance agreement shall include a response time of four hours for major system failures (emergency service), and 48 hours for minor repairs (routine service). Proposed agreement shall include biannual site visits for preventative maintenance inspection so that systems are validated prior to the warranty expiration date.
- C. Provide a list of applicable warranties for equipment and components, this list shall include warranty information, names, addresses, telephone numbers, and procedures for filing a claim and obtaining warranty services.

- D. Respond to the Owner's request for warranty service within four hours during normal business hours. For calls, submit records of the nature of the call, the work performed, and the parts replaced or service rendered.

1.08

TRAINING

- A. Provide a factory employed instructor to provide full instructions to designated Owner personnel in the system's operation, maintenance, and programming. Training shall be specifically oriented to installed equipment and systems.

1. The instruction period shall be scheduled and coordinated by the Owner.
2. Provide four hours of onsite owner familiarization and training for the installed system. Training shall include system overview, override commands, normal and emergency operation and response, programming features and report generation. Employees attending this training session shall be provided with the following documentation:
 - a. System layout point to point connection diagram.
 - b. System components cut sheets.
 - c. Operations and maintenance data.
 - d. Safety rules for the operations and maintenance of PV systems.
3. Programmer and maintenance training shall include database entry; trend logs application programs, diagnostic routines, reporting, failure recovery and calibration.
 - a. Provide a 40 hours training session as follows:
 - 1) Training session shall accommodate a minimum of 20 personnel and be facilitated at a location no more than 50 miles from the County's Headquarters. Contractor shall obtain Owner's approval for training locations.
 - 2) Training shall cover instruction, theory, and expose the trainees to system's features, components, DESIGN TEAMure, operations, programming, report generation, communications, and any other pertinent information required for the operations and maintenance of the system.
 - 3) Instructor(s) shall give the trainees the opportunity to practice on a simulated or actual (installed) system.
 - 4) The training session shall cover, but not be limited to the following instruction modules or sessions:
 - a) System DESIGN TEAMure:
 - (1) System layout and components interrelations and hierarchical structure.

- (2) Controllers interfacing and functions.
- (3) Server functionality and data management, error messages, and alarm conditions.
- (4) Connectivity and communication losses. User
- b) Operations:
 - (1) Familiarization and system operability.
 - (2) Window panes, menus, navigation buttons, alarm response windows, system passwords and accessibility features and options, monitoring and managing data points (inputs, outputs, numeric values, time and date, strings).
 - (3) Views: Provide sufficient information as to train staff on how and where to access programs, functions, adjust or alter diagnostic points and related data, override messages, reports creation.
- c) Trending: Setting trend(s) intervals, accessing data trends and history logs for diagnosis of system performance and reporting. Working with trended data graphical displays, including but not limited to hiding points, setting display types and colors, viewing and setting scales.
- d) Graphics: Standard symbols and color codes, graphics customization, how and where to access and manage the system with the graphic displays, including changing points and values, viewing results, mapping to or with other graphic sources and functions, including groups, navigation, sequence of operations, and displays and reports.
- e) Alarms: Reading and interpreting alarms, acknowledging and silencing alarms, routing and setting priorities, viewing and responding e-mailed and paged alarms.

PART 2 - PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS

- A. Photovoltaic modules systems: The PV modules shall be framed flat-panel crystalline or amorphous silicon modules.
 - 1. The array shall achieve the required kWp DC STC output for the entire system under peak sun conditions. The AC output shall not be less than 80 percent of the DC kWp rating.
 - 2. Each PV module shall include bypass diodes installed in the module junction box.

3. PV modules shall be listed on the California Energy Commission's PTC list and must qualify for eligibility under the California Solar Initiative (CSI) Program.
4. DC Photovoltaic Panel Output:
 - a. PV Module Open-Circuit Voltage shall be 45.2V or less.
 - b. PV String Open-Circuit Voltage shall be 600V or less.
 - c. Voltage range: Plus or minus ten percent.
5. PV model or arrays:

	MANUFACTURER	MODEL NUMBER	DESCRIPTION
1	ET Solar Industry, Ltd.	ET-P672 -255 to 280	Polycrystalline Module
2	Evergreen Solar Inc.	ES-A-200, 205, 210, 215	String Ribbon solar panel
3	General Electric	GEVp-200-M	Polycrystalline Module
4	Kyocera Solar, Inc.	KD200 P & F Series	Polycrystalline Module
5	REC	Peak Energy Series	Polycrystalline Module
6	Schott Solar, Inc.	SCHOTT POLY 220,225,230,235	Polycrystalline Module
7	Sharp Corporation	ND-L200 Series	Polycrystalline Module
8	Silken California Corp.	SLK60P6L 230, 235	Polycrystalline Module
9	Solar Power Inc./LDK	LDK230	Polycrystalline Module

6. Equal or better PV modules may be submitted for review by the Owner.

B. Inverters:

1. Inverters shall be listed on the California Energy Commission's PTC list and must qualify for eligibility under the California Solar Initiative (CSI) Program.
2. The PV system shall have at least one inverter. Inverter units shall be solid state device capable of accepting the output of the photovoltaic panels and providing rated output as indicated in construction documents.
 - a. The inverter shall be equipped with the following items:
 - 1) DC input disconnect.
 - 2) Surge protection.
 - 3) Ground fault interrupter.

- 4) Isolation transformer.
 - 5) AC output circuit breaker.
 - 6) Data Monitoring System.
3. The inverter shall be able to sustain an overload across its output terminals up to 150 percent load, while supplying any load within its rating and without reducing its output voltage.
 4. The inverter shall be capable of at least 300 percent current for short circuit conditions. If the short circuit is sustained, the inverter shall shutdown and disconnect automatically from the load bus.
 5. Each inverter unit shall be equipped with fault sensing and static isolation, and with an output circuit breaker for removal of faulted module(s) from the system.
 6. Power semiconductors in the inverter shall be fused with fast acting fuses to prevent cascading failures. Each fuse shall be provided with a blown fuse and alarm indicating diodes on the control panel.
 7. AC Inverter System Output:
 - a. Voltage regulation plus or minus 0.5 percent balance load, plus or minus two percent for 50 percent unbalanced load.
 - b. Voltage adjustment range plus or minus five percent manually.
 - c. Frequency regulation 0.1 percent.
 - d. Phase Displacement:
 - 1) Balanced load, 120 percent plus or minus one percent.
 - 2) Fifty percent unbalanced, 120 percent plus or minus three percent.
- C. Combiner Box: As recommended by the PV modules manufacturer.
1. The system shall have at least a terminal box or boxes, providing the electrical the electrical string(s) a waterproof entry to the conduit leading to the combiner box(es).
 2. The terminal box and combiner box can be one physical unit.
 3. The PV system shall have a combiner box(es), containing fuses and a bus to combine the outputs of the strings. A set of wires shall run from the combiner box to the inverter(s).
 4. Combiner output shall be compatible with inverter input.
- D. Edge Connector: As indicated by the PV module manufacturer.
1. Method of electrical interconnection for PV laminates shall be by means of a factory supplied plug connecting cable.

2. Cables measuring 12 to 18 inches shall be supplied with a male-type connector on each end, or with newer technology as recommended by the solar array manufacturer.
 3. Each laminated light for PV modules shall be provided with a factory supplied female-type connector.
- E. Accessories:** Junction boxes, anchors, wiring lugs and other accessories shall be provided in accordance with Division 26 requirements, and in compliance with California Electrical Code requirements and the PV modules manufacturing recommendations.
- F. Data Acquisition System:** System approved by the California Energy Commission that meets applicable state regulations.
- G. System Performance Meters:** Provide revenue grade Interval Data Recording (IDR) meters complete with industry standard telemetry for communication with Ethernet, cellular or other common output capabilities. Refer to contract drawings for meter(s) location(s).
1. Provide connection to a password protected website accessible by personnel for the purposes of metering, monitoring and data collection of solar production.
 2. Meters shall be connected to a monitoring or data collection recording solar production through Time of Use (TOU) increments applicable to the local utility standards, with a minimum 15 minute intervals.

2.02 SYSTEM RATING

- A.** System shall be sized to provide the KW system output indicated on drawings at full load rated power.
- B.** The systems shall be rated for outdoor installation. The system equipment shall be capable of operating under the locations maximum and minimum documented temperatures during summer and winter times. The entire system must be rated and warranted to withstand and operate under these conditions.
- C.** Rated PV system capacity must be specified in direct current (DC) kilowatts peak under both STC and PTC conditions.
1. The STC or Standard Test Conditions rating assumes direct current referred as "kWdc-stc". It is also refer as kilowatts peak, or "kWp". Specific PV module manufacturer maximum and minimum power data must be specified for this rating.
 2. The PTC rating or PV USA Test Conditions rating is based on 1,000 Watts per square meter solar irradiance, 20 degree Celsius ambient temperature and one meter per second wind speed.

2.03 STRUCTURAL IMPACT AND WIND LOADING

- A.** The PV array weight shall add no more than eight pounds per square foot to the facility roof structure in the array area.
- B.** The system shall be installed as part of a structural support system designed for the application.

- C. PV arrays shall be seismically restrained from falling off the roof or excessive movement on the roof. Panels shall be installed to resist sliding and pop-up resulting from lateral and vertical seismic forces and displacements per CBC.

PART 3 - EXECUTION

3.01 GENERAL

- A. PV system shall not be used for any purpose other than its intended functions.
- B. Equipment mounted in exterior locations shall be rated NEMA 3R.
- C. Semiconductor devices shall be hermetically sealed. Vacuum tubes shall not be used.
- D. Relays shall be dust tight.
- E. Wiring methods for power distribution and controls shall be as defined in the Division 26 specifications. Wire types shall conform to manufacturers' recommendations.
- F. Bolted connections of bus bars, lugs, and cables shall be in accordance with the requirements of applicable codes and standards.
- G. Power connection shall be marked and torque to the required value.
- H. Commissioning requirements of Divisions 01 and 26 apply to this section.
- I. Coordinate the Work with other aspects of roofing, mechanical, structural, and electrical systems to obtain a complete and operating system.

3.02 SYSTEM INSTALLATION

- A. Provide equipment and required wiring. Provide required conductor terminations to devices for a complete system to function as specified and indicated on Drawings. Refer to Section 16120: Low-Voltage Wires (600 Volt AC), for installation and color coding requirements.
- B. Terminations shall be in terminal cabinets or on equipment terminals.
- C. Conductors shall be installed within conduits, boxes, and terminal cabinets in a totally enclosed installation. Provide conductors required to connect incoming and outgoing circuits.
- D. Wiring within equipment and terminal cabinets shall be installed to conform to contract documentation and NFPA 72 standards. Wiring shall be cabled, laced, and securely fastened in place so that no weight is imposed on equipment or terminals.
- E. Conductors shall be color-coded per specification section 16120 Low Voltage Wires (600 Volt AC) and tagged with code markers at terminal cabinets, and equipment. A wire index shall be typed and installed on terminal cabinet doors. Index shall be covered with clear plastic adhesive covers. Wiring shall be identified as to building and location of devices.
- F. Complete installation shall comply with local building codes, manufacturer's instructions, and applicable industry standards.

- G. Location of boxes and raceways on Drawings is approximate, unless dimensions are indicated. Do not scale Drawings to determine locations and routing of conduits. Location of the infrastructure and equipment shall conform to DESIGN TEAMural features of the building and other Work already in place, and must be ascertained in the field before the start of Work.
- H. Drawings generally indicate Work to be provided, but do not indicate all bends, transitions or special fittings required to clear beams, girders or other Work already in place. Investigate conditions where conduits are to be installed, and furnish and install required fittings.
- I. The roof shall be inspected prior to start of any work. Any observed deficiencies shall be brought up to the attention of the Owner prior to commencing any work.
- J. Loose gravel on the area designated for the PV arrays shall be removed. The collected gravel shall be removed.
- K. Prepare framing to receive PV modules in accordance with manufacturer's recommendations and in compliance with accepted shop drawings.
- L. Adequate ventilation shall be provided to ensure that system components are operated within their environmental ratings.
- M. Temperature sensors shall be provided to monitor the temperature of indoor system components, such as Inverters and power monitoring system. Upon detection of temperatures in excess of the manufacturer's recommended operating temperature range, the sensor shall trigger audible and visual alarms.
- N. Provide warning signs as required by applicable codes.

3.03 MONITORING

- A. Provide an on-site Data Acquisition System (DAS). The DAS shall be equipped to log the information critical to the evaluation of system performance, including AC current energy production, solar irradiance, ambient temperature, and wind speed.
- B. The information shall be stored on the logger at 15-minute intervals and transmitted to a District designated processing facility. Information shall be stored and backed-up per CEC and utility company requirements.
- C. For the duration of the service agreement between Owner and the third party monitoring company, data services shall include the processing, quality assurance, storage, and daily backup of system performance data.
- D. Provide annual reports of system's performance on the anniversary of the system.
 - 1. The report shall include a full-color chart showing the predicted energy output for a typical year, the predicted energy output for the current year, and the actual energy produced in each month of the year.
 - 2. The report shall be prepared for each individual system in the site, and as an aggregate for the entire site's electrical energy production.

3. The DAS shall include a data logger, modem for data retrieval, NEMA 4 enclosure, dry bulb measuring device, anemometer, solar sensor and radiation shield.

3.04 TESTING

- A. A 48 hour notice shall be provided to the Owner, ENGINEER of Record (EOR), Project Inspector, and Commissioning Agent before final testing.
- B. Demonstrate in presence of the Project Inspector, and Commissioning Agent that circuit and wiring tests are free of shorts and grounds and that installation performs as specified herein and within manufacturer's guidelines.
- C. PV modules shall be factory tested for design performance.
- D. Inverter shall be factory tested for performance; results shall be included in the Operation and Maintenance Manual.
- E. Provide commissioning and system startup.
- F. Installer is responsible for identifying required tests, coordinating, scheduling, and conducting tests before Substantial Completion. Tests shall include the following:
 1. System response, data logging and transmission, and performance
 2. System features and components under normal operation.
 3. System shutdown from utility override switches.
 4. Before energizing the cables and wires, check for correct connections and test for short circuits, ground faults, continuity, and insulation.
 5. When the system is equipped with optional features, consult the manufacturer manual to determine proper testing procedures.
- G. Defects resulting from tests shall be corrected prior to substantial completion.
- H. Software Modifications:
 1. Provide the services of a factory trained and authorized technician to perform system software modification, upgrades or changes. Response time of the technician to the Project site shall not exceed 24 hours.

3.05 SERVICE MANUALS

- A. Contractor shall deliver to Owner, three copies of the service manuals. Each manual shall include the following:
 1. Installation manuals, programming manuals, user manuals, and part numbers if applicable for every major system component. Catalog cut sheets are not acceptable.
 2. A printed copy of the system configuration, including system labeling codes, and passwords.

3. An electronic copy of the system configuration program on compact disk.
4. Final test report.
5. Detailed explanation of the operation of the system.
6. Instructions for routine maintenance.
7. Detailed wiring diagrams and updated shop drawings that include revisions made in the field via plan changes, RFIs, Field Change Directives, and any other construction change documents including interface details with other systems.
8. Provide a CD ROM electronic copy of the updated system As-Built Drawings to the Owner, prepare this copy in the latest version of AutoCAD; along with the electronic copy provide a full size bond copy. Include one CD-ROM of the up-dated As-Built Drawings into each of the Service Manuals. CD and folded drawings shall be secured and inserted into the Service Manuals via a three-hole punched protective CD case and protective envelopes for the drawings.
9. Materials and required deliverables shall be submitted to the Owner.

3.06 PROTECTION

- A. Protect the Work of this section until Substantial Completion.

3.07 CLEANUP

- A. Remove rubbish, debris, and waste materials and legally dispose of off Project site.

END OF SECTION

SECTION 265100
LIGHTING FIXTURES

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. Addenda, Alternates, Drawings and general provisions of Contract, including General and Supplementary Conditions and Division-1 Specifications collectively apply to work of this Section.

1.02 DESCRIPTION

- A. Work includes but is not limited to the following:

- 1. Lighting fixtures and accessories.
- 2. Lamps.
- 3. Ballasts.
- 4. Parking Lot Poles.

- B. Related Work:

- 1. Section 260100 - Basic Materials and Methods.
- 2. Section 260533 - Conduit.
- 3. Section 260519 - Wire and Cable.
- 4. Section 260534 - Boxes.
- 5. Section 260190 - Supporting Devices.
- 6. Section 260526 - Grounding.

1.03 SUBMITTALS

- A. Submit Shop Drawings.
- B. Include outline drawings, lamp and ballast data, support points, weights, and accessory information for each lighting fixture type.

PART 2 - PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS - LIGHTING FIXTURES

- A. See Lighting Fixture Schedule on drawings.

2.02 SWITCHING AND DIMMING CONTROLS

- A. General

1. All devices color per DESIGN TEAM.
2. Observe manufacturers installation instructions with particular attention to derating requirements for multiple gang installations.
3. Use factory made multiple gang faceplates matching device color.
4. Daylight Controls may be integrated into luminaires Performance shall equal or exceed specification for individual devices.

B. Switches

1. Standard snap style
2. 120/277 volt, 20A
3. Listed
4. Specification grade
5. Color per DESIGN TEAM

C. Automatic control switch

1. Automatic control switch shall be a push button wall switch capable of on/off manual operation and shall also be capable of receiving automatic control signals through interrupting power to the switch and load.
2. Control switch shall mount in a standard single gang or multi-gang wall box and shall fit behind a decorator style face plate.
3. Control switch shall use an air gap relay rated for 15 Amp ballast, tungsten, general use and shall be compatible with all electronic ballasts and HID loads.
4. The control switch when used with an occupancy sensor shall provide manual on/off control from the push button and automatic shut off based on occupancy. When occupancy is not detected and the sensor's time delay has expired, the lights shall turn off. If occupancy is detected within 15 seconds of this shut off, the switch shall turn the lights back on. Otherwise, lights will remain off until the switch is manually turned on.
5. Control switch shall be capable of 3-way, 4-way, or multi-way switching.
6. Control switch shall be The Watt Shopper AS-100 or Sentry Switch or approved equal.

D. Motion sensors

1. Provide a dual technology sensor that detects presence in the control area by detecting Doppler shifts in transmitted ultrasound and passive infrared heat changes. Detection verification of both technologies must occur in order to activate lighting systems. Upon verification, detection by either shall hold lighting on.
2. Sensor shall have a retrigger feature in which detection by either technology shall retrigger the lighting system on within 5 seconds of being switched off.

3. Sensor shall be mounted and adjusted in order to eliminate detection through open doorways and outside of controlled area. To provide small motion diction and immediate activation upon entry, coverage of both technologies must be complete and overlapping throughout the controlled area.
4. The PIR technology shall utilize a temperature compensated, dual element sensor and a multi-element Fresnel lens. The lens shall be Poly IR4 material. The lens shall cover up to 2000 square feet for walking motion when mounted at 10 feet and 1000 square feet of desktop motion.
5. Ceiling or high wall mounted. Coordinate location for best detection when used with suspended lighting.
6. Ultrasonic sensing shall be volumetric in coverage with a frequency of 40 KHz. It shall automatically adjust the detection threshold dynamically to compensate for constantly changing levels of activity and air flow throughout controlled space.
7. Sensors shall have a time delay that is adjusted automatically or shall have a fixed time delay of 5 to 30 minutes, set by DIP switches.

E. Automatic daylighting switches

1. Provide an ON/OFF daylight controller to reduce the controlled lighting as the daylight level increases. Where two stages of reduction are specified, provide a two stage controller providing a sequence reduction. As an alternate, two single stage controllers may be provided to provide two stages of reduction as long as these two devices may be adjusted to provide the desired sequencing of the lighting reduction and maintain this sequencing when switching the lights off and again when switching the lights on.
2. Ceiling mounted or luminaire mounted. The function of the automatic daylighting switches shall not be provided by a wall switch or a device mounted at wall switch height. If the device s powered by line voltage then it must be enclosed in an enclosure rated a minimum of NEMA 1 with a tamper proof cover or locking cover.
3. Independently adjustable setpoint and deadband. Setpoint shall be adjustable from at least 10 footcandles up to 100 footcandles. Deadband shall be adjustable up to at least 100% setpoint.
4. Adjustable time delay. Lighting level must be above the off setpoint continuously for the length of the time delay before the lights will switch off. The device shall not have a length of the time delay shorter than 3 minutes. Time delay shall be adjustable to up to 20 minutes.
5. Low voltage device to be connected by low voltage wiring to a power pack. If control sequence can be met, one power pack may be used with multiple control devices.
6. Daylight switch shall provide visible indicator of the current status of the control output. Indicator shall be an LED.
7. Daylight switch to provide a test mode that temporarily bypasses the time delays. If left in test mode, the daylight switch will automatically resume normal time delays at the end of a period no longer than 60 minutes. (This item is a requirement of the 2005 Title 24 standard).

F. Automatic daylighting dimming systems

1. Provide a daylighting controller to continuously dim the fluorescent lights. Daylighting controller may be a self contained photosensor or a controller with a remote photocell. Photocell or photosensor are to be ceiling mounted or attached to a pendant fixture.
2. Photosensor to provide 0 - 10 V dimming signal to continuously dim the ballasts proprietary methods of signaling dimming ballasts shall be acceptable.
3. Daylighting controller may be open or closed loop type. Closed loop devices may not be used in applications where there are adjoining dimming zones such that the luminaires from one dimming zone can be viewed by the daylighting controls in another zone. All daylighting controllers shall provide proportional control. An open loop device may accomplish this with one adjustment. All closed loop devices shall have at least two adjustments to provide an adjustable response. Any device which attempts to maintain a constant photocell signal shall not be acceptable.
4. All adjustments shall be adjustable from the photocell.
5. Provide an occupant adjustment or override wall switch to allow the teacher to adjust the light levels.
6. Approved sensor/control manufacturers: Wattstopper, Lutron, Leviton, Lithonia, Novitas, Douglas.

PART 3 - EXECUTION

3.01 INSTALLATION

- A. Install lamps in lighting fixtures and lampholders.
- B. Support surface-mounted lighting fixtures directly from building structure. Provide additional blocking, unistruts, steel channels, etc. as required.
- C. Install recessed lighting fixtures with attached accessible junctions boxes to permit removal and access from below. Use plaster frames in plaster, gypsum wallboard or acoustic ceilings. In grid ceiling rated for light fixture support, support recessed fluorescent light fixtures directly from T-bar using approved earthquake clips and in addition, 2 No. 12 wires (slack wires), one at each diagonal end of fixture attached directly to a structural member. If two opposite ends of a fixture do not rest on ceiling main runners, provide 4 No. 12 wires (support wires) to structural member. In grid ceiling not rated for fixture support, attach fixture to grid using approved earthquake clips and in addition 4 No. 12 support wires directly to structural member.
- D. Provide safety chain between fixture and structure for recessed light fixtures. Mount hanger channels to span structural and/or T-bar ceilings.
- E. Provide required backing for all lighting fixtures.
- F. Join continuously mounted fixtures by use of chase nipples.
- G. Provide spacers where required.
- H. Mount light fixtures so that fixture labels are not visible when viewed from below.

- I. For recessed fixtures in fire rated ceiling, provide fireproofing enclosure equal to rating of ceiling
- J. Mount Parking Lot Poles complete with luminaires and lamps on concrete base.
- K. In each pendant of a pendant mounted light fixture, provide a safety wire or cable attached to the fixture and structure at each support capable of supporting four times the supported load. Provide swivel mounts at ceiling and longitudinal sway mounts at fixtures to allow fixtures to swing freely a minimum of 45 degrees from vertical.
- L. Test motion sensors and daylighting controls.
- M. For all dimming systems, contractor is responsible for burning in all lamps for 100 hours. Lamps are to operate at full output for this period.
- N. Contractor is responsible for setting up and adjusting all control devices per the manufacturer's adjustments and resulting performance.

3.02 TESTS

- A. Immediately before turning completed job over to Owner, clean all light fixtures inside and out, including plastics and glassware, adjust and tighten all trim, replace broken or damaged parts, lamp and test fixtures for electrical and mechanical operation. Replace all inoperative lamps, ballasts and other inoperative equipment.
- B. Replace noisy ballasts immediately.
- C. Include in bid the service of a California Registered Professional ENGINEER or a Professional recognized by the State of California to review and certify the final installed lighting control system as required by the California Energy Code (Title-24). The Professional shall sign the required documents, submit to the proper agency and be responsible for certifying the installed lighting control system.

END OF SECTION

SECTION 311000

SITE CLEARING

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes:

1. Removal of vegetation, grass, grass roots, shrubs, tree stumps, trees, upturned stumps, weed growth, tree roots, brush, masonry, concrete, rubbish, debris and other materials.
2. Removal of concrete and bituminous surfaces.
3. Removal of existing fences and gates.

B. Related Requirements:

1. Division 01 - General Requirements.
2. Section 312200 - Grading.
3. Section 312313 - Excavation and Fill.
4. Section 312326 - Base Course.

1.02 SUBMITTALS

- A. Shop Drawings: Submit site plan indicating extent of site clearing

1.03 QUALITY ASSURANCE

- A. Comply with Standard Specifications for Public Works Construction, current edition, as a minimum requirement.

PART 2 - PRODUCTS

NOT USED

PART 3 - EXECUTION

3.01 TREE AND STUMP REMOVAL

- A. Remove trees and stumps indicated or required to be removed. Remove trees, together with bulk of roots, to a minimum depth of 4 feet below required grade, and within a radius of approximately 7 feet beyond perimeter of trunk at grade.
- B. Fill and compact excavation from tree and stump removal. Fill in 6 inch layers, each compacted to 90 percent of maximum density in accordance with ASTM D1557.
 - 1. Back filling shall not commence until the excavation is inspected and tested.

3.02 CONCRETE AND BITUMINOUS SURFACING REMOVAL

- A. Break up and completely remove existing concrete surfacing, curbs, gutters, walks and bituminous surfacing to indicated limits. Cutting shall be performed to a neat and even line with proper tools or a concrete cutting saw. Minimum depth of cut shall be 1 1/2-inch, unless otherwise indicated. Remove concrete broken beyond the indicated limits to the nearest joint or score line and replace with new concrete to match existing.

3.03 CLEANUP

- A. Remove rubbish, debris and waste materials and legally dispose of off the Project site.

END OF SECTION

SECTION 312316

EXCAVATION AND FILL FOR PAVING

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes:

1. Excavating, backfill, and compacting for paved areas.
2. Installation of fill materials.

B. Related Requirements:

1. Division 01 - General Requirements.
2. Section 014524 - Environmental Import/Export Material Testing.
3. Section 311000 - Site Clearing.
4. Section 312200 - Grading.
5. Section 312323 - Excavation and Fill for Utilities.
6. Section 322326 - Base Course.
7. Section 320117 - Pavement Repair.
8. Section 321216 - Asphalt Paving.
9. Section 321313 - Site Concrete Work.

1.02 PROJECT REQUIREMENTS

A. Import and Export of Earth Materials:

1. Fees: Pay as required by authorities having jurisdiction over the area.
2. Bonds: Post as required by authorities having jurisdiction over the area.
3. Haul Routes and Restrictions: Comply with requirements of authorities having jurisdiction over the area.

1.03 SUBMITTALS

- A. Imported Soils: A geotechnical ENGINEER, retained by the Owner as an Owner Consultant, shall obtain initial product Sample for testing in accordance with the terms of Article 3.05 of this section.

1.04 QUALITY ASSURANCE

- A. Comply with Standard Specifications for Public Works Construction, current edition, except as modified herein.
- B. Sampling, testing, and certification of imported and/or exported soils shall be performed in accordance with Section 014524 - Environmental Import/Export Material Testing.

1 05 PROJECT CONDITIONS

- A. Information on Drawings or in soils report does not constitute a guarantee of accuracy or uniformity of soil conditions over the Project site.
- B. A copy of the foundation investigation and soils report is available for examination at the DESIGN TEAM's office during regular office hours of DESIGN TEAM.

PART 2 - PRODUCTS

2 01 BASE MATERIALS

- A. Concrete Slabs On Grade: Provide "Crushed Aggregate Base "as specified in the Standard Specifications for Public Works Construction, Section 200: "Rock Materials," with ¾ inch maximum size aggregates. Provide 3-inch thick base, unless noted otherwise.
- B. Bituminous Surfacing: As indicated on Drawings and specified in Section 312326 - Base Course.

2 02 FILL AND BACKFILL MATERIALS

- A. Fill and backfill materials shall be previously excavated materials or imported fill material, free of clods and stones larger than 3-inch, foreign materials, vegetable growths, sod, expansive soils, rubbish and debris. Material shall conform to these specified requirements and related sections.
- B. Fill material exhibiting a wide variation in consistency and moisture content shall be blended or aerated to stabilize and upgrade the material.
- C. Imported Fill Material:
 - 1. Provide suitable materials obtained from Project site excavations for earthwork and fill materials. If excavated materials are not of suitable quality or sufficient quantity, import additional materials as necessary.
 - 2. Imported fill shall be a granular material with sufficient binder to form a firm and stable unyielding subgrade and shall not have more than 60 percent of fines passing 200 mesh sieve. Material shall have a coefficient of expansion of not more than 2 percent from air dry to optimum moisture content and not more than 6 percent from air dry to saturation. Imported material shall be clean and free of rubbish, debris, and toxic or hazardous contaminants. Adobe or clay soils are not permitted.

- D. Other Fill Materials: Brick rubble and broken concrete originating from the Project site may be legally disposed of off the Project site or incorporated in fill, if reviewed by a geotechnical ENGINEER, retained by the Owner as an Owner Consultant. Unless otherwise required, no such materials may be imported from outside the Project site.
- E. Permeable Backfill:
1. Provide permeable backfill material behind retaining structures consisting of gravel, crushed gravel, crushed rock, natural sands, manufactured sand, or combinations of these materials conforming to the following gradations:

Sieve Size:	Percentage Passing:
3/4 inch (19mm)	100
3/8 inch (10mm)	80 to 100
No. 100	0 to 8
No. 200	0 to 3
 2. Those portions of fill material passing a No. 4 sieve shall provide a sand equivalent of at least 60.
 3. Provided backing for weep holes shall consist of two cubic feet of aggregate in burlap sacks, securely tied. Aggregate shall conform to requirements for No. 3 concrete aggregate as specified in subsection 200-1.4 of the Standard Specifications for Public Works Construction.
 4. Permeable Backfill Alternate Materials: Instead of the materials specified for retaining structures backfill, a drainage matting system, Miradrain by Mirafi, Inc., or equal, may be provided if reviewed by the DESIGN TEAM.

PART 3 - EXECUTION

3.01 SITE PREPARATION

- A. Clear the Project site as required in Section 311000 - Site Clearing.

3.02 PROTECTION

- A. Protect and guard excavations against danger to life, limb, and property as required by, but not limited to, Cal-OSHA regulations.
- B. Protect adjacent existing improvements including landscaping against damage.

3.03 EXISTING UTILITY LINES

- A. Protect existing utility lines from damage or displacement.
- B. Remove conduits or pipes not in service, exposed during Work, unless a minimum cover of 2 feet is provided. Remove concrete, clay or other non-metallic pipe over 8 inches in diameter, unless otherwise indicated.

3.04 EXCAVATION

- A. Unclassified Excavations: Comply with the Standard Specifications for Public Works Construction, Section 300: "Earthwork," except as modified herein.

3.05 FILL

- A. Unclassified Fill and Compaction: Comply with the Standard Specifications for Public Works Construction, Section 300: "Earthwork," except as modified herein.
- B. Provide fill materials as specified in Part 2 - Products. If excavated materials from the Project site are not of required quality or sufficient quantity, import additional materials as necessary.
- C. In addition to the requirements of this section, import and/or exported materials shall comply with the requirements of Section 014524 - Environmental Import/Export Material Testing.
- D. Imported fill materials shall be sampled by a geotechnical ENGINEER, retained by the Owner as an Owner Consultant, for compliance with the requirements of Part 2 of this Section.
- E. The geotechnical ENGINEER, retained by the Owner as an Owner Consultant, shall submit samples to a DSA approved independent approved testing laboratory for testing.
- F. Initial sampling shall be performed by the geotechnical ENGINEER, retained by the Owner as an Owner Consultant, before importing material to the Project site. Identify the location of the source site in addition to the address, name of the person and/or entity responsible for the source site. The geotechnical ENGINEER, retained by the Owner as an Owner Consultant, shall obtain both the initial and additional samples from the identified site and shall submit samples to the approved independent testing laboratory for testing.
- G. The geotechnical ENGINEER, retained by the Owner as an Owner Consultant, shall perform additional sampling during import operations. If the total quantity of import is determined to be greater than 1,000 cubic yards of material, one sample shall be obtained and submitted for testing tested for each 250 cubic yards of imported material. If the total quantity of import is determined to be less than 1,000 yards, one sample shall be obtained and submitted for testing for each 100 cubic yards of imported material.
- H. The independent approved testing laboratory shall perform the required tests and report results of tests noting if the tested material passed or failed such tests and shall furnish copies to the Project Inspector, DESIGN TEAM, OAR, DSA, Contractor, and others as required. Report shall state tests were conducted under the responsible charge of a licensed State of California professional ENGINEER and the material was tested in accordance with applicable provisions of the Contract Documents, CBC, and the DSA. Upon completion of the Work of this section, the independent testing laboratory and geotechnical ENGINEER shall submit a verified report to the DSA as required by CBC.
- I. Bills of lading or equivalent documentation will be submitted to the Project Inspector on a daily basis.
- J. Upon completion of import operations, provide the OAR a certification statement attesting that imported material has been obtained from the identified source site.

3.06 INSTALLATION OF MATERIALS

- A. Fill or backfill materials shall be installed in horizontal layers of 6 inches, unless otherwise required. Each layer shall be evenly placed and moistened or aerated as necessary. Unless otherwise reviewed by the geotechnical ENGINEER, retained by the Owner as an Owner Consultant, each layer of fill material shall cover the length and width of the area to be filled before the next layer of material is installed. Top surface of each layer shall be installed to an approximate level with a crown or crossfall of at least 1 in 50, but no more than 1 in 20. Provide adequate drainage at all times during construction of the Work of this section.

3.07 COMPACTING

- A. Each layer of fill material shall be compacted by tamping, sheepsfoot rollers, or pneumatic-tired rollers to provide specified relative compaction. At inaccessible locations, provide specified compaction by manually held, operated and directed compaction equipment.
- B. Unless otherwise indicated, compact each layer of earth fill to a relative compaction of at least 95 percent.
- C. When fill materials, or a combination of fill materials, are encountered or provided which develop densely packed surfaces as a result of installation or compacting operations, scarify each compacted layer before installing the next succeeding layer.

3.08 INSPECTION AND TESTING

- A. The geotechnical ENGINEER, retained by the Owner as an Owner Consultant, will inspect and test excavations, sample material quality as required in Part 2, and observe installation and compaction of fill materials.
- B. The geotechnical ENGINEER, retained by the Owner as an Owner Consultant, will sample imported fill materials from their designated source before delivery to the Project site.
- C. Installation of backfill shall be observed by the geotechnical ENGINEER, retained by the Owner as an Owner Consultant.
- D. The geotechnical ENGINEER, retained by the Owner as an Owner Consultant, will inspect and test excavation Work before the installation of fill and/or other materials.
- E. Compaction: Test compaction in accordance with ASTM D1557, Method C.

3.09 PROTECTION

- A. Protect the Work of this section until Substantial Completion.

3.10 CLEANING

- A. Remove rubbish, debris, and waste materials and legally dispose of off the Project site.

END OF SECTION

SECTION 312319

EXCAVATION AND FILL FOR STRUCTURES

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes:

1. Excavating, backfilling, and compacting for buildings and structures.
2. Fill materials.

B. Related Requirements:

1. Division 01 - General Requirements.
2. Section 014524 - Environmental Import/Export Material Testing.
3. Section 311000 - Site Clearing.
5. Section 312616 - Excavation and Fill for Paving.
6. Section 312323 - Excavation and Fill for Utilities.

1.02 PROJECT REQUIREMENTS

A. Import and Export of Earth Materials:

1. Fees: Pay as required by authorities having jurisdiction over the area.
2. Bonds: Post as required by authorities having jurisdiction over the area.
3. Haul Routes and Restrictions: Comply with requirements of authorities having jurisdiction over the area.

1.03 SUBMITTALS

A. Imported Soils: A geotechnical ENGINEER, retained by the Owner as an Owner Consultant, shall obtain initial product Sample for testing in accordance with the terms of Article 3.05 of this section.

B. Shoring calculations as required in Article 3.03 of this section.

1.04 QUALITY ASSURANCE

A. Comply with the following as a minimum requirement: Standard Specifications for Public Works Construction, current edition, except as modified herein.

- B. Sampling, testing, and certification of imported and/or exported soils shall be performed in accordance with Section 014524 - Environmental Import/Export Material Testing.

1.05 PROJECT CONDITIONS

- A. Information on Drawings or in soils report does not constitute a guarantee of accuracy or uniformity of soil conditions over the Project site.
- B. A copy of the foundation investigation and soils report is available for examination at the DESIGN TEAM's office during regular office hours of DESIGN TEAM.

PART 2 - PRODUCTS

2.01 FILL AND BACKFILL MATERIALS

- A. Fill and backfill materials shall be a granular material previously removed from excavation, or imported fill material, free of large clods and stones larger than 3 inches, foreign materials, vegetable growths, sod, expansive soils, rubbish and debris. Material shall conform to these specified requirements and related sections.
- B. Fill material exhibiting a wide variation in consistency and or moisture content shall be blended and/or aerated to stabilize and upgrade the material.
- C. Imported Fill Material:
 - 1. Provide suitable materials obtained from Project site excavations for earthwork and fill materials. If excavated materials are not of suitable quality or sufficient quantity, import additional materials as necessary.
 - 2. Imported fill shall be a granular material with sufficient binder to form a firm and stable unyielding subgrade and shall not have more than 60 percent of fines passing 200 mesh sieve. Material shall have a coefficient of expansion of not more than two percent from air dry to optimum moisture content and not more than six percent from air dry to saturation. Imported material shall be clean and free of rubbish, debris and toxic or hazardous contaminants. Adobe or clay soils are not permitted.
- D. Other Fill Materials: Brick rubble and broken concrete originating from the Project site may be legally disposed of off the Project site, or incorporated in fill, if reviewed by the geotechnical ENGINEER, retained by the Owner as an Owner Consultant. Unless otherwise provided, no such materials may be imported from outside the Project site.
- E. Permeable Backfill:
 - 1. Provide permeable backfill material behind retaining structures consisting of gravel, crushed gravel, crushed rock, natural sands, manufactured sand, or combinations of these materials conforming to the following gradations:

<u>Sieve Size</u>	<u>Percentage Passing</u>
3/4 inch	100

3/8 inch	80 to 100
No. 100	0 to 8
No. 200	0 to 3

2. Those portions of fill material passing a No. 4 sieve shall provide a sand equivalent of at least 60.
3. Provided backing for weep-holes shall consist of two cubic feet of aggregate in burlap sacks, securely tied. Aggregate shall conform to requirements for No. 3 concrete aggregate as specified in subsection 200-1.4 of the Standard Specifications for Public Works Construction.
4. Permeable Backfill Alternate Materials: Instead of the materials specified for retaining structures backfill, a drainage matting system, Miradrain by Mirafi, Inc., or equal, may be provided if reviewed by the DESIGN TEAM.

PART 3 - EXECUTION

3.01 SITE PREPARATION

- A. Clear the Project site as required in Section 312200 - Site Clearing.

3.02 PROTECTION

- A. Protect and guard excavations against danger to life, limb, and property as required by, but not limited to, Cal-OSHA regulations.
- B. Protect adjacent existing improvements including landscaping against damage.
- C. Shore, crib, or lag excavations and earthen banks as necessary to prevent caving-in, erosion or gullying of sides.
- D. Divert or de-water excavations until concrete is placed, forms are removed, and backfilling is complete.

3.03 SHORING

- A. Provide shoring as necessary to properly and safely support earth sides of excavations, curbs, sidewalks, gutter, drives and stairs, against movement and collapse.
- B. Design and Calculations: Provide in accordance with requirement of Cal-OHSA. Remove shoring upon completion of Work, or when no longer needed.

3.04 EXCAVATION

- A. Form sides of footings, pads, grade beams, and slab foundations, unless otherwise indicated. Provide excavations of sufficient size to permit installation and removal of forms and other Work as required.

- B. Machine-drill excavation for round footings to size and depth indicated. Provide a collar or casing, or other adequate protection, to exclude dirt and debris. Protect excavations with plank covers until concrete is placed.
- C. Provide excavation bottoms level and free from loose material. Excavate to indicated or required elevations of undisturbed earth.
- D. Provide excavations free from standing water by pumping, draining, or providing protection against water intrusion. If soil becomes soft, soggy, or saturated, excavate to firm undisturbed soil and fill as required. Slope adjacent grades away from excavations to minimize entry of water.
- E. Calculate excavation quantities based on elevations or depths indicated on Drawings.
- F. Provide 2,000 psi concrete for backfill of over-excavated areas to indicated or required elevations.
- G. Special preparation of bottom of excavated planes areas: Excavate areas designated on Drawings as bottom of excavated planes (B.E.P.), by excavating and filling to indicated grades and elevations.

3.05

IMPORT/EXPORT OF MATERIALS

- A. Provide fill materials as specified in Part 2- Products. If excavated materials from the Project site are not of required quality or sufficient quantity, import additional materials as necessary.
- B. In addition to the requirements of this section, import and/or exported materials shall comply with the requirements of Section 014524 - Environmental Import/Export Material Testing.
- C. Imported fill materials shall be sampled by the geotechnical ENGINEER, retained by the Owner as an Owner Consultant, for compliance with the requirements of Part 2 of this section.
- D. The geotechnical ENGINEER, retained by the Owner as an Owner Consultant, shall submit all samples to a DSA approved independent testing laboratory for testing.
- E. Initial sampling shall be performed by a geotechnical ENGINEER, retained by the Owner as an Owner Consultant, before importing material to the Project site. Identify the location of the source site in addition to the address, name of the person and/or entity responsible for the source site. The geotechnical ENGINEER, retained by the Owner as an Owner Consultant, shall obtain both the initial sample and additional samples from the identified site and shall submit samples to the approved independent testing laboratory for testing.
- F. The geotechnical ENGINEER, retained by the Owner as an Owner Consultant, shall perform additional sampling during import operations. If the total quantity of import is determined to be greater than 1,000 cubic yards of material, one sample shall be obtained and submitted for testing for each 250 cubic yards of imported material. If the total quantity of import is determined to be less than 1,000 yards, one sample shall be obtained and submitted for testing for each 100 cubic yards of imported material.

- G. The independent approved testing laboratory shall perform the required tests and report results of tests noting if the tested material passed or failed such tests and shall furnish copies to the Project Inspector, DESIGN TEAM, OAR, DSA, Contractor, and others as required. Report shall state tests were conducted under the responsible charge of a licensed State of California professional ENGINEER and the material was tested in accordance with applicable provisions of the Contract Documents, CBC and the DSA. Upon completion of the Work of this section, the independent testing laboratory and geotechnical ENGINEER shall submit a verified report to the DSA as required by CBC.
- H. Bills of lading or equivalent documentation will be submitted to the Project Inspector on a daily basis.
- I. Upon completion of import operations, provide the OAR a certification statement attesting that all imported material has been obtained from the identified source site.

3.06 BACKFILLING

- A. After concrete has been placed, forms removed and concrete Work inspected, backfill excavations to indicated or required grades. Backfill simultaneously on each side of walls or grade beams. Remove rubbish, debris, and other waste materials from excavations before placing backfill.
- B. Before installing any backfill, adequately cure concrete and provide bracing to stabilize structures. Protect waterproofing or dampproofing against damage during backfilling operations with required protection board. Remove bracing as backfill operation progresses.
- C. Do not furnish or install expansive soils for below grade building walls.
- D. Install each layer of material in a not to exceed thickness of 6 inches, unless otherwise required.
- E. Rigidly control the amount of water to be installed to provide optimum moisture content for type of fill material furnished. Do not over-saturate or compact by flooding or jetting.
- F. Install wall backfill before installing railings and fences on walls.
- G. Impervious backfill materials shall be installed in layers along with and by the same methods specified for structure backfill. Impervious backfill materials shall be at the approximate grade and elevation and where exposed to erosion, shall be covered with at least a 12-inch layer of fill material as reviewed by the geotechnical ENGINEER, retained by the Owner as an Owner Consultant.
- H. Install weep hole drainage at the backside of walls so the backing completely covers the weep holes, is horizontally centered and extends at least 12 inches above the bottom of the weep opening. Provide an 8-inch square section of 1/4 inch galvanized or aluminum screen, with a minimum wire diameter of 0.03 inch, and install at the backside of each weep hole before installing the backfill material.
- I. Where a reviewed drainage matting system is provided instead of permeable backfill for retaining structures, install in accordance with the manufacturer recommendations.

3.07 COMPACTING

- A. Compact each layer of fill material by tamping, sheepsfoot rollers or pneumatic-tired rollers, to such extent as to provide specified relative compaction. At inaccessible locations, compact to specified requirements with hand-held, operated and directed compaction equipment.
- B. Unless otherwise indicated, compact each layer of fill material to a relative compaction of at least 95 percent.
- C. Do not compact by flooding or jetting.
- D. When fill materials, or a combination of fill materials, are encountered or provided which develop densely packed surfaces as a result of installation or compacting operations, scarify each layer of compacted fill before installing the next succeeding layer.

3.08 INSPECTION AND TESTING

- A. The geotechnical ENGINEER, retained by the Owner as an Owner Consultant, will inspect and test excavations, sample material quality as required in Part 2, and observe installation and compaction of fill materials.
- B. The geotechnical ENGINEER, retained by the Owner as an Owner Consultant, will sample imported fill materials from their designated source before delivery to the Project site.
- C. Installation of backfill shall be observed by the geotechnical ENGINEER, retained by the Owner as an Owner Consultant.
- D. The geotechnical ENGINEER, retained by the Owner as an Owner Consultant, will inspect and test excavation Work before the installation of fill and/or other materials.
- E. Compaction: Test compaction in accordance with ASTM D1557, Method C.
- F. The Project Inspector will inspect foundation excavations when completed and ready for forms, after forms are in place and before first placement of concrete.

3.09 PROTECTION

- A. Protect the Work of this section until Substantial Completion.

3.10 CLEANUP

- A. Remove rubbish, debris, and waste materials and legally dispose of off the Project site.

END OF SECTION

SECTION 312323

EXCAVATION AND FILL FOR UTILITIES

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes:

1. Excavating, backfilling, and compacting utility trenches such as water, gas, irrigation, storm drain, sewer lines, concrete-encased conduits, and manholes, vaults, valve boxes, catch basins, underground tanks, thrust blocks, yard boxes, pull boxes and other utility appurtenances.

B. Related Requirements:

1. Division 01 - General Requirements.
2. Section 014524 - Environmental Import/Export Material Testing.
3. Section 311000 - Site Clearing.
4. Section 312200 - Grading.
5. Section 312316 - Excavation and Fill for Paving.
6. Section 312319 - Excavation and Fill for Structures.
7. Section 320117 - Pavement Repair.
8. Section 321313 - Site Concrete Work.
9. Section 328413 - Potable Water Irrigation.
10. Section 328426 - Reclaimed Water Irrigation.
11. Section 331100 - Site Water Distribution Utilities.
12. Section 333000 - Site Sanitary Sewer Utilities.
13. Section 334000 - Storm Drainage Utilities.
14. Division 22 - Plumbing.
15. Division 26 - Electrical.

1.02 PROJECT REQUIREMENTS

A. Import and Export of Earth Materials:

1. Fees: Pay as required by authorities having jurisdiction over the area.

2. Bonds: Post as required by authorities having jurisdiction over the area.
3. Haul Routes and Restrictions: Comply with requirements of authorities having jurisdiction over the area.

1.03 SUBMITTALS

- A. Imported Soil. A geotechnical ENGINEER, retained by the Owner as an Owner Consultant, shall obtain initial product Sample for testing in accordance with the terms of Article 3.05 of this section.

1.04 QUALITY ASSURANCE

- A. Comply with the following as a minimum requirement: Standard Specifications for Public Works construction, current edition except as modified herein.
- B. Sampling, testing, and certification of imported and/or exported soils shall be performed in accordance with Section 014524 - Environmental Import/Export Material Testing.

1.05 PROJECT CONDITIONS

- A. Information on Drawings or in soils report does not constitute a guarantee of accuracy or uniformity of soil conditions over the Project site.
- B. A copy of the foundation investigation and soils report is available for examination at the DESIGN TEAM's office during regular business hours of DESIGN TEAM.

PART 2 - PRODUCTS

2.01 MATERIALS

- A. Bedding material from trench bottom to one foot above the pipe:
 1. Sand, gravel, crushed aggregate or native free-draining granular material providing a sand equivalent of at least 30 or a coefficient of permeability greater than 1.4 inches per hour.
 2. Sand complying with the Specifications for cement concrete aggregates.
- B. Backfill Materials:
 1. Excavated trench material to be installed for backfilling shall be clean, free of large clods, and stones larger than 2 ½-inch in any dimension.
 2. Cement-sand slurry shall be provided with one sack of cement per cubic yard of the mixture.
 3. Imported Fill Material: Imported fill material shall be a granular material with sufficient binder to form a firm and stable unyielding subgrade and shall not have more than 60 percent of fines passing a 200 mesh sieve. Material shall provide a

coefficient of expansion of not more than two percent from air dry to optimum moisture content and not more than six percent from air dry to saturation. Imported materials shall be clean and free of rubbish, debris, and toxic or hazardous contaminants. Adobe or clay soils are not permitted.

PART 3 - EXECUTION

3.01 GENERAL

- A. Before excavation, contact the "Underground Service Alert of Southern California" (USASC) for information on buried public utilities and pipelines. For on-site utilities retain an underground locating service.
- B. Barricade trenches, ditches, pits, sumps, and similar Work outside the barricaded working area with chain link fence as specified in Section 015000 - Construction Facilities and Temporary Controls, and in accordance with Cal-OSHA standards and requirements.
- C. Saw-cut concrete or bituminous paving for trench installation.
- D. Trenches over 5 feet in depth shall conform to the Cal-OSHA.
- E. Where indicated and required to excavate in lawn areas, protect adjoining lawn areas outside of the Work area. Replace or install removed sod upon completion of backfill by installing sod level with adjacent lawns. If installation of removed sod fails, furnish sod and install to match existing lawns.
- F. Backfill over excavations to the required elevations with earth, gravel, sand, or concrete and compact as required. Provide excavations free from standing water by pumping, draining, or providing protection against water intrusion. Slope adjacent grades away from excavations to minimize entry of water.
- G. Do not install piping lengthwise under concrete walks without review by the DESIGN TEAM.
- H. Do not excavate trenches parallel to footings closer than 18 inches from the face of the footing or below a plane having a downward slope of two horizontal to one vertical, from a line 9 inches above bottom of footings.
 - 1. Unless otherwise indicated on Drawings, depth of excavations outside the buildings shall allow for a minimum coverage above top of pipe, tank, or conduit measured from the lowest adjoining finished grade, as follows:

Steel Pipe	24 inches below finished grade
Copper Water Tube	18 inches below finished grade
Cast-Iron Pressure Pipe	36 inches below finished grade
Plastic Pipe (other than waste)	30 inches below finished grade
Tanks or other structures	36 inches below finished grade
Soil, Sewer & Storm Drain	minimum 18 inches below finished grade, and as required for proper pitch and traffic load. (Install polypropylene sewer pipe with at least 24 inches coverage)

Irrigation Pipe: nonpressure pipe 12 inches, pressure pipe 24 inches

2. Trench width shall provide ample space for fitting and joining. Excavate for piping bells and fittings, bell and spigot pipe and other fittings.

- I. Unless indicated otherwise, excavate trenches to the required depths for utilities, such as pipes, conduit and tanks, with minimum allowances of 6 inches at the bottom and 6 inches at the sides for bedding of unprotected piping or as required for concrete encasement of conduits as indicated on Drawings. Grade bottom of trenches to a uniform smooth surface. Remove loose soil from the excavation before installing sand bedding or concrete encasement.
- J. Provide excavations free from standing water by pumping, draining, or providing protection against water intrusion. If soil becomes soft, soggy, or saturated, excavate to firm undisturbed soil and fill as required. Slope adjacent grades away from excavations to minimize entry of water.
- K. Provide a minimum clear dimension of 2 inches from sides of wall excavation to outer surfaces of buried pipes or conduits installed in the same trench or outside surfaces of containers and tanks.
- L. Do not install backfill until required inspections and testing is completed.
- M. Backfill electrical or other excavated utility trenches located outside of barricaded installation areas within 24 hours after inspection by the Project Inspector.
- N. Install backfill materials in layers not exceeding 4 inches in thickness and compact to 95 percent of the maximum density.
- O. If materials excavated from the Project site are not permitted for trench backfill in paved areas, backfill trenches with a cement-sand slurry mix. Install backfill to an elevation of the existing undisturbed grade plus one inch.
- P. Install and compact sand bedding to provide a uniform full length bearing under piping and conduits.
- Q. Where portions of existing structures, walks, paving, or other improvements are removed or cut for piping or conduit installation, replace the material with equal quality, finished to match adjoining existing improvements. Repair pavement as specified in Section 320117 - Pavement Repair.

3.02 IMPORT/EXPORT OF MATERIALS

- A. Provide fill materials as specified in Part 2- Products. If excavated materials from the Project site are not of required quality or sufficient quantity, import additional materials as necessary.
- B. In addition to the requirements of this section, import and exported materials shall comply with the requirements of Section 014524 - Environmental Import/Export Material Testing.

- C. Imported fill materials shall be sampled by a geotechnical ENGINEER, retained by the Owner as an Owner Consultant, for compliance with the requirements of Part 2 of this section.
- D. The geotechnical ENGINEER, retained by the Owner as an Owner Consultant, shall perform the tests by utilizing an independent approved testing laboratory.
- E. Initial sampling shall be performed by the geotechnical ENGINEER, retained by the Owner as an Owner Consultant, before importing material to the Project site. Identify the location of the source site in addition to the address, name of the person and/or entity responsible for the source site. The geotechnical ENGINEER, retained by the Owner as an Owner Consultant, shall obtain both the initial sample and additional samples from the identified site and shall submit all samples to the approved independent testing laboratory.
- F. The geotechnical ENGINEER, retained by the Owner as an Owner Consultant, shall perform additional sampling during import operations. If the total quantity of import is determined to be greater than 1,000 cubic yards of material, one sample shall be obtained and submitted for testing for each 250 cubic yards of imported material. If the total quantity of import is determined to be less than 1,000 yards, one sample shall be obtained and submitted for testing for each 100 cubic yards of imported material.
- G. The independent approved testing laboratory shall perform the required tests and report results of all tests noting if the tested material passed or failed such tests and shall furnish copies to the Project Inspector, DESIGN TEAM, OAR, DSA, Contractor, and others as required. Report shall state tests were conducted under the responsible charge of a licensed State of California professional ENGINEER and the material was tested in accordance with applicable provisions of the Contract Documents, CBC and the DSA. Upon completion of the Work of this section, the independent testing laboratory and geotechnical ENGINEER shall submit a verified report to the DSA as required by CBC.
- H. Bills of lading or equivalent documentation will be submitted to the Project Inspector on a daily basis.
- I. Upon completion of import operations, provide the OAR a certification statement attesting that imported material has been obtained from the identified source site.

3.03 INSPECTION AND TESTING

- A. The geotechnical ENGINEER, retained by the Owner as an Owner Consultant, will inspect and test excavations, sample material quality as required in Part 2, observe installation and compaction of fill materials.
- B. Compaction test shall be performed in accordance with ASTM D1557, method "C."

3.04 PROTECTION

- A. Protect the Work of this section until Substantial Completion.

3.05 CLEANUP

- A. Remove rubbish, debris, and waste materials and legally dispose of off the Project site.

END OF SECTION

SECTION 312326 BASE COURSE

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes:

1. Installation of base material.

B. Related Requirements:

1. Division 01 - General Requirements.
2. Section 311000 - Site Clearing.
3. Section 312200 - Grading.
4. Section 312316 - Excavation and Fill for Paving.
5. Section 321216 - Asphalt Paving.
6. Section 321313 - Site Concrete Work.

1.02 SUBMITTALS

- A. Prior to import, submit written certification to OAR that crushed Miscellaneous Base (CMB) does not contain Polychlorinated biphenyls (PCB) above laboratory detection limits when tested in accordance with EPA Method 8082, and obtain written approval from jurisdictional agency prior to import at the subject site, refer to Article 2.02 for sampling frequency.
- B. Product Data: Submit material source, technical information and test data for base materials. Gradation and quality certifications shall be dated within 30 days of the submittal.
- C. Sample: Submit Sample of proposed base course material.

1.03 QUALITY ASSURANCE

- A. Comply with the following as a minimum requirement: Standard Specifications for Public Works Construction, current edition.

PART 2 - PRODUCTS

2.01 UNTREATED BASE MATERIALS

- A. The following base materials shall conform to the requirements of the Standard Specifications for Public Works Construction: Section 200 - Rock Materials.

1. Crushed Miscellaneous Base.
 - a. CMB meeting requirements of Article 1.02, A, may be used on-site for pavement base only.
 - b. CMB may be used off-site when in accordance to the Greenbook.
- B. Materials generated on site shall not be used as a base course material.

2.02 SOURCE QUALITY CONTROL

- A. Sampling and testing of imported and/or exported crushed miscellaneous base (CMB) shall be performed in accordance with the following Table 1 schedule:

TABLE 1: MINIMUM SAMPLING FREQUENCY	
Volume (CY)	Sampling Frequency
0 to 500	1 per 100 Cubic Yards
501 to 1,000	1 per 250 Cubic Yards
1,001 to 5,000	1 per 250 Cubic Yards for first 1,000 Cubic Yards 1 per 500 CY thereafter
5,001 to 20,000	12 samples for first 5,000 Cubic Yards 1 per 1,000 Cubic Yards thereafter
over 20,000	1 per 2,000 Cubic Yards for first 20,000 Cubic Yards 1 per 2,500 CY thereafter

2.03 MATERIAL APPROVAL

- A. Base material shall be inspected by the Project Inspector for gradation and material content prior to installation. The owner may choose to have additional tests performed by a geotechnical ENGINEER, retained by the Owner, before installation.

PART 3 - EXECUTION

3.01 INSTALLATION

- A. Install base course material in layers not exceeding 4 inches in thickness, unless required otherwise. Grade and compact to indicated levels or grades, cut and fill, water and roll until the surface is hard and true to line, grade and required section. Provide a relative compaction of at least 95 percent, unless otherwise required.
- B. Grade base course to elevations indicated on Drawings, ready to receive surfacing, in accordance with Section 312200 - Grading.

3.02

PROTECTION

- A. Protect the Work of this section until Substantial Completion.

3.03

CLEANUP

- A. Remove rubbish, debris, and waste materials and legally dispose of off the Project site.

END OF SECTION

SECTION 321313
SITE CONCRETE WORK

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes:

1. Portland cement concrete pavement, cement walks, curbs, gutters, trash pick-up area, ramps, mowing strips, fence post footings, sliding gate concrete tracks, catch basins, pipe bedding and encasements, thrust blocks, transition structures, flagpoles and light standard bases and footings, athletic equipment footings and equipment pads.

B. Related Requirements:

1. Division 01 - General Requirements.
2. Section 032000 - Concrete Reinforcement.
3. Division 23 - HVAC.
4. Division 26 - Electrical.
5. Section 312200 - Grading.
6. Section 312316 - Excavation and Fill for Pavement.
7. Section 312326 - Base Course.
8. Section 320117 - Asphalt Pavement Repair.
9. Section 321216 - Asphalt Paving.
10. Section 331100 - Site Water Distribution Utilities.
11. Section 333000 - Site Sanitary Sewer Utilities.
12. Section 334000 - Storm Drainage Utilities.

1.02 SUBMITTALS

- A. Shop Drawings: Submit plans, elevations and details of concrete site Work.
- B. Product Data: Submit mix designs and manufacturer's technical data for materials and products. Submit 3-inch by 3-inch concrete Sample of each specified color.
- C. Material Sample: Submit one concrete bumper to the Project Inspector for destructive testing.

1.03 QUALITY ASSURANCE

- A. Comply with Standard Specifications For Public Works Construction.

PART 2 - PRODUCTS

2.01 MATERIALS

- A. Concrete, Mortar and Related Materials: Comply with applicable provisions of Standard Specifications for Public Works Construction, Section 201 - Concrete, Mortar and Related Materials:

1. Concrete: 28-day compressive strength 2,500 psi, unless specified otherwise.
2. Reinforcing Mesh: ASTM A185, 4 by 4/W1.4 by W1.4 welded wire mesh.
3. Expansion Joint Filler: Preformed expansion joint filler, bituminous type, complying with ASTM D994.

- B. Form Materials:

1. Side forms: Douglas fir, Construction Grade or Better or metal forms.
2. Stakes: Douglas fir, Construction Grade or Better or metal stakes.

- C. Concrete Parking Bumpers:

1. Precast concrete, smooth and free of pits and rock pockets, providing a minimum 28-day compressive strength of 3,500 psi. Size at least 7 ½-inch wide, 5 ½-inch high and 6-foot long. Reinforce with two #5 reinforcing bars. Provide 2 ¾-inch diameter pre-drilled holes for anchor installation.
2. Bumper Anchors: Provide ½ inch diameter by 18-inch long galvanized steel pipe.
3. Bumper Adhesive: Provide adhesive recommended by bumper manufacturer/installer for fastening bumpers to concrete pavement.

PART 3 - EXECUTION

3.01 CONSTRUCTION OF FORMS FOR CAST-IN-PLACE STRUCTURES

- A. Concrete Pavement: Install Portland cement concrete pavement in compliance with the Standard Specifications for Public Works Construction, Section 302- Roadway Surfacing.
- B. Miscellaneous Exposed Concrete: Install concrete curbs, walks, gutters, cross gutters, access ramps, driveways, catch basins, yard boxes, vaults and similar structures, in compliance with the Standard Specifications for Public Works Construction, Section 303 - Concrete and Masonry Construction.

- C. Exposed Concrete Bases: Install bases, such as for post, flagpole, light standards and similar bases, in compliance with the Standard Specifications for Public Works Construction, Section 303 - Concrete and Masonry Construction.
- D. Post, flagpole, light standard footings below grade, underground conduit bedding, encasements, thrust blocks and similar structures may be placed directly in excavations conforming to the required sizes.
- E. Reinforcement installation and concrete placement, surface finishes, curing and removal of forms shall be performed in compliance with applicable provisions of Standard Specifications for Public Works Construction, Section 303 - Concrete and Masonry Construction. Provide heavy broom finish at slopes exceeding six percent and medium broom finish at slopes up to six percent.

3.02 INSTALLATION OF PARKING BUMPERS

- A. Install bumpers as indicated on the Drawings. On bituminous paving, install anchors through pavement and into the ground a minimum of 12 inches. On concrete pavement, install bumpers in a continuous bed of adhesive.

3.03 CLEAN UP

- A. Remove rubbish, debris, and waste materials and legally dispose of off the Project site.

3.04 PROTECTION

- A. Protect the Work of this section until Substantial Completion.

END OF SECTION