NOTICE CALLING FOR BIDS

<table>
<thead>
<tr>
<th><strong>District:</strong></th>
<th>SOUTH ORANGE COUNTY COMMUNITY COLLEGE DISTRICT</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Project:</strong></td>
<td>BID NO. 2001: EAST BRIDGE REPLACEMENT PROJECT, SADDLEBACK COLLEGE</td>
</tr>
<tr>
<td><strong>Bid Deadline:</strong></td>
<td>2:00 P.M., June 07, 2011</td>
</tr>
<tr>
<td><strong>Mailing Address &amp; Place of Bid:</strong></td>
<td>South Orange County Community College District Health Sciences Building, 3rd Floor, Room HS-357 Purchasing &amp; Facilities Planning Department 28000 Marguerite Parkway Mission Viejo, CA 92692</td>
</tr>
</tbody>
</table>

NOTICE IS HEREBY GIVEN that the South Orange County Community College District, of Orange County, California, acting by and through its Governing Board, hereinafter referred to as "DISTRICT," will receive up to, but not later than, the above-stated time, sealed bids for the award of a contract for the above Project.

**Project’s Preliminary Cost Estimate**: East Bridge Replacement Project - $850,000.00

Complete description, specifications and general conditions may be viewed at the Office of the Director of Facilities Planning and Purchasing Department at the above address, telephone (949) 582-4678 or previewed on-line at socccd.edu. Interested bidders may purchase complete bid documents from Repro X-press, 18207 McDermott St., Suite I, Irvine, CA 92614, Phone: (866) 364-8569, Fax: (949) 336-7757. Payment will not be refunded, and the Project Documents are not required to be returned.

There will be a mandatory job walk and conference at 9:00 am, March 24, 2011 starting in front of the Health Sciences Building (HS) located on the Saddleback College campus, 28000 Marguerite Parkway, Mission Viejo, CA 92692.

Any bidder failing to attend the entire pre bid conference shall be deemed a non-responsive bidder and will have his bid returned unopened.

In accordance with the provisions of California Business and Professions Code Section 7028.15 and Public Contract Code Section 3300, the DISTRICT requires that the bidder possess the following classification of contractor’s license at the time the bid is submitted: Class B. Any bidder not so licensed at the time of the bid opening will be rejected as non-responsive.

Time is of the essence. Failure to complete the work within the time set forth in the bid documents will result in the imposition of liquidated damages for each calendar day of delay in the amount set forth in the Information for Bidders.

Each bid shall be accompanied by a bid security in the form of cash, a certified or cashier’s check or bid bond in an amount not less than ten percent (10%) of the total bid price, payable to the DISTRICT. In the event the successful bidder fails to enter into the contract and execute the required documents, the bid security shall be forfeited. The successful bidder shall furnish a satisfactory Performance Bond and a Payment Bond in amounts not less than one hundred percent (100%) of the total bid price.
The DISTRICT reserves the right to reject any or all bids or to waive any irregularities or informalities in any bids or in the bidding process.

The California Department of Industrial Relations has determined the general prevailing rates of per diem wages for the locality in which the work is to be performed for the Project. Copies of these wage rate determinations, entitled Prevailing Wage Scale, are maintained at the DISTRICT office and are available at the following website: www.dir.ca.gov. It shall be mandatory upon the successful bidder to whom the contract is awarded, and upon any subcontractor listed, to pay not less than the said specified rates to all workers employed by them for the Project. These requirements will be enforced through our Labor Compliance consulting firm.

No bidder may withdraw any bid for a period of ninety (90) calendar days after the date set for the opening of bids.

The general prevailing rate of per diem wages is based upon a working day of eight (8) hours. The rate for holiday and overtime work shall be at least time and one-half.

Pursuant to Section 22300 of the Public Contract Code, the Agreement will contain provisions permitting the successful bidder to substitute securities for any monies withheld by the DISTRICT to ensure performance under the Agreement or permitting payment of retention earned directly into escrow.

Brandy K. D'Lena
Director,
Facilities Planning & Purchasing

PUBLISH: THE REGISTER

May 16, 2011

&

May 23, 2011

ATTENTION: LEGAL & DEPARTMENT

In order for our Department to process payment, you MUST send Proof of Advertisement (Affidavit) on the date of publication to:

South Orange County Community College District
ATTN: Facilities Planning & Purchasing
28000 Marguerite Parkway
Mission Viejo, CA 92692

NOTE: PLEASE CALL LINDA HALL AT (949) 348-6017 WHEN AD IS RECEIVED.
CONTRACTING AND BIDDING MANUAL

SOUTH ORANGE COUNTY COMMUNITY COLLEGE DISTRICT

SADDLEBACK COLLEGE

28000 Marguerite Parkway, Mission Viejo, CA. 92692-3635

EAST BRIDGE REPLACEMENT PROJECT

BID # 2001
**TABLE OF CONTENTS**

NOTICE CALLING FOR BIDS .......................................................................................................................... 3

INFORMATION FOR BIDDERS ......................................................................................................................... 5

*BID FORM ..................................................................................................................................................... 12

*BID BOND ..................................................................................................................................................... 19

*DESIGNATION OF SUBCONTRACTORS ........................................................................................................ 22

*PREQUALIFICATION OF BIDDER (NOT USED) .............................................................................................

*NONCOLLUSION AFFIDAVIT .......................................................................................................................... 25

+WORKERS' COMPENSATION CERTIFICATE ............................................................................................... 26

+CONTRACT PERFORMANCE BOND ............................................................................................................... 27

+PAYMENT BOND .......................................................................................................................................... 31

+AGREEMENT .................................................................................................................................................. 34

+ESCROW AGREEMENT FOR SECURITY DEPOSITS IN LIEU OF RETENTION ..................................................... 39

+GUARANTEE ................................................................................................................................................... 42

+DRUG-FREE WORKPLACE CERTIFICATION ............................................................................................. 44

+CHANGE ORDER NO. ______ (Additive) ...................................................................................................... 46

+CHANGE ORDER NO. ______ (Deductive) .................................................................................................. 48

+CONTRACTOR'S CERTIFICATE OF NON-ASBESTOS MATERIALS ............................................................. 77


SUPPLEMENTAL CONDITIONS FOR SADDLEBACK COLLEGE: EAST BRIDGE REPLACEMENT PROJECT, DATED JANUARY 10, 2011 INCLUDING 25 PAGES.

*If the following items are not returned at the time of the bid opening, the bidder will be declared nonresponsive

+Items which successful bidder must submit after the award
NOTICE CALLING FOR BIDS

District: SOUTH ORANGE COUNTY COMMUNITY COLLEGE DISTRICT

Project: BID NO. 2001: Saddleback College: East Bridge Replacement Project

Bid Deadline: 2:00 P.M., June 07, 2011

Mailing Address & South Orange County Community College District
Place of Bid Health Sciences Building, 3rd Floor, Room HS-357
Receipt: Purchasing & Facilities Planning Department
28000 Marguerite Parkway
Mission Viejo, CA 92692

NOTICE IS HEREBY GIVEN that the South Orange County Community College District, of Orange County, California, acting by and through its Governing Board, hereinafter referred to as "DISTRICT," will receive up to, but not later than, the above-stated time, sealed bids for the award of a contract for the above Project.

Project’s Preliminary Cost Estimate: East Bridge Replacement Project - $850,000.00

Complete description, specifications and general conditions may be viewed at the Office of the Director of Facilities Planning and Purchasing Department at the above address, telephone (949) 582-4678 or previewed on-line at socccd.edu. Interested bidders may purchase complete bid documents from Repro X-press, 18207 McDermott St., Suite I, Irvine, CA 92614, Phone: (866) 364-8569, Fax: (949) 336-7757. Payment will not be refunded, and the Project Documents are not required to be returned.

There will be a mandatory job walk and conference at 9:00 am, March 24, 2011 starting in front of the Health Sciences Building (HS) located on the Saddleback College campus, 28000 Marguerite Parkway, Mission Viejo, CA 92692.

Any bidder failing to attend the entire pre bid conference shall be deemed a non-responsive bidder and will have his bid returned unopened.

In accordance with the provisions of California Business and Professions Code Section 7028.15 and Public Contract Code Section 3300, the DISTRICT requires that the bidder possess the following classification of contractor’s license at the time the bid is submitted: Class B. Any bidder not so licensed at the time of the bid opening will be rejected as non-responsive.

Time is of the essence. Failure to complete the work within the time set forth in the bid documents will result in the imposition of liquidated damages for each calendar day of delay in the amount set forth in the Information for Bidders.

Each bid shall be accompanied by a bid security in the form of cash, a certified or cashier's check or bid bond in an amount not less than ten percent (10%) of the total bid price, payable to the DISTRICT. In the event the successful bidder fails to enter into the contract and execute the required documents, the bid security shall be forfeited. The successful bidder shall furnish a satisfactory Performance Bond and a Payment Bond in amounts not less than one hundred percent (100%) of the total bid price.

The DISTRICT reserves the right to reject any or all bids or to waive any irregularities or informalities in any bids or in the bidding process.
The California Department of Industrial Relations has determined the general prevailing rates of per diem wages for the locality in which the work is to be performed for the Project. Copies of these wage rate determinations, entitled Prevailing Wage Scale, are maintained at the DISTRICT office and are available at the following website: www.dir.ca.gov. It shall be mandatory upon the successful bidder to whom the contract is awarded, and upon any subcontractor listed, to pay not less than the said specified rates to all workers employed by them for the Project. These requirements will be enforced through our Labor Compliance consulting firm.

No bidder may withdraw any bid for a period of ninety (90) calendar days after the date set for the opening of bids.

The general prevailing rate of per diem wages is based upon a working day of eight (8) hours. The rate for holiday and overtime work shall be at least time and one-half.

Pursuant to Section 22300 of the Public Contract Code, the Agreement will contain provisions permitting the successful bidder to substitute securities for any monies withheld by the DISTRICT to ensure performance under the Agreement or permitting payment of retention earned directly into escrow.

Brandy K. D’Lena
Director,
Facilities Planning &
Purchasing

PUBLISH: THE REGISTER
May 16, 2011

&

May 23, 2011

ATTENTION: LEGAL AD DEPARTMENT

In order for our Department to process payment, you MUST send Proof of Advertisement (Affidavit) on the date of publication to:

South Orange County Community College District
ATTN: Facilities Planning & Purchasing
28000 Marguerite Parkway
Mission Viejo, CA 92692

PLEASE CALL LINDA HALL AT (949) 348-6017 WHEN AD IS RECEIVED.
WARNING:
READ THIS DOCUMENT CAREFULLY. DO NOT ASSUME
THAT IT IS THE SAME AS OTHER SIMILAR DOCUMENTS
YOU MAY HAVE SEEN, EVEN IF FROM THE SAME DISTRICT.

1. Preparation of Bid Form. Bids shall be submitted on the prescribed Bid Form, completed in full. All bid items and statements shall be properly and legibly filled out. Numbers shall be stated both in words and in figures where so indicated, and where there is a conflict in the words and the figures, the words shall control over the numbers. The signatures of all persons shall be in longhand and in ink. Prices, wording and notations must be in ink or typewritten.

2. Form and Delivery of Bids. The bid must conform and be responsive to all Project Documents and shall be made on the Bid Form provided, and the complete bid, together with any and all additional materials as required, shall be enclosed in a sealed envelope, addressed and hand delivered or mailed to the DISTRICT at:

South Orange County Community College District
Health Science Building, 3rd Floor
28000 Marguerite Parkway
Mission Viejo, CA, 92692

and must be received on or before the bid deadline (Public Contract Code Section 20112). The envelope shall be plainly marked in the upper left hand corner with the bidder's name, the Project designation and the date and time for the opening of bids. It is the bidder's sole responsibility to ensure that its bid is received prior to the bid deadline. In accordance with Government Code Section 53068, any bid received after the scheduled closing time for receipt of bids shall be returned to the bidder unopened. At the time and place set forth for the opening of bids, the sealed bids will be opened and publicly read aloud. However, prequalification of bidders is required pursuant to Public Contract Code Section 20111.5 and only those sealed bids received from prequalified bidders shall be opened and publicly read aloud.

3. Bid Security. Each bid shall be accompanied by a bid security in the form of cash, a certified or cashier's check or bid bond in the amount of not less than ten percent (10%) of the total bid price payable to the DISTRICT and shall be given as a guarantee that the bidder, if awarded the contract, will execute the Agreement within ten (10) working days after notice of award of the contract, and will furnish, on the prescribed forms, a satisfactory Faithful Performance Bond in an amount not less than one hundred percent (100%) of the total bid price and separate Payment (labor and material) Bond in an amount not less than one hundred percent (100%) of the total bid price, furnish certificates and endorsements evidencing that the required insurance is in effect, the Workers' Compensation Certificate, Drug-Free Work Place Certification, the Criminal Records Check Certification, Contractor's Certificate Regarding Non-Asbestos Containing Materials, and the Disabled Veteran Business Enterprises Certification, if applicable, all within ten (10) working days of the notice of award of the contract or as otherwise requested in writing by the DISTRICT. It is understood and agreed that should bidder fail or refuse to return these documents as required by the DISTRICT, the bid security shall be forfeited to the DISTRICT. If the Bidder elects to furnish a bid bond as its Bid Security, the Bidder shall use the bid bond form included in the Project Documents.

4. Signature. Any signature required on Project Documents must be signed in the name of the bidder and must bear the signature of the person or persons duly authorized to sign these documents. Where indicated, if bidder is a corporation, the legal name of the corporation shall first be set forth, together with two
5. **Modifications.** Changes in or additions to any of the bid documents, summary of the work bid upon, alternative proposals, or any other modifications which are not specifically called for by the DISTRICT may result in the DISTRICT'S rejection of the bid as being nonresponsive. No oral, telephonic, facsimile or electronic modification of any of the bid documents will be considered.

6. **Erasures, Inconsistent or Illegible Bids.** The bid submitted must not contain any erasures, interlineations, or other corrections unless each such correction is authenticated by affixing the initials of the person(s) signing the bid in the margin immediately adjacent to the correction. In the event of inconsistency between words and numbers in the bid, words shall control numbers. In the event that DISTRICT determines that any bid is unintelligible, illegible or ambiguous, the DISTRICT may reject such bid as being nonresponsive.

7. **Examination of Site and Project Documents.** At its own expense and prior to submitting its bid, each bidder shall examine all documents relating to the Project, visit the site and determine the local conditions which may in any way affect the performance of the work, including the general prevailing rates of per diem wages and other relevant cost factors, familiarize itself with all Federal, State and Local laws, ordinances, rules, regulations and codes affecting the performance of the work, including the cost of permits and licenses required for the work, make such surveys and investigations, including investigation of subsurface or latent physical conditions at the site or where work is to be performed, as it may deem necessary for performance of the work at its bid price, determine the character, quality, and quantities of the work to be performed and the materials and equipment to be provided, and correlate its observations, investigations, and determinations with all requirements of the Project. The Project Documents show and describe the existing conditions as they are believed to have been used in the design of the work and are only provided as information for the bidder. The DISTRICT is not making any warranties regarding said information. The DISTRICT shall not be liable for any loss sustained by the successful bidder resulting from any variance between the conditions and design data given in the Project Documents and the actual conditions revealed during the bidder's pre-bid examination or during the progress of the work. **Bidder agrees that the submission of a bid shall be incontrovertible evidence that the bidder has complied with all the requirements of this provision of the Information for Bidders.**

8. **Withdrawal of Bids.** Any bid may be withdrawn, either personally or by written request signed by the bidder, at any time prior to the scheduled closing time for receipt of bids. The bid security for a bid withdrawn prior to the scheduled closing time for receipt of bids, in accordance with this paragraph, shall be returned. No bidder may withdraw any bid for a period of ninety (90) calendar days after the date set for the opening of bids.

9. **Agreement and Bonds.** The Agreement which the successful bidder will be required to execute and the payment bond required in accordance with Civil Code Section 3247, are included in the Project Documents. The payment bond shall be in the amount not less than one hundred percent (100%) of the amount of the contract in accordance with Civil Code Section 3248. The successful bidder will also be required to furnish a separate faithful performance bond in the amount of one hundred percent (100%) of the contract and in the form included in the Project Documents, which shall remain in full force and effect through the guarantee period as specified in the General Conditions. All bond premiums shall be at bidder’s cost.
10. Interpretation of Project Documents. If any bidder is in doubt as to the true meaning of any part of the Project Documents, or finds discrepancies in, or omissions from the Project Documents, a written request for an interpretation or correction thereof must be submitted to the DISTRICT no later than five (5) days before bid deadline. No requests shall be considered after this time. The bidder submitting the written request shall be responsible for its prompt delivery. Any interpretation or correction of the Project Documents will be made solely at DISTRICT’s discretion and only by written addendum duly issued by the DISTRICT, and a copy of such addendum will be hand delivered or mailed or faxed to each bidder known to have received a set of the Project Documents. No person is authorized to make any oral interpretation of any provision in the Project Documents, nor shall any oral interpretation of Project Documents be binding on the DISTRICT. If there are discrepancies of any kind in the Project Documents, the interpretation of the DISTRICT shall prevail. Submittal of a bid without a request for clarifications shall be incontrovertible evidence that the bidder has determined that the Project Documents are acceptable and sufficient for bidding and completing the work; that bidder is capable of reading, following and completing the work in accordance with the Project Documents; and that bidder agrees that the project can and will be completed according to the DISTRICT’S timelines and according to the progress schedule to be submitted by the successful bidder incorporating the DISTRICT’S timelines for completion of the project.

11. Bidders Interested in More Than One Bid. No person, firm or corporation shall be allowed to make, or file, or be interested in more than one bid for the same work unless alternate bids are specifically called for by the DISTRICT. A person, firm, or corporation that has submitted a sub-proposal to a bidder, or that has quoted prices of materials to a bidder, is not thereby disqualified from submitting a proposal or quoting prices to other bidders or submitting a bid on the Project.

12. Award of Contract. The DISTRICT reserves the right to reject any or all bids, or to waive any irregularities or informalities in any bids or in the bidding process. The award of the contract, if made by the DISTRICT, will be by action of the Governing Board and to the lowest responsive and responsible bidder. If two identical low bids are received from responsive and responsible bidders, the DISTRICT will determine which bid will be accepted pursuant to Public Contract Code Section 20117. In the event an award of the contract is made to a bidder, and such bidder fails or refuses to execute the Agreement and provide the required documents within fifteen (15) working days after the notice of award of the contract to bidder, the DISTRICT may award the contract to the next lowest responsive and responsible bidder or reject all bidders.

13. Alternate Bids. (Not Used) If alternate bids are called for, the DISTRICT will award the contract to the lowest responsive and responsible bidder in a manner that prevents any information that would identify any of the bidders from being revealed to the DISTRICT before the ranking of all bidders from lowest to highest has been determined. If alternate bids are called for, in addition to submitting all bid documents in a sealed envelope as indicated, bidders must submit, in a separate, plain unmarked, sealed envelope, the BID SUMMARY completed with all the prices and the BIDDER NUMBER. Bidders must obtain their bidders numbers at the office of the Construction Manager.

IF APPLICABLE INSERT INFORMATION

Aside from the bidder number, there should be no return address, logo, signature, or other means of identifying the bidder on either the bid summary or the envelope. The bid summaries will be opened and read in public at the time and place specified. The District will use these bid summaries to determine which alternates to accept, if any, and rank all bidders from lowest to highest.

14. Competency of Bidders. In selecting the lowest responsive and responsible bidder, consideration will be given not only to the financial standing but also to the general competency of the bidder for the performance of the Project. By submitting a bid, each bidder agrees that the DISTRICT, in determining the successful bidder and its eligibility for the award, may consider the bidder’s experience and facilities, conduct and performance under other contracts, financial condition, reputation in the industry, and other factors which could
affect the bidder’s performance of the Project. To this end, each bid shall be supported by a statement of the bidder’s experience on the form entitled “INFORMATION REQUIRED OF BIDDER.”

The DISTRICT may also consider the qualifications and experience of subcontractors and other persons and organizations (including those who are to furnish the principal items of material and equipment) proposed for those portions of the work. Operating costs, maintenance considerations, performance data and guarantees of materials and equipment may also be considered by the DISTRICT. In this regard, the DISTRICT may conduct such investigations as the DISTRICT deems necessary to assist in the evaluation of any bid and to establish the responsibility, qualifications and financial ability of the bidder, proposed subcontractors, and other persons and organizations to do the work to the DISTRICT’s satisfaction within the prescribed time. The DISTRICT reserves the right to reject the bid of any bidder who does not pass any such evaluation to the satisfaction of the DISTRICT.

15. **Bidder’s Prequalification.** (Not Used) Only Bid Proposals submitted by Prequalified Bidders will be considered. A Bid Proposal submitted by a Bidder who is not prequalified will be deemed a non-responsive Bid Proposal and will be rejected by the District. A Bidder who has not completed the Prequalification Application and has not been deemed a “Qualified Bidder” must complete the Prequalification Application and submit the Prequalification Application to the District by the date and in the manner set forth in the Prequalification Application. The failure to submit a completed Prequalification Application on or prior to such date will render the Bid Proposal of the Bidder untimely submitting a completed Prequalification Application to be non-responsive and rejected. If the District determines that any information provided by a Bidder in the Prequalification Application is false or misleading, or is incomplete so as to be false or misleading, the District may reject the Bid Proposal submitted by such Bidder as being non-responsive.

16. **Listing Subcontractors.** Each bidder shall submit, on the form furnished with the Project Documents, a list of the proposed subcontractors on this Project as required by the Subletting and Subcontracting Fair Practices Act (Public Contract Code Section 4100, et seq.). If alternate bids are called for and the bidder intends to use different or additional subcontractors, a separate list of subcontractors must be submitted for each such alternate bid. If the bidder fails to specify a subcontractor for any portion of the work in excess of one half (1/2) of one percent (1%) of the bidder’s total bid, the bidder agrees that he/she is fully qualified to perform that work and agrees to perform that portion of the work. Violation of this requirement (including the procurement of a subcontractor for the Project if no subcontractor is specified) can result in the DISTRICT invoking the remedies of Public Contract Code Sections 4110 and 4111.

17. **Insurance and Workers’ Compensation.** The successful bidder shall be required to furnish certificates and endorsements evidencing that the required insurance is in effect. DISTRICT may request that such certificates and endorsements are completed on DISTRICT provided forms. In accordance with the provisions of Section 3700 of the Labor Code, the successful bidder shall secure the payment of compensation to all employees. The successful bidder who has been awarded the contract shall sign and file with DISTRICT prior to performing the work, the Workers’ Compensation Certificate included as a part of the Project Documents. Labor Code Section 1861.

18. **Contractor’s License.** If, at the time and date of the contract execution, bidder is not properly licensed to perform the Project in accordance with Division 3, Chapter 9, of the Business and Professions Code and the Project Documents, such bid will be rejected as nonresponsive. (Public Contract Code Section 3300) Pursuant to Business and Professions Code Section 7028.15, no payment shall be made for work or materials under the contract unless and until the Registrar of Contractors verifies to the DISTRICT that the bidder was properly licensed at the time the bid was submitted. Any bidder not so licensed is subject to penalties under the law and the contract will be considered void and DISTRICT shall have the right to bring an action against the unlicensed bidder awarded the contract for recovery of all compensation paid under the contract. (Business and Professions Code Section 7031(b)) If the license classification specified hereafter is that of a “specialty contractor” as defined in Section 7058 of the Business and Professions Code, the specialty contractor awarded the contract for this work shall construct a majority
of the work, in accordance with the provisions of Business and Professions Code Section 7059. The bidder may not use the contractor license of a third party for this bid.

19. **Anti-Discrimination.** In connection with all work performed under this Project, there shall be no unlawful discrimination against any prospective or active employee engaged in the work because of race, color, ancestry, national origin, religious creed, sex, age, marital status, physical disability, mental disability, or medical condition. The successful bidder agrees to comply with applicable Federal and State laws including, but not limited to, the California Fair Employment and Housing Act, beginning with Government Code Section 12990 and Labor Code Section 1735. In addition, the successful bidder agrees to require like compliance by any subcontractors employed on the Project by such bidder.

20. **Hold Harmless and Indemnification.** The successful bidder awarded the contract will be required to indemnify and hold harmless the DISTRICT, its Governing Board, officers, agents, and employees as set forth in the Agreement.

21. **Substitutions.** Should the bidder wish to request any substitution for the materials, process, service, or equipment specified, the bidder shall be required to comply with Article 30 of the General Conditions.

22. **Surety Qualifications for Bonds.** Bidders shall ensure all surety companies have a minimum rating of "A-VIII," as rated by the current edition of Best's Key Rating Guide, published by A.M. Best Company, Oldwick, New Jersey 08858. Only California admitted surety insurers will be acceptable for the issuance of bonds. (Code of Civil Procedure Section 995.311) DISTRICT shall verify the status of the surety by one of the following ways: (1) printing out information from the website of the California Department of Insurance confirming the surety is an admitted surety insurer and attaching it to the bond, or (2) obtaining a certificate from the county clerk for the county in which the DISTRICT is located that confirms the surety is an admitted surety insurer and attaching it to the bond. Any admitted surety insurer who cannot satisfy the minimum rating specified above, but who satisfies the following requirements set forth in Code of Civil Procedure Section 995.660 shall be accepted and approved for the issuance of bonds:

(a) There must be on file in the office of the county clerk, for the county in which the DISTRICT is located, an unrevoked appointment, power of attorney, bylaws, or other instrument, duly certified by the proper authority and attested by the seal of the insurer authorizing the person who executed the bond to do so for and on behalf of the insurer within ten (10) calendar days of the insurer’s receipt of a request to submit such document from the DISTRICT, and an original or certified copy of the document must be submitted to the DISTRICT.

(b) A certified copy of the certificate of authority of the insurer issued by the Insurance Commissioner must be submitted to the DISTRICT within ten (10) calendar days of the insurer’s receipt of a request to submit such document from the DISTRICT.

(c) A certificate from the clerk of the county that the certificate of authority of the insurer has not been surrendered, revoked, cancelled, annulled, or suspended, and in the event it has, whether renewed authority has been granted must be submitted to DISTRICT within ten (10) calendar days of the insurer’s receipt of a request to submit such document from the DISTRICT.

(d) Copies of the insurer’s most recent annual statement and quarterly statement filed with the California Department of Insurance must be submitted to the DISTRICT within ten (10) calendar days of the insurer’s receipt of a request to submit the statements.

23. **Liquidated Damages.** All work must be completed within the time limits set forth in the Project Documents. It is agreed that damages for the failure to complete the Project described herein within the time limits required are impossible to ascertain. Should the work not be completed within the specified time for completion, the successful bidder awarded the contract shall be liable for liquidated damages, payable to the DISTRICT, in an amount of Two Thousand Dollars ($2,000.00) for each consecutive calendar day of delay in completion. Such
24. Drug-Free Workplace Certification. Pursuant to Government Code Sections 8350, et seq., the successful bidder will be required to execute a Drug-Free Workplace Certification upon execution of the Agreement. The bidder will be required to take positive measures outlined in the certification in order to ensure the presence of a drug-free workplace. Failure to abide by the conditions set forth in the Drug-Free Workplace Act could result in penalties including termination of the Agreement or suspension of payment thereunder.

25. Noncollusion Affidavit. In accordance with the provisions of Section 7106 of the Public Contract Code, each bid must be accompanied by a noncollusion affidavit properly notarized.

26. Escrow Agreement. Public Contract Code Section 22300 permits the substitution of securities for any monies withheld by a public agency to ensure performance under a contract. At the request and expense of the successful bidder awarded the contract, securities equivalent to the amount withheld as retention shall be deposited with the DISTRICT, or with a state or federally chartered bank in California as the escrow agent, who shall then pay such monies to the successful bidder. The DISTRICT retains the sole discretion to approve the bank selected by the successful bidder to serve as escrow agent. Upon satisfactory completion of the contract, the securities shall be returned to the successful bidder. Securities eligible for investment shall include those listed in Government Code Section 16430 or bank or savings and loan certificates of deposit. The successful bidder shall be the beneficial owner of any securities substituted for monies withheld and shall receive any interest thereon.

In the alternative, under Section 22300, the successful bidder may request DISTRICT to make payment of earned retentions directly to the escrow agent at the expense of the successful bidder. Also at the successful bidder’s expense, the successful bidder may direct investment of the payments into securities, and the successful bidder shall receive interest earned on such investment upon the same conditions as provided for securities deposited by successful bidder. Upon satisfactory completion of the contract, successful bidder shall receive from the escrow agent all securities, interest and payments received by escrow agent from DISTRICT pursuant to the terms of Section 22300.

The successful bidder who elects to receive interest on monies withheld in retention by the DISTRICT shall, at the request of any subcontractor performing more than five percent (5%) of the successful bidder’s total bid, make that option available to the subcontractor regarding any monies withheld in retention by the successful bidder from the subcontractor. If the successful bidder elects to receive interest on any monies withheld in retention by the DISTRICT, then the subcontractor shall receive the identical rate of interest received by the successful bidder on any retention monies withheld from the subcontractor by the successful bidder, less any actual pro rate costs associated with administering and calculating that interest. In the event that the interest rate is a fluctuating rate, the rate for the subcontractor shall be determined by calculating the interest rate paid during the time that retentions were withheld from the subcontractor. If the successful bidder elects to substitute securities in lieu of retention, then, by mutual consent of the successful bidder and subcontractor, the subcontractor may substitute securities in exchange for the release of monies held in retention by the successful bidder. Public Contract Code Section 22300(d)(1).

The successful bidder wishing to utilize Public Contract Code Section 22300 and enter into an Escrow Agreement shall complete and execute the form Escrow Agreement included in the Project Documents and submit it to the DISTRICT.

27. Change Orders. All change order requests must be submitted in the form set forth in the Project Documents and pursuant to Article 60 of the General Conditions. The amount of allowable charges submitted pursuant to a change order shall be limited to the charges allowed under Article 60 of the General Conditions. Indirect, consequential and incidental costs, project management costs, extended home office and field office
overhead, administrative costs and profit and other charges not specifically authorized under Article 60 of the General Conditions will not be allowed.

28. **Tobacco-Free Policy.** The successful bidder shall agree to enforce a tobacco-free work site.

29. **Lead.** Pursuant to the Lead-Safe Schools Protection Act (Education Code Sections 32240, et seq.) and other applicable law, the successful bidder shall not use lead-based paint, lead plumbing and solders, or other potential sources of lead contamination in the construction of any new school facility or the modernization or renovation of any existing school facility.

30. The number of executed copies of the Agreement, the Faithful Performance Bond, and the Payment Bond required is THREE (3).
Name of Bider:

To: South Orange County Community College District, acting by and through its Governing Board, herein called the "DISTRICT."

1. The undersigned Bider, having become familiarized with all the following documents including but not limited to the Notice Calling for Bids, Information for Bidders, Bid Form, Bid Security, Designation of Subcontractors Form, Information Required of Bidder, all prequalification forms pursuant to Public Contract Code Section 20111.5, if any, NoncohnCLUSION Affidavit, Workers’ Compensation Certificate, Faithful Performance Bond, Payment Bond, Agreement, Escrow Agreement, Drug-Free Workplace Certification, Criminal Records Check Certification, Change Order Forms, Shop Drawing Transmittal Form, all insurance requirements, Guarantee forms, Contractor’s Certificate Regarding Non-Asbestos Containing Materials, Disabled Veteran Business Enterprises Certification, if applicable, General Conditions and Supplemental Conditions, if any, Special Conditions, if any, drawings, specifications, and all modifications, addenda and amendments, if any (hereinafter Project Documents), the local conditions affecting the performance of the work and the cost of the work at the place where the work is to be done, hereby proposes and agrees to be bound by all the terms and conditions of the Project Documents and agrees to perform, within the time stipulated, the work, including all of its component parts, and everything required to be performed, and to provide and furnish and pay for any and all of the labor, materials, tools, expendable equipment, and all applicable taxes, utility and transportation services necessary to perform the work and complete in a good workmanlike manner all of the work required in accordance with laws, codes, regulations, ordinances and any other legal requirements governing the work, in connection with the following:

   Project: SOCCCD - Saddleback College
   EAST BRIDGE REPLACEMENT PROJECT

   District Bid #: 2001

all in strict conformity with the Project Documents, including Addenda Nos. _____, _____, _____ and _____, on file at the office of the Director of Facilities Planning and Purchasing of said DISTRICT for the following sums:

<table>
<thead>
<tr>
<th>Handwritten</th>
<th>Numeric</th>
</tr>
</thead>
<tbody>
<tr>
<td>BASE BID FOR EAST BRIDGE REPLACEMENT @ Saddleback College</td>
<td>$________/100$</td>
</tr>
<tr>
<td>ALLOWANCE: Refer to Supplemental Conditions</td>
<td>$75,000.00</td>
</tr>
<tr>
<td>$ Seventy Five Thousand and no/100</td>
<td>$</td>
</tr>
</tbody>
</table>
Each individual bid term shall be determined from visiting the work site, reviewing the drawings and specifications and all portions of the Project Documents, and shall include all items necessary to complete the work, including the assumption of all obligations, duties, and responsibilities necessary to the successful completion of the Project, and the furnishing of all materials and equipment required to be incorporated in and form a permanent part of the work, and the furnishing of tools, equipment, supplies, transportation, facilities, labor, supervision, and services required to perform and complete the work, all as per the requirements of the Project Documents, whether or not expressly listed or designated.

2. It is understood that the DISTRICT reserves the right to reject any or all bids, or to waive any irregularities or informalities in any bids, or in the bidding process. Bidder agrees that this bid shall remain open and not be withdrawn for the period specified in the Information for Bidders.

3. The required bid security is attached.

4. The required list(s) of proposed subcontractors is attached hereto, and the undersigned represents and warrants that such list(s) is complete and in compliance with the Subletting and Subcontracting Fair Practices Act. Public Contract Code Sections 4100, et seq.

5. It is understood and agreed that if written notice of the award of a contract is mailed, faxed, or delivered to the bidder, the bidder will execute and deliver to the DISTRICT the Agreement and will also furnish and deliver to the DISTRICT the Faithful Performance Bond and a separate Payment Bond as specified, and certificates and endorsements of insurance, the Workers’ Compensation Certificate, Drug-Free Work Place Certification, the Criminal Records Check Certification, Contractor’s Certificate Regarding Non-Asbestos Containing Materials, and the Disabled Veteran Business Enterprises Certification, if applicable, within 10 working days of the notice of award of the contract, or as otherwise requested in writing by the DISTRICT. It is understood that should bidder fail or refuse to return these documents as required by the DISTRICT, the bid security shall be forfeited to the DISTRICT. The bidder further agrees that the work shall be commenced by the bidder, if awarded the contract, on or before the fifth day after receiving the DISTRICT’s Notice to Proceed, and shall be completed by the bidder in the time specified by the DISTRICT.

6. Communications conveying notice of award of the contract, requests for additional information or other correspondence should be addressed to the bidder at the address stated below.

7. The name(s) of all persons interested in the bid as principals are as follows:

8. In submitting this bid, the bidder offers and agrees that if the bid is accepted, it will assign to DISTRICT all rights, title and interest in and to all causes of action it may have under Section 4 of the Clayton Act (15 U.S.C. Section 15) or under the Cartwright Act (Business & Professions Code Section 16700, et seq.) arising from purchases of goods, materials, or services by the bidder for sale to the DISTRICT pursuant to the bid. Such assignment shall be made and become effective at the time the DISTRICT tenders final payment under the contract (Public Contract Code Section 7103.5; Government Code Section 4450, 4451 and 4552).

9. The undersigned hereby warrants that the bidder has an appropriate license, License No. Class B, at the time of the bid opening, that such license entitles bidder to provide the work, that such license will be in full force and effect throughout the duration of performance of this Project. Bidder shall be nonresponsive if the Bidder is not licensed as required by the DISTRICT at the time of the bid opening. Any and all subcontractors to be employed by the undersigned shall have appropriate licenses at the time of the bid opening.
10. The bidder hereby certifies that it is, and at all times during the performance of work hereunder shall be, in full compliance with the provisions of the Immigration Reform and Control Act of 1986 ("IRCA") in the hiring of its employees, and the bidder shall indemnify, hold harmless and defend the DISTRICT against any and all actions, proceedings, penalties or claims arising out of the bidder's failure to comply strictly with the IRCA.

11. It is understood and agreed that if requested by the DISTRICT, the bidder shall furnish a notarized financial statement, references, and other information required by the DISTRICT sufficiently comprehensive to permit an appraisal of bidder's ability to perform the Project.

12. The undersigned hereby warrants that all work, except work of a maintenance period, shall be completed within 123 consecutive calendar days for the entire project scope of work. Time is of the essence. The undersigned agrees that failure to complete the work within the time set forth herein will result in the imposition of liquidated damages for each consecutive calendar day of delay in the amount of Two Thousand Dollars ($2,000.00). (Government Code Section 53069.85)

13. The required non-collusion affidavit properly notarized is attached as required by Public Contract Code Section 7106. Bidder understands and agrees that failure to submit a completed and signed affidavit will render the bidder automatically nonresponsive.

14. It is understood and agreed that all change order requests must be submitted in the form set forth in the Project Documents and pursuant to Article 60 of the General Conditions. The amount of allowable charges submitted pursuant to a change order shall be limited to the charges allowed under Article 60 of the General Conditions. Indirect, consequential and incidental costs, project management costs, extended home office and field office overhead, administrative costs and profit and other charges not specifically authorized under Article 60 of the General Conditions will not be allowed.

15. The Information Required of Bidder form has been fully completed and is attached hereto.
The undersigned hereby declares that all of the representations of this bid are made under penalty of perjury under the laws of the State of California.

Individual
Name: ____________________________________________

Signed by: ____________________________________________

Print Name: ____________________________________________

Date: ____________________________________________

Business Address: ____________________________________________

____________________________________

Telephone: ____________________________________________


Partnership
Name: ____________________________________________

Signed by: ____________________________________________

Print Name: ____________________________________________

Date: ____________________________________________

Business Address: ____________________________________________

____________________________________

Telephone: ____________________________________________


Corporation
Name: ____________________________________________

(a _______ Corporation¹)


¹ A corporation awarded the contract shall furnish evidence of its corporate existence and evidence that the officer signing the Agreement and bonds is duly authorized to do so.
Business Address: ________________________________

                                      ________________________________

Telephone: ________________________________

Signed by: _____________________________, President, Date: ____________

Print Name: _____________________________ President

Signed by: _____________________________, Secretary, Date: ____________

Print Name: _____________________________, Secretary

   [Seal]
Joint Venturer

Name: __________________________________________

Signed by: __________________________________________, Joint Venturer

Print Name: __________________________________________

Date: __________________________________________

Business Address: __________________________________________

Telephone: __________________________________________

Other Parties to: If an individual: __________________________________________

Joint Venture: (Name)

Signed by: __________________________________________

Print Name: __________________________________________

Date: __________________________________________

Doing Business as: __________________________________________

Business Address: __________________________________________

Telephone: __________________________________________
If a Partnership ____________________________________________

(Name)

Signed by: ____________________________________________ Partner

Print Name: ____________________________________________

Date: _________________________________________________

Business Address: ______________________________________

_____________________________________________________

Telephone: ____________________________________________

If a Corporation ____________________________________________

(a____________________ Corporation)

Signed By:________________________________________ Date: __________

Print Name: ____________________________________________

Title: _________________________________________________

Date: _________________________________________________

Business Address: ______________________________________

_____________________________________________________

Telephone: ____________________________________________
Bid Bond No.: _____

**BID BOND**

KNOW ALL PERSONS BY THESE PRESENTS, that we

_____

as Principal, and ________________ as Surety, a California admitted surety insurer, are

held and firmly bound unto the __ South Orange County Community College District, hereinafter called the

DISTRICT, in the sum of Ten ___ PERCENT (10%) OF THE TOTAL AMOUNT OF THE BID of the Principal

submitted to the said DISTRICT for the work described below for the payment of which sum in lawful money of the

United States, well and truly to be made, we jointly and severally bind ourselves, our heirs, executors, administrators, successors and assigns.

The condition of this obligation is such that whereas the Principal has submitted the accompanying bid

dated ______ 20__, for SOCCCD - Saddleback College

EAST BRIDGE REPLACEMENT PROJECT

District Bid # 2001

NOW, THEREFORE, if the Principal shall not withdraw said bid within the period specified therein after

the opening of the same, or, if no period be specified, within sixty (60) days after said opening, and if the Principal

is awarded the contract, and shall within the period specified therefore, or, if no period be specified, within 10

working days after the notice of award of the contract, or as otherwise requested in writing by the DISTRICT, enter

into a written contract with the DISTRICT, in accordance with the bid as accepted and give bonds with good and

sufficient surety or sureties, as may be required for the faithful performance and proper fulfillment of such contract

and for the payment for labor and materials used for the performance of the contract, furnish certificates and

endorsements evidencing the required insurance is in effect and furnish and deliver to the DISTRICT the Workers’

Compensation Certificate, Drug-Free Work Place Certification, the Criminal Records Check Certification,

Contractor’s Certificate Regarding Non-Asbestos Containing Materials, and the Disabled Veteran Business

Enterprises Certification, if applicable, then the above obligation shall be void and of no effect, otherwise the bond

amount shall be forfeited to the DISTRICT.

Surety, for value received, hereby stipulates and agrees that no change, extension of time, alteration or

addition to the terms of the contract or the call for bids, or to the work to be performed thereunder, or the

specifications accompanying the same, shall in any way affect its obligation under this bond, and it does hereby

waive notice of any such change, extension of time, alteration or addition to the terms of said contract or the call for

bids, or to the work, or to the specifications.

In the event suit is brought upon this bond by the DISTRICT and judgment is recovered, the Surety shall

pay all costs incurred by the DISTRICT in such suit, including reasonable attorney’s fees to be fixed by the court.

IN WITNESS WHEREOF, the parties have executed this bond under their several seals this ___ day of ___

20__, the name and corporate seal of each corporate party being hereto affixed and duly signed by its undersigned

authorized representative.
(Corporate Seal of Surety)

Surety

(Attach Attorney-in-Fact Certificate and Required Acknowledgements)

By: __________________________
   Signature

______________
   Print Name

_______________________
   Title

________________________
   Address

________________________
   Telephone No.

________________________
   Facsimile No.
DESIGNATION OF SUBCONTRACTORS

In compliance with the Subletting and Subcontracting Fair Practices Act (Public Contract Code Section 4100 et. seq.) and any amendments thereof, each bidder shall set forth below: (a) the name and the location of the place of business of each subcontractor who will perform work or labor or render service to the bidder (prime contractor) in or about the construction of the work or improvement to be performed under this contract or a subcontractor licensed by the State of California who, under subcontract to the bidder (prime contractor), 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 bidder’s (prime contractor’s) total bid and (b) the portion of the work which will be done by each subcontractor. The bidder (prime contractor) shall list only one subcontractor for each such portion as is defined by the bidder (prime contractor) in this bid.

If a bidder (prime contractor) fails to specify a subcontractor or if a bidder (prime contractor) specifies more than one subcontractor for the same portion of work to be performed under the contract in excess of one-half of one percent of the bidder’s (prime contractor’s) total bid, bidder shall be deemed to have agreed that bidder is fully qualified to perform that portion, and that bidder alone shall perform that portion. Violation of this requirement (including the procurement of a subcontractor for the Project if no subcontractor is specified) can result in the DISTRICT invoking the remedies of Public Contract Code Sections 4110 and 4111.

No bidder (prime contractor) whose bid is accepted shall (a) substitute any subcontractor, (b) permit any subcontractor to be voluntarily assigned or transferred or allow it to be performed by anyone other than the original subcontractor listed in the original bid, or (c) sublet or subcontract any portion of the work in excess of one-half of one percent of the bidder’s (prime contractor’s) total bid as to which the original bid did not designate a subcontractor, except as authorized in the Subletting and Subcontracting Fair Practices Act. Subletting or subcontracting of any portion of the work in excess of one-half of one percent of the bidder’s (prime contractor’s) total bid as to which no subcontractor was designated in the original bid shall only be permitted in cases of public emergency or necessity, only after a finding reduced to writing as a public record of the DISTRICT awarding this contract setting forth the facts constituting the emergency or necessity.
<table>
<thead>
<tr>
<th>Type of Trade, Labor or Service</th>
<th>Name &amp; License # of Subcontractor, License Expiration Date (Indicate if a Disabled Veteran Business Enterprise)</th>
<th>Complete Address (Name of City is not sufficient) and Telephone No.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Bidder agrees that within twenty-four (24) hours of the bid opening, Bidder shall provide the DISTRICT with the license number (if applicable), expiration date of license, complete address and telephone numbers of each listed subcontractor if such information is not available at the time of the bid opening.
Dated: _________________________

Name of Bidder

By: ____________________________
   (Signature of Bidder)

Print Name: _______________________

Address: ________________________

Telephone: _______________________

FAX: ____________________________
NONCOLLUSION AFFIDAVIT

(Public Contract Code Section 7106)

State of California

ss.

County of ________________

_____________________, being first duly sworn, deposes and says that he or she is ________________ of ________________, the party making the foregoing bid, that the bid is not made in the interest of, or on behalf of, any undisclosed person, partnership, company, association, organization, or corporation, that the bid is genuine and not collusive or sham, that the bidder has not directly or indirectly induced or solicited any other bidder to put in a false or sham bid, and has not directly or indirectly colluded, conspired, connived, or agreed with any bidder or anyone else to put in a sham bid, or that anyone shall refrain from bidding, that the bidder has not in any manner, directly or indirectly, sought by agreement, communication, or conference with anyone to fix the bid price of the bidder or any other bidder, or to fix any overhead, profit or cost element of the bid price, or of that of any other bidder, or to secure any advantage against the public body awarding the contract of anyone interested in the proposed contract, that all statements contained in the bid are true, and, further, that the bidder has not, directly or indirectly, submitted his or her bid price or any breakdown thereof, or the contents thereof, or divulged information or data relative thereto, or paid, and will not pay, any fee to any corporation, partnership, company, association, organization, bid depository, or to any member or agent thereof to effectuate a collusive or sham bid.

_____________________

Signature of Bidder

NOTARY FOR NONCOLLUSION AFFIDAVIT

Subscribed and sworn to (or affirmed) before me this _______ day of _______, 20____

_____________________

Signature of Notary

[SEAL OF NOTARY]

Typed Name of Notary
WORKERS' COMPENSATION CERTIFICATE

Labor Code Section 3700.

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

(a) By being insured against liability to pay compensation in one or more insurers duly authorized to write compensation insurance in this state.

(b) By securing from the Director of Industrial Relations a certificate of consent to self-insure either as an individual employer or as one employer in a group of employers, which may be given upon furnishing proof satisfactory to the Director of Industrial Relations of ability to self-insure and to pay any compensation that may become due to his or her employees.

(c) For any county, city, city and county, municipal corporation, public district, public agency or any political subdivision of the state, including each member of a pooling arrangement under a joint exercise of powers agreement (but not the state itself), by securing from the Director of Industrial Relations a certificate of consent to self-insure against workers' compensation claims, which certificate may be given upon furnishing proof satisfactory to the director of ability to administer workers' compensation claims properly, and to pay workers' compensation claims that may become due to its employees. On or before March 31, 1979, a political subdivision of the state which, on December 31, 1978, was uninsured for its liability to pay compensation, shall file a properly completed and executed application for a certificate of consent to self-insure against workers' compensation claims. The certificate shall be issued and be subject to the provisions of Section 3702."

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

________________________________________
Name of the Contractor

By: _____________________________________
Signature

________________________________________
Print Name

________________________________________
Title

________________________________________
Date

(In accordance with Article 5 [commencing at Section 1860], Chapter 1, Part 7, Division 2 of the Labor Code, the above certificate must be signed and filed with the awarding body prior to performing any work under the contract.)
KNOW ALL MEN BY THESE PRESENTS:

THAT WHEREAS, the South Orange County Community College District (sometimes referred to hereinafter as "Obligee") has awarded to ________________ (hereinafter designated as the "Principal" or "Contractor"), an agreement for the work described as follows: __SOC CCD - Saddleback College East Bridge Replacement Project - District Bid # 2001 (hereinafter referred to as the "Public Work"); and

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

WHEREAS, the Contractor is required by said 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 South Orange County Community College District in the sum of not less than one hundred percent (100%) of the total amount payable by said Obligee under the terms of said Contract, for which amount well and truly to be made, we bind ourselves, our heirs, executors, administrators, successors, and assigns, jointly and severally, firmly by these presents.

THE CONDITION OF THIS OBLIGATION IS SUCH THAT, if the bounded Contractor, his or her 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 said Contract and any alteration thereof made as therein provided, on his or her part, to be kept and performed at the time and in the manner therein specified, and in all respects according to their intent and meaning; and shall faithfully fulfill guarantees of all materials and workmanship, and indemnify, defend and save harmless the Obligee, its officers and agents, as stipulated in said Contract, then this obligation shall become null and void; otherwise it shall be and remain in full force and effect.

The Surety, for value received, hereby stipulates and agrees that it shall not be exonerated or released from the obligation of this bond (either by total exoneration or pro tanto) by any change, extension of time, alteration or addition to the terms of the contract or to the work to be performed thereunder or the specifications accompanying the same, nor by any change or modification to any terms of payment or extension of time for any payment pertaining or relating to any scheme of work of improvement under the contract. Surety also stipulates and agrees that it shall not be exonerated or released from the obligation of this bond (either by total exoneration or pro tanto) by any overpayment or underpayment by the Obligee that is based upon estimates approved by the Architect. The Surety stipulates and agrees that none of the aforementioned changes, modifications, alterations, additions, extension of time or actions shall in any way affect its obligation on this bond, and it does hereby waive notice of any such changes, modifications, alterations, additions or extension of time to the terms of the contract, or to the work, or the specifications as well notice of any other actions that result in the foregoing.

Whenever Principal shall be, and is declared by the Obligee to be, in default under the Contract, the Surety shall promptly either remedy the default, or shall promptly complete the Contract through its agents or independent contractors, subject to acceptance and approval of such agents or independent contractors by Obligee as hereinafter set forth, in accordance with its terms and conditions and to pay and perform all obligations of Principal under the
Contract, including, without limitation, all obligations with respect to warranties, guarantees and the payment of liquidated damages; or, at Obligee's sole discretion and election, Surety shall obtain a bid or bids for completing the Contract in accordance with its terms and conditions, and upon determination by Obligee of the lowest responsible bidder, arrange for a contract between such bidder and the Obligee and make available as Work progresses (even though there should be a default or succession of defaults under the contract or contracts of completion arranged under this paragraph) sufficient funds to pay the cost of completion less the "balance of the Contract price" (as hereinafter defined) and to pay and perform all obligations of Principal under the Contract, including, without limitation, all obligations with respect to warranties, guarantees and the payment of liquidated damages. The term "balance of the Contract price," as used in this paragraph, shall mean the total amount payable to Principal by the Obligee under the Contract and any modifications thereto, less the amount previously paid by the Obligee to the Principal, less any withholdings by the Obligee allowed under the Contract.

Surety expressly agrees that the Obligee may reject any agent or contractor which may be proposed by Surety in fulfillment of its obligations in the event of default by the Principal. Unless otherwise agreed by Obligee, in its sole discretion, Surety shall not utilize Principal in completing the Contract nor shall Surety accept a bid from Principal for completion of the work in the event of default by the Principal.

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

Surety shall remain responsible for all patent and latent defects that arise out of or relate to the Contractor's failure and/or inability to properly complete the Public Work as required by the Contract and the Contract Documents. The obligation of the Surety hereunder shall continue so long as any obligation of the Contractor remains.

Contractor and Surety agree that if the Obligee is required to engage the services of an attorney in connection with enforcement of the bond, Contractor and Surety shall pay Obligee's reasonable attorneys' fees incurred, with or without suit, in addition to the above sum.

In the event suit is brought upon this bond by the Obligee and judgment is recovered, the Surety shall pay all costs incurred by the Obligee in such suit, including reasonable attorneys' fees to be fixed by the Court.
IN WITNESS WHEREOF, we have hereunto set our hands and seals this ____ day of ____________, 20__.

PRINCIPAL/CONTRACTOR:

____________________________________

By: ___________________________________

SURETY:

____________________________________

By: ___________________________________

Attorney-in-Fact

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

The total amount of premium charged: $____________________ (This must be filled in by a corporate surety).
IMPORTANT THIS IS A REQUIRED FORM.

Surety companies executing bonds must possess a certificate of authority from the California Insurance Commissioner authorizing them to write surety insurance defined in California Insurance Code Section 105, and if the work or project is financed, in whole or in part, with federal, grant or loan funds, Surety’s name must also appear on the Treasury Department’s most current list (Circular 570 as amended).

Any claims under this bond may be addressed to:

(Name and Address of Surety)  
(Name and Address of agent or representative for service for service of process in California)

__________________________________________  
__________________________________________

Telephone: ___________________________  Telephone: ___________________________

STATE OF CALIFORNIA  
) ss.
COUNTY OF  
)

On ___________________________ before me. ___________________________.

(insert name and title of the officer)

On ___________________________ before me. ___________________________. a Notary

Public in and for said State, 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 as the Attorney-in-Fact of the _________________________ (Surety) and acknowledged to me that he/she/they subscribed the name of the _________________________ (Surety) thereto and his own name as Attorney-in-Fact on the executed 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.

__________________________________________  (SEAL)

Notary Public in and for said State

Commission expires: ___________________________

NOTE: A copy of the power-of-attorney to local representatives of the bonding company must be attached hereto.
PAYMENT BOND (CALIFORNIA PUBLIC WORKS)

KNOW ALL MEN BY THESE PRESENTS:

THAT WHEREAS, the South Orange County Community College District (sometimes referred to hereinafter as "Obligee") has awarded to ___________ (hereinafter designated as the "Principal" or "Contractor"), an agreement for the work described as follows: SOCOCED - Saddleback College East Bridge Replacement Project District Bid # 2001 (hereinafter referred to as the "Public Work"); and

WHEREAS, said Contractor is required to furnish a bond in connection with said Contract, and pursuant to California Civil Code Section 3247,

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 South Orange County Community College District and to any and all persons, companies, or corporations entitled by law to file stop notices under California Civil Code Section 3181, or any person, company, or corporation entitled to make a claim on this bond, in the sum of not less than one hundred percent (100%) of the total amount payable by said Obligee under the terms of said 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 Principal, its heirs, executors, administrators, successors, or assigns, or subcontractor, shall fail to pay any person or persons named in Civil Code Section 3181, or fail to pay for any materials, provisions, or other supplies, used in, upon, for, or about the performance of the work contracted to be done, or for any work or labor thereon of any kind, or for amounts due under the Unemployment Insurance Code, with respect to work or labor thereon of any kind, or shall fail to deduct, withhold, and pay over to the Employment Development Department, any amounts required to be deducted, withheld, and paid over by Unemployment Insurance Code Section 13020 with respect to work and labor thereon of any kind, then said Surety will pay for the same, in an amount not exceeding the amount herein above set forth, and in the event suit is brought upon this bond, also will pay such reasonable attorneys' fees as shall be fixed by the court, awarded and taxed as provided in California Civil Code Sections 3247 et seq.

This bond shall inure to the benefit of any person named in Civil Code Section 3181 giving such person or his/her assigns a right of action in any suit brought upon this bond.

It is further stipulated and agreed that the Surety of this bond shall not be exonerated or released from the obligation of the bond by any change, extension of time for performance, addition, alteration or modification in, to, or of any contract, plans, or specifications, or agreement pertaining or relating to any scheme or work of improvement herein above described, or pertaining or relating to the furnishing of labor, materials, or equipment therefor, nor by any change or modification of any terms of payment or extension of time for payment pertaining or relating to any scheme or work of improvement herein above described, nor by any rescission or attempted rescission of the contract, agreement or bond, nor by any conditions precedent or subsequent in the bond attempting to limit the right of recovery of claimants otherwise entitled to recover under any such contract or agreement or under the bond, nor by any fraud practiced by any person other than the claimant seeking to recover on the bond; and that this bond be construed most strongly against the Surety and in favor of all persons for whose benefit such bond is given; and under no circumstances shall the Surety be released from liability to those for whose benefit such bond has been given, by reason of any breach of contract between the Obligee and the Contractor or on the part of any obligee named in such bond, that the sole condition of recovery shall be that the claimant is a person described in California Schools Legal Service of O.C. Bid Forms
May 2002
Civil Code Sections 3110 and 3112, and who has not been paid the full amount of his or her claim; and that the Surety does hereby waive notice of any such change, extension of time, addition, alteration or modification herein mentioned.

IN WITNESS WHEREOF, we have hereunto set our hands and seals this __________ day of __________, 20__.

PRINCIPAL/CONTRACTOR:

________________________________________

By: _______________________________________________________________________

SURETY:

________________________________________

By: _______________________________________________________________________

Attorney-in-Fact
IMPORTANT  THIS IS A REQUIRED FORM

Surety companies executing bonds must possess a certificate of authority from the California Insurance Commissioner authorizing them to write surety insurance defined in California Insurance Code Section 105, and if the work or project is financed, in whole or in part, with federal, grant or loan funds, Surety’s name must also appear on the Treasury Department’s most current list (Circular 570 as amended).

Any claims under this bond may be addressed to:

(Name and Address of Surety)  (Name and Address of agent or representative for service for service of process in California)

____________________________________  ______________________________________

____________________________________  ______________________________________

telephone: ___________________________  Telephone: ___________________________

STATE OF CALIFORNIA  
) ss.
COUNTY OF  

On __________________________ before me, (insert name and title of the officer)

a Notary Public in and for said State, 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 as the Attorney-in-Fact of the __________________________ (Surety) and acknowledged to me that he/she/they subscribed the name of the __________________________ (Surety) thereto and his own name as Attorney-in-Fact on the executed 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.

________________________________________  (SEAL)

Notary Public in and for said State

Commission expires: ______________________

NOTE: A copy of the power-of-attorney to local representatives of the bonding company must be attached hereto.
AGREEMENT

THIS AGREEMENT, dated the ______ day of _______ , 20__, in the County of Orange, State of California, is by and between South Orange County Community College District, (hereinafter referred to as "DISTRICT"), and ____________________________ (hereinafter referred to as "CONTRACTOR").

The DISTRICT and the CONTRACTOR, for the consideration stated herein, agree as follows:

1. CONTRACTOR agrees to complete the Project known as SOCCCD - Saddleback College East Bridge Replacement Project  District Bid # 2001 according to all the terms and conditions set forth in the Project Documents, including but not limited to the Notice Calling For Bids, Information for Bidders, Bid Form, Bid Security, Designation of Subcontractors, Information Required of Bidder, all prequalification forms submitted pursuant to Public Contract Code Section 20111.5, if any, Non-collision Affidavit, Workers’ Compensation Certificate, Faithful Performance Bond, Payment Bond, Escrow Agreement, if applicable, Drug-Free Workplace Certification, Change Orders, Shop Drawing Transmittals, Insurance Certificates and Endorsements, Guarantees, Contractor’s Certificate Regarding Non-Asbestos Containing Materials, Disabled Veteran Business Enterprises Certification, if applicable, General Conditions, Supplemental Conditions, if any, Special Conditions, if any, Drawings, Specifications, and all modifications, addenda and amendments thereto by this reference incorporated herein. The Project Documents are complementary, and what is called for by any one shall be as binding as if called for by all.

2. CONTRACTOR shall perform within the time set forth in Paragraph 4 of this Agreement everything required to be performed, and shall provide, furnish and pay for all the labor, materials, necessary tools, expendable equipment, and all taxes, utility and transportation services required for construction of the Project. All of said work shall be performed and completed in a good workmanlike manner in strict accordance with the drawings, specifications and all provisions of this Agreement as hereinabove defined and in accordance with applicable laws, codes, regulations, ordinances and any other legal requirements governing the Project. The CONTRACTOR shall be liable to the DISTRICT for any damages arising as a result of a failure to fully comply with this obligation, and the CONTRACTOR shall not be excused with respect to any failure to so comply by any act or omission of the Architect, Engineer, Inspector, Division of State Architect, or representative of any of them, unless such act or omission actually prevents the CONTRACTOR from fully complying with the requirements of the Project Documents, and unless the CONTRACTOR protests at the time of such alleged prevention that the act or omission is preventing the CONTRACTOR from fully complying with the Project Documents. Such protest shall not be effective unless reduced to writing and filed with the DISTRICT within three (3) working days of the date of occurrence of the act or omission preventing the CONTRACTOR from fully complying with the Project Documents.

3. DISTRICT shall pay to the CONTRACTOR, as full consideration for the faithful performance of this Agreement, subject to any additions or deductions as provided in the Project Documents, the sum of $__________.

4. The work shall be commenced on or before the _______ Fifth (5th) day after receiving the DISTRICT’S Notice to Proceed and shall be completed within one hundred twenty three (123) consecutive calendar days from the date specified in the Notice to Proceed.
5. **Time is of the essence.** If the work is not completed in accordance with Paragraph 4 above, it is understood that the DISTRICT will suffer damage. It being impractical and infeasible to determine the amount of actual damage, in accordance with Government Code Section 53069.85, it is agreed that CONTRACTOR shall pay to DISTRICT as fixed and liquidated damages, and not as a penalty, the sum of_______ two thousand $2000.00 _______ Dollars($2000.00) for each calendar day of delay until work is completed and accepted. Time extensions may be granted by the DISTRICT as provided in Article 64 of the General Conditions. Liquidated damages shall be imposed as set forth in Article 64 of the General Conditions.

6. **Termination for Cause or Non-appropriation.** In the event CONTRACTOR defaults in the performance of the Agreement as set forth in General Conditions Article 13(a) or if there is a non-appropriation of funds or insufficient funds as set forth in General Conditions Article 13(d), then this Agreement shall terminate or be suspended as set forth in General Conditions Article 13.

**Termination for Convenience.** DISTRICT has discretion to terminate this Agreement at any time and require CONTRACTOR to cease all work on the Project by providing CONTRACTOR written notice of termination specifying the desired date of termination. Upon receipt of written notice from DISTRICT of such termination for DISTRICT’s convenience, CONTRACTOR shall:

(i) Cease operations as directed by DISTRICT in the notice;

(ii) Take any actions necessary, or that DISTRICT may direct, for the protection and preservation of the work; and

(iii) Not terminate any insurance provisions required by the Project Documents.

In case of such termination for DISTRICT’s convenience, CONTRACTOR shall be entitled to receive payment from DISTRICT for work satisfactorily executed and for proven loss with respect to materials, equipment, and tools, including overhead and profit for that portion of the work completed. In the case of Termination for Convenience, DISTRICT shall have the right to accept assignment of subcontractors. The foregoing provisions are in addition to and not in limitation of any other rights or remedies available to the DISTRICT.

7. **Hold Harmless and Indemnification.** To the fullest extent permitted by law, the CONTRACTOR, at the CONTRACTOR’s sole cost and expense, agrees to fully defend, indemnify and hold harmless, the DISTRICT, including but not limited to any of its governing board members, officers, employees, Construction Manager, Architect, and all other Agents and Representatives, from and against any and all claims, actions, demands, costs, judgments, liens, penalties, liabilities, damages, losses, anticipated losses of revenues, and expenses, including any fees of accountants, attorneys or other professionals, arising out of, in connection with, resulting from or related to, or claimed to be arising out of, in connection with, resulting from or related to any act or omission by the CONTRACTOR or any of its officers, agents, employees, subcontractors, sub-subcontractors, any person performing any of the work pursuant to a direct or indirect contract with the CONTRACTOR or individual entities comprising the CONTRACTOR, in connection with or relating to, or claimed to be in connection with or relating to the work, this Agreement, or the Project, including but not limited to any costs or liabilities arising out of or in connection with:

(a) failure to comply with any applicable law, statute, code, ordinance, regulation, permit or orders;

(b) any misrepresentation, misstatement or omission with respect to any statement made in the Project Documents or any document furnished by the CONTRACTOR in connection therewith;

(c) any breach of duty, obligation or requirement under the Project Documents;

(d) any failure to coordinate the work of other contractors.
(e) any failure to provide notice to any party as required under the Project Documents.
(f) any failure to act in such a manner as to protect the DISTRICT and the Project from loss, cost, expense or liability, or
(g) any failure to protect the property of any utility company or property owner.

This indemnity shall survive termination of the contract or final payment thereunder. This indemnity is in addition to any other rights or remedies which the DISTRICT may have under the law or under the Project Documents. In the event of any claim or demand made against any party which is entitled to be indemnified hereunder, the DISTRICT may in its sole discretion reserve, retain or apply any monies due to the CONTRACTOR under the Project Documents for the purpose of resolving such claims; provided, however, that the DISTRICT may release such funds if the CONTRACTOR provides the DISTRICT with reasonable assurance of protection of the DISTRICT’s interests. The DISTRICT shall in its sole discretion determine whether such assurances are reasonable.

8. CONTRACTOR shall take out, prior to commencing the work, and maintain, during the life of this Agreement, and shall require all subcontractors, if any, whether primary or secondary, to take out and maintain the insurance coverages set forth below and in Articles 16, 17, 18 and 19 of the General Conditions. CONTRACTOR agrees to provide all evidences of coverage required by DISTRICT including certificates of insurance and endorsements.

Public Liability Insurance for injuries including accidental death, to any one person in an amount not less than $2,000,000

Subcontractors of every tier $1,000,000

and

Subject to the same limit for each person on account of one accident, in an amount not less than $2,000,000

Subcontractors of every tier $1,000,000

Property Damage Insurance in an amount not less than $2,000,000

Subcontractors of every tier $1,000,000

Course of Construction Insurance without exclusion or limitation in an amount not less than $2,000,000

Excess Liability Insurance (Contractor only) $2,000,000

Insurance Covering Special Hazards: The following special hazards shall be covered by rider or riders to above-mentioned public liability insurance or property damage insurance policy or policies of insurance, or by special policies of insurance in amounts as follows:

Automotive and truck where operated in amounts as above

Material hoist where used in amounts as above
Waiver Of Subrogation

Contractor waives (to the extent permitted by law) any right to recover against the District, and its respective elected officials, officers, employees, agents, and representatives for damages to the Work, any part thereof, or any and all claims arising by reason of any of the foregoing, but only to the extent that such damages and/or claims are covered by property insurance and only to the extent of such coverage (which shall exclude deductible amounts) actually carried by the District.

The provisions of this section are intended to restrict each party to recovery against insurance carriers only to the extent of such coverage and waive fully and for the benefit of each, any rights and/or claims which might give rise to a right of subrogation in any insurance carrier. The District and the Contractor shall each obtain in all policies of insurance carried by either of them, a waiver by the insurance companies there under of all rights of recovery by way of subrogation for any damages or claims covered by the insurance.

Additional Insured Endorsement Requirements.

The Contractor shall name, on any policy of insurance required the District, their officers, employees, Construction Manager, Architect, and all other Agents and Representatives as additional insureds. Subcontractors shall name the Contractor, the District, their officers, employees, Construction Manager, Architect, and all other Agents and Representatives as additional insureds. The Additional Insured Endorsement included on all such insurance policies shall state that coverage is afforded the additional insured with respect to claims arising out of operations performed by or on behalf of the insured. If the additional insureds have other insurance that is applicable to the loss, such other insurance shall be on an excess or contingent basis. The insurance provided by the Contractor must be designated in the policy as primary to any insurance obtained by the District. The amount of the insurer’s liability shall not be reduced by the existence of such other insurance.

9. Public Contract Code Section 22300 permits the substitution of securities for any retention monies withheld by the DISTRICT to ensure performance under this Agreement. At the request and expense of the CONTRACTOR, securities equivalent to the monies withheld shall be deposited with the DISTRICT, or with a state or federally chartered bank in California as the escrow agent, who shall then pay such monies to the CONTRACTOR. The DISTRICT retains the sole discretion to approve the bank selected by the CONTRACTOR to serve as escrow agent. Upon satisfactory completion of the Agreement, the securities shall be returned to the CONTRACTOR. Securities eligible for investment shall include those listed in Government Code Section 16430 or bank or savings and loan certificates of deposit. The CONTRACTOR shall be the beneficial owner of any securities substituted for monies withheld and shall receive any interest thereon.

In the alternative, under Section 22300, the CONTRACTOR may request DISTRICT to make payment of earned retention monies directly to the escrow agent at the expense of the CONTRACTOR. Also at the CONTRACTOR’s expense, the CONTRACTOR may direct investment of the payments into securities, and the CONTRACTOR shall receive interest earned on such investment upon the same conditions as provided for securities deposited by CONTRACTOR. Upon satisfactory completion of the Agreement, CONTRACTOR shall receive from the escrow agent all securities, interest and payments received by escrow agent from DISTRICT pursuant to the terms of Section 22300.

10. If CONTRACTOR is a corporation, the undersigned hereby represents and warrants that the corporation is duly incorporated and in good standing in the State of __________________________, and that __________________________, whose title is __________________________, is authorized to act for and bind the corporation.

11. Each and every provision of law and clause required by law to be inserted in this Agreement shall be deemed to be inserted herein and the Agreement shall be read and enforced as though it were included herein, and
if through mistake or otherwise any such provision is not inserted, or is not currently inserted, then upon application of either party the Agreement shall forthwith be physically amended to make such insertion or correction.

12. This Agreement constitutes the entire agreement of the parties. No other agreements, oral or written, pertaining to the work to be performed, exists between the parties. This Agreement can be modified only by an amendment in writing, signed by both parties and pursuant to action of the Governing Board of the District. This Agreement shall be governed by the laws of the State of California.

IN WITNESS WHEREOF, the parties hereto have caused this Agreement to be executed.

DISTRICT

By: ____________________________
    Signature

Print Name

Title

CONTRACTOR

By: ____________________________
    Signature

Print Name

Title

Contractor's License No.

Tax ID/Social Security No.

(CORPORATE SEAL OF CONTRACTOR,
if corporation)
This Escrow Agreement is made and entered into, as of 20___, by and between South Orange County Community College District, whose address is 28000 Marguerite Parkway, Mission Viejo, CA 92692 hereinafter called "DISTRICT," whose address is __________________________, hereinafter called "Contractor," and, __________________________, whose address is __________________________, hereinafter called "Escrow Agent."

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

(1) Pursuant to Section 22360 of the Public Contract Code of the State of California, Contractor has the option to deposit securities with Escrow Agent as a substitute for retention earnings required to be withheld by DISTRICT pursuant to the Agreement entered into between the DISTRICT and Contractor for __________________________ in the amount of __________________________ dated (hereinafter referred to as the "Agreement"). Alternatively, on written request of the Contractor, the DISTRICT shall make payments of the retention earnings directly to the Escrow Agent. When the Contractor deposits the securities as a substitute for retention earnings, the Escrow Agent shall notify the DISTRICT within ten (10) days of the deposit. The market value of the securities at the time of the substitution shall be at least equal to the cash amount then required to be withheld as retention under the terms of the Agreement between the DISTRICT and Contractor. Securities shall be held in the name of DISTRICT, and shall designate the Contractor as the beneficial owner.

(2) The DISTRICT shall make progress payments to the Contractor for those funds which otherwise would be withheld from progress payments, provided that the Escrow Agent holds securities in the form and amount specified above.

(3) When the DISTRICT makes payment of retentions earned directly to the Escrow Agent, the Escrow Agent shall hold them for the benefit of the Contractor until the time the escrow created under this Escrow Agreement is terminated. The Contractor may direct the investment of the payments into securities. All terms and conditions of this Escrow Agreement and the rights and responsibilities of the parties shall be equally applicable and binding when the DISTRICT pays the Escrow Agent directly.

(4) Contractor shall be responsible for paying all fees for the expenses incurred by Escrow Agent in administering the Escrow Account and all expenses of the DISTRICT. These expenses and payment terms shall be determined by the DISTRICT, Contractor and Escrow Agent.

(5) The interest earned on the securities or the money market accounts held in escrow and all interest earned on that interest shall be for the sole account of Contractor and shall be subject to withdrawal by Contractor at any time and from time to time without notice to the DISTRICT.

(6) Contractor shall have the right to withdraw all or any part of the principal in the Escrow Account only by written notice to Escrow Agent accompanied by written authorization from the DISTRICT to the Escrow Agent that DISTRICT consents to the withdrawal of the amount sought to be withdrawn by Contractor.
(7) The DISTRICT shall have a right to draw upon the securities in the event of default by the Contractor. Upon seven (7) days' written notice to the Escrow Agent from the DISTRICT of the default, the Escrow Agent shall immediately convert the securities to cash and shall distribute the cash as instructed by the DISTRICT.

(8) Upon receipt of written notification from the DISTRICT certifying that the Agreement is final and complete, and that the Contractor has complied with all requirements and procedures applicable to the Agreement, Escrow Agent shall release to Contractor all securities and interest on deposit less escrow fees and charges of the Escrow Account. The escrow shall be closed immediately upon disbursement of all monies and securities on deposit and payments of fees and charges.

(9) Escrow Agent shall rely on the written notifications from the DISTRICT and the Contractor pursuant to Sections (5) to (8), inclusive, of this Escrow Agreement and the DISTRICT and Contractor shall hold Escrow Agent harmless from Escrow Agent's release and disbursement of the securities and interest as set forth above.

(10) The names of the persons who are authorized to give written notice or to receive written notice on behalf of the DISTRICT and on behalf of Contractor in connection with the foregoing, and exemplars of their respective signatures are as follows:

On behalf of DISTRICT: 

<table>
<thead>
<tr>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name</td>
</tr>
<tr>
<td>Signature</td>
</tr>
<tr>
<td>Address</td>
</tr>
</tbody>
</table>

On behalf of Contractor:

<table>
<thead>
<tr>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name</td>
</tr>
<tr>
<td>Signature</td>
</tr>
<tr>
<td>Address</td>
</tr>
</tbody>
</table>
On behalf of Escrow Agent:

Title

Name

Signature

Address

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

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

DISTRICT

Title

Name

Signature

CONTRACTOR

Title

Name

Signature

Escrow Agent

Title

Name

Signature
Guarantee for Saddleback College – East Bridge Replacement Project Bid #2001. We hereby guarantee that the ________ which we have installed in ________, has been done in accordance with the Project Documents and that the work as installed will fulfill the requirements included in the Project Documents. The undersigned agrees to repair or replace any or all of such work, together with any other adjacent work which may be displaced in connection with such repair or replacement, that may prove to be defective in workmanship or material within a period of one (1) year from the date of completion of the Project, ordinary wear and tear and unusual abuse or neglect excepted.

In the event of the undersigned’s or undersigned surety’s failure to commence and pursue with diligence said repairs or replacements within ten (10) calendar days after being notified in writing by the DISTRICT, the undersigned authorizes the DISTRICT to proceed to have said defects repaired or replaced and made good at the expense of the undersigned and surety who hereby agree to pay the costs and charges therefore immediately upon demand. (General Conditions Article 47(d))

________________________________________
Name of Contractor

By: _______________________________________
Signature of Contractor

________________________________________
Print Name

________________________________________
Title

Contractor shall provide copy of this Guarantee to Contractor’s surety.
Guarantee (continued)

Name of Subcontractor
(if work performed by subcontractor)

By: ________________________________
Signature of Subcontractor

______________________________
Print Name

______________________________
Title

Representatives to be contacted for service:

Name: ________________________________

Address: ________________________________

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

Pursuant to Government Code Section 8355, every person or organization awarded a contract from a State agency shall certify that it will provide a drug-free workplace by doing all of the following:

a) publishing a statement notifying employees that the unlawful manufacture, distribution, dispensation, possession or use of a controlled substance is prohibited in the person's or organization's workplace and specifying actions which will be taken against employees for violations of the prohibition;

b) establishing a drug-free awareness program to inform employees about all of the following:
   1) the dangers of drug abuse in the workplace;
   2) the person's or organization's policy of maintaining a drug-free workplace;
   3) the availability of drug counseling, rehabilitation and employee-assistance programs;
   4) the penalties that may be imposed upon employees for drug abuse violations;

c) requiring that each employee engaged in the performance of the contract be given a copy of the statement required by subdivision (a) and that, as a condition of employment on the contract, the employee agrees to abide by the terms of the statement.

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

I also understand that if the DISTRICT determines that I have either (a) made a false certification herein, or (b) violated this certification by failing to carry out the requirements of Section 8355, that the contract awarded herein is subject to suspension of payments, termination, or both. I further understand that, should I violate the terms of the Drug-Free Workplace Act of 1990, I may be subject to debarment in accordance with the requirements of Section 8350, et seq.
I acknowledge that I am aware of the provisions of Government Code Section 8350, et seq. and hereby certify that I will adhere to the requirements of the Drug-Free Workplace Act of 1990.

NAME OF CONTRACTOR

Signature

Print Name

Title

Date
CHANGE ORDER NO. ........................................ (ADDAITIVE) ........................................

PROJECT: .................................................................................................................................

TO: ...........................................................................................................................................

You are hereby directed to provide the extra work necessary to comply with this Change Order.

DESCRIPTION OF CHANGE: ......................................................................................................

COST (This cost shall not be exceeded):

Original contract price: $ __________________

Change Order amount: $ __________________

New contract price: $ __________________

TIME FOR COMPLETION:

Original completion date: __________________

Time for completion of

Change Order: __________________

New completion date: __________________

Contractor agrees to perform the above-described work in accordance with the above terms and in compliance with applicable sections of the Project Documents. The amount of the charges under this Change Order is limited to the charges allowed under Article 60 of the General Conditions. The adjustment in the contract sum, if any, and the adjustment in the contract time, if any, set out in this Change Order shall constitute the entire compensation and/or adjustment in the contract time due Contractor arising out of the change in the work covered by this Change Order, unless otherwise provided in this Change Order.

No additions or deletions to this Change Order shall be allowed, except with written permission of District Contractor accepts the terms and conditions stated above as full and final settlement of any and all claims arising from this Change Order.

(continued on next page)
This Change Order is hereby agreed to, accepted and approved.

CONTRACTOR

By __________________________
Signature

Print Name
Title
Date

DISTRICT

By __________________________
Signature

Print Name
Title
Date

ARCHITECT

By __________________________
Signature

Print Name
Title
Date
CHANGE ORDER NO. ___________________ (DEDUCTIVE)

PROJECT: ____________________________________________________________

TO: ________________________________________________________________

You are hereby directed to comply with this Change Order.

DESCRIPTION OF CHANGE: ____________________________________________

____________________________________________________________________

____________________________________________________________________

COST (This cost shall be deleted):

Original contract price: $ __________________________

Change Order amount: $ __________________________

New contract price: $ __________________________

TIME FOR COMPLETION:

Original completion date: __________________________

Time for completion of 

Change Order: __________________________

New completion date: __________________________

Contractor agrees to deduct the above-described work in accordance with the above terms and in compliance with applicable sections of the Project Documents. Contractor agrees to the adjustment in the contract sum, if any, and the adjustment in the contract time, if any, set out in this Change Order.

No additions or deletions to this Change Order shall be allowed, except with written permission of District. Contractor accepts the terms and conditions stated above as full and final settlement of any and all claims arising from this Change Order.

(continued on next page)
This Change Order is hereby agreed to, accepted and approved.

CONTRACTOR

By ____________________________

Print Name

Title

Date

DISTRICT

By ____________________________

Print Name

Title

Date

ARCHITECT

By ____________________________

Signature

Print Name

Title

Date
CONTRACTOR’S CERTIFICATE REGARDING NON-ASBESTOS CONTAINING MATERIALS

Per Article 70 of the General Conditions.

Certification for _Saddleback College – East Bridge Replacement Project_. We hereby certify that no Asbestos, or Asbestos Containing Materials shall be used in this Project or in any tools, devices, clothing, or equipment used to affect the ________________
which we have installed in the South Orange County Community College District under Project/Bid No. ___2001____

(a) The Contractor further certifies that he/she has instructed his/her employees with respect to the above mentioned standards, hazards, risks and liabilities.

(b) Asbestos and/or asbestos containing material shall be defined as all items containing but not limited to chrysolite, crocidolite, amosite, anthophyllite, tremolite and actinolite.

(c) Any or all material containing greater than one-tenth of one percent (.1%) asbestos shall be defined as asbestos containing material.

(d) Any disputes involving the question of whether or not material contains asbestos shall be settled by electron microscopy. The costs of any such tests shall be paid by the Contractor if the material is found to contain asbestos.

(e) All work or materials found to contain asbestos or work or material installed with asbestos containing equipment will be immediately rejected and this work will be removed at no additional cost to the District.

__________________________________________  __________________________________________
Date                                              Name of Contractor

By: __________________________________________
     Signature

__________________________________________
Print Name

__________________________________________
Title
# TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>ARTICLE</th>
<th>DESCRIPTION</th>
<th>PAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>DEFINITIONS</td>
<td>3</td>
</tr>
<tr>
<td>2</td>
<td>STATUS OF CONTRACTOR</td>
<td>4</td>
</tr>
<tr>
<td>3</td>
<td>CHANGE IN NAME AND NATURE OF CONTRACTOR'S LEGAL ENTITY</td>
<td>4</td>
</tr>
<tr>
<td>4</td>
<td>CONTRACTOR'S SUPERVISION, PROSECUTION AND PROGRESS</td>
<td>5</td>
</tr>
<tr>
<td>5</td>
<td>SUBCONTRACTORS</td>
<td>5</td>
</tr>
<tr>
<td>6</td>
<td>PROHIBITED INTERESTS</td>
<td>6</td>
</tr>
<tr>
<td>7</td>
<td>DISTRICT'S INSPECTOR</td>
<td>7</td>
</tr>
<tr>
<td>8</td>
<td>ARCHITECT'S STATUS</td>
<td>7</td>
</tr>
<tr>
<td>9</td>
<td>NOTICE OF TAXABLE POSSESSORY INTEREST</td>
<td>8</td>
</tr>
<tr>
<td>10</td>
<td>ASSIGNMENT OF ANTITRUST ACTIONS</td>
<td>8</td>
</tr>
<tr>
<td>11</td>
<td>OTHER CONTRACTS</td>
<td>8</td>
</tr>
<tr>
<td>12</td>
<td>OCCUPANCY</td>
<td>9</td>
</tr>
<tr>
<td>13</td>
<td>DISTRICT'S RIGHT TO TERMINATE AGREEMENT</td>
<td>9</td>
</tr>
<tr>
<td>14</td>
<td>BONDS</td>
<td>11</td>
</tr>
<tr>
<td>15</td>
<td>SUBSTITUTION OF SECURITIES</td>
<td>11</td>
</tr>
<tr>
<td>16</td>
<td>FIRE INSURANCE</td>
<td>12</td>
</tr>
<tr>
<td>17</td>
<td>PUBLIC LIABILITY AND PROPERTY DAMAGE INSURANCE</td>
<td>12</td>
</tr>
<tr>
<td>18</td>
<td>WORKERS' COMPENSATION INSURANCE</td>
<td>12</td>
</tr>
<tr>
<td>19</td>
<td>PROOF OF CARRIAGE OF INSURANCE</td>
<td>13</td>
</tr>
<tr>
<td>20</td>
<td>DRAWINGS AND SPECIFICATIONS</td>
<td>12</td>
</tr>
<tr>
<td>21</td>
<td>OWNERSHIP OF DRAWINGS</td>
<td>15</td>
</tr>
<tr>
<td>22</td>
<td>DETAIL DRAWINGS AND INSTRUCTIONS</td>
<td>15</td>
</tr>
<tr>
<td>23</td>
<td>SHOP DRAWINGS</td>
<td>16</td>
</tr>
<tr>
<td>24</td>
<td>LAYOUT AND FIELD ENGINEERING</td>
<td>18</td>
</tr>
<tr>
<td>25</td>
<td>SOILS INVESTIGATION REPORT</td>
<td>18</td>
</tr>
<tr>
<td>26</td>
<td>TESTS AND INSPECTIONS</td>
<td>19</td>
</tr>
<tr>
<td>27</td>
<td>TRENCHES</td>
<td>19</td>
</tr>
<tr>
<td>28</td>
<td>DOCUMENTS ON WORK</td>
<td>20</td>
</tr>
<tr>
<td>29</td>
<td>STATE AUDIT</td>
<td>20</td>
</tr>
<tr>
<td>30</td>
<td>SUBSTITUTIONS</td>
<td>21</td>
</tr>
<tr>
<td>31</td>
<td>SAMPLES</td>
<td>22</td>
</tr>
<tr>
<td>32</td>
<td>PROGRESS SCHEDULE</td>
<td>23</td>
</tr>
<tr>
<td>33</td>
<td>TIME ALLOWANCES</td>
<td>23</td>
</tr>
<tr>
<td>34</td>
<td>MATERIALS AND WORK</td>
<td>27</td>
</tr>
<tr>
<td>35</td>
<td>INTEGRATION OF WORK</td>
<td>28</td>
</tr>
<tr>
<td>36</td>
<td>OBTAINING OF PERMITS, LICENSES AND EASEMENTS</td>
<td>29</td>
</tr>
<tr>
<td>37</td>
<td>SURVEYS</td>
<td>29</td>
</tr>
<tr>
<td>38</td>
<td>EXISTING UTILITY LINES; REMOVAL, RESTORATION</td>
<td>29</td>
</tr>
<tr>
<td>39</td>
<td>WORK TO COMPLY WITH APPLICABLE LAWS AND REGULATIONS</td>
<td>29</td>
</tr>
<tr>
<td>40</td>
<td>ACCESS TO WORK</td>
<td>30</td>
</tr>
<tr>
<td>41</td>
<td>PAYMENTS BY CONTRACTOR</td>
<td>30</td>
</tr>
<tr>
<td>42</td>
<td>INSPECTOR'S FIELD OFFICE</td>
<td>31</td>
</tr>
<tr>
<td>43</td>
<td>UTILITIES</td>
<td>31</td>
</tr>
<tr>
<td>44</td>
<td>SANITARY FACILITIES</td>
<td>31</td>
</tr>
<tr>
<td>45</td>
<td>CLEANING UP</td>
<td>31</td>
</tr>
<tr>
<td>Article</td>
<td>Title</td>
<td>Page</td>
</tr>
<tr>
<td>---------</td>
<td>----------------------------------------------------------------------</td>
<td>------</td>
</tr>
<tr>
<td>46</td>
<td>PATENTS, ROYALTIES, AND INDEMNITIES</td>
<td>32</td>
</tr>
<tr>
<td>47</td>
<td>GUARANTEE</td>
<td>32</td>
</tr>
<tr>
<td>48</td>
<td>DUTY TO PROVIDE FIT WORKERS</td>
<td>33</td>
</tr>
<tr>
<td>49</td>
<td>WAGE RATES, TRAVEL AND SUBSISTENCE</td>
<td>33</td>
</tr>
<tr>
<td>50</td>
<td>HOURS OF WORK</td>
<td>34</td>
</tr>
<tr>
<td>51</td>
<td>PAYROLL RECORDS</td>
<td>35</td>
</tr>
<tr>
<td>52</td>
<td>APPRENTICES</td>
<td>36</td>
</tr>
<tr>
<td>53</td>
<td>LABOR - FIRST AID</td>
<td>38</td>
</tr>
<tr>
<td>54</td>
<td>PROTECTION OF PERSONS AND PROPERTY</td>
<td>38</td>
</tr>
<tr>
<td>55</td>
<td>NON-DISCRIMINATION</td>
<td>39</td>
</tr>
<tr>
<td>56</td>
<td>SCHEDULE OF VALUES AND PERIODICAL ESTIMATES</td>
<td>39</td>
</tr>
<tr>
<td>57</td>
<td>CONTRACTOR CLAIMS</td>
<td>40</td>
</tr>
<tr>
<td>58</td>
<td>DISPUTES - ARCHITECT’S DECISIONS</td>
<td>40</td>
</tr>
<tr>
<td>59</td>
<td>PAYMENTS</td>
<td>40</td>
</tr>
<tr>
<td>60</td>
<td>CHANGES AND EXTRA WORK</td>
<td>42</td>
</tr>
<tr>
<td>61</td>
<td>COMPLETION</td>
<td>46</td>
</tr>
<tr>
<td>62</td>
<td>ADJUSTMENTS TO CONTRACT PRICE</td>
<td>47</td>
</tr>
<tr>
<td>63</td>
<td>CORRECTION OF WORK</td>
<td>47</td>
</tr>
<tr>
<td>64</td>
<td>EXTENSION OF TIME - LIQUIDATED DAMAGES</td>
<td>47</td>
</tr>
<tr>
<td>65</td>
<td>PAYMENTS WITHHELD</td>
<td>48</td>
</tr>
<tr>
<td>66</td>
<td>TAXES</td>
<td>49</td>
</tr>
<tr>
<td>67</td>
<td>NO ASSIGNMENT</td>
<td>49</td>
</tr>
<tr>
<td>68</td>
<td>NOTICE</td>
<td>50</td>
</tr>
<tr>
<td>69</td>
<td>NO WAIVER</td>
<td>50</td>
</tr>
<tr>
<td>70</td>
<td>NON-UTILIZATION OF ASBESTOS MATERIAL</td>
<td>50</td>
</tr>
<tr>
<td>71</td>
<td>LEAD</td>
<td>51</td>
</tr>
<tr>
<td>72</td>
<td>GOVERNING LAW</td>
<td>51</td>
</tr>
</tbody>
</table>
ARTICLE 3. DEFINITIONS

(a) Action of the Governing Board is a vote of a majority of the members in a lawful meeting.

(b) Addenda are the changes in plans, specifications, drawings, and/or Project Documents which have been authorized in writing by the DISTRICT or ARCHITECT, and which alter, explain, or clarify the Project Documents prior to the bid deadline.

(c) Agents & Representatives includes all project participants holding contract with the DISTRICT other than the CONTRACTOR.

(d) Agreement includes collectively all Project Documents.

(e) Approval means written authorization by ARCHITECT or DISTRICT.

(f) CONTRACTOR or DISTRICT are those mentioned as such in the Agreement. They are treated throughout the Project Documents as if they are of singular number and neuter gender.

(g) Day shall be defined as business day unless otherwise noted.

(h) DISTRICT is the Governing Board or its duly authorized representative.

(h) Locality in which the work is performed means the county and city in which the work is done.

(i) Project is the planned undertaking as provided for in the Project Documents by DISTRICT and CONTRACTOR.

(j) Project Documents includes collectively, to wit: Notice Calling for Bids, Information for Bidders, Bid Form, Bid Security, Designation of Subcontractor form, Information Required of Bidders, all prequalification forms submitted pursuant to Public Contract Code Section 20111.5, if any, Noncollusion Affidavit, Workers' Compensation Certificate, Faithful Performance Bond, Payment Bond, Agreement, Escrow Agreement, Drug-Free Workplace Certification, Change Order forms, Shop Drawing Transmittals form, Insurance Certificates and Endorsements, Guarantee form, Contractor's Certificate Regarding Non-Asbestos Containing Materials, General Conditions, Supplemental Conditions, if any, Special Conditions, if any, Drawings, Specifications, and all modifications, addenda and amendments thereto. The Project Documents are complementary, and what is called for by any one shall be as binding as if called for by all.

(k) Provide shall include "provide complete in place," that is, "furnish and install"
(l) Safety Orders are those issued by the Division of Industrial Safety and OSHA safety and health standards for construction.

(m) Standards, Rules, and Regulations referred to are recognized printed standards and shall be considered as one and a part of these specifications within limits specified.

(n) Subcontractor, as used herein, includes those having a direct contractual relationship with CONTRACTOR and one who furnishes material, worked to a special design according to plans, drawings, and specifications, but does not include one who merely furnishes material not so worked.

(o) Surety is the person, firm, or corporation that executes as a California admitted surety insurer, the CONTRACTOR's Bid Security, faithful performance bond and payment bond.

(p) Work of the CONTRACTOR or subcontractor includes labor or materials (including, without limitation, equipment and appliances) or both, incorporated in, or to be incorporated in the Project.

(q) Workers includes laborer, worker, or mechanic.

(r) Working day is defined as business day.

ARTICLE 2. STATUS OF CONTRACTOR

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

(b) Contractors are required by law to be licensed and regulated by the Contractors' State License Board. Any CONTRACTOR not so licensed is subject to penalties under the law, and the contract will be considered void pursuant to Section 7028.7 of the Business and Professions Code. Any questions concerning a contractor may be referred to the Registrar, Contractors' State License Board, 9821 Business Park Drive, P.O. Box 26000, Sacramento, CA 95826.

ARTICLE 3. CHANGE IN NAME AND NATURE OF CONTRACTOR'S LEGAL ENTITY

Before CONTRACTOR makes any change in the name or legal nature of the CONTRACTOR's entity, CONTRACTOR shall first notify the DISTRICT in writing and cooperate with DISTRICT in making such changes as the DISTRICT may request in the Project Documents.
ARTICLE 4: CONTRACTOR'S SUPERVISION, PROSECUTION AND PROGRESS

(a) During progress of the work, CONTRACTOR shall keep on the worksite a competent superintendent satisfactory to DISTRICT. Before commencing the work herein, CONTRACTOR shall give written notice to DISTRICT and ARCHITECT of the name, qualifications and experience of such superintendent. If Superintendent is found unsatisfactory by DISTRICT, CONTRACTOR shall replace the Superintendent with one acceptable to the DISTRICT. Superintendent shall not be changed except with written consent of DISTRICT, unless a superintendent proves to be unsatisfactory to CONTRACTOR and ceases to be in its employ, in which case, CONTRACTOR shall notify DISTRICT and ARCHITECT in writing and replace said Superintendent with one acceptable to the DISTRICT. Superintendent shall represent CONTRACTOR and all directions given to Superintendent shall be as binding as if given to CONTRACTOR.

(b) CONTRACTOR shall supervise and direct the work competently and efficiently, devoting such attention thereto and applying such skills as may be necessary to perform the work in accordance with the Project Documents. CONTRACTOR shall carefully study and compare all plans, drawings, specifications, and other instructions and shall at once report to ARCHITECT any error, inconsistency or omission which CONTRACTOR or its employees may discover. The CONTRACTOR represents itself to DISTRICT as a skilled, knowledgeable, and experienced CONTRACTOR. The CONTRACTOR shall carefully study and compare the Project Documents with each other, and shall at once report to the ARCHITECT any errors, inconsistencies, or omissions discovered. The CONTRACTOR shall be liable to the DISTRICT for damage resulting from errors, inconsistencies, or omissions in the Project Documents that the CONTRACTOR recognized and which CONTRACTOR knowingly failed to report and which a similarly skilled, knowledgeable, and experienced contractor would have discovered.

(c) The CONTRACTOR shall verify all indicated dimensions before ordering materials or equipment, or before performing work. The CONTRACTOR shall take field measurements, verify field conditions, and shall carefully compare such field measurements and conditions and other information known to the CONTRACTOR with the Project Documents before commencing work. Errors, inconsistencies or omissions discovered shall be reported to the DISTRICT at once. Upon commencement of any item of work, the CONTRACTOR shall be responsible for dimensions related to such item of work and shall make any corrections necessary to make work properly fit at no additional cost to DISTRICT. This responsibility for verification of dimensions is a non-delegable duty and may not be delegated to subcontractors or agents.

(d) Omissions from the plans, drawings or specifications, or the misdescription of details of work which are manifestly necessary to carry out the intent of the plans, drawings and specifications, or which are customarily performed, shall not relieve the CONTRACTOR from performing such omitted or misdescribed work, but they shall be performed as if fully and correctly set forth and described in the plans, drawings and specifications.

(e) The CONTRACTOR shall be solely responsible for the means, methods, techniques, sequences, and procedures of construction. The CONTRACTOR shall be responsible to see that the finished work complies accurately with the Project Documents.

ARTICLE 5: SUBCONTRACTORS
(a) CONTRACTOR agrees to bind every subcontractor by terms of the Project Documents as far as such terms are applicable to subcontractor’s work. If CONTRACTOR shall subcontract any part of the work, CONTRACTOR shall be as fully responsible to DISTRICT for acts and omissions of any subcontractor and of persons either directly or indirectly employed by any subcontractor, as it is for acts and omissions of persons directly employed by CONTRACTOR. Nothing contained in Project Documents shall create any contractual relation between any subcontractor and DISTRICT, nor shall the contract documents be construed to be for the benefit of any subcontractor.

(b) DISTRICT’s consent to any subcontractor shall not in any way relieve CONTRACTOR of any obligations under the Project Documents and no such consent shall be deemed to waive any provision of any Project Document.

(c) CONTRACTOR must submit with its bid, a Designation of Subcontractors pursuant to the Subletting and Subcontracting Fair Practices Act. If CONTRACTOR specifies more than one subcontractor for the same portion of work or fails to specify a subcontractor, and such portion of the work exceeds one-half of one percent of the total bid, CONTRACTOR agrees that it is fully qualified to perform and shall perform such work itself, unless CONTRACTOR provides for substitution or addition of subcontractors. Substitution or addition of subcontractors shall be permitted only as authorized under the Subletting and Subcontracting Fair Practices Act, Public Contract Code Section 4100, et seq.

(d) In accordance with Business and Professions Code Section 7059, if CONTRACTOR is designated as a "specialty contractor" (as defined in Section 7058 of the Public Contract Code), all of the work to be performed outside of the CONTRACTOR’s license specialty shall be performed by a licensed subcontractor in compliance with the Subletting and Subcontracting Fair Practices Act, Public Contract Code Section 4100, et seq.

(e) A copy of each subcontract, if in writing, or, if not in writing, then a written statement signed by the CONTRACTOR giving the name of the subcontractor and the terms and conditions of such subcontract, shall be filed with the DISTRICT before the subcontractor begins work. Each subcontract shall contain a reference to the Agreement between the DISTRICT and the CONTRACTOR and the terms of that Agreement and all parts of the Project Documents shall be made a part of such subcontract insofar as applicable to the work covered thereby. Each subcontract will provide for termination in accordance with Article 13 of these General Conditions. Each subcontract shall provide for its annulment by the CONTRACTOR at the order of the ARCHITECT if in the ARCHITECT’S opinion the subcontractor fails to comply with the requirements of the Project Documents insofar as the same may be applicable to this work. Nothing herein contained shall relieve the CONTRACTOR of any liability or obligation hereunder.

(f) A CONTRACTOR may not permit a subcontractor who is ineligible to bid or work on, or be awarded, a public works project pursuant to Section 1777.1 or 1777.7 of the Labor Code to bid on, be awarded, or perform work as a subcontractor on a public works project.

**ARTICLE 6. PROHIBITED INTERESTS**

No official of DISTRICT who is authorized in such capacity and on behalf of DISTRICT to negotiate, make, accept, or approve, or to take part in negotiating, making, accepting or approving any architectural, engineering, inspection, construction or material supply contract or any subcontract in connection with construction of the Project, shall become directly or indirectly interested financially in this Project or in any part thereof. No
officer, employee, architect, attorney, engineer or inspector of or for DISTRICT who is authorized in such capacity and on behalf of DISTRICT to exercise any executive, supervisory or other similar functions in connection with construction of Project shall become directly or indirectly interested financially in this Project or in any part thereof. CONTRACTOR shall receive no compensation and shall repay DISTRICT for any compensation received by CONTRACTOR hereunder, should CONTRACTOR aid, abet or knowingly participate in violation of this Article 6.

ARTICLE 7. DISTRICT’S INSPECTOR

(a) One or more Inspector(s), including special inspectors, as required, will be employed by DISTRICT and will be assigned to the Project.

(b) No work shall be performed by the CONTRACTOR solely upon the instructions or comments by the Inspector. The Inspector has no authority to interpret the Project Documents or order extra work and any extra work performed without the written instruction of the DISTRICT shall be at CONTRACTOR’s sole cost and expense and there will be no delay damages incurred by DISTRICT for such work.

(c) No work shall be carried on except with the knowledge and under the inspection of said Inspector(s). He/she shall have free access to any or all parts of work at any time. CONTRACTOR shall furnish Inspector reasonable opportunities for obtaining such information as may be necessary to keep Inspector fully informed respecting progress and manner of work and character of materials. Inspection of work shall not relieve CONTRACTOR from any obligation to fulfill the Project Documents. Inspector or ARCHITECT shall have authority to stop work whenever provisions of Project Documents are not being complied with and such noncompliance is discovered. CONTRACTOR shall instruct its employees accordingly.

(d) CONTRACTOR understands and agrees that the Inspector for the Project may also serve concurrently as inspector for other DISTRICT projects and may not therefore be available on site during the entire work day. It shall be the responsibility of CONTRACTOR to notify the Inspector not less than twenty-four (24) hours in advance of materials and equipment deliveries and required inspections.

ARTICLE 8. ARCHITECT’S STATUS

(a) The ARCHITECT shall be the DISTRICT’s representative during construction and shall observe the progress and quality of the work on behalf of the DISTRICT. ARCHITECT shall have the authority to act on behalf of DISTRICT only to the extent expressly provided in the Project Documents. ARCHITECT shall have authority to stop work whenever such stoppage may be necessary in ARCHITECT’S reasonable opinion to ensure the proper execution of the Project Documents.

(b) The ARCHITECT shall be, in the first instance, the judge of the performance of the work. ARCHITECT shall exercise authority under the Project Documents to enforce CONTRACTOR’s faithful performance.

(c) The ARCHITECT shall have all authority and responsibility established by law. The ARCHITECT has the authority to enforce compliance with the Project Documents and the CONTRACTOR shall promptly comply with instructions from the ARCHITECT or an authorized representative of the ARCHITECT.
(d) On all questions related to the quantities, the acceptability of material, equipment or workmanship, the execution, progress or sequence of work, the interpretation of plans, specifications or drawings, and the acceptable performance of the CONTRACTOR pursuant to the decision of the ARCHITECT shall govern and shall be precedent to any payment unless otherwise ordered by the Governing Board. The progress and completion of the work shall not be impaired or delayed by virtue of any question or dispute arising out of or related to the foregoing matters and the instructions of the ARCHITECT relating thereto.

(e) General supervision and direction of the work by the ARCHITECT shall in no way imply that the ARCHITECT or his or her representatives are in any way responsible for the safety of the CONTRACTOR or its employees or that the ARCHITECT or his or her representatives will maintain supervision over the CONTRACTOR’s construction methods or personnel other than to ensure that the quality of the finished work is in accordance with the Project Documents.

**ARTICLE 9. NOTICE OF TAXABLE POSSESSORY INTEREST**

The terms of the Agreement may result in the creation of a possessory interest. If such a possessory interest is vested in a private party to the Agreement, the private party may be subjected to the payment of property taxes levied on such interest.

**ARTICLE 10. ASSIGNMENT OF ANTITRUST ACTIONS**

Public Contract Code Section 7103.5 provides:

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 awarding body (DISTRICT) all rights, title, and interest in and to all causes of action it may have under Section 4 of the Clayton Act (15 U.S.C. Section 15) or under the Cartwright Act (Chapter 2 (commencing with Section 16700) of Part 2 of Division 7 of the Business and Professions Code), arising from purchases of goods, services, or materials pursuant to the public works contract or the subcontract. This assignment shall be made and become effective at the time the awarding body tenders final payment to the contractor, without further acknowledgment by the parties.

CONTRACTOR, for itself and all subcontractors, agrees to assign to DISTRICT all rights, title, and interest in and to all such causes of action CONTRACTOR and all subcontractors may have under the Agreement. This assignment shall become effective at the time DISTRICT tenders final payment to the CONTRACTOR and CONTRACTOR shall require assignments from all subcontractors to comply herewith.

**ARTICLE 11. OTHER CONTRACTS**

(a) DISTRICT reserves the right to let other contracts in connection with this work. CONTRACTOR shall afford other contractors reasonable opportunity for introduction and storage of their materials and execution of their work and shall properly connect and coordinate its work with such other contractors.
(b) If any part of CONTRACTOR’s work depends for proper execution or results upon work of any other contractor, the CONTRACTOR shall inspect and promptly report to ARCHITECT in writing any defects in such work that render it unsuitable for such proper execution and results. CONTRACTOR will be held accountable for damages to DISTRICT for that work which it failed to inspect or should have inspected. CONTRACTOR’s failure to inspect and report shall constitute its acceptance of other contractor’s work as fit and proper for reception of its work, except as to defects which may develop in other contractors’ work after execution of CONTRACTOR’ work.

(c) To ensure proper execution of its subsequent work, CONTRACTOR shall measure and inspect work already in place and shall at once report to the ARCHITECT in writing any discrepancy between executed work and Project Documents.

(d) CONTRACTOR shall ascertain to its own satisfaction the scope of the Project and nature of any other contracts that have been or may be awarded by DISTRICT in prosecution of the Project to the end that CONTRACTOR may perform this Agreement in the light of such other contracts, if any.

(e) Nothing herein contained shall be interpreted as granting to CONTRACTOR exclusive occupancy at site of Project. CONTRACTOR shall not cause any unnecessary hindrance or delay to any other contractor working on Project. If simultaneous execution of any contract for Project is likely to cause interference with performance of some other contract or contracts, DISTRICT shall decide which contractor shall cease work temporarily and which contractor shall continue or whether work can be coordinated so that contractors may proceed simultaneously.

(f) DISTRICT shall not be responsible for any damages suffered or extra costs incurred by CONTRACTOR resulting directly or indirectly from award or performance or attempted performance of any other contract or contracts on Project, or caused by any decision or omission of DISTRICT respecting the order of precedence in performance of contracts.

ARTICLE 12: OCCUPANCY

DISTRICT reserves the right to occupy buildings and/or portions of the site at any time before completion, and such occupancy shall not constitute final acceptance of any part of work covered by this Agreement, nor shall such occupancy extend the date specified for completion of the work. Beneficial occupancy of building(s) does not commence any warranty period nor shall it entitle CONTRACTOR to any additional compensation due to such occupancy.

ARTICLE 13: DISTRICT’S RIGHT TO TERMINATE AGREEMENT

(a) Termination for Cause. If the CONTRACTOR refuses or fails to complete the work or any separable part thereof with such diligence as will insure its completion within the time specified or any extension thereof, or fails to complete said work within such time, or if the CONTRACTOR should file a petition for relief as a debtor, or should relief be ordered against CONTRACTOR as a debtor under Title 11 of the United States Code, or if CONTRACTOR should make a general assignment for the benefit of its creditors, or if a receiver should be appointed on account of its insolvency, or if it should refuse or should fail to supply enough properly skilled workers or proper equipment, tools, and materials in the necessary quantity and quality to complete the work in the time specified, or if CONTRACTOR should fail to make prompt payment to subcontractors for
materials or labor, or disregard laws or ordinances or instructions of DISTRICT, or if CONTRACTOR or its subcontractors should otherwise be guilty of a violation of any provision of this Agreement, then CONTRACTOR shall be deemed to be in default of the Agreement and DISTRICT may, without prejudice to any other right or remedy, serve written notice upon CONTRACTOR and its surety of DISTRICT’s intention to terminate this Agreement, such notice to contain the reasons for such intention to terminate, and unless within ten (10) calendar days after the service of such notice such condition shall cease or such violation shall cease, or arrangements satisfactory to DISTRICT for the correction thereof be made and corrective action commenced in a diligent and workmanlike manner and pursued to satisfactory completion, this Agreement shall upon the expiration of said ten (10) calendar days, cease and terminate. In such case, CONTRACTOR shall be excluded from the worksite and not be entitled to receive any further payment until work is finished to DISTRICT’s satisfaction.

(b) In the event of any such termination, surety shall have the right to take over and perform this Agreement, provided, however, that if surety within five (5) calendar days after service upon it of said notice of termination does not give DISTRICT written notice of its intention to take over and perform this Agreement or does not commence performance thereof within ten (10) calendar days after date of serving such notice of termination by DISTRICT on surety, DISTRICT may take over the work and prosecute same to completion by any means determined by DISTRICT including hiring another contractor for the account and at the expense of CONTRACTOR, and CONTRACTOR and its surety shall be liable to DISTRICT for any excess cost or other damages occasioned by the DISTRICT thereby. Time is of the essence in this Agreement. If the DISTRICT takes over the work as hereinabove provided, the DISTRICT may, without liability for so doing, take possession of and utilize in completing the work such materials, supplies, equipment and other property belonging to the CONTRACTOR as may be on the site of the work and necessary therefore.

(c) The expense of finishing the work, including compensation for additional architectural, managerial, and administrative services, shall be a charge against CONTRACTOR and CONTRACTOR agrees that the charge may be deducted from any money due or becoming due to CONTRACTOR from DISTRICT or CONTRACTOR shall pay the charge to the DISTRICT. Expense incurred by DISTRICT as herein provided, and damage incurred through CONTRACTOR’s default, shall be certified to DISTRICT by ARCHITECT. The surety shall become liable for payment should CONTRACTOR fail to pay in full any cost incurred by the DISTRICT.

(d) Nonappropriation of Funds/Insufficient Funds. In the event that sufficient funds are not appropriated to complete the Project or the DISTRICT determines that sufficient funds are not available to complete the Project, DISTRICT may terminate or suspend the completion of the Project at any time by giving written notice to the CONTRACTOR. In the event that the DISTRICT exercises this option, the DISTRICT shall pay for any and all work and materials completed or delivered onto the site, and the value of any and all work then in progress and orders actually placed which cannot be canceled up to the date of notice of termination. The value of work and materials paid for shall include a factor of fifteen percent (15%) for the CONTRACTOR’s overhead and profit and there shall be no other costs or expenses paid to CONTRACTOR. All work, materials and orders paid for pursuant to this provision shall become the property of the DISTRICT. DISTRICT may, without cause, order CONTRACTOR in writing to suspend, delay or interrupt the Project in whole or in part for such period of time as DISTRICT may determine. Adjustment shall be made for increases in the cost of performance of the Agreement caused by suspension, delay or interruption.

(e) The foregoing provisions are in addition to and not a limitation of any other rights or remedies available to the DISTRICT.
ARTICLE 14. BONDS

Unless otherwise specified in Special Conditions, CONTRACTOR shall furnish a surety bond in an amount equal to one hundred percent (100%) of contract price as security for faithful performance of this Agreement and shall furnish a separate bond in an amount of one hundred percent (100%) of the contract price as security for payment to persons performing labor and furnishing materials in connection with this Project. Bonds shall be in the form set forth in these Project Documents.

ARTICLE 15. SUBSTITUTION OF SECURITIES

(a) Pursuant to the requirements of Public Contract Code Section 22300, upon CONTRACTOR's request, DISTRICT will make payment to CONTRACTOR of any earned retention funds withheld from payments under this Agreement if CONTRACTOR deposits with the DISTRICT or in escrow with a California or federally chartered bank acceptable to DISTRICT, securities eligible for the investment pursuant to Government Code Section 16430 or bank or savings and loan certificates of deposit, upon the following conditions:

(1) CONTRACTOR shall be the beneficial owner of any securities substituted for retention funds withheld and shall receive any interest thereon.

(2) All expenses relating to the substitution of securities under said Section 22300 and under this Article 15, including, but not limited to DISTRICT's overhead and administrative expenses, and expenses of escrow agent shall be the responsibility of the CONTRACTOR.

(3) If CONTRACTOR shall choose to enter into an escrow agreement, such agreement shall be in the form as set forth in Public Contract Code section 22300(f) attached hereto as part of the Project Documents and which shall allow for the conversion to cash to provide funds to meet defaults by the CONTRACTOR including, but not limited to, termination of the CONTRACTOR's control over the work, stop notices filed pursuant to law, assessment of liquidated damages or amount to be kept or retained under the provisions of the Project Documents.

(4) Securities, if any, shall be returned to CONTRACTOR only upon satisfactory completion of the Agreement.

(b) To minimize the expense caused by such substitution of securities, CONTRACTOR shall, prior to or at the time CONTRACTOR requests to substitute security, deposit sufficient security to cover the entire amount to be then withheld and to be withheld under the General Conditions of this Agreement. Should the value of such substituted security at any time fall below the amount for which it was substituted, or any other amount which the DISTRICT determines to withhold, CONTRACTOR shall immediately, and at CONTRACTOR's expense, deposit additional security qualifying under said Section 22300 until the total security deposited is no less than equivalent to the amount subject to withholding under the Agreement.

(c) In the alternative, under Section 22300, CONTRACTOR, at its own expense, may request DISTRICT to make payment of earned retention funds directly to the escrow agent. Also at the expense of CONTRACTOR, CONTRACTOR may direct investment of the payments into securities, and CONTRACTOR shall receive the interest earned on the investment upon the same conditions as shown in paragraph (a) for
securities deposited by CONTRACTOR. Upon satisfactory completion of the Agreement, CONTRACTOR shall receive from the escrow agent all securities, interest and payments received by the escrow agent from DISTRICT, pursuant to the terms of Section 22300.

(d) If any provision of this Article 15 shall be found to be illegal or unenforceable, then, notwithstanding, this Article 15 shall remain in full force and effect, and such provision shall be deemed stricken.

ARTICLE 16. FIRE INSURANCE

CONTRACTOR will procure at CONTRACTOR's own expense and before commencement of any work under this Agreement, fire insurance on the Project. Amount of fire insurance shall be sufficient to protect against loss or damage in full until work is accepted by DISTRICT. CONTRACTOR shall submit proof of insurance and shall provide endorsements on forms provided by the DISTRICT or on forms approved by the DISTRICT.

ARTICLE 17. PUBLIC LIABILITY AND PROPERTY DAMAGE INSURANCE

(a) CONTRACTOR shall take out and maintain during the life of this Agreement such public liability and property damage insurance as shall protect CONTRACTOR and DISTRICT from all claims for personal injury, including accidental death, to any person (including, as to DISTRICT, injury or death to CONTRACTOR’s or subcontractor’s employees), as well as from all claims for property damage arising from operations under this Agreement, in amounts as set forth in the Agreement.

(b) CONTRACTOR shall require its subcontractors, if any, to take out and maintain similar public liability and property damage insurance in like amounts or insure the activities of its subcontractors in CONTRACTOR’s own policy.

(c) CONTRACTOR, during the progress of the work and until final acceptance of the work by DISTRICT upon completion of the entire Agreement, shall maintain Builder’s Risk/“All Risk,” course-of-construction insurance in an amount not less than as set forth in the Agreement. Coverage is to provide extended coverage and insurance against vandalism, malicious mischief, perils of fire, sprinkler leakage, civil authority, sonic boom, earthquake, collapse, flood, wind, lightning, smoke, riot, debris removal (including demolition), and reasonable compensation for ARCHITECT's services and expenses required as a result of such insured loss upon the entire work which is the subject of the Project Documents, including completed work, work in progress to the full insurable amount thereof, and temporary field offices placed at the project site by the Contractor or District Consultants in conjunction with the Project. The risk of damage to the work due to the perils covered by the Builder’s Risk/“All Risk” Insurance, as well as any other hazards which might result in damage to the work, is that of CONTRACTOR and the surety, and no claims for such loss or damage shall be recognized by DISTRICT nor will such loss or damage excuse the complete and satisfactory performance of the Agreement by CONTRACTOR.

(d) CONTRACTOR shall submit proof of insurance and shall provide endorsements on the forms provided by the DISTRICT or on forms approved by the DISTRICT. Such insurance shall be issued by admitted surety insurers under the same conditions as required for bonds on the Project.

ARTICLE 18. WORKERS' COMPENSATION INSURANCE
(a) In accordance with the provisions of Section 3700 of the Labor Code, the CONTRACTOR and every subcontractor shall be required to secure the payment of compensation to its employees.

(b) The CONTRACTOR shall provide, during the life of the Agreement, workers' compensation insurance for all of its employees engaged in work under this Agreement, on or at the site of the Project, and, in case any of its work is sublet, the CONTRACTOR shall require the subcontractor similarly to provide workers' compensation insurance for all the latter's employees. Any class of employee or employees not covered by a subcontractor's insurance shall be covered by the CONTRACTOR's insurance. In case any class of employees engaged in work under this Agreement, on or at the site of the Project, is not protected under the workers' compensation statute, the CONTRACTOR shall provide or shall cause a subcontractor to provide, adequate insurance coverage for the protection of such employees not otherwise protected before subcontractor commences work. The CONTRACTOR shall file with the DISTRICT certificates of its insurance protecting workers and a thirty (30) day notice shall be provided to DISTRICT before the cancellation or reduction of any policy of CONTRACTOR or subcontractor. CONTRACTOR shall submit proof of insurance and shall provide endorsements on the forms provided by the DISTRICT or on forms approved by the DISTRICT. Such endorsements shall be submitted concurrently with the Project Documents.

ARTICLE 19. PROOF OF CARRIAGE OF INSURANCE

(a) CONTRACTOR shall not commence work nor shall it allow any subcontractor to commence work under this Agreement until all required insurance certificates and endorsements from admitted surety insurers have been obtained and delivered in duplicate to and approved by DISTRICT. Such insurance shall be issued by admitted surety insurers under the same conditions as required for bonds on the Project. CONTRACTOR shall provide proof of insurance on DISTRICT approved forms without revisions.

(b) Certificates and insurance policies shall include the following:

(1) A clause stating:

"This policy shall not be canceled or reduced in required limits of liability or amount of insurance until notice has been mailed to DISTRICT stating date of cancellation or reduction. Date of cancellation or reduction may not be less than thirty (30) days after date of mailing notice."

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

(3) Statement that the DISTRICT is an additional insured under the policy described and that such insurance policy shall be primary to any insurance or self-insurance maintained by the DISTRICT.

(c) In case of CONTRACTOR's failure to provide insurance as required by the Agreement, the DISTRICT may, at DISTRICT's option, take out and maintain at the expense of the CONTRACTOR, such insurance in the name of CONTRACTOR, or subcontractor, as the DISTRICT may deem proper and may deduct the cost of
taking out and maintaining such insurance from any sums which are due or to become due to the CONTRACTOR under this Agreement.

**ARTICLE 20. DRAWINGS AND SPECIFICATIONS**

(a) Drawings and Specifications are intended to delineate and describe the Project and its component parts to such a degree as will enable skilled and competent contractors to intelligently bid upon the work, and to carry said work to a successful conclusion.

(b) Drawings and Specifications are intended to comply with all laws, ordinances, rules and regulations of constituted authorities having jurisdiction, and where referred to in the Project Documents, said laws, ordinances, rules and regulations shall be considered as a part of the Agreement within the limits specified. The CONTRACTOR shall bear all expenses of correcting work done contrary to said laws, ordinances, rules and regulations and if the CONTRACTOR performed same (1) without first consulting the ARCHITECT for further instructions regarding said work, or (2) disregarded the ARCHITECT'S instructions regarding said work.

(c) Questions regarding interpretation of drawings and specifications shall be clarified by the ARCHITECT. Before commencing any portion of the work, CONTRACTOR shall carefully examine all drawings and specifications and other information given to CONTRACTOR. CONTRACTOR shall immediately notify ARCHITECT and DISTRICT in writing of any perceived or alleged error, inconsistency, ambiguity, or lack of detail or explanation in the drawings and specifications. If CONTRACTOR or its subcontractors, material or equipment suppliers, or any of their officers, agents, and employees performs, permits, or causes the performance of any work under the Project Documents, which it knows or should have known to be in error, inconsistent, or ambiguous, or not sufficiently detailed or explained, CONTRACTOR shall bear any and all costs arising therefrom including, without limitation, the cost of correction thereof. In the event ARCHITECT determines that CONTRACTOR's requests for clarification or interpretation are not justified or do not reflect adequate competent supervision or knowledge by the CONTRACTOR or his/her subcontractors, CONTRACTOR shall be required to pay ARCHITECT's reasonable and customary fees in processing and responding to such requests. Should the CONTRACTOR commence work on any part thereof without seeking clarification, CONTRACTOR waives any claim for extra work or damages as a result of any ambiguity, conflict or lack of information.

(d) Figured dimensions on drawings shall govern, but work not dimensioned shall be as directed. Work not particularly shown or specified shall be the same as similar parts that are shown or specified. Large-scale drawings shall take precedence over smaller scale drawings as to shape and details of construction. Specifications shall govern as to materials, workmanship, and installation procedures. Drawings and specifications are intended to be fully cooperative and to agree. If CONTRACTOR observes that drawings and specifications are in conflict, CONTRACTOR shall promptly notify the ARCHITECT in writing, and any necessary changes shall be adjusted as provided in the Article entitled "Changes and Extra Work," provided, however, that the specification calling for the higher quality material or workmanship shall prevail without additional cost to DISTRICT.

(e) Materials or work described in words which so applied has a well-known technical or trade meaning shall be deemed to refer to such recognized standards.
(f) It is not the intention of the Agreement to go into detailed descriptions of any materials and/or methods commonly known to the trade under "trade name" or "trade term." The mere mention or notation of such "trade name" or "trade term" shall be considered a sufficient notice to CONTRACTOR that it will be required to complete the work so named with all its incidental and accessory items according to the best practices of the trade.

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

(h) ARCHITECT will furnish to CONTRACTOR one (1) complete set of prints for posting of changes. Additional prints shall be provided by ARCHITECT upon payment by CONTRACTOR. During the construction period, CONTRACTOR shall maintain the set of prints in a satisfactory record condition, and shall thoroughly and neatly post, as they occur, all additions, deletions, corrections and/or revisions in the actual construction of the Project. The record drawings must be posted monthly and be current prior to each submission of each certificate of payment.

ARTICLE 21: OWNERSHIP OF DRAWINGS

All plans, drawings, designs, specifications, and other incidental architectural and engineering work or materials and other Project Documents and copies thereof furnished by DISTRICT are DISTRICT's property. They are not to be used in other work and are to be returned to DISTRICT on request at completion of work, and may be used by DISTRICT as it may require, without any additional costs to DISTRICT.

ARTICLE 22: DETAIL DRAWINGS AND INSTRUCTIONS

(a) In case of ambiguity, conflict, or lack of information, ARCHITECT shall furnish additional instructions by means of drawings or otherwise, necessary for proper execution of work. All such drawings and instructions shall be consistent with Project Documents, true developments thereof, and reasonably inferable therefrom. Such additional instructions shall be furnished with reasonable promptness, provided that CONTRACTOR informs the ARCHITECT of the relationship of the request to the critical path of construction.

(b) Work shall be executed in conformity therewith and CONTRACTOR shall do no work without proper drawings and instructions.

(c) The ARCHITECT will furnish necessary additional details to more fully explain the work, which details shall be considered as part of the Project Documents.

(d) Should any details be more elaborate, in the opinion of the CONTRACTOR, than scale drawings and specifications warrant, CONTRACTOR shall give written notice thereof to the ARCHITECT within five (5) days of the receipt of same. In case no notice is given to the ARCHITECT within five (5) days, it will be assumed the details are reasonable development of the scale drawings. In case notice is given, then it will be considered, and if found justified, the ARCHITECT will either modify the drawings or shall recommend to DISTRICT a change order for the extra work involved.
(e) All parts of the described and shown construction shall be of the best quality of their respective kinds and the CONTRACTOR is hereby advised to use all diligence to become fully involved as to the required construction and finish, and in no case to proceed with the different parts of the work without obtaining first from the ARCHITECT such directions and or drawings as may be necessary for the proper performance of the work.

(f) If it is found at any time, before or after completion of the work, that the CONTRACTOR has varied from the drawings and/or specifications, in materials, quality, form or finish, or in the amount or value of the materials and labor used, the ARCHITECT shall make a recommendation: (1) that all such improper work be removed, remade and replaced, and all work disturbed by these changes be made good at the CONTRACTOR’s expense, or (2) that the DISTRICT deduct from any amount due CONTRACTOR, the sum of money equivalent to the difference in value between the work performed and that called for by the drawings and specifications. ARCHITECT shall determine such difference in value. The DISTRICT, at its option, may pursue either recommendation made by the ARCHITECT.

**ARTICLE 23. SHOP DRAWINGS**

(a) CONTRACTOR shall check and verify all field measurements and shall submit to ARCHITECT, with sufficient advance time, six (6) copies, checked and approved by CONTRACTOR, of all shop or setting list drawings, schedules, and materials list required for the work of various trades. ARCHITECT shall review such drawings, schedules and materials list only for conformance with design concept of Project and compliance with information given in Project Documents, and return as approved or disapproved with guidance as to required corrections within fourteen (14) calendar days (and more than 14 calendar days for complex reviews). CONTRACTOR shall make any corrections required by ARCHITECT, file three (3) corrected copies with ARCHITECT, and furnish such other copies as may be needed for construction within fourteen (14) calendar days. ARCHITECT’S approval of such drawings, schedules, or materials list shall not relieve CONTRACTOR from responsibility for deviations unless CONTRACTOR has in writing called ARCHITECT’S attention to such deviations at time of submission and secured ARCHITECT’S written approval, nor shall it relieve CONTRACTOR from responsibility for errors in shop drawings or schedules.

(b) All submittals of shop drawings, catalog cuts, data sheets, schedules and material lists shall be complete and shall conform to contract drawings and specifications.

(c) The term “shop drawing” as used herein shall be understood to include, but not be limited to, detail design calculations, fabrication and installation drawings, lists, graphs and operating instructions.

(d) Shop drawings shall be submitted at a time sufficiently early to allow review of same by the Division of State Architect (DSA) if required, and the ARCHITECT, and to accommodate the rate of construction progress required under the Project Documents. CONTRACTOR will be required to pay ARCHITECT’S reasonable and customary fees in order to expedite review of shop drawings which are not submitted in a timely fashion.

(e) All shop drawing submittals shall be accompanied by an accurately completed transmittal form using the format bound herein. Any shop drawing submittal not accompanied by such a form, or where all applicable items on the form are not completed, will be returned for resubmittal. The CONTRACTOR may authorize a material or equipment supplier to deal directly with the ARCHITECT with regard to shop drawings, however.
ultimate responsibility for the accuracy and completeness of the information contained in the submittal shall remain with the CONTRACTOR.

(f) Normally, a separate transmittal form shall be used for each specific item or class of material or equipment for which a submittal is required. Transmittal of shop drawings on various items using a single transmittal form will be permitted only when the items taken together constitute a manufacturer's "package" or are so functionally related that expediency indicates review of the group or package as a whole. At its option, the CONTRACTOR or Supplier may obtain from the ARCHITECT quantities of the shop drawing transmittal form at reproduction cost.

(g) CONTRACTOR's review and approval of shop drawings shall include the following stamp:

"The CONTRACTOR has reviewed and approved not only the field dimensions but the construction criteria and has also made written notation regarding any information in the shop drawings that does not conform to the Project Documents. This shop drawing has been coordinated with all other shop drawings received to date by CONTRACTOR and this duty of coordination has not been delegated to subcontractors, material suppliers, the ARCHITECT, or the engineers on this project.

Signature of CONTRACTOR"

(h) Within fourteen (14) calendar days after receipt of shop drawings, the ARCHITECT will return one or more prints of each drawing to CONTRACTOR with his or her comments noted thereon. The CONTRACTOR shall make a complete and acceptable submittal to the ARCHITECT by the second submission of drawings. The DISTRICT shall withhold funds due the CONTRACTOR to cover additional costs of the ARCHITECT'S review beyond the second submission and any other costs incurred by DISTRICT.

(i) If prints of the shop drawing are returned to the CONTRACTOR marked "NO EXCEPTIONS TAKEN," formal revision of said drawing will not be required. If prints of the drawing are returned to the CONTRACTOR marked "MAKE CORRECTIONS NOTED," formal resubmittal of said drawings will not be required. If prints of the drawing are returned to the CONTRACTOR marked "REVISE AND RESUBMIT," the CONTRACTOR shall revise said drawing and shall resubmit six (6) copies of the revised drawing to the ARCHITECT. If prints of the drawing are returned to the CONTRACTOR marked "REJECTED RESUBMIT," the CONTRACTOR shall resubmit six (6) new copies of the drawing to the ARCHITECT.

(j) Fabrication of an item shall not be commenced before the ARCHITECT has reviewed the pertinent shop drawings and returned copies to the CONTRACTOR marked with "NO EXCEPTIONS TAKEN," or "MAKE CORRECTIONS NOTED." Revisions indicated on shop drawings shall be considered as changes necessary to meet the requirements of the Project Documents and shall not be taken as the basis of claims for extra work. The review of such drawings by the ARCHITECT will be limited to checking for general agreement with the Project Documents, and shall in no way relieve the CONTRACTOR of responsibility for errors or omissions contained therein, nor shall such review operate to waive or modify any provision contained
in the Project Documents. Fabricating dimensions, quantities of material, applicable code requirements, and other contract requirements shall be the CONTRACTOR’s responsibility.

(k) No work represented by required shop drawings shall be purchased or commenced until the applicable submittal has been approved. The work shall conform to the approved shop drawings and all other requirements of the Project Documents. The CONTRACTOR shall not proceed with any related work which may be affected by the work covered under shop drawings until the applicable shop drawings have been approved, particularly where piping, machinery, and equipment and the required arrangements and clearances are involved.

(l) Except where the preparation of a shop drawing is dependent upon the approval of a prior shop drawing, all shop drawings pertaining to the same class or portion of the work shall be submitted simultaneously.

(m) Calculations of a structural nature must be approved by the Division of State Architect.

(n) THE CONTRACTOR SHALL HAVE NO CLAIM FOR DAMAGES OR EXTENSION OF TIME DUE TO ANY DELAY RESULTING FROM THE CONTRACTOR HAVING TO MAKE THE REQUIRED REVISIONS TO SHOP DRAWINGS UNLESS REVIEW BY THE ARCHITECT OF SAID DRAWINGS IS DELAYED BEYOND THE TIME PROVIDED HEREBEFORE AND THE CONTRACTOR CAN ESTABLISH THAT THE ARCHITECT’S DELAY IN REVIEW ACTUALLY RESULTED IN A DELAY IN THE CONTRACTOR CONSTRUCTION SCHEDULE. CONTRACTOR SHALL NOT BE ENTITLED TO ANY CLAIM FOR DAMAGES RESULTING FROM DSA REVIEW EXTENDING BEYOND FIFTEEN (15) CALENDAR DAYS AFTER SUBMITTAL. HOWEVER, DISTRICT MAY CONSIDER AN EXTENSION OF TIME DUE TO ANY DELAY CAUSED BY DSA REVIEW.

ARTICLE 24: LAYOUT AND FIELD ENGINEERING

All field engineering if required for laying out of work and establishing grades for earthwork operations shall be furnished by CONTRACTOR at its expense. Such work shall be done by a qualified civil engineer approved by the DISTRICT.

ARTICLE 25: SOILS INVESTIGATION REPORT

(a) When a soils investigation report has been obtained from test holes at the site, such report is available for the CONTRACTOR’S use for work under this Agreement. Such report shall not be part of the Agreement. Any information obtained from such report or any information given on the project documents as to surface and subsurface soil condition or to elevations of existing grades or elevations of underlying rock is approximate only, is not guaranteed and does not form a part of the Agreement. CONTRACTOR is required to make a visual examination of site and must make whatever test CONTRACTOR deems appropriate to determine surface and subsurface soil conditions. If, during the course of work under this Agreement, CONTRACTOR encounters subsurface or latent conditions which differ materially from those indicated in the soils investigation report, then CONTRACTOR shall notify the DISTRICT within five (5) working days of discovery of the condition.

WARNING: DISTRICT does not warrant the soils at the project site nor any information contained in any soils report. Soils investigation report is provided for CONTRACTOR’S information only. CONTRACTOR must
conduct an independent investigation of the project site and the soils conditions of the site. DISTRICT does not warrant the soils conditions of the site and CONTRACTOR is fully responsible to ascertain site conditions for the purposes of determining construction means and methods prior to commencing construction.

(b) CONTRACTOR agrees that no claim against DISTRICT will be made by CONTRACTOR for damages and hereby waives any rights to damages in the event that during progress of work CONTRACTOR encounters subsurface or latent conditions at the worksite materially different from those shown on project documents.

ARTICLE 26. TESTS AND INSPECTIONS

(a) Tests and inspections will comply with California Code of Regulations and with all other laws, ordinances, rules, regulations, or orders of public authorities having jurisdiction over the Project.

(b) If the Agreement, DISTRICT's instructions, laws, ordinances, or any public authority require any work to be specially tested or approved, CONTRACTOR shall give notice in accordance with such authority of its readiness for observation or inspection at least two (2) working days prior to being tested or covered up. If inspection is by authority other than DISTRICT, CONTRACTOR shall inform the DISTRICT's Inspector of the date fixed for such inspection. Required certificates of inspection shall be secured by CONTRACTOR. Observations by DISTRICT's Inspector shall be promptly made, and where practicable, at source of supply. If any work should be covered up without approval or consent of DISTRICT's Inspector, it must be uncovered for examination and satisfactorily reconstructed at CONTRACTOR's expense in compliance with the Agreement. Costs of tests, inspections and any materials found to be not in compliance with the Agreement shall be paid for by CONTRACTOR. Other costs for test and inspection shall be paid by the DISTRICT.

ARTICLE 27. TRENCHES

(a) CONTRACTOR shall provide adequate sheeting, shoring, and bracing, or equivalent method, for the protection of life and limb in trenches and open excavation, which conform to applicable safety standards.

(b) If this Agreement involves the excavation of any trench or trenches five (5) feet or more in depth, and the Project cost is in excess of $25,000, the CONTRACTOR shall, in advance of excavation, submit to the DISTRICT for acceptance or to whomever DISTRICT designates which may include a registered civil or structural engineer employed by the DISTRICT to whom authority to accept has been delegated, a detailed plan showing the design of shoring, bracing, sloping or other provisions to be made for worker protection from the hazard of caving ground during the excavation of such trench or trenches. If such plan varies from the Shoring System Standards established by the Construction Safety Orders of the Division of Industrial Safety, the plan shall be prepared by a registered civil or structural engineer employed by the CONTRACTOR, and all costs therefore shall be included in the price named in the Agreement for completion of the work as set forth in the Project Documents. In no case shall such plan be less effective than that required by the Construction Safety Orders. No excavation of such trench or trenches shall be commenced until said plan has been accepted by CAL-OSHA and a CAL-OSHA permit for such plan delivered to the DISTRICT. Labor Code Section 6500 and 6705, Health and Safety Code Section 17922.5)
(c) If this Agreement involves the digging of trenches or excavations that extend deeper than four feet below the surface, the following shall apply pursuant to Public Contract Code section 7104:

(1) The CONTRACTOR shall promptly, and before the following conditions are disturbed, notify the DISTRICT, in writing, of any:

(i) 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 provisions of existing law.

(ii) Subsurface or latent physical conditions at the site different from those indicated.

(iii) Unknown physical conditions at the site of any unusual nature, different materially from those ordinarily encountered and generally recognized as inherent in work of the character provided for in the contract.

(2) The DISTRICT shall promptly investigate the conditions, and if it finds that the conditions do materially so differ, or do involve hazardous waste, and cause a decrease or increase in the CONTRACTOR's cost of, or the time required for, performance of any part of the work shall issue a change order under the procedures described in the Project Documents.

(3) In the event a dispute arises between the DISTRICT and the CONTRACTOR, whether the conditions materially differ or involve hazardous waste, or cause a decrease or increase in the CONTRACTOR's cost of, or time required for, performance of any part of the work, the CONTRACTOR shall not be excused from any scheduled completion date provided for by the Project Documents, but shall proceed with all the work to be performed under the Project Documents. The CONTRACTOR shall retain any and all rights provided either by contract or by law which pertain to the resolution of disputes and protests between the contracting parties.

**ARTICLE 28. DOCUMENTS ON WORK**

CONTRACTOR shall keep on the job site at all times one legible copy of all Project Documents, including addenda and change orders, and all approved drawings, plans, schedules and specifications. Said Documents shall be kept in good order and available to ARCHITECT, ARCHITECT's representatives, and all authorities having jurisdiction. CONTRACTOR shall be acquainted with and comply with all California Code of Regulations provisions relating to conditions on this Project.

**ARTICLE 29. STATE AUDIT**

Pursuant to and in accordance with the provisions of Government Code Section 8546.7, or any amendments thereto, all books, records and files of the DISTRICT, the CONTRACTOR, or any subcontractor connected with the performance of this Agreement involving the expenditure of public funds in excess of Ten Thousand Dollars ($10,000.00), including, but not limited to, the costs of administration of the Agreement, shall be subject to the examination and audit of the State Auditor at the request of the DISTRICT or as part of any audit of the DISTRICT for a period of three (3) years after final payment is made under this Agreement.
ARTICLE 30. SUBSTITUTIONS

(a) Prior to Bid Opening. Should the bidder wish to request prior to bid opening, any substitution for the materials, process, service or equipment specified, the bidder shall submit a written request at least five (5) working days before the bid opening date and hour. If the substituted item is acceptable, the DISTRICT will approve it in an Addendum issued to all bidders of record. Requests received less than five (5) working days prior to bid opening will not be considered. DISTRICT shall only consider substitution requests from the bidder submitting the bid for the project.

(b) After Bid Opening and Prior to Award of Contract. If the bidder clearly indicates in its bid that it is proposing to use an “equal” product, the brand name or trade name, if any, of a proposed substitute item shall be inserted in the spaces provided on the SUBSTITUTION REQUEST FORM. Any submittal provided after the aforementioned deadline will not be considered. If the bidder fails to indicate an “equal” product, its bid shall be considered as offering the material, process, service or equipment referred to by the brand name or trade name specified. It is expressly understood and agreed to by the bidder that the DISTRICT reserves the right to reject any such proposed substituted item. It is further expressly understood and agreed by bidder that in the event the DISTRICT rejects a proposed “equal” item, the bidder will then supply the material, process, service or equipment designated by brand name or trade name or a substitute therefore which meets with the approval of the DISTRICT.

The SUBSTITUTION REQUEST FORM: Requests for substitutions of products, materials, or processes in place of a Specified Item must in writing on the District’s Substitution Request Form (“Request Form”) at the time of submitting bids to the District. The SUBSTITUTION REQUEST FORM must be accompanied by evidence as to whether the proposed substitution:

1. Is equal in quality/service/ability to the Specified Item;
2. Will entail no changes in detail, construction, and scheduling of related work;
3. Will be acceptable in consideration of the required design and artistic effect;
4. Will provide no cost disadvantage to the District;
5. Will require no excessive or more expensive maintenance, including adequacy and availability of replacement parts; and
6. Will required no change of the construction schedule

In completing the SUBSTITUTION REQUEST FORM, the bidder must state, with respect to each requested substitution, whether the bidder will agree to provide the Specified Item in the event that the District denies the bidder’s request for such requested substitution. In the event that the bidder has agreed in the Request Form to provide the Specified Item and the District denies the bidder’s requested substitution for a Specified Item, the bidder shall provide the Specified Item without any additional cost or charge to the District.

With respect to all proposed substitutions of “equal” items, the bidder shall submit all pertinent and appropriate data substantiating its request for substitutions within fifteen (15) days prior to the award of the contract. DISTRICT shall only consider substitution requests from the bidder submitting the bid for the Project. The DISTRICT is not responsible for locating or securing any information which is not included in such substantiating data. The burden of proof as to the quality or suitability of proposed substituted items shall be borne by the bidder. The DISTRICT shall be the sole judge as to the quality and suitability of proposed substituted items, and decisions of the DISTRICT shall be final and conclusive. Unless extended by the mutual agreement of the parties, the DISTRICT shall notify the successful bidder of the decision concerning the
proposed substitution of "equal" items prior to the award of the contract. Also such decisions by the DISTRICT shall be in writing, and no proposed substituted item shall be deemed approved unless the DISTRICT has so indicated in writing. These time limitations shall be complied with strictly, and in no case will an extension of time for completion be granted because of the bidder’s failure to request the substitution of an item at the times and in the manner set forth herein.

(c) Whenever in specifications any materials, process, service or equipment is indicated or specified by brand name, trade name, proprietary name or by name of manufacturer, such specification shall be deemed to be used for the purpose of facilitating description of material, process, service or equipment desired and shall be deemed to be followed by the words "or equal," and CONTRACTOR may, unless otherwise stated, offer any material, process, service, or equipment which shall be substantially equal or better in every respect to that so indicated or specified subject to DISTRICT or ARCHITECT approval.

(d) If material, process, service, or equipment offered by CONTRACTOR is not, in opinion of ARCHITECT, or DISTRICT, substantially equal or better in every respect to that specified, then CONTRACTOR shall furnish the material, process, service, or equipment specified. Burden of proof as to equality of any material, process, service, or equipment shall rest with CONTRACTOR. Provision authorizing submission of "or equal" substantiating data shall not in any way authorize an extension of time for performance of this Agreement.

(e) In the event CONTRACTOR furnishes material, process, service or equipment other than what was specified by the DISTRICT and which has been accepted by the DISTRICT and which later is defective, then CONTRACTOR at its sole cost and expense shall furnish the DISTRICT specified material, process, service or equipment or fully replace with new the defective material process, service or equipment at DISTRICT’s discretion.

(f) In the event CONTRACTOR furnishes material, process service, or equipment more expensive than that specified, difference in cost of such material, process, service, or equipment so furnished shall be borne by CONTRACTOR. Any engineering, design fees, or approval agencies’ fees required to make adjustments in material or work of all trades directly or indirectly affected by the approved substituted items shall be borne entirely by CONTRACTOR. Any difference in cost between an approved substitution which is lower in cost than the originally specified item shall be refunded or credited by CONTRACTOR to DISTRICT.

(g) Price, fitness and quality being equal with regard to supplies, the District may prefer supplies grown, manufactured, or produced in California and next prefer supplies partially manufactured grown, or produced in California provided the bids of said suppliers or the prices quoted by them do not exceed by more than 5% of the lowest bids/prices quoted by out of state suppliers, the major portion of the manufacture of the supplies is not done outside of California and the public good will be served thereby. (Government Code section 4330-4334)

ARTICLE 31. SAMPLES

(a) CONTRACTOR shall furnish for approval, within thirty-five (35) calendar days following award of contract, all samples as required in specifications together with catalogs and supporting data required by ARCHITECT. This provision shall not authorize any extension of time for performance of the work. ARCHITECT shall review such samples, as to conformance with design concept of work and for compliance
with information given in Project Documents and approve or disapprove same within ten (10) working days from receipt of same.

(b) Unless specified otherwise, sampling, preparation of samples and tests shall be in accordance with the latest standards of the American Society for Testing and Materials.

(c) Samples shall, upon demand of ARCHITECT or DISTRICT, be submitted for tests or examinations and considered before incorporation of same into the work. CONTRACTOR shall be solely responsible for delays due to samples not being submitted in time to allow for tests. Acceptance or rejection will be expressed in writing. Work shall be equal to approved samples in every respect. Samples which are of value after testing will remain the property of the CONTRACTOR.

**ARTICLE 32. PROGRESS SCHEDULE**

(a) Within five (5) calendar days after Board approval of contract, CONTRACTOR shall submit a preliminary schedule that describes the work sequence planned in the first 30 days of construction. Within 21 calendar days following Board approval of contract, CONTRACTOR shall prepare and submit for DISTRICT’s acceptance the Initial Construction Schedule. The schedule shall indicate the beginning and completion dates of all phases of construction and shall use the "critical path method" (commonly called CPM) or equivalent scheduling methodology for the value reporting, planning and scheduling of all work required under the Project Documents. The schedule will separately identify those milestones or events that must be completed before other portions of the work can be accomplished.

(b) The scheduling is necessary for the DISTRICT’s adequate monitoring of the progress of the work and shall be prepared in accordance with the time frame described in Article 4 of the Agreement. The DISTRICT may reject such a schedule and require modification to it if, in the opinion of the ARCHITECT or DISTRICT, adherence to the progress schedule will cause the work not to be completed in accordance with the Agreement. CONTRACTOR shall adhere to any such modifications required by the DISTRICT.

(c) CONTRACTOR will exchange scheduling information with subcontractors and suppliers. CONTRACTOR will order work, equipment and materials with sufficient lead time to avoid interruption of the work.

(d) The CONTRACTOR shall submit to DISTRICT a monthly schedule to reflect the actual sequence of the work which shall be totally separate and apart from the original progress schedule.

(e) The CONTRACTOR shall also, if requested by the ARCHITECT or DISTRICT, provide revised schedules within ten (10) calendar days if, at any time, the ARCHITECT or DISTRICT, consider the completion date to be in jeopardy. The revised schedule shall be designed to show how the CONTRACTOR intends to accomplish the work to meet the original completion date. The form and method employed by the CONTRACTOR shall be the same as for the original progress schedule. The CONTRACTOR shall modify any portions of the schedule that become infeasible because of "activities behind schedule" or for any other valid reason. CONTRACTOR will provide documents and justification for any schedule changes. An activity that cannot be completed by its original completion date shall be deemed to be behind schedule.
(f) CONTRACTOR shall submit a revised schedule within ten (10) consecutive calendar days of CONTRACTOR’s request for any extension of time. Failure to submit such schedule will result in CONTRACTOR waiving his/her right to obtain any extension of time.

(g) IT IS AGREED THAT THE DISTRICT OWNS THE “FLOAT” ON THIS PROJECT. IF CONTRACTOR SUBMITS A REVISED SCHEDULE SHOWING AN EARLIER COMPLETION DATE FOR THE PROJECT, DISTRICT’s ACCEPTANCE OF THIS REVISED SCHEDULE SHALL NOT ENTITLE CONTRACTOR TO ANY DELAY CLAIM OR DISRUPTION DAMAGES OR ANY OTHER DAMAGES DUE TO ANY SUCH REVISED SCHEDULE. NOTHING PROVIDED HEREIN SHALL BE CONSTRUED AS A DIRECT, INDIRECT OR IMPLICIT ACCELERATION ORDER TO THE CONTRACTOR.

(h) CONTRACTOR agrees that failure to timely submit the progress schedule, the monthly schedule or any revised progress schedule requested by the ARCHITECT or the DISTRICT may result in delay in payment to CONTRACTOR.

(i) In addition to the requirement to update the baseline schedule, CONTRACTOR is responsible to provide a four week rolling schedule at each progress meeting. This Schedule will include activities that are 1 week behind the Data Date and 3 weeks ahead of the Data Date. The Data Date shall be the date of the progress meeting. Schedule shall include information for all trades on-site. Schedule will identify any work that is proposed outside the regular working hours.

### ARTICLE 33: TIME ALLOWANCES

(a) DISTRICT will serve a Notice to Proceed upon Contractor by hand delivery, facsimile, email or delivery to Contractor at legal address.

(b) Start date for Contract Times shall be on the date indicated in the Notice to Proceed. If no date is indicated, then the start date for contract time shall be the 5th calendar day from date that Contractor receives DISTRICT’s written Notice to Proceed, unless the Notice to Proceed is served by mail only, then the Start Date under the Contract shall be the tenth (10th) calendar day following the date of mailing. The Contractor shall commence work on such day, and shall prosecute the Work diligently to completion thereafter. No work shall commence before contract bonds and insurance certificates have been filed with the DISTRICT and the contract has been signed by the DISTRICT.

(c) CHANGE OF CONTRACT TIMES

(1) The contract times may only be changed by change order or written amendment and time is of this essence in this Agreement.

(2) The Contract Times will be adjusted in an amount equal to the time lost as shown on a critical path schedule due to the following:

(i) Changes in the Work ordered by DISTRICT.
(ii) Acts or neglect by DISTRICT’s consultants, acts or neglect of utility districts, acts or neglect of other Contractors performing other Work, provided Contractor has fully and completely performed its responsibilities under the Contract Documents, including but not limited to, its cooperation and coordination responsibilities required by the Contract Documents.

Fires, floods, abnormal weather conditions, earthquakes, civil disturbances, or acts of God, provided damage resulting from same is not the result of Contractor’s failure to properly protect the Work as required by the Contract Documents. Notwithstanding the foregoing, the contract times shall not be extended unless Contractor has actually been prevented from completing any part of the Work within the contract time due to delay which is (i) beyond the control of Contractor and (ii) due to reasons for which Contractor is not responsible and (iii) a claim for delay is made as provided for herein. Delays attributable to and within the control of a Subcontractor, or its subcontractors, or supplier shall be deemed to be delays within the control of Contractor.

Contractor shall have no right to an adjustment in the time of completion due to weather conditions which are normal for the locality of the site. The time period for completion of the project has been determined with consideration given to the average climatic range prevailing in the locality of the site.

(3) Where Contractor is prevented from completing any part of the Work within the contract due to delay beyond the control of both DISTRICT and Contractor, an extension of contract times in an amount equal to the time loss due to such delay shall be the Contractor’s sole and exclusive remedy for such delay. DISTRICT shall not be liable to Contractor, any Subcontractor, any supplier, or any other person or organization, or to any surety for or employee or agent of any of them, for damages arising out of or resulting from (i) delays caused by or within the control of Contractor, or (ii) delays beyond the control of both parties including but not limited to fires, floods, epidemics, abnormal weather conditions, acts of God or acts or neglect by utility districts.

(4) Delays due to adverse weather conditions will not be allowed for weather conditions which do not directly impact the performance of the critical path. Whenever the Contractor has undertaken an exterior critical path activity which is directly impacted by adverse weather conditions, the Contractor shall immediately notify the DISTRICT of the potential delay to such activity. The DISTRICT shall inspect the site, meet with the Contractor and confirm that the exterior critical path activity is impacted and grant an extension of the Contract Times sufficient to allow the Contractor to perform the impacted activity.

(5) If delays acceptable for evaluation occur concurrently, the maximum extension of the Contract time shall be the number of days from the commencement of the first delay to the cessation of the delay which ends last.

(6) Delay in completion of the Work beyond the expiration of the contract time resulting from causes other than those listed as acceptable for evaluation are considered inexcusable delays and shall not entitle the Contractor to an extension of the contract time or an adjustment of the Contract amount.
If an inexcusable delay occurs concurrently with acceptable delays for evaluation, the maximum extension of the Contract Time shall be the number of days, if any, by which the duration of a delay exceeds the inexcusable delay. The duration of concurrence is non-compensable.

(d) NOTICE OF DELAY

(1) Notice shall constitute application for extension of time only if notice requests extension and sets forth the impact of the delay on the critical path and Contractor's estimate of additional time required together with full recital of causes of unavoidable delays relied upon.

(2) After receipt of a request for a time extension, with verifiable documents and justifications included, DISTRICT will make decision thereon, and will advise Contractor in writing.

(3) No time extensions shall be considered without related documents and justifications necessary for DISTRICT to make determination.

(4) No time extensions shall be granted for delays for which Contractor fails to give timely notice and Contractor hereby waives any and all damages for delay for which timely notice is not given.

(5) Any request for extension of time shall be accompanied by the claimant's written statement that the adjustment claimed is the entire adjustment to which the claimant is entitled as a result of the occurrence of said event. All claims and adjustments in the contract times shall be determined by DISTRICT. No claim for an adjustment in the contract times will be valid and such claim will be waived if not submitted in accordance with the requirements of this paragraph.

(6) The Contractor's failure to perform in accordance with the construction schedule shall not be excused because the Contractor has submitted time extension requests, unless and until such requests are approved by DISTRICT.

(e) NO DAMAGE FOR CONTRACTOR CAUSED DELAY

Contractor shall not be entitled to any compensation, including but not limited to extended field or home office overhead, field supervision, costs of capital, interest, escalation charges, acceleration costs or other impacts for any delays caused in whole or in part by Contractor's failure to perform its obligations under this Contract, or during periods of delay concurrently caused by Contractor and either DISTRICT or others. Contractor may be compensated for delays caused directly and solely by DISTRICT except that Contractor shall not be entitled to damages for delay to the Work caused by the following reasons:

(1) DISTRICT's right to sequence Work in manner which would avoid disruption to the DISTRICT's tenants and their contractors or other prime contractors and their respective subcontractors, exercised as a result of Contractor's failure to perform its cooperation and coordination responsibilities required by this Contract,
(2) DISTRICT's enforcement of government act or regulation, or the provisions of the Contract Documents; and

(3) Extensive requests for clarifications to construction documents or modifications to contract, provided such clarifications or modifications are processed by DISTRICT or its consultants in a reasonable time commensurate with provisions of Contract requirements.

(f) EXTENSION OF TIME DOES NOT WAIVE DISTRICT'S RIGHTS

Granting of time extension for any reason shall in no way operate as waiver on part of DISTRICT, of right to collect liquidated damages for other delays or of right to collect other damages or other rights to which DISTRICT is entitled.

ARTICLE 34. MATERIALS AND WORK

(a) Except as otherwise specifically stated in this Agreement, CONTRACTOR shall provide and pay for all materials, supplies, tools, equipment, labor transportation, superintendence, temporary constructions of every nature, and all other services and facilities of every nature whatsoever necessary to execute and complete the Project within specified time.

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

(c) Materials shall be furnished in ample quantities and at such times as to insure uninterrupted progress of work and shall be stored properly and protected as required. DISTRICT has no obligation to pay for any prefabricated material stored offsite until delivered and installed to the jobsite and inspected and approved by the inspector of record.

(d) CONTRACTOR shall, after issuance of the Notice to Proceed by DISTRICT, place orders for materials and/or equipment as specified so that delivery of same may be made without delays to the work. CONTRACTOR shall, upon demand from the ARCHITECT, furnish to the ARCHITECT documentary evidence showing that orders have been placed.

(e) DISTRICT reserves the right, for any neglect in not complying with the above instructions, to place orders for such materials and/or equipment as it may deem advisable in order that the work may be completed at the date specified in the Agreement, and all expenses incidental to the procuring of said materials and/or equipment shall be paid for by the CONTRACTOR.

(f) No materials, supplies, or equipment for work under this Agreement shall be purchased subject to any chattel mortgage or under a conditional sale or other agreement by which an interest therein or in any part
thereof is retained by seller or supplier. CONTRACTOR warrants good title to all material, supplies, and equipment installed or incorporated in work and agrees upon completion of all work to deliver premises, together with all improvements and appurtenances constructed or placed thereon by it, to DISTRICT free from any claims, liens, or charges. CONTRACTOR further agrees that neither it nor any person, firm, or corporation furnishing any materials or labor for any work covered by this Agreement shall have any right to lien upon premises or any improvement or appurtenance thereon, except that CONTRACTOR may install metering devices or other equipment of utility companies or of political subdivisions, title to which is commonly retained by utility company or political subdivision. In the event of installation of any such metering device or equipment, CONTRACTOR shall advise DISTRICT as to owner thereof.

(g) Nothing contained in this Article 33, however, shall defeat or impair the rights of persons furnishing material or labor under any bond given by CONTRACTOR for their protection or any rights under any law permitting such persons to look to funds due CONTRACTOR in hand of DISTRICT, and this provision shall be inserted in all subcontracts and material contracts and notice of its provisions shall be given to all persons furnishing materials or labor when no formal contract is entered into for such materials or labor.

(h) The title to new materials and/or equipment and attendant liability for its protection and safety, shall remain in the CONTRACTOR until incorporated in the work and accepted by the DISTRICT. No part of said materials and/or equipment shall be removed from its place of onsite/offsite storage except for immediate installation in the work; and CONTRACTOR shall keep an accurate inventory of all said materials and/or equipment in a manner satisfactory to the DISTRICT or its authorized representative.

ARTICLE 35: INTEGRATION OF WORK

(a) CONTRACTOR shall do all cutting, fitting, patching, and preparation of work as required to make its several parts come together properly, and fit it to receive or be received by work of other contractors or existing conditions showing upon, or reasonably implied by, the drawings and specifications, and shall follow all directions given by the Architect.

(b) All costs caused by defective or ill-timed work shall be borne by CONTRACTOR.

(c) CONTRACTOR shall not endanger any work by cutting, excavating, or otherwise altering work and shall not cut or alter work of any other contractor without the written consent of the ARCHITECT. CONTRACTOR shall be solely responsible for protecting existing work on adjacent properties and shall obtain all required permits for shoring and excavations near property lines.

(d) When modifying existing work or installing new work adjacent to existing work, CONTRACTOR shall match, as closely as conditions of site and materials will allow, the finishes, textures, and colors of the original work, refinishing existing work as required, at no additional cost to DISTRICT.

(e) CONTRACTOR is aware that this Project may be split into several phases. If the Project is split into phases then CONTRACTOR has made allowances for any delays or damages which may arise from coordination with contractors for other phases. If any delays should arise from a contractor working on a different phase, CONTRACTOR's sole remedy for damages, including delay damages, shall be against the contractor who caused such damage and not the DISTRICT. CONTRACTOR shall provide access to
contracts for other phases as necessary to prevent delays and damages to contractors working on other phases of construction.

**ARTICLE 36. OBTAINING OF PERMITS, LICENSES AND EASEMENTS**

(a) Permits, licenses, and certificates necessary for prosecution of work shall be secured and paid for by CONTRACTOR, unless otherwise specified. All such permits, licenses, and certificates shall be delivered to the ARCHITECT before demand is made for the certificate of final payment. CONTRACTOR shall, and shall require subcontractors to, maintain contractors' licenses in effect as required by law.

(b) Easements for permanent structures or permanent changes in existing facilities shall be secured and paid for by DISTRICT, unless otherwise specified.

(c) Permits and charges for installation, and inspection thereof, of utility services by serving utilities shall be secured and paid for by DISTRICT.

**ARTICLE 37. SURVEYS**

Surveys to determine location of property lines and corners will be supplied by DISTRICT. Surveys to determine locations of construction, grading, and site work, shall be provided by CONTRACTOR.

**ARTICLE 38. EXISTING UTILITY LINES; REMOVAL, RESTORATION**

(a) Pursuant to Government Code Section 4215, the DISTRICT assumes the responsibility for removal, relocation, and protection of utilities located on the construction site at the time of commencement of construction under this Agreement with respect to any such utility facilities which are not identified in the plans and specifications. The CONTRACTOR shall not be assessed for liquidated damages for delay in completion of the Project caused by failure of the DISTRICT to provide for removal or relocation of such utility facilities. If the CONTRACTOR, while performing work under this Agreement, discovers utility facilities not identified by the DISTRICT in the plans or specifications, CONTRACTOR shall immediately notify the DISTRICT and the utility in writing. CONTRACTOR shall be compensated according to the provisions governing changes in the work.

(b) This Article 37 shall not be construed to preclude assessment against the CONTRACTOR for any other delays in completion of the work. Nothing in this Article shall be deemed to require the DISTRICT to indicate the presence of existing service laterals or appurtenances whenever the presence of such utilities on the construction site can be inferred from the presence of other visible facilities, such as buildings, meter junction boxes, on or adjacent to the site of the construction.

(c) As part of the work to be performed, CONTRACTOR shall provide the notices and proceed in accordance with Government Code Sections 4216.2, 4216.3 and 4216.4, and pay all fees charged pursuant to Government Code Section 4216, et seq.

**ARTICLE 39. WORK TO COMPLY WITH APPLICABLE LAWS AND REGULATIONS**
(a) CONTRACTOR shall give all notices and comply with all laws, ordinances, rules, and regulations applicable to the work as indicated and specified.

(b) If CONTRACTOR observes that drawings or specifications are at variance therewith, CONTRACTOR shall promptly notify ARCHITECT in writing and any changes deemed necessary by the ARCHITECT shall be adjusted as provided for changes in work. If CONTRACTOR performs any work which it knew, or through exercise of reasonable care should have known, to be contrary to such laws, ordinances, rules or regulations, and without such notice to ARCHITECT, CONTRACTOR shall bear all costs arising therefrom. Where plans, drawings or specifications state that materials, processes, or procedures must be approved by the Division of State Architect, State Fire Marshall, or other body or agency, CONTRACTOR shall be responsible for satisfying requirements of such bodies or agencies.

ARTICLE 40. ACCESS TO WORK

DISTRICT and its representatives shall at all times have access to work wherever it is in preparation or progress. CONTRACTOR shall provide safe and proper facilities for such access so that DISTRICT’s representatives may perform their functions.

ARTICLE 41. PAYMENTS BY CONTRACTOR

CONTRACTOR shall pay:

(1) For all transportation and utility services not later than the 20th day of the calendar month following that in which such services are rendered;

(2) For all materials, tools, and other expendable equipment to the extent of ninety percent (90%) of cost thereof, not later than the 20th day of the calendar month following that in which such materials, tools, and equipment are delivered at site of Project and balance of cost thereof not later than the 30th day following completion of that part of work in or on which such materials, tools, and equipment are incorporated or used, and

(3) To each of its subcontractors, not later than the 5th day following each payment to CONTRACTOR the respective amounts allowed CONTRACTOR on account of work performed by respective subcontractor to the extent of such subcontractor’s interest therein.

(4) Within seven (7) days from the time that all or any portion of the retentions are received by CONTRACTOR from DISTRICT, to each of its subcontractors from whom retention has been withheld, each subcontractor’s share of the retention received. However, if a retention payment received by CONTRACTOR is specifically designated for a particular subcontractor, payment of the retention shall be made to the designated subcontractor, if the payment is consistent with the terms of the subcontract. CONTRACTOR may withhold from a subcontractor its portion of the retentions if a bona fide dispute exists between the subcontractor and the CONTRACTOR. The amount withheld from the retention shall not exceed one hundred fifty percent (150%) of the estimated value of the disputed amount.
ARTICLE 42. INSPECTOR'S FIELD OFFICE

CONTRACTOR shall provide for the exclusive use of Inspector a temporary field office to be located as directed by Inspector and to be maintained until removal is authorized by DISTRICT. Office shall be of substantial waterproof construction with adequate natural light and ventilation by means of stock design windows. Door shall have a key-type lock or padlock hasp. A table satisfactory for study of plans and two chairs shall be provided by CONTRACTOR. CONTRACTOR shall provide and pay for adequate electric lights, telephone service (not a pay phone), and adequate heat for the field office until authorized removal.

ARTICLE 43. UTILITIES

(a) All utilities, including but not limited to electricity, water, gas, and telephone used on work shall be furnished and paid for by CONTRACTOR. CONTRACTOR shall furnish and install necessary temporary distribution systems, including meters, if necessary, from distribution points to points on site where utility is necessary to carry on the work. When it is necessary to interrupt any existing utility service to make connections, a minimum of forty-eight (48) hours advance notice shall be given to the DISTRICT and ARCHITECT. Interruptions in utility services shall be of the shortest possible duration for the work at hand and shall be approved by the DISTRICT and the ARCHITECT. In the event any utility service is interrupted without the required forty-eight (48) hours notice, then CONTRACTOR shall be liable for all damage suffered by DISTRICT due to the interruption. Upon completion of work, CONTRACTOR shall remove all temporary distribution systems.

(b) CONTRACTOR may, with written permission of DISTRICT, use DISTRICT's existing utilities by making prearranged payments to DISTRICT for utilities used by CONTRACTOR for the Project.

ARTICLE 44. SANITARY FACILITIES

The CONTRACTOR shall provide sanitary temporary toilet and wash facilities in no fewer numbers than required by law and such additional facilities as may be directed by the Inspector for the use of all workers. The toilet facilities shall be maintained in a sanitary condition at all times and shall be left at the site until removal is directed by the Inspector. Use of toilet and wash facilities in the work under construction shall not be permitted.

ARTICLE 45. CLEANING UP

CONTRACTOR at all times shall keep work site free from debris such as waste, rubbish, and excess materials and equipment caused by this work. CONTRACTOR shall not leave debris under, in, or about the work site, but shall promptly remove same. Upon completion of work, CONTRACTOR shall clean interior and exterior of building, including fixtures, equipment, walls, floors, ceilings, roofs, window sills and ledges, horizontal projections, and any areas where debris has collected. CONTRACTOR shall clean and polish all glass, plumbing fixtures, and finish hardware and similar finish surfaces and equipment and remove temporary fencing, barricades, planking, sanitary facilities and similar temporary facilities from site. If CONTRACTOR fails to clean up, the DISTRICT shall do so and the cost thereof shall be charged to the CONTRACTOR and deducted from any progress payment due.
ARTICLE 46. PATENTS, ROYALTIES, AND INDEMNITIES

The CONTRACTOR shall hold and save the DISTRICT and its governing board, officers, agents, and employees harmless from liability of any nature or kind, including cost and expense, for or on account of any patented or unpatented invention, process, article, or appliance manufactured or used in the performance of this Agreement, including its use by the DISTRICT, unless otherwise specifically provided in the Project Documents, and unless such liability arises from the sole negligence, or active negligence, or willful misconduct of the DISTRICT.

ARTICLE 47. GUARANTEE

(a) CONTRACTOR warrants that the work (which includes any equipment furnished by CONTRACTOR as part of the materials) shall: (a) be free from defects in workmanship and material, (b) be free from defects in any design performed by CONTRACTOR, (c) be new, and conform and perform to the requirements stated in the specifications and where detail requirements are not so stated, shall conform to applicable industry standards; and (d) be suitable for the use stated in the specifications.

(b) The warranty period for discovery of defective work shall commence on the date stamped on the Notice of Completion verifying County recordation and continue for the period set forth in the specifications or for one year if not so specified. If, during the warranty period, the work is not available for use due to defective work, such time of unavailability shall not be counted as part of the warranty period. The warranty period for corrected defective work shall continue for a duration equivalent to the original warranty period.

(c) District shall give CONTRACTOR prompt written notice after discovery of any defective work. CONTRACTOR shall correct any such defective work, as well as any damage to any other part of the work resulting from such defective work, and provide repair, replacement, or reimbursement, at its sole expense, in a manner approved by the DISTRICT and with due diligence and dispatch as required to make the work ready for use by DISTRICT, ordinary wear and tear, unusual abuse or neglect excepted. Such corrections shall include, but not be limited to, any necessary adjustments, modifications, changes of design (unless of DISTRICT’s design), removal, repair, replacement or reinstallation, and shall include all necessary parts, materials, tools, equipment, transportation charges and labor as may be necessary, and cost of removal and replacement of work shall be performed at a time and in such a manner so as to minimize the disruption to DISTRICT’s use of the work.

(d) In the event of failure of CONTRACTOR or Surety to commence and pursue with diligence said repairs or replacements within ten (10) calendar days after being notified in writing, DISTRICT is hereby authorized to proceed to have defects repaired or replaced and make good at expense of CONTRACTOR and Surety who hereby agree to pay costs and charges therefore immediately on demand.

(e) If, in the opinion of the DISTRICT, defective work creates a dangerous condition or requires immediate correction or attention to prevent further loss to the DISTRICT or to prevent interruption of operations of the DISTRICT, the DISTRICT will attempt to give the written notice required by this Article. If the CONTRACTOR or Surety cannot be contacted or neither complies with the DISTRICT’s requirements for correction within a reasonable time as determined by the DISTRICT, the DISTRICT may, notwithstanding the provisions of this Article, proceed to make such correction or provide such attention and the costs of such correction or attention shall be charged against the CONTRACTOR and Surety. Such action by the DISTRICT
will not relieve the CONTRACTOR and Surety of the guarantees provided in this Article or elsewhere in the Project Documents.

(f) This Article does not in any way limit the guarantees on any items for which a longer guarantee is specified or on any items for which a manufacturer gives a guarantee for a longer period. CONTRACTOR shall furnish to DISTRICT all appropriate guarantee or warranty certificates upon completion of the Project or upon request by DISTRICT.

(g) All guarantees required under this Article shall be in writing on the Guarantee form included in the Project Documents.

(h) CONTRACTOR shall provide to DISTRICT instruction manuals for all items which require same.

(i) Nothing herein shall limit any other rights or remedies available to DISTRICT.

(j) The DISTRICT may collect its reasonable costs and attorneys' fees in any action to enforce this Article.

**ARTICLE 48. DUTY TO PROVIDE FIT WORKERS**

(a) CONTRACTOR and subcontractors shall at all times enforce strict discipline and good order among their employees and shall not employ on work any unfit person or anyone not skilled in work assigned to such person. It shall be the responsibility of CONTRACTOR to ensure compliance with this Article.

(b) Any person in the employ of the CONTRACTOR or subcontractors whom DISTRICT or ARCHITECT may deem incompetent, unfit, troublesome or otherwise undesirable shall be excluded from the work site and shall not again be employed on it except with written consent of DISTRICT.

**ARTICLE 49. WAGE RATES, TRAVEL AND SUBSISTENCE**

(a) Pursuant to the provisions of Article 2 (commencing at Section 1770). Chapter 1, Part 7, Division 2 of the Labor Code, the governing board of DISTRICT has obtained the general prevailing rate of per diem wages and the general prevailing rate for holiday and overtime work in the locality in which this public work is to be performed for each craft, classification or type of worker needed for this Project from the Director of the Department of Industrial Relations ("Director"). These rates are on file with the Clerk of the DISTRICT's governing board and copies will be made available to any interested party on request. CONTRACTOR shall post a copy of such wage rates at the work site. Labor Code Section 1773.2. The rates are available on the Internet at www.dli.ca.gov "Statistics & Research."

(b) Holiday and overtime work, when permitted by law, shall be paid for at a rate of at least one and one-half times the above specified rate of per diem wages, unless otherwise specified. Holidays shall be defined in the Collective Bargaining Agreement applicable to each particular craft, classification or type of worker employed.
(c) CONTRACTOR shall pay and shall cause to be paid each worker engaged in work on the Project not less than the general prevailing rate of per diem wages determined by the Director, regardless of any contractual relationship which may be alleged to exist between the CONTRACTOR or any subcontractor and such workers.

(d) CONTRACTOR shall pay and shall cause to be paid to each worker needed to execute the work on the Project travel and subsistence payments, as such travel and subsistence payments are defined in the applicable collective bargaining agreements filed with the Department of Industrial Relations in accordance with Labor Code Section 1773.8.

(e) If during the period this bid is required to remain open, the Director of Industrial Relations determines that there has been a change in any prevailing rate of per diem wages in the locality in which this public work is to be performed, such change shall not alter the wage rates in the Notice Calling for Bids or the contract subsequently awarded.

(f) Pursuant to Labor Code Section 1775, CONTRACTOR shall as a penalty to the DISTRICT, forfeit fifty dollars ($50) for each calendar day, or portion thereof, for each worker paid less than the prevailing rate of per diem wages, determined by the Director, for such craft or classification in which such worker is employed for any public work done under the Agreement by CONTRACTOR or by any subcontractor under it. The amount of the penalty shall be determined by the Labor Commission and shall be based on consideration of the CONTRACTOR's mistake, inadvertence or neglect in failing to pay the correct prevailing rate of per diem wage, or the previous record of the CONTRACTOR in meeting his or her prevailing rate of per diem wage obligations, or the CONTRACTOR's willful failure to pay the correct prevailing rate of per diem wages. A mistake, inadvertence or neglect in failing to pay the correct prevailing rate of per diem wage is not excusable if the CONTRACTOR had knowledge of his or her obligations under this part. The difference between such prevailing rate of per diem wage and the amount paid to each worker for each calendar day or portion thereof for which each worker was paid less than the prevailing rate of per diem wage shall be paid to each worker by the CONTRACTOR.

(g) Any worker employed to perform work on the Project, which work is not covered by any craft or classification listed in the general prevailing rate of per diem wages determined by the Director shall be paid not less than the minimum rate of wages specified therein for the craft or classification which most nearly corresponds to work to be performed by them, and such minimum wage rate shall be retroactive to time of initial employment of such person in such craft or classification.

(h) Pursuant to Labor Code Section 1773.1, per diem wages are deemed to include employer payments for health and welfare, pension, vacation, travel time, and subsistence pay as provided for in Labor Code Section 1773.8.

(i) CONTRACTOR shall post at appropriate conspicuous points on the site of the Project, a schedule showing all determined minimum wage rates and all authorized deductions, if any, from unpaid wages actually earned.

**ARTICLE 50. HOURS OF WORK**

(a) As provided in Article 3, (commencing at Section 1810), Chapter 1, Part 7, Division 2 of the Labor Code, eight (8) hours of labor shall constitute a legal day's work. The time of service of any worker employed
at any time by the CONTRACTOR or by any subcontractor on any subcontract under this Agreement upon the work or upon any part of the work contemplated by this Agreement shall be limited and restricted by the Agreement to eight (8) hours per day, and forty (40) hours during any one week, except as hereinafter provided. Notwithstanding the provisions hereinafore set forth, work performed by employees of CONTRACTOR in excess of eight (8) hours per day and forty (40) hours during any one week shall be permitted upon this work upon compensation for all hours worked in excess of eight (8) hours per day at not less than one and one-half times the basic rate of pay.

(b) The CONTRACTOR shall keep and shall cause each subcontractor to keep an accurate record showing the name of and actual hours worked each calendar day and each calendar week by each worker employed by CONTRACTOR in connection with the work or any part of the work contemplated by this Agreement. The record shall be kept open at all reasonable hours to the inspection of the DISTRICT and to the Division of Labor Standards Enforcement, Department of Industrial Relations.

(c) Pursuant to Labor Code Section 1813, the CONTRACTOR shall pay to the DISTRICT a penalty of Twenty-Five Dollars ($25) for each worker employed in the execution of this Contract by the CONTRACTOR or by any subcontractor for each calendar day during which such worker is required or permitted to work more than eight (8) hours in any one calendar day and 40 hours in any one calendar week in violation of the provisions of Article 3 (commencing at Section 1810), Chapter 1, Part 7, Division 2 of the Labor Code.

(d) Any work necessary to be performed after regular working hours, or on Sundays or other holidays shall be performed without additional expense to DISTRICT.

**ARTICLE 51. PAYROLL RECORDS**

(a) Pursuant to the provisions of Labor Code Section 1776, the CONTRACTOR shall keep and shall cause each subcontractor performing any portion of the work under this Agreement to keep an accurate payroll record showing the name, address, social security number, work classification, straight time and overtime hours worked each day and week, and the actual per diem wages paid to each journeyman, apprentice, worker, or other employee employed by CONTRACTOR in connection with the work.

(b) The payroll records enumerated under subdivision (a) shall be certified and shall be available for inspection at all reasonable hours at the principal office of the CONTRACTOR on the following basis:

1. A certified copy of an employee’s payroll record shall be made available for inspection or furnished to the employee or his or her authorized representative on request.

2. A certified copy of all payroll records enumerated in subdivision (a) shall be made available for inspection or furnished upon request to a representative of the DISTRICT, the Division of Labor Standards Enforcement, and the Division of Apprenticeship Standards of the Department of Industrial Relations.

3. A certified copy of all payroll records enumerated in subdivision (a) shall be made available for inspection upon request by the public or copies thereof made, provided, however, that a request by the public shall be made through either the District, the Division of Apprenticeship Standards, or the
Division of Labor Standards Enforcement. If the requested payroll records have not been provided pursuant to paragraph (2), the requesting party shall, prior to being provided the records, reimburse the costs of preparation by the CONTRACTOR, subcontractors, and the entity through which the request was made. The public shall not be given access to the records at the principal office of the CONTRACTOR.

(4) The form of certification shall be as follows:

I, _______________ (Name-print), the undersigned, am _______________ (position in business) with the authority to act for and on behalf of

________________________________________ (Name of business and/or CONTRACTOR),
certify under penalty of perjury that the records or copies thereof submitted and consisting of

____________________ (description, number of pages) are the originals or true, full and correct copies of the originals which depict the payroll record(s) of the actual disbursements by way of cash, check, or whatever form to the individual or individuals named.

Dated: _____ Signature: __________________________________________

(c) Contractor shall file a certified copy of the payroll records enumerated in subdivision (a) with the entity that requested the records within ten (10) days after receipt of a written request. In the event that the CONTRACTOR fails to comply within the 10-day period, the CONTRACTOR shall, as a penalty to the DISTRICT, forfeit Twenty-Five Dollars ($25) for each calendar day, or portion thereof, for each worker, until strict compliance is effectuated. Upon the request of the Division of Apprenticeship Standards or the Division of Labor Standards Enforcement, these penalties shall be withheld from progress payments then due.

(d) Any copy of payroll records made available for inspection as copies and furnished upon request to the public by the DISTRICT, the Division of Apprenticeship Standards, or the Division of Labor Standards Enforcement shall be marked or obliterated in such a manner as to prevent disclosure of an individual’s name, address, and social security number. The name and address of the CONTRACTOR shall not be marked or obliterated.

(e) The CONTRACTOR shall inform the DISTRICT of the location of the payroll records enumerated under subdivision (a), including the street address, city and county, and shall, within five (5) working days, provide a written notice of a change of location and address.

(f) It shall be the responsibility of the CONTRACTOR to ensure compliance with the provisions of this Article 50 and the provisions of Labor Code Section 1776.

**ARTICLE 52. APPRENTICES**
(a) The CONTRACTOR acknowledges and agrees that, if this Agreement involves a dollar amount greater than or a number of working days greater than that specified in Labor Code Section 1777.5, this Agreement is governed by the provisions of Labor Code Section 1777.5. It shall be the responsibility of the CONTRACTOR to ensure compliance with this Article 51 and with Labor Code Section 1777.5 for all apprenticing occupations.

(b) Apprentices of any crafts or trades may be employed and, when required by Labor Code Section 1777.5, shall be employed provided they are properly registered in full compliance with the provisions of the Labor Code.

(c) Every such apprentice shall be paid the standard wage paid to apprentices under the regulations of the craft or trade at which he or she is employed, and shall be employed only at the work of the craft or trade to which he or she is registered.

(d) Only apprentices, as defined in Section 3077, who are in training under apprenticeship standards and written apprentice agreements under Chapter 4 (commencing at Section 3070), Division 3 of the Labor Code, are eligible to be employed on public works. The employment and training of each apprentice shall be in accordance with the provisions of the apprenticeship standards and apprentice agreements under which he or she is training.

(e) Pursuant to Labor Code Section 1777.5, the CONTRACTOR and any subcontractors employing workers in any apprenticeship craft or trade in performing any work under this Agreement shall employ apprentices in at least the ratio set forth in Section 1777.5 and apply to the applicable joint apprenticeship committee for a certificate approving the CONTRACTOR or subcontractor under the applicable apprenticeship standards for the employment and training of apprentices.

(f) Every contractor and subcontractor shall submit contract award information to the applicable joint apprenticeship committee which shall include an estimate of journeyman hours to be performed under the Agreement, the number of apprentices to be employed and the approximate dates the apprentices will be employed.

(g) If the CONTRACTOR or subcontractor willfully fails to comply with Labor Code Section 1777.5, then, upon a determination of noncompliance by the Chief of the Division of Apprenticeship Standards, the CONTRACTOR or subcontractor shall be subject to the penalties imposed under Labor Code Section 1777.7. Interpretation and enforcement of these provisions shall be in accordance with the rules and procedures of the California Apprenticeship Council.

(h) The CONTRACTOR and all subcontractors shall comply with Labor Code Section 1777.6, which section forbids certain discriminatory practices in the employment of apprentices.

(i) CONTRACTOR shall become fully acquainted with the law regarding apprentices prior to commencement of the work. Special attention is directed to Sections 1777.5, 1777.6, and 1777.7 of the Labor Code, and Title 8, California Code of Regulations, Section 200, et seq. Questions may be directed to the State Division of Apprenticeship Standards, 455 Golden Gate Avenue, 8th Floor, San Francisco, California 94102, (415) 703-4920.
ARTICLE 53: LABOR - FIRST AID

The CONTRACTOR shall maintain emergency first aid treatment for CONTRACTOR’s workers on the Project which complies with the Federal Occupational Safety and Health Act of 1970 (29 U.S.C.A., Sec. 651, et seq.).

ARTICLE 54: PROTECTION OF PERSONS AND PROPERTY

(a) The CONTRACTOR shall be responsible for all damages to persons or property that occur as a result of its fault or negligence in connection with the prosecution of this Agreement and shall take all necessary measures and be responsible for the proper care and protection of all materials delivered and work performed until completion and final acceptance by the DISTRICT. CONTRACTOR shall provide such heat, covering, and enclosures as are necessary to protect all work, materials, equipment, appliances, and tools against damage by weather conditions. All work shall be solely at the CONTRACTOR’s risk with the exception of damage to the work caused by “acts of God” as defined in Public Contract Code Section 7105.

(b) CONTRACTOR shall take, and require subcontractors to take, all necessary precautions for safety of workers and shall comply with all applicable federal, state, local and other safety laws, standards, orders, rules, regulations, and building codes to prevent accidents or injury to persons on, about, or adjacent to the work site and to provide a safe and healthful place of employment. CONTRACTOR shall furnish, erect and properly maintain at all times, as directed by DISTRICT or ARCHITECT or required by conditions and progress of work, all necessary safety devices, safeguards, construction canopies, signs, audible devices for protection of the blind, safety rails, belts and nets, barriers, lights, and watchmen for protection of workers and the public and shall post danger signs warning against hazards created by such features in the course of construction. CONTRACTOR shall designate a responsible employee, whose duty shall be to post information regarding protection and obligations of workers and other notices required under occupational safety and health laws, to comply with reporting and other occupational safety requirements, and to protect the life, safety and health of workers. Name and position of person so designated shall be reported in writing to DISTRICT by CONTRACTOR. CONTRACTOR shall correct any violations of safety laws, standards, orders, rules, or regulations. Upon the issuance of a citation or notice of violation by the Division of Occupational Safety and Health, such violation shall be corrected immediately by the CONTRACTOR at CONTRACTOR’s expense.

(c) In an emergency affecting safety of person or of work or of adjoining property, CONTRACTOR, without special instruction or authorization from ARCHITECT or DISTRICT, is hereby permitted to act, at its discretion, to prevent such threatened loss or injury; and CONTRACTOR shall so act if so authorized or instructed by Architect or DISTRICT. Any compensation claimed by CONTRACTOR on account of emergency work shall be determined by written agreement with the DISTRICT.

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

(e) CONTRACTOR shall (unless waived by the DISTRICT in writing):

(1) When performing new construction on existing sites, become informed and take into specific account the maturity of the students on the site; perform work which may interfere with school routine...
before or after school hours, enclose working area with a substantial barricade, not allow any unauthorized individuals on the site, require all workers on the Project to be conspicuously identified either by a firm logo on their clothing or prominent identification badge and arrange work to cause a minimum amount of inconvenience and danger to students and faculty in their regular school activities.

(2) Provide substantial barricades around any shrubs or trees indicated to be preserved.

(3) Deliver materials to building area over route designated by ARCHITECT.

(4) When directed by DISTRICT, take preventive measures to eliminate objectionable dust.

(5) Enforce all instructions of DISTRICT and ARCHITECT regarding signs, advertising, fires, and smoking and require that all workers comply with all regulations while on construction site.

(6) Take care to prevent disturbing or covering any survey markers, monuments, or other devices marking property boundaries or corners. If such markers are disturbed by accident, they shall be replaced by an approved civil engineer at no cost to the DISTRICT.

**ARTICLE 55: NON-DISCRIMINATION**

In the performance of the terms of this Agreement, CONTRACTOR agrees that it will not engage in nor permit such subcontractor as it may employ to engage in unlawful discrimination in employment of persons because of the race, religious creed, color, national origin, ancestry, physical handicap, medical condition, marital status, age or sex of such persons.

**ARTICLE 56: SCHEDULE OF VALUES AND PERIODICAL ESTIMATES**

(a) CONTRACTOR shall furnish on form(s) approved by DISTRICT.

(1) Within ten (10) calendar days of award of contract a detailed schedule of values giving complete breakdown of contract price for each component of the Project or site which shall include all subcontractor/supplier agreements showing dollar amounts of these agreements to justify the schedule of values, and

(2) A periodical itemized estimate of work done for purpose of making partial payments thereon. Change order work shall be clearly identified on a separate schedule of values.

(3) Within ten (10) calendar days of request of DISTRICT, a schedule of estimated monthly payments which shall be due CONTRACTOR under the Agreement.
(b) Values employed in making up any of these schedules are subject to the ARCHITECT's written approval and will be used only for determining basis of partial payments and will not be considered as fixing a basis for additions to or deductions from contract price.

**ARTICLE 57. CONTRACTOR CLAIMS**

If the CONTRACTOR shall claim compensation for any damage sustained by reason of the acts of the DISTRICT or its agents, CONTRACTOR shall, within five (5) calendar days after sustaining of such damage, make to the ARCHITECT a written statement of the damage sustained. On or before the 15th day of the month succeeding that in which such damage shall have been sustained, the CONTRACTOR shall file with the DISTRICT an itemized statement of the details and amount of such damage, and unless such statement shall be made as thus required, CONTRACTOR's claims for compensation shall be forfeited and invalidated and it shall not be entitled to consideration for payment on account of any such damage.

**ARTICLE 58. DISPUTES - ARCHITECT'S DECISIONS**

(a) The ARCHITECT shall, within a reasonable time, make decisions on all matters relating to the CONTRACTOR's execution and progress of the work. The decisions of the ARCHITECT shall not be binding, but shall be advisory only on the CONTRACTOR for the purpose of CONTRACTOR's obligation to proceed with the work.

(b) Except for tort claims, all claims by the CONTRACTOR for a time extension, payment of money or damages arising from work done by, or on behalf of, the CONTRACTOR pursuant to the Agreement and payment of which is not otherwise expressly provided for or the claimant is not otherwise entitled to, or as to the amount of payment which is disputed by the DISTRICT of Three Hundred Seventy Five Thousand Dollars ($375,000) or less shall be subject to the settlement procedures set forth in Public Contract Code Section 20104, et seq., which provisions are incorporated herein by reference.

(c) In the event of a dispute between the parties as to performance of the work, the interpretation of this Agreement or payment or nonpayment for work performed or not performed, the parties shall attempt to resolve the dispute. Pending resolution of the dispute, CONTRACTOR agrees to continue the work diligently to completion. If the dispute is not resolved, CONTRACTOR agrees it will neither rescind the Agreement nor stop the progress of the work, but CONTRACTOR's sole remedy shall be to submit such controversy to determination by a court of the State of California, in Orange County, having competent jurisdiction of the dispute, after the Project has been completed, and not before.

**ARTICLE 59. PAYMENTS**

(a) Unless otherwise specified in writing, each month within thirty (30) days after receipt by the DISTRICT of the monthly progress schedule and an undisputed, properly submitted payment request from CONTRACTOR which has been certified for payment by the Architect, there shall be paid to CONTRACTOR a sum equal to ninety percent (90%) of value of work performed and of materials delivered to the jobsite and inspected and approved by the inspector of record and subject to or under the control of the DISTRICT and unused up to the last day of the previous month, less aggregate previous payments. Public Contract Code Section 20104.50 Monthly payments shall be made only on the basis of monthly estimates which shall be prepared by CONTRACTOR on a form approved by DISTRICT and filed before the fifth day of the month.
during which payment is to be made. Work completed as estimated shall be an estimate only and no inaccuracy or error in said estimate shall operate to release CONTRACTOR or Surety from any damages arising from such work or from enforcing each and every provision of this Agreement, and DISTRICT shall have the right subsequently to correct any error made in any estimate for payment. CONTRACTOR SHALL NOT BE ENTITLED TO HAVE ANY PAYMENT FOR WORK PERFORMED SO LONG AS ANY LAWFUL OR PROPER DIRECTION CONCERNING WORK, OR ANY PORTION THEREOF, GIVEN BY THE DISTRICT OR ARCHITECT SHALL REMAIN UNCOMPLIED WITH BY THE CONTRACTOR. CONTRACTOR AGREES TO THE TEN PERCENT (10%) RETENTION ON ALL PROGRESS PAYMENTS. Public Contract Code Section 9203.

(b) DISTRICT has discretion to require from the CONTRACTOR any of the following information with the application for payment: (i) certified payroll covering the period of the prior application for payment, (ii) unconditional waivers and releases from all subcontractors/suppliers for which payment was requested under the prior application for payment, and/or (iii) receipts or bills of sale for any items. CONTRACTOR agrees that payment may be contingent upon District receiving any one or more of these documents.

(c) Before payment is made hereunder, a certificate in writing shall be obtained from the ARCHITECT stating that the work for which the payment is demanded has been performed in accordance with the terms of the Project Documents and that the amount stated in the certificate is due under the terms of the Project Documents, which certificate shall be attached to and made a part of the claim made and filed with the DISTRICT, provided that if the ARCHITECT shall, within three (3) days after written demand therefore, fail to deliver such certificate to the DISTRICT, the CONTRACTOR may file its claim with the DISTRICT without said certificate, but together with such claim shall be filed a statement that demand was made for such certificate and that the same was refused. Thereupon, the DISTRICT will either allow said claim as presented or shall, by an order entered on the minutes of said DISTRICT state the reasons for refusing to allow said claim. It is understood, moreover, that the certificate of the ARCHITECT shall not be conclusive upon the DISTRICT, but advisory only.

(d) Upon receipt of CONTRACTOR’s payment request, DISTRICT shall review the payment request as soon as practicable after receipt for the purpose of determining that the payment request is proper. Any payment request determined not to be proper shall be returned to the CONTRACTOR as soon as practicable but not later than seven (7) days after receipt and shall be accompanied by a document setting forth in writing the reasons(s) why the payment request was not proper. Public Contract Code Section 20104.50

(e) NO PAYMENT BY DISTRICT HEREBUNDER SHALL BE INTERPRETED SO AS TO IMPLY THAT DISTRICT HAS INSPECTED, APPROVED, OR ACCEPTED ANY PART OF THE WORK.

(f) Unless otherwise provided, on or before making request for final payment of the undisputed amount due under the Agreement, CONTRACTOR shall submit to DISTRICT, in writing a summary of all claims for compensation under or arising out of this Agreement which were timely filed. The acceptance by CONTRACTOR of the payment of the final amount shall constitute a waiver of all claims against DISTRICT under or arising out of this Agreement, except those previously made, in a timely manner and in writing, and identified by CONTRACTOR as unsettled at the time of CONTRACTOR’s final request for payment.

(g) CONTRACTOR shall pay each of its subcontractors from whom retention has been withheld each subcontractor’s share of the retention received within seven (7) days from the time that all or any portion of the
retention are received by the CONTRACTOR subject to any limitations set forth in Public Contract Code Section 7107(e).

(h) The final payment of the ten percent (10%) retention of the value of the work done under this Agreement, if unencumbered, shall be made thirty-five (35) days after recording by the DISTRICT of the Notice of Completion at the County Recorder’s Office. APPROVAL OF COMPLETION OF THE PROJECT WILL BE MADE ONLY BY ACTION OF THE GOVERNING BOARD OF DISTRICT. Public Contract Code Section 7107.

**ARTICLE 60. CHANGES AND EXTRA WORK**

(a) DISTRICT may, as provided by law and without affecting the validity of this Agreement, order changes, modifications, deletions and extra work by issuance of written change orders from time to time during the progress of the Project, contract sum being adjusted accordingly. All such work shall be executed under conditions of the original Agreement except that any extension of time caused thereby shall be adjusted at time of ordering such change. DISTRICT has discretion to order changes on a “time and material” basis with adjustments to time made after CONTRACTOR has justified through documentation the impact on the critical path of the Project.

(b) Notwithstanding any other provision in the Project Documents, the adjustment in the contract sum, if any, and the adjustment in the contract time, if any, set out in a change order shall constitute the entire compensation and/or adjustment in the contract time due CONTRACTOR arising out of the change in the work covered by the change order unless otherwise provided in the change order. The amount of the compensation due CONTRACTOR shall be calculated pursuant to subparagraph (e) of this Article 59. The entire compensation shall not include any additional charges not set forth in subparagraph (e) and shall not include delay damages (due to processing of a change order, refusal to sign a change order) indirect, consequential, and incidental costs including any project management costs, extended home office and field office overhead, administrative costs and profit other than those amounts authorized under subparagraph (e) of this Article 59.

(c) In giving instructions, ARCHITECT shall have authority to make minor changes in work, not involving change in cost, and not inconsistent with purposes of the Project. Otherwise, except in an emergency endangering life or property, no extra work or change shall be made unless in pursuance of a written order from DISTRICT, authorized by action of the governing board, and no claim for addition to contract sum shall be valid unless so ordered.

(d) If the ARCHITECT determines that work required to be done constitutes extra work outside the scope of the Agreement, the ARCHITECT shall send a request for a detailed proposal to the CONTRACTOR. CONTRACTOR will respond with a detailed proposal within five (5) calendar days of receipt of the Request for Proposal which shall include a complete itemized cost breakdown of all labor and materials showing actual quantities, hours, unit prices, and the wage rates required for the change. If the change order involves a change in construction time, a request for the time change shall accompany the change order cost breakdown. All such requests for time shall be specified by CONTRACTOR as either “work days” or “calendar days.” Any request for time received with only the designation of “days” shall be considered calendar days. The term “work days” as used in this paragraph shall mean Monday through Friday, excluding Saturdays, Sundays and federal and state of California observed holidays. If the work is to be performed by a subcontractor, CONTRACTOR must include a bid from the subcontractor containing the same detailed information as required for CONTRACTOR. No
extensions of time will be granted for change orders that, in the opinion of the ARCHITECT, do not affect the critical path of the Project.

(e) Value of any such extra work, change, or deduction shall be determined at the discretion of DISTRICT in one or more of the following ways:

(1) By mutual written acceptance of a lump sum proposal from CONTRACTOR properly itemized and supported by sufficient substantiating data to permit evaluation by DISTRICT and ARCHITECT.

(2) By unit prices contained in CONTRACTOR's original bid and incorporated in the Project Documents or fixed by subsequent agreement between DISTRICT and CONTRACTOR.

(3) By cost of material and labor and percentage for overhead and profit ("time and material"). If the value is determined by this method the following requirements shall apply:

(A) Daily Reports by Contractor.

(i) General. At the close of each working day, the CONTRACTOR shall submit a daily report to the ARCHITECT and the Inspector, on forms approved by the DISTRICT, together with applicable delivery tickets, listing all labor, materials, and equipment involved for that day, and for other services and expenditures when authorized concerning extra work items. An attempt shall be made to reconcile the report daily, and it shall be signed by the ARCHITECT and the CONTRACTOR. In the event of disagreement, pertinent notes shall be entered by each party to explain points which cannot be resolved immediately. Each party shall retain a signed copy of the report. Reports by Subcontractors or others shall be submitted through the CONTRACTOR.

(ii) Labor. The report shall show names of workers, classifications, and hours worked and hourly rate. Project Superintendent expenses are not allowed.

(iii) Materials. The report shall describe and list quantities of materials used and unit cost.

(iv) Equipment. The report shall show type of equipment, size, identification number, and hours of operation, including loading and transportation, if applicable, and hourly/daily cost.

(v) Other Services and Expenditures. Other services and expenditures shall be described in such detail as the DISTRICT may require.

(B) Basis for Establishing Costs
(i) Labor. The costs of labor will be the actual cost for wages prevailing locally for each craft classification or type of workers at the time the extra work is done, plus employer payments of payroll taxes and insurance, health and welfare, pension, vacation, apprenticeship funds, and other direct costs resulting from federal, state or local laws, as well as assessments or benefits required by lawful collective bargaining agreements. The use of labor classification which would increase the extra work cost will not be permitted unless the CONTRACTOR establishes the necessity for such additional costs. Labor costs for equipment operators and helpers shall be reported only when such costs are not included in the invoice for equipment rental.

(ii) Materials. The cost of materials reported shall be at invoice or lowest current price at which such materials are locally available and delivered to the work site in the quantities involved, plus sales tax, freight and delivery. The DISTRICT reserves the right to approve materials and sources of supply, or to supply materials to the CONTRACTOR if necessary for the progress of the work. No markup shall be applied to any material provided by the DISTRICT.

(iii) Tool and Equipment Rental. No payment will be made for the use of tools which have a replacement value of $500 or less or where an invoice is not provided.

Regardless of ownership, the rates to be used in determining equipment rental costs shall not exceed listed rates prevailing locally at equipment rental source, or distributors, at the time the work is performed. The rental rates paid shall include the cost of fuel, oil, lubrication, supplies, small tools, necessary attachments, repairs and maintenance of any kind, depreciation, storage, insurance, and all incidentals. Necessary loading and transportation costs for equipment used on the extra work shall be included.

If equipment is used intermittently and, when not in use, could be returned to its rental source at less expense to the DISTRICT than holding it at the work site, it shall be returned, unless the CONTRACTOR elects to keep it at the work site at no expense to the DISTRICT.

All equipment shall be acceptable to the ARCHITECT, in good working condition, and suitable for the purpose for which it is to be used. Manufacturer's ratings and manufacturer's approved modifications shall be used to classify equipment and it shall be powered by a unit of at least the minimum rating recommended by the manufacturer.

(iv) Other Items. The DISTRICT may authorize other items which may be required on the extra work. Such items include labor, services, material and equipment which are different in their nature from those required by the work and which are of a type not ordinarily available from the CONTRACTOR or any of the subcontractors. Invoices covering all such items in detail shall be submitted with the request for payment.

(v) Invoices. Vendors' invoices for material, equipment rental, and other expenditures, shall be submitted with the request for payment. If the request for payment is not substantiated by invoices or other documentation, the DISTRICT may establish the cost of the item involved at the lowest price which was current at the time of the report.
(C) The following form shall be used as applicable by the DISTRICT and CONTRACTOR to communicate proposed additions and deductions to the Agreement

EXTRA CREDIT

i. Material/Equipment (attach itemized quantity and unit cost plus sales tax)

ii. Labor (attach itemized hours and rates)

iii. Subtotal

iv. If subcontractor performed work, add Subcontractor's overhead and profit to portions performed by it, not to exceed 15% of Item iii. above

v. Subtotal

vi. General Contractor's Overhead and Profit, not to exceed 15% of Item v if Contractor performed the work. If subcontractor performed the work, not to exceed 5% of Item v. Of portions performed by Contractor and subcontractors, portions performed by Contractor shall not exceed 15% of Item v, and portions performed by Subcontractor shall not exceed 5% of Item v.

vii. Subtotal

viii. Bond and Liability Insurance Premium, if in fact additional bonds or insurance were actually purchased, not to exceed 1% of Item vii.

ix. Total

(4) IT IS EXPRESSLY UNDERSTOOD THAT THE VALUE OF SUCH EXTRA WORK OR CHANGES, AS DETERMINED BY ANY OF THE AFOREMENTIONED METHODS, EXPRESSLY INCLUDES ANY AND ALL OF CONTRACTOR'S COSTS AND EXPENSES, BOTH DIRECT AND INDIRECT, RESULTING FROM ADDITIONAL TIME REQUIRED ON THE PROJECT, OR RESULTING FROM DELAYS TO THE PROJECT. ANY COSTS OR EXPENSES NOT INCLUDED ARE DEEMED WAIVED. FOR PURPOSES OF DETERMINING THE COST, IF ANY, OF ANY EXTRA WORK, CHANGE, ADDITION OR OMISSION HEREUNDER, ALL TRADE DISCOUNTS, REBATES, REFUNDS, AND ALL RETURNS FROM THE SALE OF
SURPLUS MATERIALS AND EQUIPMENT SHALL ACCRUE AND BE CREDITED TO CONTRACTOR, AND CONTRACTOR SHALL ENSURE THAT SUCH DISCOUNTS, REBATES, REFUNDS, AND RETURNS MAY BE SECURED, AND THE AMOUNT THEREOF SHALL BE ALLOWED AS A REDUCTION OF CONTRACTOR’S COST IN DETERMINING THE ACTUAL COST OF CONSTRUCTION FOR PURPOSES OF ANY EXTRA WORK, CHANGE, ADDITION OR OMISSIONS IN THE WORK AS PROVIDED HEREIN.

(f) If the CONTRACTOR should claim that any instruction, request, drawing, specification, action, condition, omission, default, or other situation obligates the DISTRICT to pay additional compensation to CONTRACTOR or to grant an extension of time, or constitutes a waiver of any provision in the Agreement, CONTRACTOR shall notify the DISTRICT in writing, of such claim within five (5) calendar days from the date CONTRACTOR has actual or constructive notice of the factual basis supporting the claim. The notice shall state the factual bases for the claim and cite in detail the Project Documents (including plans and specifications) upon which the claim is based. The CONTRACTOR’s failure to notify the DISTRICT within such five (5) day period shall be deemed a waiver and relinquishment of such a claim. If such notice be given within the specified time, the procedure for its consideration shall be as stated above in these General Conditions.

(g) “PROHIBITED USAGE OF CONTRACTOR QUALIFYING LANGUAGE STAMPS ON DISTRICT DRAWINGS OR CONTRACT FORMS.” Contractor shall not countersign or endorse any form, drawing, change order, contract or other documents with any conditions not mutually agreed to in advance by the DISTRICT and the CONTRACTOR. Endorsement of a contract, change order, specification, drawing or form with the following: “This change order is being executed without waiver of the right to seek additional compensation for such services,” shall be of no legal force or effect.

ARTICLE 61: COMPLETION

(a) The DISTRICT shall accept completion of the Project and have the Notice of Completion recorded within ten (10) days of acceptance of completion of the Project when the entire work including punch list items shall have been completed to the satisfaction of the DISTRICT. Civil Code Section 3093. The work may only be accepted as complete by action of the DISTRICT’s Governing Board.

(b) However, the DISTRICT, at its sole option, may accept completion of the Project and have the Notice of Completion recorded when the entire work including individual portions of the work shall have been completed to the satisfaction of the DISTRICT, except for minor corrective items, as distinguished from incomplete items.

(c) A final walk through of the Project to determine completion and to record the Notice of Completion shall occur only upon a valid claim by CONTRACTOR that the Project is complete except for minor corrective items. Any erroneous claims of completion by CONTRACTOR resulting in a premature walk through shall be at CONTRACTOR’s sole cost and expense and DISTRICT shall make adjustments to the contract price by reducing the amount thereof to pay for any costs incurred by the DISTRICT due to the erroneous claims by the CONTRACTOR that the Project is complete. Minor corrective items shall be identified in the final walk through of the Project.
(d) If the CONTRACTOR fails to complete the minor corrective items prior to the expiration of the thirty-five (35) day period immediately following recording of the Notice of Completion, the DISTRICT shall withhold from the final payment an amount equal to one hundred fifty percent (150%), as determined by the DISTRICT, of the amount of each item until such time as the item is completed. Public Contract Code Section 7107. At the end of such 35-day period, if there are items remaining to be corrected, the DISTRICT may elect to proceed as provided in Article 61(b) entitled "Adjustments to Contract Price."

**ARTICLE 62. ADJUSTMENTS TO CONTRACT PRICE**

(a) If CONTRACTOR defaults or neglects to carry out the work in accordance with the Project Documents or fails to perform any provision thereof, DISTRICT may, after ten (10) days written notice to the CONTRACTOR and without prejudice to any other remedy it may have, make good such deficiencies.

(b) The DISTRICT shall adjust the total contract price by reducing the amount thereof by the cost of making good such deficiencies. If DISTRICT deems it inexpedient to correct work not done in accordance with the Project Documents, an equitable reduction in the contract price shall be made therefore.

**ARTICLE 63. CORRECTION OF WORK**

(a) CONTRACTOR shall promptly remove all work identified by DISTRICT as failing to conform to the Project Documents, whether incorporated or not. CONTRACTOR shall promptly replace and re-execute its own work to comply with Project Documents without additional expense to DISTRICT and shall bear the expense of making good all work of other contractors destroyed or damaged by such removal or replacement.

(b) If CONTRACTOR does not remove such work within a reasonable time, fixed by written notice, DISTRICT may remove it and may store the material at CONTRACTOR's expense. If CONTRACTOR does not pay expenses of such removal within ten (10) days thereof, DISTRICT may, upon ten (10) days written notice, sell such materials at auction or at private sale and shall account for net proceeds thereof, after deducting all costs and expenses that should have been borne by CONTRACTOR.

**ARTICLE 64. EXTENSION OF TIME - LIQUIDATED DAMAGES**

(a) The CONTRACTOR and DISTRICT hereby agree that the exact amount of damages for failure to complete the work within the time specified is extremely difficult or impossible to determine. CONTRACTOR shall be assessed liquidated damages for each and every day the work required under the Project Documents remains unfinished past the time for completion, as set forth in the Agreement, and any extensions of time granted by the DISTRICT to the CONTRACTOR under the terms of the Project Documents. The CONTRACTOR will pay to the DISTRICT or DISTRICT may retain from amounts otherwise payable to the CONTRACTOR, said amount for each day after failure to meet the requirements of the contract completion as scheduled in the Agreement. Government Code Section 53069.85 For purposes of this article, the work shall be considered "complete" in accordance with the provisions of Article 60, "COMPLETION", except that the work may be considered complete without formal acceptance by the DISTRICT Governing Board so long as the Governing Board, at its next regularly scheduled meeting, accepts the work.
(b) CONTRACTOR shall not be charged for liquidated damages, as set forth above, because of any delays in completion of work which are not the fault or negligence of CONTRACTOR, including but not restricted to acts of God. CONTRACTOR shall within ten (10) days of beginning of any such delay, notify DISTRICT in writing of causes of delay. CONTRACTOR shall provide documentation and justification to substantiate the delay and its relation to the Project's critical path. DISTRICT shall ascertain the facts and extent of delay and grant extension of time for completing work when, in its judgment, the findings of fact justify such an extension. The DISTRICT's finding of fact thereon shall be final and conclusive on the parties hereto. Extension of time shall apply only to that portion of work affected by the delay, and shall not apply to other portions of work not so affected.

**ARTICLE 65: PAYMENTS WITHHELD**

(a) In addition to amount which DISTRICT may retain under Article entitled “COMPLETION” and Article entitled “PAYMENTS,” DISTRICT may withhold a sufficient amount or amounts of any payment or payments otherwise due to CONTRACTOR, as in its judgment may be necessary to cover:

(1) Payments which may be past due and payable for just claims against CONTRACTOR or any subcontractors, or against and about the performance of work on the Project, including, without limitation, payments made pursuant to the Article entitled "PAYMENTS BY CONTRACTOR.”

(2) The cost of defective work which CONTRACTOR has not remedied.

(3) Liquidated damages assessed against CONTRACTOR.

(4) Penalties for violation of labor laws.

(5) The cost of materials ordered by the DISTRICT pursuant to Article 33 entitled "MATERIALS AND WORK.”

(6) The cost of completion of this Agreement if there exists a reasonable doubt that this Agreement can be completed for the balance then unpaid to CONTRACTOR.

(7) Damage to DISTRICT, another contractor, or subcontractor.

(8) Site clean-up as provided in Article 44 entitled "CLEANING UP.”

(9) Payments to indemnify, defend, or hold harmless the DISTRICT.

(10) Any payments due to the District including but not limited to payments for failed tests, utilities or imperfections.

(11) Extra services for ARCHITECT.
(12) Extra services for the INSPECTOR including but not limited to reinspection required due to CONTRACTOR's failed tests or installation of unapproved or defective materials and CONTRACTOR's requests for inspection and CONTRACTOR's failure to attend the inspection.

(13) Failure of CONTRACTOR to submit on a timely basis, proper and sufficient documentation required by the Project Documents, including without limitation, monthly progress schedules, shop drawings, submittal schedules, schedule of values, product data and samples, proposed product lists, executed change orders and verified reports.

(14) Any other obligation(s) of the DISTRICT which the DISTRICT is authorized and/or compelled by law to perform.

(b) If the above grounds are in the opinion of the DISTRICT removed by or at the expense of CONTRACTOR, payment shall be made for amounts withheld because of them.

(c) DISTRICT may apply such withheld amount or amounts to payment of such claims or obligations at its discretion. In so doing, DISTRICT shall make such payments on behalf of CONTRACTOR. If any payment is so made by DISTRICT, then such amount shall be considered as a payment made under contract by DISTRICT to CONTRACTOR and DISTRICT shall not be liable to CONTRACTOR for such payments made in good faith. Such payments may be made without prior judicial determination of claim or obligations. DISTRICT will render CONTRACTOR an accounting of such funds disbursed on behalf of CONTRACTOR.

(d) As an alternative to payment of such claims or obligations, DISTRICT, in its sole discretion, may reduce the total contract price as provided in Article 61 entitled "ADJUSTMENTS TO CONTRACT PRICE."

**ARTICLE 66. TAXES**

(a) CONTRACTOR will pay all applicable federal, state and local taxes on all materials, labor, or services furnished by it, and all taxes arising out of its operations under the Project Documents.

(b) If under federal excise tax law any transaction hereunder constitutes a sale on which a federal excise tax is imposed and the sale is exempt from such excise tax because it is a sale to a state or local government for its exclusive use, the DISTRICT, upon request, will execute documents necessary to show (1) that the DISTRICT is a political subdivision of the State for the purposes of such exemption and (2) that the sale is for the exclusive use of the DISTRICT. No excise tax for such materials shall be included in any bid price.

**ARTICLE 67. NO ASSIGNMENT**

The CONTRACTOR shall not assign, transfer, convey, sublet or otherwise dispose of this Agreement or of its rights, title or interest in or to the same or any part thereof. If the CONTRACTOR shall assign, transfer, convey, sublet or otherwise dispose of the Agreement or its right, title or interest therein, or any part thereof, such attempted or purported assignment, transfer, conveyance, sublease or other disposition shall be null, void and of no legal effect whatsoever, and the Agreement may, at the option of the DISTRICT, be terminated, revoked and annulled, and the DISTRICT shall thereupon be relieved and discharged from any and all liability and obligations growing out of the same to the CONTRACTOR, and to its purported assignee or transferee.
ARTICLE 68: NOTICE

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

(1) If notice is given to DISTRICT, by personal delivery thereof to DISTRICT, or by depositing same in United States mail, enclosed in a sealed envelope addressed to DISTRICT, and sent by registered or certified mail with postage prepaid.

(2) If notice is given to CONTRACTOR, by personal delivery thereof to said CONTRACTOR, or to CONTRACTOR's superintendent at site of Project, or by depositing same in United States mail, enclosed in a sealed envelope addressed to said CONTRACTOR at its regular place of business or at such address as may have been established for the conduct of work under this Agreement, and sent by registered or certified mail with postage prepaid.

(3) If notice is given to surety or other persons, by personal delivery to such surety or other person, or by depositing same in United States mail, enclosed in a sealed envelope, addressed to such surety or person at the address of such surety or person last communicated by surety or other person to party giving notice, and sent by registered or certified mail with postage prepaid.

ARTICLE 69: NO WAIVER

The failure of the DISTRICT in any one or more instances to insist upon strict performance of any of the terms of this Agreement or to exercise any option herein conferred shall not be construed as a waiver or relinquishment to any extent of the right to assert or rely upon any such terms or option on any future occasion.

ARTICLE 70: NON-UTILIZATION OF ASBESTOS MATERIAL

(a) The CONTRACTOR will be required to execute and submit the Certificate Regarding Non-Asbestos Containing Materials.

(b) Should asbestos containing materials be installed by the CONTRACTOR in violation of this certification, or if removal of asbestos containing materials is part of the Project, decontaminations and removals will meet the following criteria:

(1) Decontamination and removal of work found to contain asbestos or work installed with asbestos containing equipment shall be done only under the supervision of a qualified consultant, knowledgeable in the field of asbestos abatement and accredited by the Environmental Protection Agency (EPA).

(2) The asbestos removal contractor shall be an EPA accredited contractor qualified in the removal of asbestos and shall be chosen and approved by the asbestos consultant who shall have sole discretion and final determination in this matter.
(3) The asbestos consultant shall be chosen and approved by the DISTRICT who shall have sole discretion and final determination in this matter.

(4) The work will not be accepted until asbestos contamination is reduced to levels deemed acceptable by the asbestos consultant.

(c) Cost of all asbestos removal, including, but not necessarily limited to the cost of the asbestos removal contractor, the cost of the asbestos consultant, analytical and laboratory fees, time delays and additional costs as may be incurred by the DISTRICT shall be borne entirely by the CONTRACTOR.

(d) Hold Harmless. Interface of work for the Project with work containing asbestos shall be executed by the CONTRACTOR at his/her risk, and at his/her discretion with full knowledge of the currently accepted standards, hazards, risks and liabilities associated with asbestos work and asbestos containing products. By execution of the Agreement, the CONTRACTOR acknowledges the above and agrees to hold harmless the DISTRICT, its Governing Board, employees, agents, and ARCHITECT and assigns for all asbestos liability which may be associated with this work. The CONTRACTOR further agrees to instruct his/her employees with respect to the above mentioned standards, hazards, risks and liabilities.

ARTICLE 71. LEAD

Pursuant to the Lead-Safe Schools Protection Act (Education Code Sections 32240, et seq.) and other applicable law, the CONTRACTOR shall not use lead-based paint, lead plumbing and solders, or other potential sources of lead contamination in the construction of any new school facility or the modernization or renovation of any existing school facility.

ARTICLE 72. GOVERNING LAW

The laws of the State of California shall govern the Project and the Agreement.
SPECIAL CONDITIONS

1. **Application of Special Conditions.** These Special Conditions form a part of the Contract Documents for the Work generally described as:
   
   EAST BRIDGE REPLACEMENT PROJECT
   AT SADDLEBACK COLLEGE
   BID NO. 2001

2. Contractor shall indicate the name of their Project Manager and provide a summary of his/her previous experience and phone number to be reached 24-hours a day, seven days a week.

3. Shutdown of any systems must be coordinated and scheduled with Saddleback College Maintenance and Operations staff. Provide 48-hrs. Minimum notice. Any premium paid required to perform system shutdowns shall be included in bid price.

4. Contractor to provide and coordinate all permits, inspections and fees with AQMD as necessary.

5. Contractor is required to recycle all demolished concrete and asphalt removed by this project and to provide the District with manifests indicating recycled quantities. Removal of rebar from demolished concrete as required to recycle shall be included in bid price.

6. Contractor is responsible for the hauling of all debris and disposal at a legal dumpsite.

7. The Contractor is to provide vehicular and pedestrian traffic control as required to facilitate on-campus safety on an as required basis. Roadways are to remain clear and unobstructed during the course of construction. Limited blockage for material delivery and demolition will be allowed through coordination with the District’s representative.

8. Standard working hours are from 7:00am to 3:30pm. Alternate shifts and weekend work may be approved upon request. The Contractor is to provide 48 hours notice prior to the date extended hours are to be provided. All overtime or extended hours inspection charges will be paid by the contractor.

9. Construction parking is to be contained within the designated construction parking area. Temporary parking permits up to (25) will be issued at no cost to the Contractor for the duration of the project.

10. Construction materials are to be located within the designated staging area (to be determined). Contractor to install and maintain temporary fencing for the duration of the project.

11. Contractor to maintain appropriate building access and exiting points of all existing buildings in the work area during all phases of the construction work.

12. Contractor is to provide temporary sanitary conveniences for the use of employees and persons engaged in the construction work, including subcontractors and their employees, as required by law, ordinances, or regulations of public authorities having jurisdiction.

13. Any damage to existing facilities is to be repaired to the condition it was at the beginning of construction. The Contractor will be required to repair interior and exterior surfaces and finishes, utility systems, asphalt in the parking lot, curbs, driveways, signage, turf and irrigation around the construction area, etc., that is damaged as a result of construction.

14. The Contractor may use electrical utilities within the construction site. Power will be provided by the Owner.
15. The Contractor is to allow the Owner, faculty, students, staff, and other related persons including furniture & equipment movers, maintenance and operations personnel, etc., access to all existing buildings surrounding the construction site during construction.

16. The Contractor shall provide and maintain administrative field office facilities within the staging area. This shall include an office space for the Inspector of Record for the project.

17. The Contractor is to mobilize within 5 days of receipt of the Notice to Proceed. The Contractor is to initiate field investigation and preparation of shop drawings and submittals so as to submit these for review and approval by the Architect within the first 14 days of the project.

18. Drawings and Specifications. The number of copies of the Drawings and the Specifications to be furnished to the Contractor free of charge is one (1) copy.

19. (ALLOWANCE) Due to the nature of this project, unforeseen conditions may be encountered during construction. An allowance in the amount indicated in the Bid Documents is to be included as part of the base bid and will be used for unforeseen conditions. Use of this allowance will require written approval by the ARCHITECT and the DISTRICT REPRESENTATIVE. Any unused portion of the allowance shall be credited back to the District at the conclusion of the Project through a deductive change order to the Contract.

20. Submit Shop Drawings for steel bridge no later than 21 calendar days from Date of Notice to Proceed.

PROJECT MANUAL
for:

Saddleback College
East Bridge Replacement Project

South Orange County Community College District
28000 Marguerite Parkway
Mission Viejo, CA 92692-3635

Prepared By:

R²A Architecture
2900 Bristol Street, Suite E-205
Costa Mesa, CA 92626
(714) 435-0380

Project Number 10003.00
January 10, 2011
ARCHITECT
R²A Architecture
2900 Bristol Street, Suite E-205
Costa Mesa, CA 92626-7909
P: (714) 435-0380
F: (714) 435-0383
License: Etienne G. Runge

CIVIL ENGINEER
KPFF Consulting Engineers
18500 Von Karman Avenue, 10th Floor
Irvine, CA 92612
P: (949) 252-1022
F: (949) 252-8082
License: Ali Khamsi

ELECTRICAL ENGINEER
OMB Electrical Engineers
8825 Research Drive
Irvine, CA 92618
P: (949) 753-1553
F: (949) 753-1992
License: Jeffrey C. Overmyer

STRUCTURAL ENGINEER
KPFF Consulting Engineers
18500 Von Karman Avenue, 10th Floor
Irvine, CA 92612
P: (949) 252-1022
F: (949) 252-8082
License: William H. Thorpe
TABLE OF CONTENTS

Introductory Documents

Title Page
Seals Page
Table of Contents

Division 00000  Bid Documents, General and Special Conditions

Notice Calling for Bids
Information for Bidders
Bid Form
Bid Bond
Designation of Subcontractors
Prequalification of Bidder (Not Used)
Noncollusion Affidavit
Workers’ Compensation Certificate
Contract Performance Bond
Payment Bond
Agreement
Escrow Agreement for Security Deposit in Lieu of Retention Guarantee
Drug-Free Workplace Certification
Change Order No. _____ (Additive)
Change Order No. _____ (Deductive)
Contractor’s Certificate of Non-Asbestos Materials
General Conditions
Special Conditions

Division 01000  General Requirements

01100  Summary
01210  Allowances
01250  Contract Modification Procedures
01290  Payment Procedures
01310  Project Management and Coordination
01320  Construction Progress Documentation
01322  Photographic Documentation
01330  Submittal Procedures
01400  Quality Requirements
01420  References
01500  Temporary Facilities and Controls
01524  Construction Waste Management
01600  Product Requirements
01700  Execution Requirements
01731  Cutting and Patching
01732  Selective Demolition
01770  Closeout Procedures
01781  Project Record Documents

Division 02000  Sitework
<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>02230</td>
<td>Site Clearing</td>
</tr>
<tr>
<td>02300</td>
<td>Earthwork</td>
</tr>
<tr>
<td>02630</td>
<td>Storm Drainage</td>
</tr>
<tr>
<td>02751</td>
<td>Cement Concrete Paving</td>
</tr>
<tr>
<td>02764</td>
<td>Pavement Joint Sealants</td>
</tr>
<tr>
<td>02875</td>
<td>Post and Panel Signage</td>
</tr>
<tr>
<td></td>
<td><strong>Division 03000  Concrete</strong></td>
</tr>
<tr>
<td>03100</td>
<td>Concrete Formwork</td>
</tr>
<tr>
<td>03200</td>
<td>Concrete Reinforcement</td>
</tr>
<tr>
<td>03300</td>
<td>Cast-in-Place Concrete</td>
</tr>
<tr>
<td></td>
<td><strong>Division 04000  Masonry</strong></td>
</tr>
<tr>
<td>04220</td>
<td>Concrete Unit Masonry</td>
</tr>
<tr>
<td></td>
<td><strong>Division 05000  Metals</strong></td>
</tr>
<tr>
<td>05120</td>
<td>Structural Steel</td>
</tr>
<tr>
<td>05315</td>
<td>Metal Floor Decking</td>
</tr>
<tr>
<td>05500</td>
<td>Metal Fabrications</td>
</tr>
<tr>
<td>05721</td>
<td>Ornamental Railings</td>
</tr>
<tr>
<td></td>
<td><strong>Division 06000  Wood and Plastics (Not Used)</strong></td>
</tr>
<tr>
<td></td>
<td><strong>Division 07000  Thermal and Moisture Protection</strong></td>
</tr>
<tr>
<td>07195</td>
<td>Anti-Graffiti Coatings</td>
</tr>
<tr>
<td></td>
<td><strong>Division 08000  Doors and Windows (Not Used)</strong></td>
</tr>
<tr>
<td></td>
<td><strong>Division 09000  Finishes</strong></td>
</tr>
<tr>
<td>09900</td>
<td>Painting</td>
</tr>
<tr>
<td></td>
<td><strong>Division 10000  Specialties (Not Used)</strong></td>
</tr>
<tr>
<td></td>
<td><strong>Division 11000  Equipment</strong></td>
</tr>
<tr>
<td>11150</td>
<td>Parking Control Equipment</td>
</tr>
<tr>
<td></td>
<td><strong>Division 12000  Furnishings (Not Used)</strong></td>
</tr>
<tr>
<td></td>
<td><strong>Division 13000  Special Construction (NOT USED)</strong></td>
</tr>
<tr>
<td></td>
<td><strong>Division 14000  Conveying Systems (Not Used)</strong></td>
</tr>
<tr>
<td></td>
<td><strong>Division 15000  Mechanical Systems (Not Used)</strong></td>
</tr>
</tbody>
</table>
Division 16000  Electrical Systems

16010       General Electrical Requirements
16050       Basic Electrical Materials and Methods

End of Table of Contents
SECTION 01100 - Summary

PART 1 - General

1.1 Related Documents

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division I Specification Sections, apply to this section.

1.2 Summary

A. Project Name: Saddleback College East Bridge Replacement Project

B. Project Location: Saddleback College, 28000 Marguerite Parkway, Mission Viejo, CA 92692.

C. Owner: South Orange County Community College District, 28000 Marguerite Parkway, Mission Viejo, CA 92692.

D. Owner’s Representative: Brandye D’Lena, Director, Facilities Planning/Purchasing

E. Architect: R²A Architecture, 2900 Bristol Street, Suite B-205, Costa Mesa, CA 92626, telephone 714.435.0380, fax 714.435.0383, contact Rafael Iniguez, Jr.

F. The Work consists of the following:

1. This project consists of demolition and removal of existing pedestrian bridge and construction of new bridge on existing abutments. Install new footing attached to existing abutment and modify top of abutment base. Remove portions of existing on-grade paving. Install new bridge and paving to meet accessibility requirements for path of travel. Remove existing guardrails and install new guardrails. Install decorative signage, site lighting, bridge lighting, trench drains and storm drainage to lower curb. Install conduit & pull boxes for future use and conduit & wiring for new lighting.

G. Provide all labor, materials, equipment, freight, taxes, services and administration to complete the Work.

H. The Bid Drawings and Specifications indicate the scope of the Work in terms of the design concept, the dimensions of the Work, and the elements of construction. The Bid Drawings and Specifications do not necessarily indicate or describe all Work required for the full performance and completion of the Work. Contractor shall be solely responsible for the inclusion of adequate amounts in the bid price to include all items, regardless of whether items are indicated, described, implied, or necessary in order to produce a completed Project. Decisions by the Owner’s Representative as to the items of Work included within the scope of these Drawings and Contract Documents shall be final and binding on the Contractor.

1.3 Contracts

A. Work will be completed under:


1.4 Use Of Premises
A. Contractor shall have full use of premises for construction operations, including use of Project site, during construction period. Contractor’s use of premises is limited only by Owner’s right to perform work or to retain other contractors on portions of Project. Perform Work so as not to interfere with Owner’s day to day operations. Limit construction operations to the following days and times:

1. Monday through Friday. 7:00 a.m. to 3:30 p.m.

B. Smoking is not permitted within Building or Site, or within 25 feet of entrances, windows or air intakes.

C. Prior to pre-construction meeting, submit written/graphic construction plan describing intended use of construction site. Address the following items:

1. Daily work hours of construction personnel.
2. Parking area for construction personnel and visitors.
3. Staging area.
4. Delivery points.
5. Construction traffic patterns.
6. Construction office location.
7. Temporary toilet location.
9. Maximum number of workers expected in a single day.
10. Crane location.
11. Temporary utility connection location(s)
12. Soil stockpile areas.
15. Trash collection points.
16. Recycled material sorting areas.
17. Scaffold locations.
18. Pedestrian and automobile traffic patterns around site enclosures. Written description and location of protection for people and devices.
19. Schedule of road closures.
20. Bridge delivery location, crane lift & movement area.

D. Review construction plan at pre-construction meeting and revise per comments received at meeting. Limit areas of activity as directed by Owner. Submit final plan prior to submitting first application of payment.

E. Keep driveways and entrances serving premises clear and available to Owner, Owner’s employees, and emergency vehicles at all times. Do not use these areas for parking or storage of materials.

1. Schedule deliveries to minimize use of driveways and entrances.
2. Schedule deliveries to minimize space and time requirements for storage of materials and equipment on-site.

F. Contractor is aware that adjacent buildings are occupied. Contractor must conduct operations to ensure least inconvenience to public and occupied areas in adjacent buildings. Indicate adjacent building occupancy dates in construction schedule and coordinate construction activity with Owner.

1. Minimum noise impact on adjacent existing occupancies.
2. Minimum dust and debris impact on adjacent existing buildings and occupancies.
3. Maintain and provide pedestrian barriers and protection.
4. Maintain and protect exits from occupied areas at all times.
G. Arrange and pay for parking needed for contractors, workers, subcontractors and employees.

H. Arrange for additional work areas as needed.

I. Access to and egress from construction site shall be in strict conformance with Owner’s requirements and City requirements. Obtain approval for construction routes from Owner and City agencies.

1.5 **Owner’s Occupancy Requirements**

A. Owner reserves the right to place and install equipment in completed areas of Work, before Substantial Completion/Beneficial Occupancy, provided such installation does not interfere with completion of the Work. Such placement of equipment shall not constitute acceptance of the Work, or substantial completion/beneficial occupancy.

1.6 **Work Not in Contract**

A. The following will be provided by the Owner under separate contracts.

1. Encapsulation, removal and disposal of any hazardous materials on the site or in the existing bridge & abutments.
2. Tests and inspections specified to be provided by the Owner in the Contract Documents.
3. Items noted NIC (Not in Contract) on the Drawings or in the Specifications.

B. When work of this Contract requires the contractor to make allowance for interfacing his Work with other work indicated as NIC, the contractor shall include all costs associated therein.

1.7 **Specification Conventions**

A. The Specifications use certain conventions for the style of language and the intended meaning of certain terms, words, and phrases when used in particular situations. These conventions are as follows:

1. Language used in the Specifications and other Contract Documents is abbreviated. Words implied, but not stated, shall be inferred as the sense requires. Singular words shall be interpreted as plural and plural words shall be interpreted as singular where applicable as the context of the Contract Documents indicates.
2. Imperative mood and streamlined language are generally used in the Specifications and Drawings. Requirements expressed in the imperative mood are to be performed by Contractor. Occasionally, the indicative or subjunctive mood may be used in the Section Text for clarity to describe responsibilities that must be fulfilled indirectly by Contractor or by others when so noted.

   a. The words "shall," "shall be," or "shall comply with," depending on the context, are implied where a colon (:) is used within a sentence or phrase.

B. Unless stated in the Contract Documents, technical words and abbreviation contained in the Contract Documents are used in accordance with commonly understood construction industry meanings, and non-technical words and abbreviations are used in accordance with their commonly understood meanings.

C. Contract Documents may omit modifying words such as “all” and “any,” and articles such as “the” and “an,” but the fact that a modifier or an article is absent from one statement and appears in another is not intended to affect the interpretation of either statement. Use of the word “including,” when following any general statement, shall not be construed to limit such statement to specific items or matters, whether or not non-limiting language (such as “without limitation,” “but not limited to,” or words of similar import) is used with reference thereto, but rather shall be deemed to refer to all other items or matters that could reasonably fall within the broadest possible scope of such general statement.

Summary
01100 - 3
D. Whenever context so requires, use of the singular number shall be deemed to include the plural and vice versa.

1. Each gender shall be deemed to include any other gender, and each shall include corporation, partnership, trust or other legal entity whenever context so requires.
2. Captions and headings of various subdivisions of Contract Documents are intended only as a matter of reference and convenience and in no way define, limit, or prescribe the scope or intent of Contract Documents or any subdivision thereof.

PART 2 - Products (Not Used)

PART 3 - Execution (Not Used)

End of Section 01100
SECTION 01210 – Allowances

PART 1 - General

1.1 Related Documents

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division I Specification Sections, apply to this Section.

B. Related Sections include the following:
   1. Section 01400 “Quality Requirements.”

1.2 Procedures

A. Submit invoices and delivery slips to show actual quantities of materials delivered to the site for use in fulfillment of each allowance.

1.3 Coordination

A. Coordinate allowance items with other portions of the work. Furnish templates as required to coordinate installation.

1.4 Lump-Sum Allowances

A. Include labor to install work covered by allowances.

B. Include costs for receiving and handling, overhead and profit, and similar costs related to products and materials required by work covered by allowances.

C. Allowance may only be used with prior written approval of Owner and Architect.

D. Identify allowance on bid form and include in base bid amount.

PART 2 - Products (Not Used)

PART 3 - Execution

3.1 Schedule of Allowances

<table>
<thead>
<tr>
<th>Allowance #</th>
<th>Description</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>A1</td>
<td>Allowance for unforeseen conditions</td>
<td>$75,000.00</td>
</tr>
</tbody>
</table>

End of Section 01210
SECTION 01250 - Contract Modification Procedures

PART 1 - General

1.1 Related Documents

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division I Specification Sections, apply to this Section.

1.2 Proposal Requests

A. Include measures as are needed to assure familiarity of the contractor’s staff and employees with these procedures for processing contract modifications.

B. Make submittals through the Architect. Submit the number of copies called for under the various items listed in this Section.

C. Based upon Owner’s request for changes in scope, RFI responses, or other changes, Architect will issue a detailed description, or Field Change Directive (FCD) that may require adjustment to the Contract Sum or Time. If necessary, the description, or FCD will include revised Drawings and Specifications.

1. Proposed Changes issued by Architect are for information only. Do not consider them instructions either to stop work in progress or to execute the proposed change.
2. Within five (5) days after receipt of proposed changes, submit a quotation estimating adjustments to the Contract Sum and the Contract Time necessary to execute the change.
   a. Include a list of quantities of products required or eliminated and unit costs, with total amount of purchases and credits to be made. If requested, furnish survey data to substantiate quantities.
   b. Indicate applicable taxes, delivery charges, equipment rental, and amounts of trade discounts.
   c. Include costs of labor and supervision directly attributable to the change.
   d. Include proposed Contractor’s Construction Schedule that indicates the effect, if any, of the change to the construction schedule. Including, but not limited to, changes in activity duration, start and finish times, and activity relationship. Use available total float before requesting an extension of the Contract Time.

1.3 Change Order Procedures

A. On Owner’s approval of a Proposal Request, issue a Change Order for signatures of Owner, Contractor and Architect on form approved by Owner.

B. Change Orders will be dated and numbered in sequence.

C. Each Change Order shall include the following information:

1. DSA Application number.
2. Project Name and Address.
3. A detailed description of the change required, with back-up documentation (Bulletin, Change Order Request, cost data, letters, etc.)
4. The reason for the change.
5. Who requested the change.
6. The dollar amount of each item (add, deduct, or no cost)
7. Time adjustment if warranted.
8. All necessary back-up information, including sales receipts, time cards, field logs, test results, etc., necessary to justify the amounts of time indicated.

D. The Owner, DSA Inspector, Architect and the construction manager shall review, approve, and sign the Change Order.

E. The construction manager will distribute the required number of copies (minimum of seven) of each Change Order prepared and signed and submitted through the construction manager to the Owner.

1. The Architect will retain one signed copy in his file, will forward the other signed copies to the Division of the State Architect (DSA).
2. The Owner, upon approval, will sign all copies, retain one signed copy for the Owner's files and return the remaining copies to the construction manager for distribution to the Architect.
   a. All Change Orders must be approved by DSA prior to change being made in the Work.
3. All Change Orders must be approved by the Owner's Board prior to the contractor invoicing the Owner for that change.

PART 2 - Products (Not Used)

PART 3 - Execution (Not Used)

End of Section 01250
SECTION 01290 - Payment Procedures

PART 1 - General

1.1 Related Documents

A. Drawings and general provisions of the Contract, including General and Supplementary conditions and other Division I Specification Sections, apply to this Section.

1.2 Schedule of Values

A. Submit Schedule of Values no later than 10 days prior to submittal of initial application of payment.

B. Use the Project Manual table of contents as a guide to establish line items for the Schedule of Values. Provide at least one line item for each Specification Section. Provide a breakdown of the Contract Sum in enough detail to facilitate continued evaluation of Applications for Payment and progress reports. Include the following project identification on the Schedule of Values:

1. Project name and location.
2. Name of Architect
3. Architect’s project number.
4. Contractor’s name and address.
5. Date of submittal.
6. Round amounts to nearest whole dollar; total shall equal the Contract Sum.
7. Provide a separate line item in the Schedule of Values for each allowance. Show line-item value of unit-cost allowances, as a product of the unit cost, multiplied by measured quantity. Use information indicated in the Contract Documents to determine quantities.
8. Update and submit the Schedule of Values with each Application for Payment.
9. Arrange the Schedule of Values in tabular format with separate columns to indicate the following:
   a. Related specification sections
   b. Description of Work
   c. Name of Sub-Contractor
   d. Approved change orders that affect value.
   e. Dollar value.
   f. Total contract sum of base contract
   g. Total Contract sum with total of approved change orders added it

10. Differentiate between items stored on site and items stored offsite. Include evidence of insured or bonded warehousing.

1.3 Applications For Payment

A. Make each Application for Payment consistent with previous applications and payments as certified by Architect and paid for by Owner. Initial Application for Payment, Application for Payment at time of Substantial Completion/Beneficial Occupancy, and final Application for Payment may involve additional requirements.

B. Submit Application for Payment to Owner on a day of each month agreed to by Owner, Contractor and Architect.

C. Use AIA Document G702 and AIA Document G703 Continuation Sheets as form for Applications for Payment.
D. Complete every entry on form. Notarize and execute by a person authorized to sign legal documents on behalf of Contractor. Architect will return incomplete applications without action.

1. Match data on the current Schedule of Values and current Construction Schedule.
2. Include amounts of Approved Change Orders issued before last day of construction period covered by application.

E. Submit five (5) signed and notarized original copies of each Application for Payment to Owner by a method ensuring receipt. All copies shall include waivers of lien and other required attachments. Transmit each copy with a transmittal form listing attachments and recording appropriate information about application.

F. With each Application for Payment, submit waivers and releases from every entity who is lawfully entitled to file a lien arising out of the Contract and related to the Work covered by the payment.

1. Submit conditional waiver and release upon progress payment on each item for amount requested in current application, after deduction for retainage, on each item.
2. Submit an unconditional waiver and release on each item for the amount paid in the previous application, prior to deduction for retainage.
3. When an application shows completion of an item, submit conditional waiver and release upon final payment.
4. Owner reserves the right to designate which entities involved in the Work must submit waivers.
5. Submit waivers of lien on forms, executed in a manner acceptable to Owner.
6. Within 10 (ten) days of receipt of payment that includes final payment on an item of Work, submit an unconditional waiver and release upon final payment for the item.

G. Administrative actions and submittals that must precede or coincide with submittal of first Application for Payment include the following:

1. List of subcontractors.
2. Schedule of Values.
3. Construction Schedule.
5. List of Contractor’s staff assignments.
7. Copies of building permits.
8. Copies of authorizations and Business Licenses from authorities having jurisdiction in location of Work.
11. Certificates of insurance and insurance policies.
12. List of subcontracts.

H. After issuing the Certificate of Substantial Completion/Beneficial Occupancy, submit an Application for Payment showing 100 percent completion for portion of the Work claimed as substantially complete/claimed to be complete for beneficial occupancy.

1. Include documentation supporting claim that the Work is substantially complete/Work is complete for beneficial occupancy and a statement showing an accounting of changes to the Contract Sum.
2. Reflect Certificates of Partial Substantial Completion/Beneficial Occupancy issued previously for Owner occupancy of designated portions of the Work.

I. Submit final Application for Payment with releases and supporting documentation not previously submitted and accepted, including, but not limited, to the following:

Payment Procedures
01290 - 2
1. Evidence of completion of Project closeout requirements.
2. Insurance certificates for products and completed operations where required and proof that taxes, fees, and similar obligations were paid.
3. Updated final statement, accounting for final changes to the Contract Sum.
4. AIA Document G706, "Contractor's Affidavit of Payment of Debts and Claims."
6. AIA Document G707, "Consent of Surety to Final Payment."
7. Evidence that claims have been settled.
8. Final meter readings for utilities, a measured record of stored fuel, and similar data as of date of Substantial Completion/Beneficial Occupancy or when Owner took possession of and assumed responsibility for corresponding elements of the Work.
10. Warranty and Maintenance information.
11. Record documents.

PART 2 - Products (Not Used)

PART 3 - Execution (Not Used)

End of Section 01290
SECTION 01310 - Project Management and Coordination

PART I - General

1.1 Related Documents

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

B. Related Sections include:

1. Section 01700 “Execution Requirements.”

1.2 Definitions

A. RFI: Request For Information by contractor seeking interpretation or clarification of the Contract Documents.

1.3 Coordination

A. Coordinate all construction operations to ensure efficient and orderly installation of each part of the Work. Coordinate construction operations that depend on each other for proper installation, connection, and operation. Establish and maintain clear communication between all trades.

1. Schedule construction operations in sequence required to obtain the best results where installation of one part of the Work depends on installation of other components, before or after its own installation.

2. Coordinate installation of different components with other contractors to ensure maximum accessibility for required maintenance, service, and repair.

3. Make adequate provisions to accommodate items scheduled for later installation.

4. Where availability of space is limited, coordinate installation of different components to ensure maximum performance and accessibility for required maintenance, service, and repair of all components, including mechanical and electrical.

5. Provide and maintain sufficient crew to manage, supervise, execute and complete the Work by the required completion date.

6. Observe Work of each subcontractor to monitor compliance with schedule and requirements of the Contract Documents.

7. Report noncompliance to Inspector of Record, with recommendation for changes.

B. Require each subcontractor to:

1. Coordinate work of his own employees and suppliers.

2. Expedite his work to assure compliance with schedules.

3. Coordinate his work with that of other prime contractors, subcontractors and work by Owner.

4. Prepare sub-schedules to comply with critical mass.

5. Monitor schedules as work progresses.

C. Prepare memoranda for distribution to each party involved, outlining special procedures required for coordination. Include such items as required notices, reports, and list of attendees at meetings.

D. Coordinate scheduling and timing of required administrative procedures with construction activities and activities of other contractors to avoid conflicts and to ensure orderly progress of the Work. Time
progress meetings to coincide with review of payment applications. Such administrative activities include, but are not limited to, the following:

1. Preparation of Construction Schedule.
2. Preparation of the Schedule of Values.
3. Installation and removal of temporary facilities and controls.
4. Delivery and processing of submittals.
5. Progress meetings.
6. Pre-installation meetings.
7. Project closeout activities.
8. Startup and adjustment of systems.
9. Project closeout activities.

E. Coordinate and check layout and installation of Work between all trades. Coordinate and sequence Work in a logical manner to minimize impact to Work in place.

F. Require all subcontractors to read and comply with all applicable requirements of the contract documents.

G. Carefully review all contract documents and promptly issue an RFI in writing noting errors, inconsistencies or omissions found, prior to starting any Work.

H. Field verify all dimensions needed for fabricated components.

I. Coordinate construction activities so that operations are carried out with consideration for efficient use of power, water and material.

J. Within 10 (ten) days of Notice to Proceed, submit a list of names for the following general contractor staff. List addresses, phone numbers, email addresses and fax numbers:

1. Principal in charge.
2. Project manager(s).
3. Project superintendent(s).
4. Key administrative staff.

1.4 Project Meetings

A. Schedule and conduct meetings and conferences at Project site on a regular basis to coordinate the Work. Prepare agenda and lead the meeting. Issue meeting minutes to all concerned parties.

1. Inform participants and others involved, and individuals whose presence is required, of date and time of each meeting. Notify Owner and Architect of scheduled meeting dates and times.
2. Distribute the agenda to all invited attendees.
3. Record significant discussions and agreements achieved. Distribute the meeting minutes to everyone concerned, including Owner and Architect, within 2 days of the meeting.
4. Those persons designated by the contractor to attend and participate in project meetings shall be deemed authorized to commit the contractor to solutions agreed upon or commitments of the contractor made in the project meetings.
5. The contractor will assign the same person or persons to represent the contractor at the project meetings throughout progress of the Work.

B. Schedule a preconstruction meeting before starting construction, at a time convenient to Owner and Architect, but no later than 10 working days after the date of the Notice to Proceed. Hold the meeting at Project site or another convenient location. Conduct the meeting to review responsibilities and personnel assignments.

Project Management and Coordination

01310 - 2
1. Authorized representatives of Owner, Architect, and their consultants; Contractor and its superintendent, major subcontractors, suppliers, and other concerned parties shall attend the meeting. All participants at the meeting shall be familiar with Project and authorized to conclude matters relating to the Work.

2. Discuss items of significance that could affect progress, including the following:
   
a. Construction schedule.
b. Phasing.
c. Critical work sequencing and long-lead items.
d. Designation of key personnel and their duties.
e. Procedures for processing field decisions and Change Orders.
f. Procedures for RFI's.
g. Procedures for Bulletins and Field Change Directives.
h. Procedures for testing and inspecting.
i. Procedures for processing Applications for Payment.
j. Distribution of the Contract Documents.
k. Submittal procedures.
l. Preparation of Record Documents.
m. Use of the premises.
n. Work restrictions.
o. Owner's occupancy requirements, use of facilities and protection of occupants.
p. Responsibility for temporary facilities and controls.
q. Construction waste management and recycling.
r. Parking availability.
s. Office, work, and storage areas.
t. Equipment deliveries and priorities.
u. First aid and safety procedures.
w. Progress cleaning.
x. Working hours.
y. Safety program.
z. Communication channels and procedures.

3. Record and distribute meeting minutes.

C. Conduct a pre-installation meeting at Project site for each construction activity required to have a pre-installation meeting.

1. Installer and representatives of manufacturers and fabricators involved in or affected by the installation and its coordination or integration with other materials and installations that have preceded or will follow, shall attend the meeting. Advise Architect and Owner of scheduled meeting dates.

2. Review progress of other construction activities and preparations for the particular activity under consideration, including requirements for the following:
   
b. Options.
c. Related RFIs.
d. Related Change Orders.
e. Lead time.
f. Deliveries.
g. Submittals.
h. Review of mockups.
i. Possible conflicts.

j. Compatibility problems.

k. Time schedules.

l. Weather limitations.

m. Manufacturer's written recommendations.

n. Warranty requirements.

o. Compatibility of materials.

p. Acceptability of substrates.

q. Temporary facilities and controls.

r. Space and access limitations.

s. Regulations of authorities having jurisdiction.

t. Testing and inspecting requirements.

u. Installation procedures.

v. Coordination with other work.

w. Required performance results.

x. Protection of adjacent work.

y. Protection of construction and personnel.

3. Record significant conference discussions, agreements, and disagreements, including required corrective measures and actions.

4. Distribute minutes of the meeting to each party present and to all other concerned parties.

5. Do not proceed with installation if meeting cannot be successfully concluded. Initiate whatever actions are necessary to resolve impediments to performance of the Work and reconvene the conference at earliest feasible date.

6. As a result of the meeting, make necessary adjustments in work to assure compliance with intent of contract requirements at no additional cost or time to the contract.

D. Conduct regular progress meetings at intervals agreed to with Owner. Coordinate dates of meetings with preparation of payment requests.

1. In addition to representatives of Owner and Architect, each contractor, subcontractor, supplier, and other entity concerned with current progress or involved in planning, coordination, or performance of future activities shall be represented at these meetings. All participants at the meeting shall be familiar with Project and authorized to conclude matters relating to the Work.

2. Review and correct minutes of previous progress meeting. Review other items of significance that could affect progress. Include topics for discussion as appropriate to status of Project.

a. Review progress since the last meeting. Determine whether each activity is on time, ahead of schedule, or behind schedule, in relation to Construction Schedule. Determine how construction behind schedule will be expedited; secure commitments from parties involved to do so. Discuss whether schedule revisions are required to ensure that current and subsequent activities will be completed within the Contract Time. Review schedule for next period.

b. Review present and future needs of each entity present, including the following:

1) Interface requirements.

2) Sequence of operations.

3) Status of submittals.

4) Deliveries.

5) Off-site fabrication.

6) Access.

7) Work hours.

8) Quality and work standards.
9) Status of correction of deficient items.
10) Field observations.
11) RFIs.
12) Status of proposal requests.
13) Pending changes.
14) Status of Change Orders.
15) Pending claims and disputes.
16) Documentation of information for payment requests.

3. Record and distribute minutes of the meeting to each party present and to all other concerned parties.

E. The Owner’s Representative may call a special meeting at any time during the course of the project. Special project meetings shall include representatives of any members of the project team requested in order to discuss problems and/or solutions that are common to the project.

1.5 Requests For Interpretation (RFIs)

A. Immediately on discovery of the need for interpretation of the Contract Documents, prepare and submit an RFI in the approved form.

1. RFIs shall originate with Contractor. RFIs submitted by entities other than Contractor will be returned with no response.
2. Coordinate and submit RFIs in a prompt manner so as to avoid delays in the Work.
3. Review all RFIs with contract documents prior to submitting RFI to Architect to assure that requested information is not in the contract documents. No time or schedule extension will be approved for RFIs when requested information is clearly shown in the Contract Documents.

B. Include a detailed, legible description of item needing interpretation and the following:

1. Project name
2. Date
3. Name of Contractor
4. Name of Architect
5. RFI number, numbered sequentially.
6. Specification Section number and title and related paragraphs, as appropriate.
7. Drawing number and detail references, as appropriate.
8. Field dimensions and conditions, as appropriate.
9. Contractor’s suggested solution. If Contractor’s solution impacts the Contract Time or the Contract Sum, Contractor shall state impact in the RFI. RFIs submitted without solution will be returned unreviewed, and no extension of time will be approved.
10. Contractor’s signature
11. Include drawings, descriptions, measurements, photos, Product Data, Shop Drawings, and other information necessary to fully describe items needing interpretation.
12. Enumerate each page and attachments of RFI with sequential number. Indicate total number of pages on RFI form.

C. Architect will review each RFI and determine action required. RFIs received after 3:00 p.m. will be considered as received the following working day.

1. The following RFIs will be returned without action:
   a. Approval of Means and Methods.
   b. Requests for approval of submittals.
c. Requests for approval of substitution of products or alternate methods.
d. Requests for coordination information already indicated in the Contract Documents.
e. Requests for adjustments in the Contract Time or the Contract Sum.
f. Requests for interpretation of Architect’s actions on submittals.
g. Incomplete RFIs or RFIs with numerous errors.
h. RFIs which do not propose a solution.

2. Architect’s action may include a request for additional information, in which case Architect’s time for response will start again.
3. Architect’s action on RFIs that may result in a change to the Contract Time or the Contract Sum. If contractor believes the RFI response warrants change in the Contract Time or the Contract Sum, notify Architect in writing within 5 working days after receipt of the RFI response.

D. On receipt of Architect’s action, immediately review response and notify Architect within one day if contractor disagrees with response. After acceptance of response, update the RFI log and distribute the RFI response to affected parties.

E. Prepare, maintain, and submit a tabular log of RFIs organized by the RFI number. Include the following:

1. Owner and project name.
2. Name of Contractor.
4. RFI number including RFIs that were dropped and not submitted.
5. RFI description.
6. Date the RFI was submitted.
7. Date Architect’s response was received.

PART 2 - Products (Not Used)

PART 3 - Execution (Not Used)

End of Section 01310
SECTION 01320 - Construction Progress Documentation

PART I - General

1.1 Related Documents

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this section.

B. Related Sections include:
   1. Section 01290 “Payment Procedures.”
   2. Section 01322 “Photographic Documentation.”

1.2 Definitions

A. Activity: A discrete part of a project that can be identified for planning, scheduling, monitoring, and controlling the construction project. Activities included in a construction schedule consume time and resources.

B. CPM: Critical Path Method, which is a method of planning and scheduling a construction project where activities are arranged based on activity relationships. Network calculations determine when activities can be performed and the critical path of Project.

C. Critical Path: The longest connected chain of interdependent activities through the network schedule that establishes the minimum overall Project duration and contains no float.

D. Float: The measure of leeway in starting and completing an activity. Float time belongs to Owner.

E. Major Area: A story of construction, a separate building, or a similar significant construction element.

F. Milestone: A key or critical point in time for reference or measurement.

1.3 Submittals

A. Submittal Schedule: Submit 5 copies of submittal schedule.

B. 30 Day Schedule: Submit 5 opaque color copies large enough to show all 30 days at a readable size.

C. Construction Schedule: Submit 5 opaque copies of initial schedule, large enough to show entire schedule for entire construction period. Submit an electronic copy of schedule in PDF format.

D. Revised Construction Schedule: Submit 5 opaque color copies large enough to show entire construction schedule at a readable size.

E. Four Week Rolling/Look Ahead Schedule: Submit 5 opaque color copies.

F. Daily Construction Reports: Submit 2 copies at weekly intervals.

G. Field Condition Reports: Submit 2 copies at time of discovery of differing conditions.

1.4 Coordination
A. Coordinate preparation and processing of schedules and reports with performance of construction activities and with scheduling and reporting of separate contractors.

B. Coordinate Construction Schedule with the Schedule of Values, Submittals Schedule and payment requests.

PART 2 - Products

2.1 Submittals Schedule

A. Submit a schedule of submittals within 10 days of date of Notice to Proceed, arranged in chronological order by dates required by construction schedule. Include time required for review, resubmittal, ordering, manufacturing, fabrication, and delivery when estimating dates. Coordinate Submittal Schedule with Construction Schedule. Submit concurrently with submittal of Construction Schedule. Include the following:

1. Scheduled date for first submittal
2. Specification Section number and title
3. Submittal category (action or informational)
4. Name of subcontractor
5. Description of the Work covered
6. Scheduled date for Architect’s final release or approval

2.2 Construction Schedule

A. Within 10 days from date of Notice to Proceed, submit a construction schedule. Extend schedule from date established for Notice to Proceed to date of Final Completion. Show the following dates and portions of time:

1. Notice to Proceed
2. Contract Completion Date
3. Date of Beneficial Occupancy
4. Date of Substantial Completion/Beneficial Occupancy
5. Start and Finish dates for each Activity
6. Critical Path
7. Do not sequester float time through strategies such as extending activity durations to consume available float time associated with non-critical activities to cause the Work to become critical.
8. Contract completion date shall not be changed by submission of a schedule that shows an early completion date, unless specifically authorized by Change Order.
9. Show all contractual milestone dates, delivery dates and lead time.
10. Deliverable dates such as submittal approval dates, deferred approval dates, testing and inspection dates and all other dates affecting progress of the Work
11. Dates that designated working spaces, storage areas, access, and other facilities to be made available by the Owner
12. Dates for critical decisions from the Owner
13. Dates required for Owner-furnished items
14. Connection and relocation of existing utilities
15. Connections to or penetration(s) of existing structures
16. Earliest dates when infrastructure and systems are ready for telecom wiring and low voltage installation
17. As-built documentation preparation time

B. Treat each story or separate area as a separate numbered activity for each principal element of the Work.

Construction Progress Documentation
01320 - 2
1. Define and arrange activities so no activity is longer than 10 (ten) days.
2. Include procurement time for long lead items requiring more than 10 (ten) days procurement time, as separate activities in schedule. Procurement cycle activities include, but are not limited to, submittals, approvals, purchasing, fabrication, and delivery. Include procurement time within Activity time.
3. Include review and resubmittal times for submittals. Coordinate submittal review times in Construction Schedule with Submittals Schedule.
4. Include time necessary for startup and testing.
5. Indicate completion in advance of date established for Substantial Completion/Beneficial Occupancy, and allow time for Architect's administrative procedures necessary for certification of Substantial Completion/Beneficial Occupancy. Show substantial completion/beneficial occupancy date.

C. Include constraints and work restrictions indicated in the Contract Documents and as follows in schedule, and show how the sequence of the Work is affected.

1. Arrange list of activities on schedule by phase.
2. Include a separate activity for each portion of the Work performed by Owner.
3. Show the effect of the following items on the schedule:
   a. Coordination with existing construction.
   b. Limitations of continued occupancies.
   c. Uninterruptible services.
   d. Partial occupancy before Substantial Completion/Beneficial Occupancy.
   e. Use of premises restrictions.
   g. Seasonal variations.
   h. Environmental control.
   i. Required inspections.

4. Indicate important stages of construction for each major portion of the Work.
5. Include critical milestone dates such as Inspections and Completion dates.

D. For each proposed contract modification that affects contract time, prepare a time-impact analysis to demonstrate the effect of the proposed change on the overall project schedule. Submit analysis with proposed change.

E. Prepare Construction Schedule using a computerized, time-scaled CPM network analysis diagram for the Work. Develop CPM schedule so it can be accepted for use within 7 (seven) days of submission of first payment application. Failure to include any work item required for performance of this Contract shall not excuse Contractor from completing all work within applicable completion dates, regardless of Owner/Architect approval of the schedule.

1. Establish procedures for monitoring and updating CPM schedule and for reporting progress. Coordinate procedures with progress meeting and payment request dates.
2. Use "one workday" as the unit of time. Include nonworking days and holidays in the schedule.
3. Indicate the estimated time duration, sequence requirements, and relationship of each activity in relation to other activities.
4. Identify critical path activities, including those for interim completion dates. Scheduled start and completion dates shall be consistent with Contract milestone dates.

F. Prepare Schedule using a computerized program that has been specifically developed to products and manage CPM bar chart type schedules.
2.3 Reports

A. Prepare a daily construction report recording the following information concerning events at Project site:

1. List of subcontractors at Project site.
2. Equipment at Project site.
3. Material deliveries.
4. High and low temperatures and general weather conditions.
5. Accidents.
7. Meter readings and similar recordings.
8. Orders and requests of authorities having jurisdiction.
9. Services connected and disconnected.
10. Equipment or system tests and startups.
11. Number of workers on site.
12. Estimated completion date of each activity.
13. Specific problems, if any, with the actions and/or inaction of subcontractors, the Owner, Architect, consulting engineers, or the Contract Documents which are preventing contractor’s work from being properly completed per the schedule.

B. Immediately on discovery of a difference between field conditions and the Contract Documents, prepare and submit a detailed report. Submit with a request for interpretation. Include a detailed description of the differing conditions and photographs, together with recommendations.

C. When an event of an unusual and significant nature occurs at the project site, whether or not it is directly related to the Work, prepare and submit a report. List chain of events, individuals involved, photographs and written description.

D. Submit daily report to Owner’s Representative by 4:00 p.m. daily on each and every working day.

PART 3 - Execution

3.1 Construction Schedule

A. Issue schedule at each regularly schedule progress meeting. At monthly intervals, update schedule to reflect actual construction progress and activities. Issue updated schedule with each Application for Payment.

B. Distribute copies of construction schedule to Architect Owner, separate contractors, testing and inspecting agencies, and other parties identified by Contractor with a need-to-know schedule responsibility.

1. Post copies in Project meeting rooms and temporary field offices.
2. When revisions are made, distribute updated schedules to the same parties and post in the same locations. Delete parties from distribution when they have completed their assigned portion of the Work and are no longer involved in performance of construction activities.

3.2 Corrective Actions

A. Contractor agrees that whenever it becomes apparent to the Owner from the current monthly updated Contract Baseline Schedule that the contract completion date will not be met, the contractor will take corrective actions, at no additional cost to Owner, including but not limited to:
1. The contractor shall prepare a recovery schedule to demonstrate how lost time will be re-couped. Prior to revising the baseline schedule the recovery shall be approved by the Owner.

2. Increase construction manpower in such quantities and crafts as will substantially eliminate the backlog of work.

3. Increase the number of working hours per shift, shifts per working day, working days per week, or the amount of construction equipment, or any combination of the foregoing, sufficiently to substantially eliminate the backlog of work. This paragraph shall not be construed to permit contractor to violate the work hour restrictions specified in the Contract Documents.

4. Reschedule activities to achieve maximum practical concurrency of accomplished activities.

B. Should the contractor fail to complete the work per the agreed schedule and requires overtime and/or weekend work and/or holiday work to remedy schedule deficiencies, the contractor will bear all expenses associated with the unscheduled overtime work. In the event the contractor requires said unscheduled overtime, the contractor will be required to reimburse the Owner, through deductive change order, for inspection and construction manager support.

C. Should contractor fail to complete project by completion date and project work time runs past completion date, contractor shall be responsible for all costs and expenses associated with extended work time. Contractor shall reimburse Owner, through deductive change order, cost for professional fees. This requirement is in addition to any specified liquidated damages.

3.3 Four Week Rolling/Look Ahead Schedule

A. At each project meeting and based upon the latest approved schedule, the contractor shall submit a four week rolling look ahead schedule. The schedule shall show summary of non-critical activities and each critical activity. In addition, a comparison between the planned versus actual of the preceding activities shall be shown.
SECTION 01322 - Photographic Documentation

PART 1 - General

1.1 Related Documents

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 Submittals

A. Submit electronic copies of photographs taken since last progress meeting, at each progress meeting.

B. Identify each set of images on transmittal with the following information:
   1. Name of Project
   2. Name of Contractor
   3. Date stamped by camera
   4. Unique sequential identifier

C. Submit a complete set of digital image electronic files at completion of Project. Identify electronic media with date photographs were taken at time of Substantial Completion/Beneficial Occupancy. Submit images that have same aspect ratio as the sensor, uncropped.

PART 2 - Products

2.1 Photographic Media

A. Provide images in JPEG format, produced by a digital camera with minimum sensor size of 4.0 megapixels, 150 DPI minimum.

PART 3 - Execution

3.1 Construction Photographs

A. Take photographs using the maximum range of depth of field, and that are in focus, to clearly show the Work. Photographs with blurry or out-of-focus areas will not be accepted.

B. Submit digital images exactly as originally recorded in the digital camera, without alteration, manipulation, editing, or modifications using image-editing software.

   1. Include date and time in filename for each image
   2. Maintain one set of images on CD-ROM in the field office at Project site, available at all times for reference. Identify images same as for those submitted to Architect

C. Before commencement of the work, take color, digital photographs of Project site, staging & laydown areas, vehicle & construction access routes and surrounding properties, including existing items to remain during construction, from different vantage points:

   1. Flag construction limits before taking construction photographs
   2. Take photographs to show existing conditions adjacent to property before starting the Work
   3. Take photographs of existing buildings either on or adjoining property to accurately record physical conditions at start of construction
4. Take additional photographs to record settlement or cracking of adjacent structures, pavements, and improvements.

D. Take periodic construction photographs one day before the cutoff date associated with each Application for Payment. Select vantage points to show status of construction, progress and adjacent properties since last photographs were taken.

E. Take digital color photographs of entire scope of Work at time of Substantial Completion/Beneficial Occupancy. Submit photographs to Owner and Architect with transmittal.

F. Take color digital photographs of entire scope of Work at time of Completion. Submit photographs to Owner and Architect with each transmittal.

End of Section 01322
SECTION 01330 - Submittal Procedures

PART 1 - General

1.1 Related Documents

A. Drawings and general provisions of the Contract, including General and Supplementary and other Division 1 Specification Sections, apply to this section.

B. Related Sections include:

1. Section 01320 “Construction Progress Documentation.”
2. Section 01400 “Quality Requirements.”
3. Section 01770 “Closeout Procedures.”
4. Section 01781 “Project Record Documents.”
5. Section 01782 “Operation and Maintenance Data.”

1.2 Definitions

A. Action Submittals: Written and graphic information that requires Architect’s responsive action.

B. Informational Submittals: Written information that does not require Architect’s responsive action. Submittals may be rejected for not complying with requirements.

1.3 Submittal Procedures

A. Coordinate preparation and processing of submittals with performance of construction activities.

1. Coordinate each submittal with fabrication, purchasing, testing, delivery, other submittals, and related activities that require sequential activity.
2. Coordinate transmittal of different types of submittals for related parts of the Work so processing will not be delayed because of need to review submittals concurrently for coordination. Architect reserves the right to withhold action on a submittal requiring coordination with other submittals until related submittals are received.
3. Do not use submittals to obtain approval of substitutions and alternate methods.
4. Do not use submittals to obtain approval of means and methods.

B. Allow 14 days for submittal review, including 14 days for each resubmittal, as follows. Time for review shall commence on Architect’s receipt of submittal. No extension of the Contract Time will be authorized because of failure to transmit submittals enough in advance of the Work to permit processing, including resubmittals.

1. Allow for initial review of each submittal. Allow additional time if coordination with subsequent submittals is required. Architect will advise Contractor when a submittal being processed must be delayed for coordination.
2. If intermediate submittal is necessary, process it in same manner as initial submittal.
3. Allow for review of each resubmittal.

C. Place a permanent label or title block on each submittal for identification.

1. Indicate name of firm or entity that prepared each submittal on label or title block.
2. Provide a space approximately 6 x 8 inches on label or beside title block to record action taken by Architect.
3. Include the following information on label for processing and recording action taken:
   a. Project name.
   b. Date.
   c. Name and address of Architect.
   d. Name and address of Contractor.
   e. Name and address of subcontractor.
   f. Name and address of supplier.
   g. Name of manufacturer.
   h. Submittal number or other unique identifier, including revision identifier. Submittal number shall use Specification Section number followed by a decimal point and then a sequential number (e.g., 06100.01). Resubmittals shall include an alphabetic suffix after another decimal point (e.g., 06100.01 A).

D. Highlight, encircle, or otherwise specifically identify deviations from the Contract Documents on submittals. If submittals contain comparable products equal to or exceeding specified basis of design products provide side-by-side comparison of all attributes between proposed product and specified product. Include side-by-side comparison within submittal, submittals for comparable products without side-by-side comparisons will be rejected.

E. Package each submittal individually and appropriately for transmittal and handling. Transmit each submittal using a transmittal form. Do not group separate submittals under a single transmittal and single submittal number. Rejection of one portion of a submittal will be a rejection of the entire submittal. Architect will return submittals, without review, received from sources other than Contractor. Use transmittal form supplied by Architect.

F. Make resubmittals in same form and number of copies as initial submittal.
   1. Note date and content of previous submittal.
   2. Note date and content of revision in label or title block and clearly indicate extent of revision.

G. Furnish copies of final submittals with mark indicating Architect’s action to manufacturers, subcontractors, suppliers, fabricators, installers, authorities having jurisdiction, and others as necessary for performance of construction activities. Show distribution on transmittal forms.

H. Use only final submittals indicating Architect’s ‘acceptance’ or ‘furnish as corrected’ without a requested resubmittal.

I. Although copies of standards needed for enforcement of requirements may be part of required submittals, the Architect reserves the right to require the contractor to submit additional copies as necessary for enforcement of requirements.

1.4 Contractor’s Use of Architect’s CAD Files

A. Contractor is not allowed to use Architect’s CAD files, or printed copies of Architect’s drawings, for use in preparing submittals.

PART 2 - Products

2.1 Action Submittals

A. Prepare and submit Action Submittals required by individual Specification Sections.
B. Product Data: Collect information into a single submittal for each element of construction and type of product or equipment. Provide adequate information in each submittal so that reviews may be conducted efficiently.

1. If information must be specially prepared for submittal because standard printed data are not suitable for use, submit as Shop Drawings, not as Product Data.
2. Mark each copy of each submittal to show which products and options are applicable.
3. Include the following information, as applicable:
   a. Manufacturer's written recommendations.
   b. Manufacturer's product specifications.
   c. Manufacturer's installation instructions.
   d. Manufacturer's catalog cuts.
   e. Wiring diagrams showing factory-installed wiring.
   f. Printed performance curves.
   g. Operational range diagrams.
   h. Compliance with specified referenced standards.
   i. Testing by recognized testing agency.

4. Submit six (6) copies of Product Data, unless otherwise indicated. Architect will return four (4) copies. Retain one returned copy as a Project Record Document. Provide one returned copy to Owner. Provide one returned copy to IOR.

C. Shop Drawings: Prepare Project-specific information, drawn accurately to scale. Do not base Shop Drawings on reproductions of the Contract Documents or standard printed data.

1. Fully illustrate requirements in the Contract Documents. Include the following information, as applicable:
   a. Dimensions.
   b. Identification of products.
   c. Fabrication and installation drawings.
   d. Roughing-in and setting diagrams.
   e. Wiring diagrams showing field-installed wiring, including power, signal, and control wiring.
   f. Shopwork manufacturing instructions.
   g. Templates and patterns.
   h. Schedules.
   i. Notation of coordination requirements.
   j. Notation of dimensions established by field measurement.
   k. Relationship to adjoining construction clearly indicated.
   l. Seal and signature of professional engineer if specified.
   m. Wiring Diagrams: Differentiate between manufacturer-installed and field-installed wiring.

2. Except for templates, patterns, and similar full-size drawings, submit Shop Drawings on sheets at least 8-1/2 by 11 inches but no larger than 30 by 40 inches.
3. Submit six (6) opaque (bond) copies of each submittal. Architect will return four (4) copies. Retain one returned copy as a Project Record Document. Provide one returned copy to Owner. Provide one returned copy to IOR.

D. Samples: Submit Samples for review of kind, color, pattern, and texture for a check of these characteristics with other elements and for a comparison of these characteristics between submittal and actual component as delivered and installed.
1. Transmit Samples that contain multiple, related components such as accessories together in one submittal package.
2. Attach label on unexposed side of Samples that includes the following:
   a. Generic description of Sample.
   b. Product name and name of manufacturer.
   c. Sample source.
   d. Submittal number.
   e. Contractor's review and approval stamp and signature.
3. Maintain sets of approved Samples at Project site, available for quality-control comparisons throughout the course of construction activity. Sample sets may be used to determine final acceptance of construction associated with each set.
4. Submit manufacturer's color charts consisting of units or sections of units showing the full range of colors, textures, and patterns available.
   a. Submit six (6) full set(s) of available choices where color, pattern, texture, or similar characteristics are required to be selected from manufacturer's product line. Architect will return four (4) submittals with options selected.
5. Submit full-size units or Samples of size indicated, prepared from same material to be used for the Work, cured and finished in manner specified, and physically identical with material or product proposed for use, and that show full range of color and texture variations expected.

2.2 Informational Submittals

A. Prepare and submit Informational Submittals required by Specification Sections.
   1. Submit six (6) copies of each submittal.
   2. Provide a notarized statement that includes signature of entity responsible for preparing certifications. Certificates and certifications shall be signed by an officer or other individual authorized to sign documents on behalf of that entity.

B. Prepare written information that demonstrates capabilities and experience of firm or person. Include lists of completed projects with project names and addresses, names and addresses of architects and owners, and other information specified.

C. Prepare written certification that welding procedures and personnel comply with requirements in the Contract Documents. Submit record of Welding Procedure Specification (WPS) and Procedure Qualification Record (PQR) on AWS forms. Include names of firms and personnel certified.

D. Prepare written statements on manufacturer's letterhead certifying that Installer complies with requirements in the Contract Documents and, where required, is authorized by manufacturer for this specific Project.

E. Prepare written statements on manufacturer's letterhead certifying that manufacturer complies with requirements in the Contract Documents. Include evidence of manufacturing experience where required.

F. Prepare written statements on manufacturer's letterhead certifying that product complies with requirements in the Contract Documents.

G. Prepare written evidence, from a model code organization acceptable to authorities having jurisdiction, that product complies with building code in effect for Project.
H. Prepare reports written by a qualified testing agency, on testing agency’s standard form, indicating and interpreting results of tests performed before installation of product, for compliance with performance requirements in the Contract Documents.

I. Prepare reports written by a qualified testing agency, on testing agency’s standard form, indicating and interpreting results of compatibility tests performed before installation of product. Include written recommendations for primers and substrate preparation needed for adhesion.

J. Prepare written and graphic information, including, but not limited to, performance and design criteria, list of applicable codes and regulations, and calculations. Include list of assumptions and other performance and design criteria and a summary of loads. Include load diagrams if applicable. Provide name and version of software, if any, used for calculations. Include page numbers.

K. Prepare written or published information that documents manufacturer’s written recommendations, guidelines, and procedures for installing or operating a product or equipment. Include name of product and manufacturer.

L. Prepare written information documenting factory-authorized service representative’s tests and inspections. Include the following, as applicable:
   2. Summary of installation procedures being followed, whether they comply with requirements and, if not, what corrective action was taken.
   3. Results of operational and other tests and a statement of whether observed performance complies with requirements.

M. Prepare written information indicating current status of insurance or bonding coverage. Include name of entity covered by insurance or bond, limits of coverage, amounts of deductibles, if any, and term of the coverage.

N. Submit Material Safety Data Sheets (MSDSs) directly to Owner, do not submit to Architect. Architect will not review submittals that include MSDSs and will return them unreviewed for submittal to Owner.

2.3 Subcontract List

A. Within 10 days of date of Notice to Proceed, submit a list of each subcontractor performing work on the project. Prepare a written summary identifying individuals or firms proposed for each portion of the Work, including those who furnish products, equipment or fabrications. Include the following in tabular format:
   1. Name, address, telephone number, email and fax number.
   2. Number and title of related specification section.
   3. License number and grade of license.
   4. Submit copies to Architect at time of first application for payment.
   5. Retain one returned copy as Record Document. Provide one returned copy to Owner. Provide one returned copy to IOR.

PART 3 - Execution

3.1 Contractor’s Review

A. Review each submittal and check for coordination with other Work of the Contract and for compliance with the Contract Documents. Note corrections and field dimensions. Mark with approval stamp before
submitting to Architect. Place approval stamp on body of submittal, do not place approval stamp on binding cover.

B. Stamp each submittal with a uniform, approval stamp. Include Project name and location, submittal number, Specification Section title and number, name of reviewer, date of Contractor's approval, and statement certifying that submittal has been reviewed, checked, and approved for compliance with the Contract Documents.

3.2 Architect's Action

A. Architect will not review submittals that do not bear Contractor's approval stamp and will return them without action.

B. If the Architect returns a submittal as rejected or requiring correction(s) with resubmission, the contractor, so as not to delay the progress of the Work, shall promptly thereafter resubmit a submittal conforming to the requirements of the Contract Documents. The resubmitted submittal shall indicate the portions thereof modified in accordance with the Architect's direction. When professional certification or performance criteria of material, systems or equipment is required by the Contract Documents, the Architect shall be entitled to rely upon the accuracy and completeness of such calculations and certifications accompanying submittals. The Architect's review of the submittals is for the limited purposes described in the Contract Documents.

C. Architect will review each action submittal, make marks to indicate corrections or modifications required, and return it. Architect will stamp each submittal with an action stamp and will mark stamp appropriately to indicate action necessary. Submittals will only be reviewed for conformance with design intent and information in the Contract Documents.

D. Architect will review each informational submittal and will return it without action.

E. Partial submittals are not acceptable, will be considered nonresponsive, and will be returned without review.

F. Submittals not required by the Contract Documents may not be reviewed and will be discarded.

G. All reviewed submittals will be returned to Contractor.

H. After two submissions, without acceptance, of a particular submittal, Contractor will bear expense for additional Architect review of that submittal, through deductive change order.

I. Include all costs for preparing and handling submittals including costs associated with printing and distribution of submittals to a subcontractor.

End of Section 01330
SECTION 01400 - Quality Requirements

PART I - General

1.1 Related Documents

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

B. Testing and inspecting services are required to verify compliance with requirements specified or indicated. These services do not relieve Contractor of responsibility for compliance with the Contract Document requirements.

1. Specified tests, inspections, and related actions do not limit Contractor's other quality-assurance and control procedures that facilitate compliance with the Contract Document requirements.

2. Requirements for Contractor to provide quality-assurance and control services required by Architect, Owner, or authorities having jurisdiction are not limited by provisions of this Section.

C. See Divisions 2 through 16 Sections for specific test and inspection requirements.

1.2 Definitions

A. Quality-Assurance Services: Activities, actions, and procedures performed before and during execution of the Work to guard against defects and deficiencies and substantiate that proposed construction will comply with requirements.

B. Quality-Control Services: Tests, inspections, procedures, and related actions during and after execution of the Work to evaluate that actual products incorporated into the Work and completed construction comply with requirements. Services do not include contract enforcement activities performed by Architect.

C. Mockups: Full-size, physical assemblies that are constructed on-site. Mockups are used to verify selections made under sample submittals, to demonstrate aesthetic effects and, where indicated, qualities of materials and execution, and to review construction, coordination, testing, or operation: they are not Samples. Approved mockups establish the standard by which the Work will be judged.

D. Laboratory Mockups: Full-size, physical assemblies that are constructed at testing facility to verify performance characteristics.

E. Preconstruction Testing: Tests and inspections that are performed specifically for the Project before products and materials are incorporated into the Work to verify performance or compliance with specified criteria.

F. Product Testing: Tests and inspections that are performed by a qualified testing agency acceptable to authorities having jurisdiction, to establish product performance and compliance with industry standards.

G. Source Quality-Control Testing: Tests and inspections that are performed at the source, i.e., plant, mill, factory, or shop.

H. Field Quality-Control Testing: Tests and inspections that are performed on-site for installation of the Work and for completed Work.
I. Testing Agency: A professionally licensed entity engaged to perform specific tests, inspections, or both. Testing laboratory shall mean the same as testing agency.

J. Installer/Applicator/Erector: Contractor or another entity engaged by Contractor as an employee, Subcontractor, or Sub-subcontractor, to perform a particular construction operation, including installation, erection, application, and similar operations.

1. Using a term such as "carpentry" does not imply that certain construction activities must be performed by accredited or unionized individuals of a corresponding generic name, such as "carpenter." It also does not imply that requirements specified apply exclusively to tradespeople of the corresponding generic name.

K. ‘Minimum experience’ means having successfully completed a minimum of five (5) years’ experience on projects similar in size and scope of the type of Work required for this Project, being familiar with special requirements indicated, and having complied with requirements of authorities having jurisdiction.

L. IOR: Inspector of Record.

M. DSA: California Division of State Architect.

N. OAR: Owner’s Authorized Representative.

O. CBC: California Building Code, Title 24, California Code of Regulations.

1.3 Conflicting Requirements

A. If compliance with two or more standards or code requirements is specified and the standards or code requirements establish different or conflicting requirements for minimum quantities or quality levels, comply with the most expensive requirement at no additional cost to Owner. When uncertainties exist and requirements are different, but apparently equal, submit RFIs to Architect for a decision before proceeding.

B. The quantity or quality level shown or specified shall be the minimum provided or performed. The actual installation may comply exactly with the minimum quantity or quality specified, or it may exceed the minimum within reasonable limits. To comply with these requirements, indicated numeric values are minimum or maximum, as appropriate, for the context of requirements. When uncertainties exist submit RFI to Architect for a decision before proceeding.

C. When conflicts exist within drawings provide Architect with RFI for clarification and provide more expensive option at no additional cost to Owner.

D. When conflicts exist within specifications provide Architect with RFI for clarification and provide more expensive option at no additional cost to Owner.

E. When conflicts exist between drawings and specifications provide Architect with RFI for clarification and provide more expensive option at no additional cost to Owner.

F. If conflicts exist between code requirements, authorities having jurisdiction and contract documents provide RFI to Architect for clarification and provide more expensive option at no additional cost to Owner.

G. In determining most expensive requirement or options in items above, consider all factors, such as but not limited to, material cost, order processing, submittal time, delivery time, fabrication, labor and installation, and affects on overhead and general conditions.
1.4 Submittals

A. For testing agencies retained, submit proof of qualification to demonstrate their capabilities and experience. Include proof of qualifications in the form of a recent report on the inspection of the testing agency by a recognized authority.

B. Prepare and submit certified written reports that include the following:
   1. Date of issue
   2. Project title and number
   3. Name, address, and telephone number of testing agency
   4. Dates and locations of samples and tests or inspections
   5. Names of individuals making tests and inspections
   6. Description of the Work and test and inspection method
   7. Identification of product and Specification Section
   8. Complete test or inspection data
   9. Test and inspection results with interpretation of test results
   10. Record of temperature and weather conditions at time of sample taking and testing and inspecting
   11. Name and signature of laboratory inspector
   12. Recommendations on retesting and reinspecting

C. For Owner's records, submit copies of permits, licenses, certifications, inspection reports, releases, jurisdictional settlements, notices, receipts for fee payments, judgments, correspondence, records, and similar documents, established for compliance with standards and regulations bearing on performance of the Work

1.5 Quality Assurance

A. Provide firms and individuals trained and experienced in installing, erecting, or assembling Work similar in material, design, and extent to that indicated for this Project, whose work has resulted in construction with a record of successful in-service performance. Provide direct supervision of all workers by supervisors trained and experienced in the type of Work being performed. Provide workers performing the actual Work who are trained and experienced in the type of Work they are being asked to execute.

B. Provide firms and individuals experienced in manufacturing products or systems similar to those indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units

C. Provide firms and individuals experienced in producing and fabricating products similar to those indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units

D. Provide the services of professional engineers who are legally qualified to practice in jurisdiction where Project is located and who is experienced in providing engineering services of the kind required. Engineering services are defined as those performed for design and installation of the systems, assemblies, or products that are similar to those indicated for this Project in material, design, and extent.

E. Certain sections of the Specifications require that specific construction activities shall be performed by entities who are recognized experts in those operations. Specialists shall satisfy qualification requirements indicated and shall be engaged for the activities indicated. Requirement for specialists shall not supersede building codes and regulations governing the Work.

F. Certain sections of the specifications require execution of the Work by manufacturer certified installers. Certified installers are to provide supervisors to directly oversee and manage the workers executing the
Work. Certified installers shall provide supervisors and workers thoroughly trained in the handling and installation of products specified.

G. When required, provide an authorized representative of manufacturer who is trained and approved by manufacturer to inspect installation of manufacturer’s products that are similar in material, design, and extent to those indicated for this Project.

H. Before installing portions of the Work requiring mockups, build mockups for each form of construction and finish required to comply with the following requirements, using materials indicated for the completed Work:

1. Build mockups in location and of size indicated or, if not indicated, as directed by Architect.
2. Notify Architect 7 (seven) days in advance of dates and times when mockups will be constructed.
3. Demonstrate the proposed range of aesthetic effects and workmanship.
4. Obtain Architect’s approval of mockups before starting Work, fabrication, or construction.
5. Maintain mockups during construction in an undisturbed condition as a standard for judging the completed Work.
6. Demolish and remove mockups when directed.

I. Any additional Work beyond that specified or illustrated, or any modifications thereto, that are necessary for the furnishing of required warranty shall be provided by the Contractor without additional cost to the Owner.

J. The Specification requires that certain specific construction activities shall be performed by specialists who are recognized experts in the operations to be performed. The specialists must be engaged for those activities, and the assignments are requirements over which the contractor has no choice or option. Nevertheless, the ultimate responsibility for fulfilling Contract requirements remains with the contractor.

1. This requirement shall not be interpreted to conflict with enforcement of building codes and similar regulations governing the Work. It is also not intended to interfere with local trade union jurisdictional settlements and similar conventions.
2. Use of titles such as “carpentry” is not intended to imply that certain construction activities must be performed by accredited or unionized individuals of a corresponding generic name, such as “carpenter.” It also does not imply that requirements specified apply exclusively to tradespersons of the corresponding generic name.
3. Requirement for specialists shall not supersede building codes and similar regulations governing the Work, nor interfere with local trade-union jurisdictional settlements and similar conventions.

1.6 Quality Control

A. Owner will hire an independent testing agency to conduct tests, sampling, and testing of materials. Selection of material to be tested shall be by the agency or the IOR and not by Contractor. Owner will engage a qualified testing agency and special inspectors to conduct special tests and inspections required by authorities having jurisdiction. Special inspections are indicated in the Contract Documents. Procedural and acceptance criteria shall be as set forth in the California Building Standards Administrative Code and as set forth in the California Building Code.

B. Owner will directly reimburse testing agency for all costs for all Building or Fire Official required tests and inspections, but may be reimbursed by Contractor for such costs as noted in related sections of the Contract Documents.

1. Contractor will reimburse Owner or directly reimburse testing agency for all costs for retesting required by failed tests as set forth in Sections 4-333(c) and 4-335(c) of the California Building Standards Administrative Code.
2. Contractor will reimburse Owner for testing services requested by contractor which are beyond the scope of the Work.

C. Independent testing agency is not authorized to release, revoke, alter, or enlarge requirements of the Contract Documents or approve or accept any portion of the Work.

D. Independent testing agency shall not perform any duties of Contractor.

E. Contractor shall notify the Owner a sufficient time in advance of the manufacture of material to be supplied by Contractor as required under the Contract Documents, which must by terms of the Contract Documents be tested, in order that the Owner may arrange for the testing of same at the source of supply. Contractor will supply and otherwise make materials to be tested available to the testing agency in time to receive results and make necessary corrections and retest, in order to not impact the Project schedule.

F. Any material shipped by Contractor from source of supply prior to having satisfactorily passed required testing and inspection shall not be incorporated into the Work.

G. Contractor shall provide an insulated curing box with capacity for not less than twenty (20) concrete cylinders and relocate curing box and cylinders as rapidly as required in order to provide for progress of the Work.

H. Where indicated, engage a factory-authorized service representative to inspect substrates, field-assembled components, and equipment installation, including service connections. Report results in writing to Owner and Architect.

I. Regardless of whether original tests or inspections were Contractor's responsibility, provide quality-control services, including retesting and reinspecting, for construction that replaced Work that failed to comply with Contract Documents.

J. Cooperate with agencies performing required tests, inspections, and similar quality-control services, and provide reasonable auxiliary services as requested. Notify agency sufficiently in advance of operations to permit assignment of personnel. Provide the following:

1. Access to the Work.
2. Incidental labor and facilities necessary to facilitate tests and inspections.
3. Adequate quantities of representative samples of materials that require testing and inspecting. Assist agency in obtaining samples.
4. Facilities for storage and field curing of test samples.
5. Delivery of samples to testing agencies.
6. Preliminary design mix proposed for use for material mixes that require control by testing agency.
7. Security and protection for samples and for testing and inspecting equipment at Project site.
8. Make construction materials available to testing agency for testing.

K. Coordinate sequence of activities to accommodate required quality-assurance and control services with a minimum of delay and to avoid necessity of removing and replacing construction to accommodate testing and inspecting. Schedule time for tests, inspections, obtaining samples, and similar activities.

1. By advanced discussion with the testing laboratory selected by the Owner, determine the time required for the laboratory to perform its tests and to issue each of its findings. Provide all required time within the construction schedule.
2. When the testing laboratory is ready to test according to the established schedule, but is prevented from testing or taking specimens due to incompleteness of the Work, all extra charges for testing attributable to the delay may be back-charged to the contractor and shall not be borne by the Owner.

Quality Requirements 01400 - 5
3. All overtime costs required for testing and inspection shall be paid by Owner and deducted from monies due the contractor.

L. Local legally constituted public authorities having jurisdiction over this construction and the Owner or their designated representative shall be the only authorized persons empowered to direct tests to be made when it appears to be necessary to determine compliance or non-compliance to the requirements of the Work.

M. If the contractor elects to change material sources after mix designs, formulations and fabrications have been established, the contractor shall reimburse the Owner for all costs incurred in the re-testing of materials and the re-design and review of mixes, formulations and fabrications.

N. Provide such other testing and inspecting as are specified to be furnished by the contractor in this Section and/or elsewhere in the Contract Documents.

PART 2 - Products (Not Used)

PART 3 - Execution

3.1 Testing and Inspection Log

A. Maintain a testing and inspection log at Project site. Post changes and modifications as they occur. Provide access to log by Architect, IOR and Owner.

3.2 Repair And Protection

A. On completion of testing, inspecting, sample taking, and similar services, repair damaged construction and restore substrates and finishes.

1. Provide materials and comply with installation requirements specified in other Specification Sections. Restore patched areas and extend restoration into adjoining areas with durable seams that are as invisible as possible.
2. Comply with requirements of Section 01731 "Cutting and Patching."

B. Protect construction exposed by or for quality-control service activities.

C. Repair and protection are Contractor's responsibility, regardless of the assignment of responsibility for quality-control services.

3.3 Test Reports

A. One copy of each test report shall be forwarded directly to Owner, Inspector of Record, Architect, structural engineer, construction manager and contractor by the testing agency. Such reports shall include all tests made, regardless of whether such tests indicate that the material is satisfactory or unsatisfactory. Samples taken but not tested shall also be reported. Records of special sampling operations as required shall also be reports. Reports shall show that the material or materials were sampled and tested in accordance with the requirements of CBC, Title 24, Parts 1 and 2, and with the approved Contract Documents. Test reports shall show the specified design strength. Test reports shall also state whether or not material or materials tested comply with the specified requirements as set forth in Section 4-335(d) of the California Administrative Code, Title 24.
3.4 Verification of Test Reports

A. Testing agency shall submit to DSA a verified report, in duplicate, covering tests that were performed by that agency during the progress of the Work. Additional copies of each test report shall be forwarded directly to Owner, Architect, Contractor, project inspector, construction manager, and structural engineer by the testing agency. Such report shall be furnished each time construction on the Work is suspended, covering tests up to that time, and prior to Final Completion of the Work, covering all tests as set forth in Sections 4-335(e) and 4-336 of the California Administrative Code, Title 24, Part I.

3.5 Site Visitations

A. Owner, Architect and IOR shall have access to the site at all times, to all parts of the Work and to all shops/warehouses where materials or Work is in preparation, fabrication or storage.

B. Owner, Architect and IOR have the right to reject materials and workmanship deemed defective Work, and to require their correction. Rejected Work and materials shall be corrected in a satisfactory manner without charge to Owner. If Contractor does not correct rejected Work within a reasonable time, fixed by written notice and in accordance with the terms and conditions of the Contract Documents, Owner may correct rejected Work and recover design, engineering, repair, replacement and administrative costs through deductive change order.

C. The Owner at any time prior to Final Completion reserves the right to make an examination of Work already completed by removing Work in place. The Contractor shall, on request, promptly furnish all necessary facilities, labor, and materials. If Work is found to be defective in any respect due to the fault of the Contractor all expenses of such examinations and of satisfactory reconstruction will be at the Contractor’s expense. If Work is found to meet the requirements of Contract Documents, the additional cost of examination and replacement shall be paid for by Owner.

D. Contractor is responsible for compliance with all applicable local, state, and federal codes, regulations, ordinances, restrictions, and requirements.

3.6 Inspector of Record

A. Project Inspector of Record (IOR), employed by the Owner in accordance with requirements of California Code of Regulations, Title 24, will be assigned to the Work.

1. Project inspector shall be approved by Architect, Structural Engineer, and DSA.
2. As set forth in Section 4-333(b) of the California Administrative Code, Title 24, Part I.
3. Duties of project inspector are specifically defined in Section 4-342 of the California Administrative Code, Title 24, Part I.

B. The Work shall be subject to the personal continuous observation of the IOR. He shall have free access to any or all parts of the Work at any time.

C. Inspection of Work shall not relieve Contractor from obligation to fulfill all of the terms and conditions of the Contract Documents.

D. Contractor shall be responsible for scheduling times of inspection, tests, sample taking, and similar activities of the Work. Provide 48 hour minimum notice to IOR and testing laboratory for tests and inspections.

E. All Work must be inspected and approved by IOR prior to being covered by other Work.
3.7 **Tests and Inspections**


B. Required tests and inspections include but are not limited to the following.

1. See CBC, project DSA Testing and Inspections form, and Divisions 2 through 16 Sections for additional information.

C. Excavations, Foundations and Retaining Walls: CBC, Chapter 18A.

   1. Inspection: 1704A.8

D. Concrete: CBC, Chapter 19A.

   1. Materials:
      a. General Concrete Materials: 1704A.4.1, 1903A.
      c. Concrete Aggregate: 1903A.3.

   2. Quality:

   3. Inspection:
      a. Batch Plant Inspection: 1704A.4.3.
      e. Concrete Testing: 1916A.

E. Masonry: CBC, Chapter 21A:

   1. Materials:
      a. Masonry Units: 2103A.1, 2102A.2, 2102A.4, 2103A.5, 2103A.6

   2. Quality:
      c. Masonry Prism Tests: 2105A.3, 2105.2.2.2.

Quality Requirements

01400 - 8
e. Combination of Units: 2105A.6.

3. Inspection
   b. Reinforcing Bar Welding Inspection: 1704A.4.2

F. Steel: CBC, Chapter 22A.

1. Materials:

2. Quality:
   a. Tests of Structural Cold Formed Steel: 2212A.1.

3. Inspection:
   a. Steel Construction Inspection: 1704A.3, 1704A.4
   b. Shop Fabrication Inspection: 1704A.2, 1704A.3.2.1
   d. High Strength Bolt Inspection: 1704A.3.3.

End of Section 01400
SECTION 01420 - References

PART 1 - General

1.1 Related Documents

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division I Specification Sections, apply to this section.

1.2 Definitions

A. Basic Contract definitions are included in the Conditions of the Contract.

B. Approved Equal or Equal: As approved and accepted by the Architect and Owner.

C. Approved: The term “approved” or “approved as noted,” where used in conjunction with action on the submittals, applications, and requests, is limited to the responsibilities and duties of the Architect stated in General Conditions. Such approval shall not release the contractor from responsibility to fulfill Contract Document requirements, unless otherwise provided in the Contract Documents.

D. As Necessary: Essential to completion of Work.

E. As Required: As demanded by Contract Documents.

F. As Selected, As Approved, As Directed: Or words of similar import mean as selected by, as approved by, or as accepted by the Architect. No implied meaning shall be interpreted to extend Architect’s responsibility into the contractor’s area of contractor’s supervision.

G. As Shown, As Detailed: And words of similar import mean as indicated on the Drawings.

H. Building Department, Authorities Having Jurisdiction: All agencies, individually or collectively, charged by statute with administration/enforcement of requirements of the Building Code and other jurisdictional requirements at Project location.

I. Concealed: Embedded and/or hidden in masonry, concrete or other construction, installed within furred spaces, within a wall/partition or above ceilings, in trenches, in crawl spaces, or other enclosures.

J. Days: Calendar days in every case.

K. Directed: Terms such as “directed,” “requested,” “authorized,” “selected,” “approved,” “required,” and “permitted” mean “directed by the Architect through the construction manager,” “requested by the Architect through the construction manager,” and similar phrases. However, no implied meaning shall be interpreted to extend the Architect’s responsibility into the contractor’s area of construction supervision.

L. Division: Part of these Specifications except where obvious intent is the act or process of dividing. Divisions are groups of related Sections.

M. Equipment: Means a product with operational parts, whether motorized or manually operated, that requires service connections such as wiring or piping.

N. Exposed: Not installed or concealed as defined above.
O. Exterior: A space which does not meet the definition for “interior” above.

P. Fabricated: Items specifically assembled or made out of selected materials to meet individual design requirements for the Project.

Q. Furnish: Supply and deliver to Project Site, ready for unloading, unpacking, assembly, installation, and similar operations.

R. Indicated: Requirements expressed by graphic representations or in written form on Drawings, in Specifications, and in other Contract Documents. Other terms including "shown," "noted," "scheduled," and "specified" have the same meaning as "indicated."

S. Install: Operations at Project Site including unloading, temporarily storing, unpacking, assembling, erecting, placing, anchoring, applying, working to dimension, finishing, curing, protecting, cleaning, and similar operations.

T. Installer: An entity engaged by the contractor either as an employee, subcontractor, or sub-subcontractor for performance of a particular construction activity, including installation, erection, application and similar operations. Installers are required to be experienced in the operations they are engaged to perform. The term “experienced” when used with the term “installer” means having a minimum of five (5) previous Projects similar in size and scope to this Project, and familiar with the precautions required, and has complied with requirements of the authority having jurisdiction.

U. Interior: A space completely enclosed by walls, solid door(s), floor and ceiling.

V. Manufactured: Applies to standard units or articles usually mass-produced.

W. Manufacturer’s Directions: Manufacturer’s written instructions, recommendations, specifications for use and installation.

X. Materials: Products substantially shaped, cut, worked, mixed, finished, refined or otherwise fabricated, processed, or installed to form part of Work.

Y. Named Products: Items identified by manufacturer's product name, including make or model designation, indicated in manufacturer’s published product literature current as of the date of the Contract Documents.

Z. Product(s): Materials, systems, and equipment, and terms of similar intent.

AA. Project Site: Space available for performing construction activities. The extent of Project Site may or may not be identical with the description of the land on which Project is to be built.

BB. Provide: Furnish and install, complete and ready for the intended use.

CC. Regulations: Laws, ordinances, statutes, and lawful orders issued by authorities having jurisdiction, and rules, conventions, and agreements within the construction industry that control performance of the Work.

DD. Section: A distinct part of these Specifications, except where obvious intent is one of several components, a piece. Section is usually a basic unit of Work.

EE. Shall: Is mandatory.
FF. Submit. Submittal. Furnish to Architect for review, unless otherwise stated.

GG. Testing Laboratories: An independent entity engaged to perform specific inspections or tests, either at the Project Site or elsewhere and to report on, and, if required, to interpret, results of these inspections or tests.

1.3 Industry Standards

A. Unless the Contract Documents include more stringent requirements, applicable reference standards have the same force and effect as if bound or copied directly into the Contract Documents to the extent referenced. Such standards are made a part of the Contract Documents by reference. In case of conflict between performance standard or regulation and contract documents provide more expensive requirement at no additional cost to Owner.

B. Comply with referenced standards in effect as of date of the Contract Documents. Referenced standards take precedence over standards that are not referenced but recognized in the construction industry as applicable.

C. Comply with all conditions of approval from governing authorities.

D. In case of conflict between reference standards or reference standards and governing authorities, provide the most expensive requirements, at no additional cost to Owner.

E. The contractual relationship and responsibilities of the parties to the Contract shall not be altered from the Contract Documents by mention or inference otherwise in any reference document.

F. Each entity engaged in construction on Project shall be familiar with industry standards applicable to its construction activity. Copies of applicable standards are not bound with the Contract Documents. Where copies of standards are needed to perform a required construction activity, obtain copies directly from publication source. Maintain a copy of all applicable regulations and reference standards at the project site.

G. In every instance the quantity or quality level shown or specified shall be the minimum to be provided or performed. The actual installation may comply exactly, within specified tolerances, with the minimum quantity or quality specified, or it may exceed that minimum within reasonable limits. In complying with these requirements, indicated numeric values are minimum or maximum values, as noted, or appropriate for the context of the requirements. Refer instances of uncertainty to the Architect for decision before proceeding.

H. Where abbreviations and acronyms are used in Contract Documents, they shall mean the recognized name of the entities in the following list. This list is not inclusive of all organizations.

   ACI     ACI International (American Concrete Institute)
   ADA     Americans with Disabilities Act
   AISC    American Institute of Steel Construction
   AISI    American Iron and Steel Institute
   ANSI    American National Standards Institute
   ASTM    American Society for Testing and Materials International
AWS      American Welding Society
CRSI     Concrete Reinforcing Steel Institute
ICC-ES   ICC Evaluation Service, Inc.
NES      National Evaluation Service (See ICC-ES)
SMACNA   Sheet Metal and Air Conditioning Contractors' National Association
UL       Underwriters Laboratory

PART 2 - Products (Not Used)

PART 3 - Execution (Not Used)

End of Section 01420
SECTION 01500 - Temporary Facilities and Controls

PART 1 - General

1.1 Related Documents
   A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division I Specification Sections, apply to this Section.
   B. Related Sections include:
      1. Section 01700 "Execution Requirements."

1.2 Use Charges
   A. Cost or use charges for temporary facilities shall be included in the Contract Sum. Allow other entities to use temporary services and facilities without cost, including, but not limited to, Owner’s construction forces, Architect, testing agencies, and authorities having jurisdiction.
   B. Water from Owner’s existing water system is available for use without metering and without payment of use charges. Provide connections and extensions of services as required for construction operations. Coordinate with owner to determine point of connection.
   C. Electric power from Owner’s existing system is available for use without metering and without payment of use charges. Provide connections and extensions of services as required for construction operations. Coordinate with owner to determine point of connection.

1.3 Quality Assurance
   A. Comply with NECA, NEMA, ANSI A110.6, NFPA 241 and UL standards and regulations for temporary electric service. Install service to comply with NFPA 70.
   B. Arrange for authorities having jurisdiction to test and inspect each temporary utility before use. Obtain required certifications and permits.

1.4 Project Conditions
   A. Installer of each permanent service shall assume responsibility for operation, maintenance, and protection of each permanent service during its use as a construction facility before Owner’s acceptance, regardless of previously assigned responsibilities.
   B. Provide barricades to protect pedestrian traffic around site.
   C. Respond to complaints from Owner within 48 hours.
   D. Provide immediate written RFI summarizing complaints received directly from neighbors.
   E. Keep temporary services and facilities clean and neat in appearance. Operate in a safe and efficient manner. Take necessary fire prevention measures. Do not overload facilities, or permit them to interfere with progress. Do not allow hazardous, dangerous, or unsanitary conditions, or public nuisances to develop or persist on the site.
F. Contractor is responsible for site and building security, and security to all areas of work.

G. Relocate temporary services and facilities as required by progress of the Work.

PART 2 - Products

2.1 Materials

A. Provide new materials. Undamaged, previously used materials in serviceable condition may be used if approved by Architect. Provide materials suitable for use intended.

B. Comply with Sections 02741 and 02751 for Asphalt Paving and Concrete Paving.

C. Portable Chain-Link Fencing: Minimum 2-inch, 9 Ga., galvanized steel, chain-link fabric fencing; minimum 6 feet high with galvanized steel pipe posts, minimum 2 3/8-inch OD line posts and 2 7/8-inch OD corner and pull posts, with 1 3/8-inch OD top and bottom rails. Provide privacy screen in fence and gates. Contractor is responsible for realigning, relocating and reestablishing temporary fence, privacy screen, and gates as required to accommodate access, circulation and progress of Work.

D. Provide necessary construction grade lumber and CDX plywood in sizes and thickness needed.

E. Provide 10-mil minimum polyethylene sheeting as needed to protect and screen work.

F. Provide paint as needed to comply with VOC requirements.

G. Provide sandbags as required.

H. Provide First Aid supplies.

I. Provide security hardware and locks to secure the site.

J. Tarpaulins: Fire-resistant labeled with flame-spread rating of 15 or less.

K. Provide rubber hoses as necessary to serve Project Site.

2.2 Temporary Enclosures

A. Prefabricated occupiable units with serviceable finishes, lockable entrances, operable windows, heating and air conditioning temperature controls, and foundations adequate for normal loading.

B. Provide storage sheds sized, furnished, and equipped to accommodate materials and equipment for construction operations. Keep materials dry at all times.

C. Single-occupant self-contained toilet units of chemical, aerated re-circulation or combustion type; vented; fully enclosed with a glass-fiber-reinforced polyester shell or similar nonabsorbent material.

D. The Contractor shall provide a temporary office for the IOR to be located as directed by the IOR and to be maintained until removal is authorized by the Owner. This office shall be of substantial waterproof construction with adequate natural light and ventilation by means of stock design windows. The door shall have a secure deadbolt type lock. A table satisfactory for the study of plans and two chairs shall be provided by the Contractor. The Contractor shall provide and pay for adequate electric lights, private local telephone service with a loud exterior bell, internet DSL service, fax machine with active line, and adequate heat and air conditioned cooling for this field office until the completion of the Contract.
2.3 Equipment

A. Provide portable, UL rated fire extinguishers; with class, & extinguishing agent and in quantity & location as required by fire authority.

B. Locate, place and use equipment so as not to impose excessive loads on supporting walls, floors, roofs and structures.

PART 3 - Execution

3.1 Installation, General

A. Locate temporary facilities where they will serve Project adequately and result in minimum interference with performance of the Work. Relocate and modify facilities as required by progress of the Work.

B. Provide each facility ready for use when needed to avoid delay. Do not remove until facilities are no longer needed or are replaced by authorized use of completed permanent facilities.

C. Install IOR office and supporting utilities.

3.2 Temporary Utility Installation

A. Arrange with utility company, Owner, and existing users for time when service can be interrupted, if necessary, to make connections for temporary services.

B. Use of Owner's existing water service facilities will be permitted with written permission by Owner, as long as facilities are cleaned and maintained in a condition acceptable to Owner. At Substantial Completion/Beneficial Occupancy, restore those facilities to condition existing before initial use. Where installations below an outlet might be damaged by spillage or leakage, provide a drip pan of suitable size to minimize water damage. Drain accumulated water promptly from pans. Coordinate with owner on location of available water.

C. Provide temporary toilets, wash facilities, and drinking water for use of construction personnel. Comply with authorities having jurisdiction for type, number, location, operation, and maintenance of fixtures and facilities.

D. Use of Owner's existing electric power service will be permitted with written permission by Owner, as long as equipment is maintained in a condition acceptable to Owner. Coordinate with owner on location of available power.

E. Provide temporary lighting with local switching that provides adequate illumination for construction operations, observations, inspections, and traffic conditions. Install and operate temporary lighting that fulfills security and protection requirements without operating entire system. Provide the following minimum temporary lighting:

1. Provide one 100-W lamp per 500 sq. ft. uniformly distributed, for general lighting, or equivalent illumination.
2. Provide one 100-W lamp every 50 feet in traffic areas.
3. Provide one 100-W lamp per story in stairways and ladder runs, located to illuminate each landing and flight.
4. Install exterior-yard site lighting that will provide adequate illumination for construction operations, traffic conditions, and signage visibility where the Work is being performed.

F. Provide a minimum of one (1) telephone line for each field office.
1. Provide superintendent with cellular telephone or portable two-way radio for use when away from field office.

G. Provide temporary electronic DSL communication service, including electronic mail in each field office.

3.3 Support Facilities Installation

A. Provide construction offices, shops, and sheds. Maintain support facilities until near Substantial Completion/Beneficial Occupancy. Remove before Substantial Completion/Beneficial Occupancy. Personnel remaining after Substantial Completion/Beneficial Occupancy will be permitted to use permanent facilities, under conditions acceptable to Owner. Coordinate with owner on location.

B. Comply with traffic control requirements of authorities having jurisdiction. Coordinate with owner on traffic patterns and times.

1. Protect existing site improvements to remain including curbs, pavement, and utilities.
2. Maintain access for fire-fighting equipment and access to fire hydrants.
3. Provide owner and authorities having jurisdiction with a minimum 7 day notice of traffic/street closure and re-routing. Coordinate with all parties concerned on allowable and preferred closure times.

C. Arrange and coordinate with owner for temporary parking areas for construction personnel.

D. Comply with requirements for drains by authorities having jurisdiction. Maintain Project site, excavations, and construction free of excess water. Comply with authorities having jurisdiction with regards to storm water and erosion control.

1. Dispose of rainwater in a lawful manner per requirements of authorities having jurisdiction that will not result in flooding Project or adjoining properties nor endanger permanent Work or temporary facilities.
2. Provide measures to prevent soil erosion and discharge of soil-bearing water runoff and airborne dust to adjacent properties and walkways, according to requirements of authorities having jurisdiction.
3. Provide barriers in and around excavations and subgrade construction to prevent flooding by runoff or stormwater from heavy rains.

E. Provide temporary signs as necessary for completion of the Work. Locate temporary signs to inform public and individuals seeking entrance to Project. Unauthorized signs are not permitted.

1. Provide temporary, directional signs for construction personnel and visitors.
2. Maintain and touchup signs so they are legible at all times.

F. Provide waste-collection containers in sizes adequate to handle waste from construction operations. Comply with requirements of authorities having jurisdiction.

G. Provide facilities necessary for hoisting materials and personnel. Truck cranes and similar devices used for hoisting materials are considered "tools and equipment" and not temporary facilities.

H. Provide street sweeping and clean-up to keep adjacent public ways, streets and sidewalks clean. Clean-up all trash, waste, material and soil debris trails on public ways and streets as a result of the Work. Trucks hauling soil, gravel and other loose material must be wetted and covered.

3.4 Security and Protection Facilities Installation

Temporary Facilities and Controls

01500 - 4
A. Provide protection, operate temporary facilities, and conduct construction in ways and by methods that comply with environmental regulations and that minimize possible air, waterway, and subsoil contamination or pollution or other undesirable effects.

B. Install temporary fencing located outside the drip line of trees to protect vegetation from damage from construction operations. Protect tree root systems from damage, flooding, and erosion.

C. Before construction operations begin, furnish and install site enclosure fence in a manner that will prevent unauthorized people and animals from easily entering site.

1. Enclose entire project area to accommodate construction operations including office, storage and staging areas and personnel parking.
2. Maintain security by limiting number of keys and restricting distribution to authorized personnel.
3. Provide lockable entrances to work areas to prevent unauthorized entrance, vandalism, theft, and similar violations of security.
4. Provide lockable gates in sizes and locations necessary to complete the Work.

D. Comply with requirements of authorities having jurisdiction for erecting structurally adequate barricades, including warning signs and lighting. Provide structurally adequate, protective, covered walkway for passage of individuals where hazardous operations may occur overhead.

E. Provide temporary enclosures for protection of construction in progress and completed, from exposure to foul weather, other construction operations, and similar activities. Where heating or cooling is needed and permanent enclosure is not complete, insulate temporary enclosures. Coordinate temporary enclosures with material installation, ventilation, drying and curing procedures.

F. Provide and maintain temporary fire protection facilities of types needed to protect against reasonably predictable fire losses. Comply with 2001 CFC Article 87.

3.5 Operation, Termination, and Removal

A. Enforce strict discipline in use of temporary facilities. To minimize waste and abuse, limit availability of temporary facilities to essential and intended uses.

B. Maintain facilities in good operating condition until removal. Maintain operation of temporary enclosures, heating, cooling, humidity control, ventilation, and similar facilities on a 24-hour basis where required to achieve indicated results and to avoid possibility of damage.

C. Do not change over from using temporary security and protection facilities to permanent facilities until Substantial Completion/Beneficial Occupancy.

D. At earliest feasible time, when acceptable to Owner, change over from use of temporary utilities to use of permanent service.

E. Remove each temporary facility when need for its service has ended, when it has been replaced by authorized use of a permanent facility, or no later than Substantial Completion/Beneficial Occupancy. Complete or, if necessary, restore permanent construction that may have been delayed because of interference with temporary facility. Repair damaged Work, clean exposed surfaces, and replace construction that cannot be satisfactorily repaired.

1. Materials and facilities that constitute temporary facilities are property of Contractor. Owner reserves right to take possession of Project identification signs.
2. At Substantial Completion/Beneficial Occupancy, clean and renovate permanent facilities used during construction period. Comply with final cleaning requirements.
SECTION 01524 - Construction Waste Management

PART I - General

1.1 Related Documents

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

B. Related Sections include:
   1. Section 01732 “Selective Demolition.”
   2. Section 02230 “Site Clearing.”

1.2 Definitions

A. Construction Waste: Materials and other solid waste resulting from construction, remodeling, renovation, or repair operations. Construction waste includes packaging.

B. Demolition Waste: Materials resulting from demolition or selective demolition operations.

C. Disposal: Removal off-site of demolition and construction waste and subsequent sale, recycling, reuse, or deposit in landfill or incinerator acceptable to authorities having jurisdiction.

D. Recycle: Recovery of demolition or construction waste for subsequent processing in preparation for reuse.

1.3 Performance

A. The Owner has established that this Project shall generate the least amount of landfill waste possible and that processes that ensure the generation of as little landfill waste as possible due to error, poor planning, breakage, mishandling, contamination, or other factors shall be employed.

B. Of the inevitable waste that is generated, as much of the waste materials as economically feasible shall be recycled. Waste disposal in landfills shall be minimized.

C. Field verify dimensions indicated on construction documents before confirming product orders or proceeding with Work, to minimize waste due to excessive materials.

1.4 Quality Assurance

A. Comply with hauling and disposal regulations of authorities having jurisdiction.

1.5 Delivery, Storage and Handling

A. Coordinate the schedule of product deliveries in order to minimize site storage time and potential damage to stored materials and to minimize waste due to excessive materials handling and misapplication.

B. Set aside and protect misdelivered and substandard products and materials and return to supplier for credit.

C. Store products and materials in a manner to prevent damage and contamination.
PART 2 - Products (Not Used)

PART 3 - Execution

3.1 Recycling Waste

A. Arrange for timely pickups from the site and deliveries to recycling facility in order to prevent contamination of recyclable material. Designate specific areas for separation and storage of salvaged and recycle materials. Keep areas neat and clean, in an orderly manner, and well labeled.

B. Separate recyclable waste from other waste materials, trash, and debris. Separate recyclable waste by type at Project site to the maximum extent practical.
   1. Provide appropriately marked containers or bins for controlling recyclable waste until they are removed from Project site. Include list of acceptable and unacceptable materials at each container and bin.
   2. Stockpile processed materials on-site without intermixing with other materials. Place, grade, and shape stockpiles to drain surface water. Cover to prevent windblown dust.
   3. Stockpile materials away from construction area. Do not store within drip line of remaining trees.
   4. Store components off the ground and protect from the weather.
   5. Remove recyclable waste off Owner’s property and transport to recycling receiver or processor.

C. Break up asphaltic concrete paving and transport paving to asphalt-recycling facility.

D. Remove reinforcement and other metals from concrete and sort with other metals. Break-up and transport concrete to recycling facility.

E. Remove metal reinforcement, anchors, and ties from masonry and sort with other metals. Clean and stack undamaged, whole masonry units on wood pallets. Transport masonry to recycling facility.

F. Separate metals by type:
   1. Structural Steel: Stack members according to size, type of member and length.
   2. Remove bolts, nuts, washers and other rough hardware.
   3. Sort and pile metal reinforcing.
   4. Sort and pile anchors, ties, clips and other miscellaneous metal items.

G. Separate lamps by type and protect from breakage.

H. Separate switches, receptacles, switchgear, transformers, meters, panelboards, circuit breakers, and other devices by type.

I. Reduce conduit to straight lengths and store by type and size.

J. Packaging:
   1. Break down packaging and cardboard into flat sheets. Bundle and store in a dry location.
   2. Separate and bag Polystyrene Packaging materials.
   3. As much as possible, require deliveries using pallets to remove pallets from Project site. For pallets that remain on-site, break down pallets into component wood pieces and comply with requirements for recycling wood.
   4. Break down crates into component wood pieces and comply with requirements for recycling wood.
   5. Collect beverage containers and paper waste used by onsite workers and sort by material.
K. Chip removed brush, branches, and trees on site. Recycle as mulch. Remove from site if necessary.

3.2 Disposal of Waste

A. Except for items or materials to be recycled, remove waste materials from Project site and legally dispose in a landfill acceptable to authorities having jurisdiction.

1. Do not allow landfill waste materials that are to be disposed of to accumulate on-site.
2. Remove and transport debris in a manner that will prevent spillage on adjacent surfaces, site areas, and routes of transport.
3. Transport landfill waste materials off Owner’s property and legally dispose of them.

B. Do not burn waste materials.

End of Section 01524
SECTION 01600 - Product Requirements

PART I - General

1.1 Related Documents

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division I Specification Sections, apply to this Section.

B. Related Sections include:

1. Section 01770 “Closeout Procedures.”

1.2 Definitions

A. Products: Items purchased for incorporating into the Work. The term “product” includes the terms “material,” “equipment,” “system,” and terms of similar intent.

B. Substitutions: Changes in products, materials, equipment, and methods of construction from those required by the Contract Documents.

C. Specific manufacturer names or product names noted as “or equal” “equal to” or similar language are referenced to establish minimum basis of design requirements for quality, properties, function, dimensions, instances, performance, physical properties, appearance, and other characteristics for the purposes of evaluating comparable products by other manufacturers. Comply with submittal requirements for submitting comparable products on an “or equal” basis. Listed manufacturers are provided as a suggested guide and are not intended to limit Contractor’s choices of manufacturers. Contractor is responsible for providing products that meet the basis of design in every respect and providing required submittal information to demonstrate compliance.

D. Descriptive, performance, and reference standard requirements in the Specifications establish “salient characteristics” of products. Where Specifications require compliance with performance requirements, provide products that comply with or exceed requirements, and are recommended by the manufacturer for application indicated. General overall performance of a product is implied where the product is specified for a specific application. Manufacturer’s recommendations may be contained in product literature, or by manufacturer’s certification of performance.

1.3 Substitution Request Documentation

A. Submit three copies of each substitution request for consideration. Identify product, fabrication or installation method to be replaced. Include Specification Section number and title and Drawing numbers and titles.

1. Substitution Request Form: Provide type written form, contractor’s choice, showing substitution request identification number, summarize and list each item of content. Include statement on form that contractor has reviewed contents of substitution request and has found it to be in compliance in all respects with the requirements of the Contract Documents, including material and installation requirements. Contractor shall sign form.

2. Show compliance with Contract requirements for substitutions and the following, as applicable:

   a. Statement indicating why specified product or method cannot be provided.
   b. List of changes or modifications needed to other parts of the Work that will be necessary to accommodate proposed substitution.
c. Detailed comparison of significant qualities of proposed substitution with those of the Work specified.
d. Product Data, including drawings and descriptions of products and fabrication and installation procedures.
e. Samples, where applicable.
f. List of similar installations for completed projects with project names and addresses and names and addresses of architects and owners.
g. Material test reports from a qualified testing agency indicating and interpreting test results for compliance with requirements indicated.
h. Research/evaluation reports acceptable to authority having jurisdiction, evidencing compliance with building code in effect for Project.
i. Detailed evaluation of Construction Schedule showing effect on the overall Contract Time and individual tasks. If specified products are not available from manufacturer within scheduled construction time, provide written statement on manufacturer’s letterhead stating lack of availability or timing of delivery.
j. Cost implications, if any, in the Contract Sum.
k. Contractor’s certification that proposed substitution complies with requirements in the Contract Documents and is appropriate for applications indicated.
l. Contractor’s waiver of rights to additional payment or time that may subsequently become necessary because of failure of proposed substitution to produce indicated results.

3. If necessary, Architect will request additional information or documentation for evaluation of a request for substitution. Architect will notify Contractor of acceptance or rejection of proposed substitution. Use product specified if Architect cannot make a decision on use of a proposed substitution. Contractor is responsible for providing all necessary information including information requested by Architect to justify substitution.

4. Do not install substituted products without acceptance from Owner and Architect.
5. Do not resubmit rejected substitutions.
6. Use of approved substitution does not alleviate Contractor from complying with requirements of Contract Documents.
7. Allow for all substitution request and review times in construction schedule. Additional schedule time will not be granted for substitutions.

1.4 Quality Assurance

A. If Contractor is given option of selecting between two or more products for use on Project, product selected shall be compatible with products previously selected, even if previously selected products were also options.

B. Do not incorporate products that are provided prior to satisfactorily passing testing requirements.

C. Provide all products required for a complete and proper installation, even if not specifically indicated, at no additional cost to Owner.

D. Where inter-related, multiple components are required for a complete system provide components that are completely compatible and satisfy required warranties. Provide only one brand, kind or make of product from a single source for each purpose throughout Work.

E. For all products referred to in singular number, provide the quantity needed to complete the Work.

F. Contractor is responsible for providing products that are equal to or better than the level of quality and basis of design specified at no additional cost to Owner.

1.5 Product Delivery, Storage, and Handling

Product Requirements
01600 - 2
A. Deliver, store, and handle products using means and methods that will prevent damage, deterioration, and loss, including theft. Comply with manufacturer's written instructions. Exercise special care to protect products that are sensitive to light, UV exposure, heat or moisture.

B. Delivery and Handling:

1. Schedule and sequence deliveries with construction schedule to minimize storage time at Project site and to prevent overcrowding of construction spaces.
2. Coordinate delivery with installation time to ensure minimum holding time for items that are flammable, hazardous, easily damaged, or sensitive to deterioration, theft, and other losses.
3. Deliver products to Project site in undamaged condition in manufacturer's original sealed container or other packaging system, complete with labels and instructions for handling, storing, unpacking, protecting, and installing.
4. Promptly inspect products on delivery and prior to installation to ensure compliance with Contract Documents and to ensure that products are undamaged and properly protected. Immediately reject and return all products and materials that do not comply.
5. Provide adequate equipment and personnel to properly handle, move and store products and materials to prevent damage, disfiguring or soiling.

C. Storage:

1. Store products to allow for inspection and measurement of quantity or counting of units.
2. Store materials in a manner that will not endanger Project structure.
3. Store products that are subject to damage by the elements, under cover in a weathertight enclosure above ground, with ventilation adequate to prevent condensation. Maintain temperature and humidity within range required by manufacturer's written instructions.
4. Store cementitious products and materials on elevated platforms.
5. Store foam plastic from exposure to sunlight and UV exposure, except to extent necessary for period of installation and concealment.
6. Comply with product manufacturer's written instructions for temperature, humidity, ventilation, and weather-protection requirements for storage. Comply with MSDS.
7. Protect stored products from damage and liquids from freezing.
8. Do not bring products to site until conditions match those recommended in writing by manufacturer.
9. Do not store products labeled flammable or toxic within the building.
10. Store products in a secure enclosure.
11. When approved by Owner, and when site constraints do not permit on-site storage, materials may be stored off site in a bonded warehouse approved by Owner, at no additional cost to Owner.
12. Store granular materials on a solid flat surface in a well drained area.
13. Arrange storage area to allow access for inspections and for logical sequencing with construction.

1.6 Product Warranties

A. Special warranties specified shall be in addition to manufacturer's standard warranties or implied warranties required by the Contract Documents. Manufacturer's disclaimers and limitations on product warranties do not relieve Contractor of obligations under requirements of the Contract Documents.

1. Manufacturer's Warranty: Preprinted written warranty published by individual manufacturer for a particular product and specifically endorsed by manufacturer to Owner.
2. Special Warranty: Written warranty required by the Contract Documents, either to extend time limit provided by manufacturer's warranty or to provide more rights for Owner.
B. Where special warranties are required prepare a written document that contains appropriate terms and identification, ready for execution. Submit a draft for approval as submittal. Even when not specifically indicated as a submittal within a specific Specification Section.

C. All warranties shall indicate the Owner as beneficiary.

PART 2 - Products

2.1 Product Selection

A. Provide products that comply with the Contract Documents that are undamaged and new at time of installation.

1. Provide products complete with accessories, trim, finish, fasteners, and other items needed for a complete installation and indicated use and effect.
2. Owner reserves the right to limit selection to products with warranties not in conflict with requirements of the Contract Documents.
3. "Or Equal" basis-of-design: Where Specifications name a product and include a list of manufacturers, provide the specified product or a comparable product that is equal in all respects. Drawings and Specifications indicate sizes, profiles, dimensions, and other characteristics that are based on the product named.
4. Where Specifications require matching an established Sample, select a product that complies with requirements and matches Architect's sample. Architect's decision will be final on whether a proposed product matches.
5. Where Specifications include the phrase "as selected from manufacturer's colors, patterns, and textures" or a similar phrase, Architect will select color, pattern, density, or texture from manufacturer's full range of products that includes both standard and premium items.
6. Where a conflict exists between two different products specified to the same piece of work, provide the more expensive product at no additional cost to Owner.
7. Where conflict exists between product requirements indicated and jurisdictional requirements provide for more expensive option at no additional cost to Owner.
8. Where conflict exists between specifications and drawings for product requirements provide more expensive product at no additional cost to Owner.
9. Where products are accompanied by the term "match sample," sample to be matched is Architect's.
10. If available, and unless custom products or nonstandard options are specified, provide standard products and types that have been produced and used successfully in similar situations on other Projects.

2.2 Substitution Process Requirements

A. Architect will consider requests for substitution if received within 15 (fifteen) days prior to award of Contract. Requests received after that time may or may not be considered at discretion of Architect.

B. Architect will consider Contractor's request for substitution only when the following conditions are satisfied:

1. Requested substitution offers Owner a substantial advantage in cost, time, energy conservation, or other considerations, after deducting additional responsibilities Owner must assume, such as Architect's evaluation and redesign efforts.
2. Requested substitution does not require extensive revisions to the Contract Documents.
3. Requested substitution is consistent with the Contract Documents and will produce indicated results.
4. Substitution request is timely, fully documented and properly submitted.
5. Requested substitution will not adversely affect Contractor's Construction Schedule.
6. Requested substitution has received necessary approvals of authorities having jurisdiction.
7. Requested substitution is compatible with other portions of the Work.
8. Requested substitution has been coordinated by Contractor with other portions of the Work.
9. Requested substitution provides specified warranties.

C. Contractor is responsible for providing all information necessary and requested to justify substitution request.

D. Substitution requests and processing shall in no way justify additional time or money to the Contract.

E. Denial of substitution requests shall in no way justify additional time or money to the Contract.

F. Approved substitutions shall in no way relieve Contractor from requirements and responsibilities of the Contract Documents.

G. Contractor assumes all costs associated with installing approved substitutions. Contractor is responsible for all professional fees, including Architect and Engineers, for time required for review and any redesign services associated with substitutions and for costs associated with re-approval by Government Authority. Costs shall be paid by Owner through deductive change order to Contract.

H. Substitutions on the basis of unavailability of a product must be accompanied by letter on manufacturer's letterhead stating lack of availability, and that contractor could not have known of unavailability at the time of bid. Substitution requests based on unavailable product that do not include required letter or language will be denied and contractor shall be responsible for providing products of equal to or better than quality level indicated at no additional cost to Owner.

I. Substitutions will not be considered when they are indicated or implied on submittals. All proposed substitutions must be requested with separate written requests.

J. The contractor's submittal and Architect's acceptance of Shop Drawings, Product Data or Samples that indicate construction not complying with the Contract Documents, does not constitute an acceptable or valid request for substitution, nor does it constitute approval.

PART 3 - Execution (Not Used)

End of Section 01600
SECTION 01700 - Execution Requirements

PART 1 - General

1.1 Related Documents

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division I Specification Sections, apply to this Section.

B. Related Sections include:

1. Section 01310 "Project Management and Coordination."
2. Section 01330 "Submittal Procedures."
3. Section 01731 "Cutting and Patching."
4. Section 01770 "Closeout Procedures."

1.2 Submittals

A. Submit certificate signed by licensed land surveyor certifying that location and elevation of improvements comply with requirements.

B. Submit 2 (two) copies of a final survey showing the project layout work performed and record survey data, including finish elevations and bridge location.

1.3 Quality Assurance

A. Obtain the services of a licensed land surveyor who is legally qualified to practice in jurisdiction where Project is located and who is experienced in providing land-surveying services of the kind indicated.

B. Provide installers practicing the best methods known to each particular trade. Use adequate numbers of skilled, experienced workers who are adequately trained and completely familiar with the requirements and methods needed for completion of the work.

C. Where required by warranty requirements provide approved fabricators and installers. Provide written evidence of such approval on manufacturer’s letterhead from manufacturer.

PART 2 - Products (Not Used)

PART 3 - Execution

3.1 Examination

A. The existence and location of site improvements, utilities, and other construction indicated as existing are not guaranteed. Before beginning work, investigate and verify the existence, depth and location of plumbing and electrical systems and other construction affecting the work.

B. Furnish location data for work related to Project that must be performed by public utilities serving Project site.

C. Examine substrates, areas, and conditions for compliance with requirements for installation tolerances and other conditions affecting performance. Record observations.
1. If requirements of Contract Documents create conditions which are detrimental to performance of the work provide an RFI to the Architect.

2. Verify compatibility with and suitability of substrates, including compatibility with existing finishes or primers, curing compounds and other finishes and coatings. Assure that moisture content of substrate is within acceptable written recommended limits of manufacturer of material to be applied to substrate.

3. Examine and verify rough-in for electrical systems to verify actual locations of connections before fixture installation.

4. Examine and verify suitability of structure and other elements to accept installation of products and systems.

5. Verify that conditions do not negate required warranties.

6. Proceed with installation only after unsatisfactory conditions have been corrected. Proceeding with the work indicates contractor’s acceptance of surfaces and conditions.

3.2 Preparation

A. Furnish information to Owner that is necessary to adjust, move, or relocate existing utility structures, utility poles, lines, services, or other utility appurtenances located in or affected by construction. Coordinate with utility companies and authorities having jurisdiction. Obtain necessary approvals and permits for work in public right of way.

B. 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:

1. Notify Owner not less than 5 days in advance of proposed utility interruptions.

2. Do not proceed with utility interruptions without Owner’s written permission.

C. Take field measurements as required to fit the work properly. Recheck measurements before installing each product. Where portions of the work are indicated to fit to other construction, verify dimensions of other construction by field measurements before order and fabrication. Coordinate fabrication schedule with construction progress to avoid delaying the work. Immediately upon discovery of conflicts submit written RFI to Architect for clarification.

D. Verify space requirements and dimensions of items shown diagrammatically on Drawings prior to order and fabrication. Immediately upon discovery of conflicts submit written RFI to Architect for clarification.


3.3 Construction Layout

A. Before proceeding to lay out or executing any work or fabrication, become familiar with existing and proposed conditions, verify project dimensions and locations shown on Drawings, in relation to the property survey, existing benchmarks and working points and lines established for the Project. If discrepancies are discovered, provide an RFI to the Architect immediately.

1. Verify elevations of existing and proposed bearing points on existing CMU abutments.

2. Verify existing and proposed span dimensions between existing CMU abutments.

B. Engage a licensed surveyor to lay out the work using accepted surveying practices.
1. Assume responsibility for furnishing all permanent and temporary stakes, pins, markers, strings, and grade markings as required to clearly mark the outlines and horizontal and to implement the work of layout and staking. Make all minor field adjustments if so directed by the Architect at no extra cost to the Owner.

2. Establish benchmarks and control points to set lines and levels of construction and elsewhere as needed to locate each element of Project.

3. Establish dimensions within tolerances indicated. Do not scale Drawings or use means to measure or obtain required dimensions from electronic drawings, use written dimensions only.

4. Inform installers of lines and levels to which they must comply.

5. Check the location, level and plumb, of every major element as the work progresses.

6. Notify Architect with written RFI immediately when deviations from required lines and levels exceed allowable tolerances.

7. Close site surveys with an error of closure equal to or less than the standard established by authorities having jurisdiction.

C. Locate and lay out all vertical and horizontal alignment of all site improvements, including pavement and edges, fixture locations, pavement scoring lines, curbs, gutters, grading, fill and topsoil placement, utility slopes, and invert elevations, and all other site features indicated.

D. Locate and lay out all horizontal and vertical control lines and levels for structures and foundations. Transfer survey markings and elevations for use with control lines and levels. Level foundations and piers from two or more locations.

E. Maintain a log of layout control work. Record deviations from required lines and levels. Include beginning and ending dates and times of surveys, weather conditions, name and duty of each survey party member, and types of instruments and tapes used. Make the log available for reference by Owner, Architect and Inspector.

3.4 Field Engineering

A. Locate existing permanent benchmarks, control points, and similar reference points before beginning the work. Preserve and protect permanent benchmarks and control points during construction operations.

1. Do not change or relocate existing benchmarks or control points. Report in writing lost or destroyed permanent benchmarks or control points promptly.

2. Replace lost or destroyed permanent benchmarks and control points promptly. Base replacements on the original survey control points. Maintain necessary stakes and pins throughout Project.

B. Establish and maintain a minimum of 2 (two) permanent benchmarks on Project site, referenced to data established by survey control points. Comply with authorities having jurisdiction for type and size of benchmark.

1. Record benchmark locations, with horizontal and vertical data, on Project Record Documents.

2. Provide temporary reference points sufficient to locate the work.

3. Remove temporary reference points whether exposed or not when no longer needed. Restore marked construction to its original condition.

C. On completion of foundation walls, major site improvements, and other work requiring field-engineering services, prepare a certified survey showing dimensions, locations, angles, and elevations of construction and site work.

D. Prepare a final survey showing significant features for Project. Include on the survey a certification, signed by licensed surveyor, that principal metes, bounds, lines, and levels of Project are accurately positioned as shown on the survey. Show monuments, streets, site improvements and utilities, existing
improvements and significant vegetation, grade contours, and the distance and bearing from abutment corners to a legal point.

3.5 **Installation**

A. Locate the work and components of the work accurately, in correct alignment and elevation, as indicated.

1. Make vertical work plumb and make horizontal work level.
2. Where space is limited, install components to maximize space available for maintenance and ease of removal for replacement.
3. Conceal pipes, ducts, conduit and wiring in finished areas, unless otherwise indicated.
4. Maintain minimum headroom clearance required by building authority in spaces without a ceiling.

B. Comply with manufacturer's written instructions and recommendations for installing products in applications indicated. Install products in a manner that satisfies warranty requirements and is recommended in writing by manufacturer.

C. Install products at the time and under conditions that will ensure the best possible results. Maintain conditions required for product performance until Substantial Completion/Beneficial Occupancy. Prepare substrates and surfaces as recommended in writing by manufacturer. Perform work when existing and forecasted weather conditions are within limits recommended in writing by manufacturer. Comply with manufacturer's written temperature and humidity requirements. Allow materials to adjust to ambient conditions as recommended by manufacturer in writing prior to installation.

D. Conduct construction operations so no part of the work is subjected to damaging operations or loading in excess of that expected during normal conditions of occupancy.

E. Do not use tools or equipment that produce harmful noise levels to building occupants.

F. Obtain and distribute templates to parties involved for factory prepared and field installed work. Check Shop Drawings and coordinate with other work to confirm that adequate provisions are made for locating and installing fabricated products.

G. Provide anchors and fasteners as required to anchor each component securely in place, accurately located and aligned with other portions of the work.

1. Where mounting heights are not indicated, submit an RFI to verify mounting heights.
2. Allow for bridge movement, including thermal expansion and contraction.
3. Coordinate installation of anchorages. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, and items with integral anchors, that are to be embedded in concrete or masonry. Deliver such items to Project site in time for installation.

H. Make joints of uniform width. Where joint locations in exposed work are not indicated, submit RFI to verify joint location. Measure, layout, plan, cut and fit exposed connections together to form hairline joints.

I. After sub-contractors and trades have completed portions of work, inspect work and adjacent areas and make any adjustments necessary.

J. Clean areas and spaces where cutting and patching are performed. Completely remove paint, mortar, oils, putty, and similar materials.
K. Use products, cleaners, and installation materials that are not considered hazardous, and are fully compatible with installed products and finishes.

L. Thoroughly clean piping, conduit, and similar features before applying paint or other finishing materials. Restore damaged pipe covering to its original condition.

3.6 Progress Cleaning

A. Clean Project site and work areas daily, including common areas. Enforce requirements strictly. Dispose of materials lawfully.

2. Do not hold waste materials more than 7 days during normal weather or 3 days if the temperature is expected to rise above 80°F.
3. Containerize unsanitary waste materials separately from other waste. Mark containers appropriately and dispose of legally, according to regulations. Do not store unsanitary or unsafe waste inside building.
5. Do not store flammable, unsafe, unsanitary or odorous waste in a manner or location that would adversely affect pedestrians, building occupants, adjacent buildings and occupants, and properties.

B. Maintain Project site free of loose, scattered waste materials and debris.

C. Clean areas where work is in progress to the level of cleanliness necessary for proper execution of the work.

1. Remove liquid spills promptly.
2. Where dust would impair proper execution of the work, vacuum the entire work area, as needed.

D. Keep installed work clean. Clean installed surfaces according to written instructions of manufacturer or fabricator of product installed, using only cleaning materials specifically recommended. If specific cleaning materials are not recommended, use cleaning materials that are not hazardous to health or property and that will not damage exposed surfaces.

E. Clean exposed surfaces and protect as necessary to ensure freedom from damage and deterioration at time of Substantial Completion/Beneficial Occupancy.

F. Burying or burning waste materials on-site is not permitted. Washing waste materials down sewers or into waterways is not permitted.

G. During handling and installation, clean and protect construction in progress and adjoining materials already in place. Apply protective covering where required to ensure protection from damage or deterioration at Substantial Completion/Beneficial Occupancy.

H. Clean and provide maintenance on completed construction as frequently as necessary through the remainder of the construction period. Adjust and lubricate operable components to ensure operability without damaging effects.

I. Supervise construction operations to assure that no part of the construction completed or in progress, is subject to harmful, dangerous, damaging, or otherwise deleterious exposure during the construction period.

3.7 Protection of Installed Construction
3.8 Correction of the Work

A. Repair or remove and replace defective construction. Restore damaged substrates and finishes. Comply with requirements in Section 01731 "Cutting and Patching."

1. Repairing includes replacing defective parts, refinishing damaged surfaces, touching up with matching materials, and properly adjusting operating equipment.

B. Restore permanent facilities used during construction to their specified condition.

C. Remove and replace entire area of finish materials that are exposed to view if damaged surfaces cannot be repaired without visible evidence of repair.

D. Remove and replace damaged substrates and base structure if damaged by construction operations.

E. Remove and replace components that do not operate properly.

End of Section 01700
SECTION 01731 - Cutting and Patching

PART 1 - General

1.1 Related Documents

A. Drawings and general provisions of the Contract, including General and Supplementary conditions and other Division 1 Specification Sections, apply to this Section.

1.2 Submittals

A. Submit a proposal describing procedures at least 10 (ten) days before the time cutting and patching will be performed, requesting approval to proceed. Include the following information:

1. Describe cutting and patching, show how they will be performed, and indicate why they cannot be avoided.
2. Describe anticipated results. Include changes to structural elements and operating components as well as changes in building's appearance and other significant visual elements.
3. List products to be used and firms or entities that will perform the Work.
4. Indicate when cutting and patching will be performed.
5. List utility services/systems that cutting and patching procedures will disturb or affect. List services/systems that will be relocated and those that will be temporarily out of service. Indicate how long services/systems will be disrupted.
6. Where cutting and patching involve adding reinforcement to structural elements, submit details and engineering calculations showing integration of reinforcement with original structure.
7. Obtain approval of cutting and patching proposal before cutting and patching. Approval does not waive right to later require removal and replacement of unsatisfactory work. Do not cut and patch structural elements without approval from Architect.

1.3 Quality Assurance

A. Do not cut, drill or notch structural elements unless detailed on structural drawings or without prior written authorization from the Structural Engineer.

B. Do not cut and patch operating elements and related components in a manner that results in reducing their capacity to perform as intended or that results in increased maintenance, decreased operational life or safety, or voids required or implied warranties.

C. Do not cut and patch elements or related components in a manner that results in reducing their load carrying capacity, capacity to perform as intended, causes increased maintenance or decreased operational life or safety, or voids required or implied warranties.

D. Do not cut and patch construction in a manner that results in visual evidence of cutting and patching. Do not cut and patch construction exposed on the exterior or in occupied spaces in a manner that would, in Architect's opinion, reduce the building's aesthetic qualities. Remove and replace construction that has been cut and patched in a visually unsatisfactory manner.

E. Sloppy, careless or avoidable cutting and patching will not be tolerated and work affected will be replaced at no cost to Owner. An aesthetically pleasing overall appearance of finished surfaces is a requirement of this Project. Make necessary preparations, and use recommended techniques with great care to ensure that all finished surfaces are acceptable to Architect. Architect will be the sole judge of visual acceptability.
F. Prior to any cutting and patching work meet at Project site with parties involved. Review areas of proposed cutting and patching, coordinate procedures and resolve conflicts before proceeding.

G. Contractor shall do all cutting, fitting, or patching of work as required to make its several parts come together properly and fit to receive or be received by work of other contractors shown upon, or reasonably implied by, the Drawings and Specifications for the completed structure as Architect may direct. In addition, the contractor shall do the following:

1. Uncover work to provide for installing, inspecting, or both, of ill-timed work.
2. Remove and replace work not conforming to requirements of the Contract Documents.
3. Remove and replace defective work.

H. All cost caused by defective or ill-timed work shall be borne by contractor.

I. Contractor shall not endanger any work by cutting, excavating, or otherwise altering work and shall not cut or alter work of any other contractor except with consent of Architect.

J. Should conditions of the work, or schedule, indicate a required change of materials or methods for cutting and patching, notify the Architect and Owner and secure written permission.

1.4 Warranty

A. Remove, replace, patch, and repair materials and surfaces cut or damaged during cutting and patching operations, by methods and with materials approved in writing by manufacturer’s of affected materials, so as to not void warranties. Architect will be the sole judge of visual acceptability.

PART 2 - Products

2.1 Materials

A. Comply with requirements specified in other Sections.

B. Use materials identical to in-place materials. For exposed surfaces, use materials that visually match in-place adjacent surfaces to the fullest extent possible. If identical materials are unavailable or cannot be used, use materials that, when installed, will match the visual and functional performance of in-place materials. Architect will be sole judge of visual acceptability.

PART 3 - Execution

3.1 Examination

A. Examine surfaces to be cut and patched and conditions under which cutting and patching are to be performed. After uncovering work, examine conditions affecting installation of new work.

1. Before patching, verify compatibility with and suitability of substrates, including compatibility with in-place finishes or primers.
2. Proceed with installation only after unsafe or unsatisfactory conditions have been corrected. Proceeding with cutting and patching work constitutes acceptance of substrate and conditions by contractor.

3.2 Preparation

A. Provide temporary support of Work to be cut.
B. Protect in-place construction during cutting and patching to prevent damage. Provide protection from adverse weather conditions for portions of Project that might be exposed during cutting and patching operations.

C. Avoid interfering with use of adjoining areas or interrupting the free passage to adjoining areas.

D. Where existing utility services/systems are required to be removed, relocated, or abandoned, bypass such services/systems before cutting to prevent interruption to occupied areas.

E. Locate all utilities prior to any cutting or excavation.

3.3 Performance

A. Employ adequate number of skilled workers to perform cutting and patching. Proceed with cutting and patching at the earliest feasible time, and complete without delay. Cut in-place construction to provide for installation of other components or performance of other construction, and subsequently patch as required to restore surfaces to their original condition.

B. Cut in-place construction by sawing, drilling, grinding, and similar operations, including excavation, using methods least likely to damage elements retained or adjoining construction.

1. In general, use hand or small power tools designed for sawing and grinding, not hammering and chopping. Cut holes and slots as small as possible, neatly to size required, and with minimum disturbance of adjacent surfaces. Temporarily cover openings when not in use.

2. Cut or drill from the exposed or finished side into concealed surfaces.

3. Cut concrete and masonry using a cutting machine, such as an abrasive saw or a diamond-core drill.

4. For excavating and backfilling comply with requirements in applicable Division 2 Sections where required by cutting and patching operations.

5. Proceed with patching after construction operations requiring cutting are complete.

C. Patch construction by filling, repairing, refinishing, closing up, and similar operations following performance of other Work. Patch with durable seams that are as invisible as possible. Provide materials and comply with installation requirements specified in other Sections.

1. Test and inspect patched areas after completion to demonstrate integrity of installation.

2. Restore exposed finishes of patched areas and extend finish restoration into retained adjoining construction in a manner that will eliminate evidence of patching and refinishing.

3. Provide an even surface of uniform finish, color, texture, and appearance. Remove finishes and replace with new materials, if necessary as determined by Architect, to achieve uniform color and appearance.

D. Clean areas and spaces where cutting and patching are performed. Completely remove paint, mortar, oils, putty, and similar materials.

End of Section 01731
SECTION 01732 - Selective Demolition

PART 1 - General

1.1 Related Documents

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division I Specification Sections, apply to this Section.

B. Related Sections include:

1. Section 01322 “Photographic Documentation.”
2. Section 01500 “Temporary Facilities and Controls.”
3. Section 01324 “Construction Waste Management.”
4. Section 02230 “Site Clearing.”

1.2 Definitions

A. Remove: Detach items from existing construction in their entirety as required for new construction and legally dispose of them off-site.

B. Salvage: Detach items from existing construction and deliver them to Owner.

C. Remove and Reinstall: Detach items from existing construction in their entirety as required for new construction, prepare them for reuse, and reinstall them where indicated.

D. Existing to Remain: Existing items of construction that are not to be removed and will remain functional.

E. Abandon: Existing items of construction that are to be disconnected, shutdown and left in place.

1.3 Quality Assurance

A. Provide the services of an experienced firm that has specialized in demolition work similar in material and extent to that indicated for this Project.

B. Comply with governing EPA notification regulations before beginning selective demolition. Comply with hauling and disposal regulations of authorities having jurisdiction. Comply with all applicable storm water, erosion and air quality regulations.

C. Standards: Comply with ANSI A10.6 and NFPA 241.

D. Conduct pre-demolition meeting at Project site. Review methods and procedures related to selective demolition. Issue meeting minutes.

1.4 Project Conditions

A. Conduct selective demolition so Owner's operations will not be disrupted.

B. Conditions existing at time of inspection for bidding purpose will be maintained by Owner as far as practical.
C. Compare existing conditions with Construction Documents before proceeding with selective demolition. Immediately provide written RFI to Architect for resolution of any conflicts found.

D. It is not expected that hazardous materials will be encountered in the Work.
   1. Known hazardous materials will be removed by Owner before start of the Work under a separate contract.
   2. If materials suspected of containing hazardous materials are encountered, do not disturb; immediately notify Architect and Owner in writing. Owner will remove hazardous materials under a separate contract.

E. Maintain existing utilities indicated to remain in service and protect them against damage during selective demolition operations. Re-route utilities if necessary to maintain service, without disruption of service.

F. Verify depth and locations of existing utilities to remain prior to start of selective demolition.

1.5 Warranty

A. Remove, replace, patch, and repair materials and surfaces cut or damaged during selective demolition, by methods and with materials so as not to void existing warranties.

PART 2 - Products (Not Used)

PART 3 - Execution

3.1 Examination

A. Verify that utilities have been disconnected and capped.

B. Survey existing conditions and correlate with requirements indicated to determine extent of selective demolition required.

C. Inventory and record the condition of items to be removed and reinstalled and items to be salvaged.

D. When unanticipated mechanical, electrical, or structural elements that conflict with intended function or design are encountered, investigate and measure the nature and extent of conflict. Promptly submit a written RFI to Architect immediately.

E. Engage a professional engineer to survey condition of structure to determine whether removing any element might result in structural deficiency or unplanned collapse of any portion of structure or adjacent structures during selective demolition operations. If such condition exists submit written RFI to Architect immediately.

F. Record existing conditions by use of measured drawings, preconstruction photographs and templates. Before selective demolition or removal of existing building elements that will be reproduced or duplicated in final Work, make permanent record of measurements, materials, assembly, construction, connection and interface with other materials, as needed to make exact reproduction.

G. Perform surveys as the Work progresses to detect hazards resulting from selective demolition activities.

3.2 Electrical Systems
A. Maintain systems indicated to remain and protect them against damage during selective demolition operations.

3.3 Preparation

A. Conduct selective demolition and debris-removal operations to ensure minimum interference with roads, streets, walks, walkways, and other adjacent occupied and used facilities.

B. Provide temporary barricades and other protection required to prevent injury to people and damage to adjacent buildings and facilities to remain.

C. Provide and maintain shoring, bracing, and structural supports as required to preserve stability and prevent movement, settlement, or collapse of construction and finishes to remain, and to prevent unexpected or uncontrolled movement or collapse of construction being demolished. Strengthen or add supports when required to adequately support surrounding Work during progress of selective demolition.

3.4 Selective Demolition

A. Demolish and remove existing construction only to the extent indicated and as required by new construction. Use methods required to complete the Work within limitations of governing regulations and as follows:

1. Neatly cut openings and holes plumb, square, and true to dimensions required. Use cutting methods least likely to damage construction to remain or adjoining construction. Use hand tools or small power tools designed for sawing or grinding, not hammering and chopping, to minimize disturbance of adjacent surfaces. Temporarily cover openings to remain.

2. Cut or drill from the exposed or finished side into concealed surfaces to avoid marring existing finished surfaces.

3. Do not use cutting torches until work area is cleared of flammable materials. At concealed spaces, such as duct and pipe interiors, verify condition and contents of hidden space before starting flame-cutting operations. Maintain portable fire-suppression devices during flame-cutting operations. Maintain adequate ventilation when using cutting torches.

4. Locate selective demolition equipment and remove debris and materials so as not to impose excessive loads on supporting walls, floors, or framing.

5. Dispose of demolished items and materials promptly. Remove decayed, infested, corroding or otherwise dangerous unsuitable materials promptly.

6. Remove structural framing members and lower to ground by method suitable to avoid free fall and prevent ground impact and dust generation.

B. Removed and Salvaged Items:

1. Clean and repair items.

2. Pack or crate items. Identify contents of containers.

3. Store items in a secure area until delivery to Owner.

4. Transport items to Owner's storage area designated by Owner.

5. Protect items from damage during transport and storage.

C. Protect construction indicated to remain against damage and soiling during selective demolition.

3.5 Selective Demolition Procedures for Specific Materials

A. Demolish concrete in sections. Carefully cut concrete full depth at junctures with construction to remain and at regular intervals, then remove concrete between saw cuts.
B. Demolish masonry in small sections. Cleanly cut masonry at junctures with construction to remain, and then remove masonry between saw cuts.

C. Saw-cut perimeter of slab on grade areas to be demolished, then break up and remove.

3.6 Disposal of Demolished Materials

A. Remove demolished materials from Project site and recycle to greatest extent possible. Legally dispose of remaining material in an EPA-approved landfill.

B. Do not burn or bury demolished materials.

3.7 Cleaning

A. Clean adjacent structures and improvements of dust, dirt, and debris caused by selective demolition operations. Return adjacent areas to condition existing before selective demolition operations began.

End of Section 01732
SECTION 01770 - Closeout Procedures

PART 1 - General

1.1 Related Documents

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division I Specification Sections, apply to this Section.

B. Related Sections include:

1. Section 01290 “Payment Procedures.”
2. Section 01322 “Photographic Documentation.”
3. Section 01781 “Project Record Documents.”
4. Section 01820 “Demonstration and Training.”

1.2 Substantial Completion/Beneficial Occupancy

A. Before requesting review for determining date of Substantial Completion/Beneficial Occupancy, complete the following. List items below that are incomplete in request.

1. Prepare a list of items to be completed and corrected in a punch list format.
2. Advise Owner of pending insurance changeover requirements.
3. Submit specific warranties, workmanship bonds, maintenance service agreements, final certifications, and similar documents. All warranties shall commence on the date stamped on the Notice of Completion by County Recorder’s Office.
4. Obtain and submit releases permitting Owner unrestricted use of the Work and access to services and utilities. Include occupancy permits, operating certificates, and similar releases.
5. Prepare and submit Project Record Documents, operation and maintenance manuals, Final Completion construction photographs, damage or settlement surveys, property surveys, and similar record information.
6. Deliver tools, spare parts, extra materials, and similar items to location designated by Owner. Label with manufacturer’s name and model number where applicable.
7. Make final changeover of permanent locks and deliver keys to Owner. Advise Owner’s personnel of changeover in security provisions.
8. Complete startup testing of systems.
9. Terminate and remove temporary facilities from Project site, along with mockups, construction tools, and similar elements.
10. Advise Owner of changeover for utilities.
11. Submit changeover information related to Owner’s occupancy, use, operation, and maintenance.
12. Complete final cleaning requirements, including touchup painting.
13. Touch up and otherwise repair and restore marred exposed finishes to eliminate visual defects.

B. Submit a written request for Project Review for Substantial Completion/Beneficial Occupancy. On receipt of request, Architect will either proceed with review or notify Contractor of unfulfilled requirements. Architect will prepare the Certificate of Substantial Completion/Beneficial Occupancy after review or will notify Contractor of items, either on Contractor’s list or additional items identified by Architect, that must be completed or corrected before certificate will be issued.

1. Request re-review when incomplete items are corrected.
2. Results of completed review will form the basis of requirements for Final Completion.

1.3 Final Completion
A. Before requesting final review for determining date of Final Completion, complete the following:

1. Submit a final Application for Payment.
2. Submit certified Substantial Completion/Beneficial Occupancy punch list of items to be completed or corrected stating that each item has been completed or otherwise resolved.
3. Submit evidence of final, continuing insurance coverage complying with insurance requirements.
4. Instruct Owner’s personnel in operation, adjustment, and maintenance of products, equipment, and systems.

B. Submit a written request for final review for acceptance. On receipt of request, Architect will either proceed with review or notify Contractor of unfulfilled requirements. Architect will prepare a final Certificate for Payment after review or will notify Contractor of construction that must be completed or corrected before certificate will be issued.

1. Request re-review when the incomplete items are corrected.

1.4 Warranties

A. Assemble and organize warranty documents into an orderly sequence based on the table of contents of the Project Manual.

1. Find warranties and bonds in heavy-duty, 3-ring, vinyl-covered, loose-leaf binders, thickness as necessary to accommodate contents, and sized to receive 8-1/2-by-11-inch paper.
2. Provide heavy paper dividers with tabs for each separate warranty. Mark tab to identify the product or installation. Provide a typed description of the product or installation, including the name of the product and the name, address, and telephone number of installer.
3. Identify each binder on the front and spine with the typed or printed title “WARRANTIES.” Project name, name and address of Contractor.

B. Provide 3 (three) copies of extended warranties at time of Substantial Completion/Beneficial Occupancy.

PART 2 - Products

2.1 Materials

A. Use cleaning materials and agents recommended by manufacturer or fabricator of the surface to be cleaned. Do not use cleaning agents that are potentially hazardous to health or property or that might damage finished surfaces.

B. Provide close out documents in appropriately sized 3-ring binder with transparent vinyl insert sleeve on both front cover and binding edge. Use multiple binders if necessary.

PART 3 - Execution

3.1 Final Cleaning

A. Provide final cleaning. Conduct cleaning and waste-removal operations to comply with local laws and ordinances and Federal and local environmental and antipollution regulations. Turn over Project in a “like new” condition.

B. Employ experienced workers or professional cleaners for final cleaning. Clean each surface or unit to condition expected in an average commercial building cleaning and maintenance program. Comply with manufacturer’s written instructions.
1. Complete the following cleaning operations before requesting inspection for certification of Substantial Completion/Beneficial Occupancy for entire Project or for a portion of Project:
   a. Clean Project site, yard, and grounds, in areas disturbed by construction activities, including landscape development areas, of rubbish, waste material, litter, and other foreign substances. Remove and dispose all mock-ups that are not incorporated into Work.
   b. Sweep paved areas broom clean. Remove petrochemical spills, stains, and other foreign deposits.
   c. Rake grounds that are neither planted nor paved to a smooth, even-textured surface.
   d. Remove tools, construction equipment, machinery, and surplus material from Project site.
   e. Clean exposed exterior hard-surfaced finishes to a dirt-free condition, free of stains, films, and similar foreign substances. Avoid disturbing natural weathering of exterior surfaces. Restore reflective surfaces to their original condition.
   f. Remove debris and surface dust from limited access spaces.
   g. Sweep concrete floors broom clean in occupied spaces.
   h. Remove labels that are not permanent.
   i. Touch up and otherwise repair and restore marred, exposed finishes and surfaces. Replace finishes and surfaces that cannot be satisfactorily repaired or restored or that already show evidence of repair or restoration. Do not paint over name plates, labels, and similar identification items on parts and equipment.
   j. Replace parts subject to unusual operating conditions.
   k. Clean light fixtures, lamps, globes, and reflectors to function with full efficiency. Replace burned-out bulbs, and those noticeably dimmed by hours of use.
   l. Leave Project clean and ready for occupancy.

C. Comply with safety standards for cleaning. Do not burn waste materials. Do not bury debris or excess materials on Owner’s property. Do not discharge volatile, harmful, or dangerous materials into drainage systems. Remove waste materials from Project site and dispose of lawfully.

D. Turn over additional materials and products as required by Contract Documents.

E. On occupancy, the Owner will assume responsibility for maintenance and custodial service for occupied portions of structure.

End of Section 01770
SECTION 01781 - Project Record Documents

PART 1 - General

1.1 Related Documents

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

B. Related Sections include:
   1. Section 01782 “Operation and Maintenance Data.”

1.2 Submittals

A. Submit (1) set of corrected Record Drawings and (1) set of marked-up Record Prints.

B. Submit (1) PDF copy of Project’s Specifications, including addenda and contract modifications.

C. Submit (1) PDF copy of each Product Data submittal.

PART 2 - Products

2.1 Record Drawings

A. Maintain one set of black-line on white paper record prints of the Contract Drawings.
   1. Mark Record Prints to show the actual installation where installation varies from that shown on the current Contract Documents.
   2. Give particular attention to information on concealed elements that would be difficult to identify or measure and record later.
   3. Record data as soon as possible after obtaining it. Record and check the markup before enclosing concealed installations.
   4. Accurately record information in an understandable drawing technique.
   5. Mark record sets with erasable, colored pencil. Use colors to distinguish between changes for different categories of the Work at same location. Establish legend to clearly define colors.
   6. Note Construction Change Directive numbers, alternate numbers, Change Order numbers, and similar identification, where applicable.

B. Identify and date each Record Drawing, include the designation “PROJECT RECORD DRAWING” in a prominent location.
   1. Organize Record Prints and newly prepared Record Drawings into manageable sets. Bind each set with durable paper cover sheets. Include identification on cover sheets.
   2. Scan each Record Drawing whether it contains marks or not and create a PDF of each drawing.
   3. Provide the following identification on each Record Drawing:
      a. Project name.
      b. Date
      c. Designation “PROJECT RECORD DRAWINGS.”
      d. Name of Contractor.

2.2 Record Specifications
A. Mark Specifications to indicate the actual product or method of installation that varies from that indicated in Contract Documents, addenda, and contract modifications.

   1. Give particular attention to information on concealed products and installations that cannot be readily identified and recorded later.
   2. Mark copy with the proprietary name and model number of products, materials, and equipment furnished, including substitutions and product options selected.
   3. Record the name of manufacturer, supplier, installer, and other information necessary to provide a record of selections made.
   4. Note related Change Orders.

2.3 Record Product Data

A. Mark Product Data to indicate the actual product installation where installation varies substantially from that indicated in Product Data submittal.

   1. Give particular attention to information on concealed products and installations that cannot be readily identified and recorded later.
   2. Include significant changes in the product delivered to Project site and changes in manufacturer's written instructions for installation.
   3. Note related Change Orders, Record Specifications and Record Drawings where applicable.

2.4 Miscellaneous Record Submittals

A. Assemble miscellaneous records required by other Specification Sections for miscellaneous record keeping and submittal in connection with actual performance of the Work. Bind or file miscellaneous records and identify each, ready for continued use and reference.

   1. RFI's and RFI Log.
   2. FCDs and FCD Log.
   3. Change Orders.

PART 3 - EXECUTION

3.1 Recording and Maintenance

A. Maintain one copy of each submittal during the construction period for Project Record Document purposes. Post changes and modifications to Project Record Documents as they occur, do not wait until the end of Project.

B. Store Record Documents and Samples in the field office apart from the Contract Documents used for construction. Do not use Project Record Documents for construction purposes. Maintain Record Documents in good order and in a clean, dry, legible condition, protected from deterioration and loss. Provide access to Project Record Documents for Architect's reference during normal working hours.

End of Section 01781
SECTION 02230 – Site Clearing

PART 1 - General

1.1 Summary

A. This Section includes the following:

1. Protecting existing trees, shrubs, groundcovers, plants and grass to remain.
2. Removing existing trees, shrubs, groundcovers, plants and grass.
3. Clearing and grubbing.
4. Stripping and stockpiling topsoil.
5. Removing above- and below-grade site improvements.
6. Disconnecting and capping or sealing site utilities.
7. Temporary erosion and sedimentation control measures.

1.2 Material Ownership

A. Except for stripped topsoil or other materials indicated to remain Owner’s property, cleared materials shall become Contractor’s property and shall be removed from Project site.

1.3 Project Conditions

A. Traffic: Minimize interference with adjoining roads, streets, walks, and other adjacent occupied or used facilities during site-clearing operations.

1. Do not close or obstruct streets, walks, or other adjacent occupied or used facilities without permission from Owner and authorities having jurisdiction.
2. 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 Applicable)

PART 3 - Execution

3.1 Preparation

A. Protect and maintain benchmarks and survey control points from disturbance during construction.

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.

1. Restore damaged improvements to their original condition, as acceptable to Owner.
3.2 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 sediment and erosion control Drawings.

B. Inspect, repair, and maintain erosion and sedimentation control measures during construction until permanent vegetation has been established.

C. Remove erosion and sedimentation controls and restore and stabilize areas disturbed during removal.

3.3 Tree Protection

A. Erect and maintain temporary fencing around tree protection zones before starting site clearing. Remove fence when construction is complete.

B. Do not excavate within tree protection zones, unless otherwise indicated.

C. Repair or replace trees and vegetation indicated to remain that are damaged by construction operations, in a manner approved by Architect.

3.4 Utilities

A. Locate, identify, disconnect, and seal or cap off utilities indicated to be removed.

1. Arrange with utility companies to shut off indicated utilities.

B. 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:

1. Notify Architect not less than two days in advance of proposed utility interruptions.
2. Do not proceed with utility interruptions without Architect's written permission.

3.5 Clearing And Grubbing

A. Fill depressions caused by clearing and grubbing operations with satisfactory soil material unless further excavation or earthwork is indicated.

B. Place fill material in horizontal layers not exceeding a loose depth of 8 inches and compact each layer to a density equal to adjacent original ground.

3.6 Topsoil Stripping

A. Remove sod and grass before stripping topsoil.

B. Strip topsoil to whatever depths are encountered in a manner to prevent intermingling with underlying subsoil or other waste materials.

C. Stockpile topsoil materials away from edge of excavations without intermixing with subsoil. Grade and shape stockpiles to drain surface water. Cover to prevent windblown dust.
3.7 Site Improvements

A. Remove existing above- and below-grade improvements as indicated and as necessary to facilitate new construction.

3.8 Disposal

A. Disposal. Remove surplus soil material, unsuitable topsoil, obstructions, demolished materials, and waste materials including trash and debris, and legally dispose of them off Owner’s property.

B. Separate recyclable materials produced during site clearing from other nonrecyclable materials. Store or stockpile without intermixing with other materials and transport them to recycling facilities.

End of Section 02230
SECTION 02300 - Earthwork

PART 1 - General

1.1 Summary

A. This Section includes the following:

1. Preparing subgrades for slabs-on-grade, walks, pavements, lawns and grasses and exterior plants.
2. Base course for concrete walks and pavements.
3. Base course for asphalt paving.
4. Excavating and backfilling for utility trenches.

1.2 Quality Assurance

Standard Specifications: Comply with the Standard Specifications for Public Works Construction (SSPWC), latest edition and supplements for rock materials. The Standard Specifications apply only to performance and materials and how they are to be incorporated into the Work. The legal/contractual relationship sections and the measurement and payment sections do not apply to this document.

1.3 Definitions

A. Backfill: Soil material used to fill an excavation.

1. Initial Backfill: Backfill placed beside and over pipe in a trench, including haunches to support sides of pipe.
2. Final Backfill: Backfill placed over initial backfill to fill a trench.

B. Base Course: Course placed between the subgrade and the base course and hot-mix asphalt or concrete paving.

C. Bedding Course: Course placed over the excavated subgrade in a trench before laying pipe.

D. Borrow Soil: Satisfactory soil imported from off-site for use as fill or backfill.

E. Classified Excavation: Removal and disposal of materials not defined as rock.

F. Excavation: Removal of material encountered above subgrade elevations and to lines and dimensions indicated.

1. Authorized Additional Excavation: Excavation below subgrade elevations or beyond indicated lines and dimensions as directed by Architect. Authorized additional excavation and replacement material will be paid for according to Contract provisions changes in the Work.
2. Unauthorized Excavation: Excavation below subgrade elevations or beyond indicated lines and dimensions without direction by Architect. Unauthorized excavation, as well as remedial work directed by Architect, shall be without additional compensation.

G. Fill: Soil materials used to raise existing grades

H. Structures: Buildings, footings, foundations, retaining walls, slabs, tanks, curbs, mechanical and electrical appurtenances, or other man-made stationary features constructed above or below the ground surface.
I. Subgrade: Surface or elevation remaining after completing excavation, or top surface of a fill or backfill immediately below base, drainage fill, or topsoil materials.

J. Unclassified Excavation: Removal and disposal of materials encountered regardless of nature of materials, including rock.

K. Utilities: On-site underground pipes, conduits, ducts, and cables, as well as underground services within buildings.

1.4 Project Conditions

A. Existing Utilities: Do not interrupt utilities serving facilities occupied by Owner or others unless permitted in writing by Architect and then only after arranging to provide temporary utility services according to requirements indicated.

PART 2 - Products

2.1 Soil Materials

A. General: Provide borrow soil materials when sufficient satisfactory soil materials are not available from excavations.

B. Satisfactory Soils: Sand, gravel, friable earth, or non-expansive clays, subject to Testing Laboratory's approval. Fill and backfill material shall be free of organic material, slag, cinders, expansive soils, trash or rubble and stones having maximum dimension greater than 6 inches.

C. Unsatisfactory Soils: Expansive and other soils as defined in the project

1. Unsatisfactory soils also include satisfactory soils not maintained within 2 percent of optimum moisture content at time of compaction.

D. Base Course: Material conforming to SSPWC section 200-2.2, Crushed Aggregate Base or SSPWC section 200-2.4 Crushed Miscellaneous Base.

E. Engineered Fill: Naturally or artificially graded mixture of natural or crushed gravel, crushed stone, and natural or crushed sand; ASTM D 2940, with at least 90 percent passing a 1-1/2-inch sieve and not more than 12 percent passing a No. 200 sieve.

F. Bedding Course: Naturally or artificially graded clean, crushed sand; ASTM D 2940, except with 100 percent passing a 3/8-inch sieve and not more than 8 percent passing a No. 200 sieve.

2.2 Accessories

A. Warning Tape: Acid- and alkali-resistant polyethylene film warning tape manufactured for marking and identifying underground utilities, 6 inches wide and 4 mils thick, continuously inscribed with a description of the utility. Colors coding shall be according to the American Public Works Association (APWA) standards:

1. Blue – Potable water and fire suppression lines
2. Green – Sanitary sewer and storm drain lines
3. Orange – Communication, alarm or signal lines
4. Purple – Reclaimed water, irrigation, and slurry lines
5. Red – Electrical power lines, cables, conduit and lighting lines
6. Yellow – Gas, oil, steam, petroleum, or gaseous material lines

PART 3 - Execution

3.1 Preparation

A. Protect structures, utilities, sidewalks, pavements, and other facilities from damage caused by settlement, lateral movement, undermining, washout, and other hazards created by earthwork operations.

B. Preparation of subgrade for earthwork operations including removal of vegetation, topsoil, debris, obstructions, and deleterious materials from ground surface is specified in Division 2 Section “Site Clearing” or “Demolition”.

C. Protect and maintain erosion and sedimentation controls, which are specified in Division 2 Section “Site Clearing” or “Demolition,” during earthwork operations.

3.2 Excavation

A. Unclassified Excavation: Excavate to subgrade elevations regardless of the character of surface and subsurface conditions encountered. Unclassified excavated materials may include rock, soil materials, and obstructions. No changes in the Contract Sum or the Contract Time will be authorized for rock excavation or removal of obstructions.

1. If excavated materials intended for fill and backfill include unsatisfactory soil materials and rock, replace with satisfactory soil materials.

3.3 Excavation For Structures

A. Excavate to indicated elevations and dimensions within a tolerance of plus or minus 1 inch. If applicable, extend excavations a sufficient distance from structures for placing and removing concrete formwork, for installing services and other construction, and for inspections.

1. Excavations for Footings and Foundations: Do not disturb bottom of excavation. Excavate by hand to final grade just before placing concrete reinforcement. Trim bottoms to required lines and grades to leave solid base to receive other work.

3.4 Excavation For Walks And Pavements

A. Excavate surfaces under walks and pavements to indicated lines, cross sections, elevations, and subgrades

3.5 Excavation For Utility Trenches

A. Excavate trenches to indicated gradients, lines, depths, and elevations.

B. Excavate trenches to uniform widths to provide 6 inch clearance on each side of pipe or conduit. Excavate trench walls vertically from trench bottom to 12 inches higher than top of pipe or conduit, unless otherwise indicated.

C. Trench Bottoms: Excavate and shape trench bottoms to provide uniform bearing and support of pipes and conduit. Shape subgrade to provide continuous support for bells, joints, and barrels of pipes and for joints, fittings, and bodies of conduits. Remove projecting stones and sharp objects along trench subgrade.
1. Excavate trenches 6 inches deeper than elevation required in rock or other unyielding bearing material, 4 inches deeper elsewhere, to allow for bedding course.

3.6 Subgrade Inspection

A. Reconstruct subgrades damaged by freezing temperatures, frost, rain, accumulated water, or construction activities, as directed by Architect, without additional compensation.

3.7 Unauthorized Excavation

A. Fill unauthorized excavation under foundations or wall footings by extending bottom elevation of concrete foundation or footing to excavation bottom, without altering top elevation. Lean concrete fill, with 28-day compressive strength of 2500 psi, may be used when approved by Architect.

1. Fill unauthorized excavations under other construction or utility pipe as directed by Architect.

3.8 Storage Of Soil Materials

A. Stockpile borrow soil materials and excavated satisfactory soil materials without intermixing. Place, grade, and shape stockpiles to drain surface water. Cover to prevent windblown dust.

1. Stockpile soil materials away from edge of excavations. Do not store within drip line of remaining trees.

3.9 Utility Trench Backfill

A. Place backfill on subgrades free of mud, frost, snow, or ice.

B. Place and compact bedding course on trench bottoms and where indicated. Shape bedding course to provide continuous support for bells, joints, and barrels of pipes and for joints, fittings, and bodies of conduits.

C. Backfill trenches excavated under footings and within 18 inches of bottom of footings with satisfactory soil. Fill with concrete to elevation of bottom of footings. Concrete is specified in Division 3 Section Cast-in-Place Concrete.

D. Provide 4-inch-thick, concrete-base slab support for piping or conduit less than 30 inches below surface of roadways. After installing and testing, completely encase piping or conduit in a minimum of 4 inches of concrete before backfilling or placing roadway base.

E. Place and compact initial backfill of satisfactory soil, free of particles larger than 1 inch in any dimension, to a height of 12 inches over the utility pipe or conduit.

1. Carefully compact initial backfill under pipe haunches and compact evenly up on both sides and along the full length of utility piping or conduit to avoid damage or displacement of piping or conduit. Coordinate backfilling with utilities testing.

F. Place and compact final backfill of satisfactory soil to final subgrade elevation.

G. Install warning tape directly above utilities, minimum 6 inches above top of pipe, minimum 12 inches below finished grade, except 6 inches below subgrade under pavements and slabs.
3.10 **Soil Fill**

A. Plow, scarify, bench, or break up sloped surfaces steeper than 1 vertical to 4 horizontal so fill material will bond with existing material.

B. Place and compact fill material in layers to required elevations as follows:
   1. Under grass and planted areas, use satisfactory soil material.
   2. Under walks and pavements, use engineered fill.
   3. Under building slabs, use engineered fill.
   4. Retain subparagraph below if backfill or fill beneath footings and foundations is required. Coordinate material selection with geotechnical engineer's written recommendations.
   5. Under footings and foundations, use engineered fill.

3.11 **Soil Moisture Control**

A. Uniformly moisten or aerate subgrade and each subsequent fill or backfill soil layer before compaction to within 2 percent of optimum moisture content.
   1. Do not place backfill or fill soil material on surfaces that are muddy, frozen, or contain frost or ice.
   2. Remove and replace, or scarify and air dry otherwise satisfactory soil material that exceeds optimum moisture content by 2 percent and is too wet to compact to specified dry unit weight.

3.12 **Compaction Of Soil Backfills And Fills**

A. Place backfill and fill soil materials in layers not more than 8 inches in loose depth for material compacted by heavy compaction equipment, and not more than 4 inches in loose depth for material compacted by hand-operated tampers.

B. Place backfill and fill soil materials evenly on all sides of structures to required elevations, and uniformly along the full length of each structure.

C. Compact soil materials to not less than the following percentages of maximum dry unit weight according to ASTM D 1557.

D. Under structures, building slabs, steps, and pavements, scarify and recompact top 12 inches of existing subgrade and each layer of backfill or fill soil material to 95 percent.

E. Under walkways, scarify and recompact top 6 inches below subgrade and compact each layer of backfill or fill soil material to 90 percent.

F. Under lawn or unpaved areas, scarify and recompact top 6 inches below subgrade and compact each layer of backfill or fill soil material to 85 percent.

G. For utility trenches, compact each layer of initial and final backfill soil material to 85 percent.

3.13 **Grading**

A. General: Uniformly grade areas to a smooth surface, free of irregular surface changes. Comply with compaction requirements and grade to cross sections, lines, and elevations indicated.

B. Site Grading: Slope grades to direct water away from buildings and to prevent ponding. Finish subgrades to required elevations within the following tolerances.
1. Lawn or Unpaved Areas: Plus or minus 1 inch.
2. Walks: Plus or minus 1 inch.
3. Pavements: Plus or minus 1/2 inch.

3.14 Base Courses

A. Place base course on subgrades free of mud, frost, snow, or ice.

B. On prepared subgrade, place base course under pavements and walks as follows:
   1. Shape base course to required crown elevations and cross-slope grades.
   2. Compact base course at optimum moisture content to required grades, lines, cross sections, and thickness to not less than 95 percent of maximum dry unit weight according to ASTM D 1557.

3.15 Field Quality Control

A. Testing Agency: Owner will engage a qualified independent geotechnical engineering testing agency to perform field quality-control testing.

B. Allow testing agency to inspect and test subgrades and each fill or backfill layer. Proceed with subsequent earthwork only after test results for previously completed work comply with requirements.

C. Footing Subgrade: At footing subgrades, at least one test of each soil stratum will be performed to verify design bearing capacities. Subsequent verification and approval of other footing subgrades may be based on a visual comparison of subgrade with tested subgrade when approved by Architect.

D. Testing agency will test compaction of soils in place according to ASTM D 1556, ASTM D 2167, ASTM D 2922, and ASTM D 2937, as applicable.

E. When testing agency reports that subgrades, fills, or backfills have not achieved degree of compaction specified, scarify and moisten or aerate, or remove and replace soil to depth required; recompact and retest until specified compaction is obtained.

3.16 Protection

A. Protecting Graded Areas: Protect newly graded areas from traffic, freezing, and erosion. Keep free of trash and debris.

B. Repair and reestablish grades to specified tolerances where completed or partially completed surfaces become eroded, rutted, settled, or where they lose compaction due to subsequent construction operations or weather conditions.

C. Where settling occurs before Project correction period elapses, remove finished surfacing, backfill with additional soil material, compact, and reconstruct surfacing.
   1. Restore appearance, quality, and condition of finished surfacing to match adjacent work, and eliminate evidence of restoration to greatest extent possible.

3.17 Disposal Of Surplus And Waste Materials

A. Disposal: Remove surplus satisfactory soil and waste material, including unsatisfactory soil, trash, and debris, and legally dispose of it off Owner’s property.
End of Section 02300
SECTION 02630 - Storm Drainage

Part 1 - General

1.1 Summary
   A. This Section includes gravity-flow, nonpressure storm drainage pipe and drainage structures.

1.2 Performance Requirements
   A. Gravity-Flow, Nonpressure, Drainage-Piping Pressure Rating: 10-foot head of water.

1.3 Submittals
   A. Product Data: For each type of product installed.
   B. Field quality-control test reports.

PART 2 - Products

2.1 Manufactures
   A. In other Part 2 articles where titles below introduce lists, the following requirements apply to product selection:
      1. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, manufacturers specified.

2.2 PVC Pipe And Fittings

2.3 Nonpressure-Type Pipe Couplings
   A. Comply with ASTM C 1173, elastomeric, sleeve-type, reducing or transition coupling, for joining underground nonpressure piping. Include ends of same sizes as piping to be joined and corrosion-resistant-metal tension band and tightening mechanism on each end.
   B. Sleeve Materials:
      1. For Plastic Pipes: ASTM F 477, elastomeric seal or ASTM D 5926, PVC
      2. For Dissimilar Pipes: ASTM D 5926, PVC or other material compatible with pipe materials being joined.
   C. Unshielded Flexible Couplings: Elastomeric sleeve with corrosion-resistant-metal tension band and tightening mechanism on each end.
      1. Manufacturers:
b. Fernco Inc.  
c. Logan Clay Products Company (The).  
d. Mission Rubber Company, a division of MCP Industries, Inc.  
e. NDS Inc.  
f. Plastic Oddities, Inc.  
g. Any equivalent manufacturer.

D. Shielded Flexible Couplings: ASTM C 1460, elastomeric or rubber sleeve with full-length, corrosion-resistant outer shield and corrosion-resistant-metal tension band and tightening mechanism on each end.

1. Manufacturers:
   a. Cascade Waterworks Mfg.  
   c. Mission Rubber Company, a division of MCP Industries, Inc.  
   d. Any equivalent manufacturer.

E. Ring-Type Flexible Couplings: Elastomeric compression seal with dimensions to fit inside bell of larger pipe and for spigot of smaller pipe to fit inside ring.

1. Manufacturers:
   a. Fernco Inc.  
   b. Logan Clay Products Company (The).  
   c. Mission Rubber Company, a division of MCP Industries, Inc.  
   d. Any equivalent manufacturer.

2.4 Concrete

A. General: Cast-in-place concrete according to ACI 318/318R, ACI 350R, and the following:

1. Cement: ASTM C 150, Type II  
2. Fine Aggregate: ASTM C 33, sand  
3. Coarse Aggregate: ASTM C 33, crushed gravel  
4. Water: Potable

2.5 Trench Drain

A. See plan for type of Trench Drain and connection to storm drain system.

PART 3 - Execution

3.1 Piping Applications

A. Pipe couplings and fittings with pressure ratings at least equal to piping rating may be used in applications below, unless otherwise indicated.

1. Use nonpressure-type flexible couplings where required to join gravity-flow, nonpressure sewer piping, unless otherwise indicated.
   a. Shielded flexible couplings for same or minor difference OD pipes.  
   b. Unshielded, increaser/reducer-pattern, flexible couplings for pipes with different OD  
   c. Ring-type flexible couplings for piping of different sizes where annular space between smaller piping's OD and larger piping's ID permits installation.
3.2 Piping Installation

A. Install piping beginning at low point, true to grades and alignment indicated with unbroken continuity of invert. Place bell ends of piping facing upstream. Install gaskets, seals, sleeves, and couplings according to manufacturer’s written instructions for using lubricants, cements, and other installation requirements.

B. Install proper size increasers, reducers, and couplings where different sizes or materials of pipes and fittings are connected. Reducing size of piping in direction of flow is prohibited.

C. Install gravity-flow, nonpressure drainage piping according to the following:
   1. Install piping pitched down in direction of flow, at minimum slope of 1 percent, unless otherwise indicated.
   2. Install PVC sewer piping according to ASTM D 2321 and ASTM F 1668.

3.3 Pipe Joint Construction

A. Join gravity-flow, nonpressure drainage piping according to the following:
   1. Join PVC sewer piping according to ASTM D 2321 and ASTM D 3034 for elastomeric-gasket joints.

3.4 Connections

A. Connect nonpressure, gravity-flow drainage piping to Trench Drain.

3.5 Anchorage Installation

A. Install anchorages for tees, plugs and caps, bends and crosses.

3.6 Trench Drain Installation

A. Set frames and grates to elevations indicated.

3.7 Field Quality Control

A. Test new piping systems for leaks and defects.
   1. Do not enclose, cover, or put into service before inspection and approval
   2. Test completed piping systems according to requirements of authorities having jurisdiction
   3. Schedule tests and inspections by authorities having jurisdiction with at least 24 hours’ advance notice
   4. Submit separate report for each test
   5. Option: Test plastic gravity sewer piping according to ASTM F 1417.

B. Leaks and loss in test pressure constitute defects that must be repaired.

C. Replace leaking piping using new materials, and repeat testing until leakage is within allowances specified.

End of Section 02630
SECTION 02751 – Cement Concrete Pavement

PART 1 - General

1.1 Summary

A. This Section includes exterior cement concrete pavement for the following:
   1. Curbs and gutters.
   2. Wallways.

1.2 Submittals

A. Product Data: For each type of product indicated, including admixtures.

B. Design Mixtures: For each concrete pavement mixture.

1.3 Quality Assurance

A. Manufacturer Qualifications: Manufacturer of ready-mixed concrete products who complies with ASTM C 94/C 94M requirements for production facilities and equipment.


C. All work to be performed and materials to be used shall be in accordance with the Standard Specifications for Public Works Construction, latest edition and supplements.

D. The Contractor shall have one copy of the Standard Specifications at the job site.

E. The Standard Specifications apply only to performance and materials and how they are to be incorporated into the Work. The legal/contractual relationship sections and the measurement and pavement sections do not apply to this document.

F. Contractor shall obtain from Owner concrete mix designs and information for concrete paving installed at Library. Contractor shall use this information when ordering concrete for that portion of paving and bench work indicated to match Library concrete work.

G. Before beginning actual work, install mockups of at least 8’ x 8’ in surface area to demonstrate aesthetic effects and set quality standards for materials and execution. Build mockups to verify selections made under sample submittals and to demonstrate aesthetic effects and set quality standards for fabrication and installation.

   1. Build mockups for each type of concrete paving texture, finish and installation. Construct mockup in a layered fashion to show all elements of the assembly. Include the following:
      a. Inside and outside corners.
      b. Control and expansion joints.
      c. Sealant joints.
   
   2. Approved mockups may become part of the completed work if undisturbed at time of Substantial Completion.
3. Do not proceed with work until mockup is approved by Architect. Reconstruct mockup as necessary to obtain Architect’s approval.

4. Coordinate with necessary trades to construct mockup to reflect actual construction. Obtain materials, and services of other trades to participate in mockup construction so mockup reflects actual construction and conditions proposed in finished work in all respects, including but not limited to, supporting structure, substrates, flashing, attachment, backings, opening and finished materials. Provide materials identical to materials that will be used in actual work.

5. Architect’s review and comments or no-comment of mockup does not relieve contractor from fulfilling requirements of Contract Documents. Deviations from Contract requirements in completed work whether noted or not noted in mockup are contractor’s responsibility and must be corrected at no additional cost or time to Contract.

6. Use workers trained and experienced in each particular trade required to construct each element of the mockup.

H. Conduct pre-installation meeting to comply with requirements in Section 01300 "Project Management and Coordination." Review project requirements and make adjustments in installation strategies to meet requirements without additional cost or time to Contract.

PART 2 - Products

2.1 Steel Reinforcement

A. Reinforcing Bars: ASTM A 615/A 615M, Grade 60, deformed.

B. Bar Supports: Bolsters, chairs, spacers, and other devices for spacing, supporting, and fastening reinforcing bars and dowels in place. Manufacture bar supports according to CRSI’s “Manual of Standard Practice.”

2.2 Concrete Materials

A. Cementitious Material: Use the following cementitious materials, of the same type, brand, and source throughout the Project:

1. Portland Cement: ASTM C 150, Type II, low alkali

B. Combined Aggregates: Gradation “C” conforming to SSPWC Section 201-1.3.2.

C. Water: ASTM C 94/C 94M

2.3 Curing Materials

A. Impervious Sheet Materials: Impervious sheet materials shall conform to ASTM C 171, type optional, except that polyethylene film, if used, shall be white opaque.

B. Burlap: Burlap shall conform to AASHTO M 182.

C. White Pigmented Membrane-Forming Curing Compound: White pigmented membrane-forming curing compound shall conform to ASTM C 309, Type 2.

2.4 Related Materials

B. Concrete Coloring: W.R. Grace Topcast #3 where indicated to match Library paving.

2.5 Concrete Mixtures

A. Prepare design mixtures, proportioned according to ACI 301, with the following properties:

1. Compressive Strength (28 Days): 4,500
2. Maximum Water-Cementitious Materials Ratio at Point of Placement: 0.45
3. Slump Limit: 4 inches, plus or minus 1 inch.

2.6 Concrete Mixing

A. Ready-Mixed Concrete: Measure, batch, and mix concrete materials and concrete according to ASTM C 94 C 94M. Furnish batch certificates to Architect for each batch discharged and used in the Work. Place concrete within 90 minutes of mixing.

PART 3 - Execution

3.1 Examination

A. Proof-roll prepared subbase surface below concrete pavements with heavy pneumatic-tired equipment to identify soft pockets and areas of excess yielding.

3.2 Edge Forms and Screed Construction

A. Set, brace, and secure edge forms, bulkheads, and intermediate screed guides for pavement to required lines, grades, and elevations. Install forms to allow continuous progress of work and so forms can remain in place at least 24 hours after concrete placement.

B. Clean forms after each use and coat with form-release agent to ensure separation from concrete without damage.

3.3 Steel Reinforcement

A. General: Comply with CRSI's "Manual of Standard Practice" for fabricating, placing, and supporting reinforcement.

3.4 Joints

A. General: Form construction, isolation, and control joints and tool edgeings true to line with faces perpendicular to surface plane of concrete. Construct transverse joints at right angles to centerline, unless otherwise indicated.

B. Construction Joints: Set construction joints at side and end terminations of pavement and at locations where pavement operations are stopped for more than one-half hour unless pavement terminates at isolation joints.

C. Isolation Joints: Form isolation joints of preformed joint-filler strips abutting concrete curbs, catch basins, manholes, inlets, structures, walks, other fixed objects, and where indicated.

D. Control Joints: Form weakened-plane control joints, sectioning concrete into areas as indicated. Construct control joints for a depth equal to at least one-fourth of the concrete thickness to match jointing of existing adjacent concrete pavement.
E. Edging: Tool edges of pavement, gutters, curbs, and joints in concrete after initial floating with an edging tool to a 1/4-inch radius. Repeat tooling of edges after applying surface finishes. Eliminate tool marks on concrete surfaces.

3.5 Concrete Placement

A. Moisten subbase to provide a uniform dampened condition at time concrete is placed.

B. Comply with ACI 301 requirements for measuring, mixing, transporting, and placing concrete.

C. Deposit and spread concrete in a continuous operation between transverse joints. Do not push or drag concrete into place or use vibrators to move concrete into place.

D. Screed pavement surfaces with a straightedge and strike off.

E. Commence initial floating using bull floats or darbies to impart an open textured and uniform surface plane before excess moisture or bleed water appears on the surface. Do not further disturb concrete surfaces before beginning finishing operations or spreading surface treatments.

3.6 Float Finishing

A. General: Do not add water to concrete surfaces during finishing operations.

B. Float Finish: Begin the second floating operation when bleed-water sheen has disappeared and concrete surface has stiffened sufficiently to permit operations. Float surface with power-driven floats, or by hand floating if area is small or inaccessible to power units. Finish surfaces to true planes. Cut down high spots and fill low spots. Refloat surface immediately to uniform granular texture.

1. Medium-to-Fine-Textured Broom Finish: Draw a soft bristle broom across float-finished concrete surface perpendicular to line of traffic to provide a uniform, fine-line texture.

2. Provide heavy sandblast where indicated at colored concrete to match heavy sandblast texture at Library paving. See Section 03300 for sandblasting.

3.7 Concrete Protection and Curing

A. General: Protect freshly placed concrete from premature drying and excessive cold or hot temperatures.

B. Begin curing after finishing concrete but not before free water has disappeared from concrete surface.

3.8 Pavement Tolerances

A. Comply with tolerances as follows

1. Elevation: 1/4 inch
2. Thickness: Plus 3/8 inch minus 1/4 inch
3. Surface: Gap below 10-foot-long, unlevelled straightedge not to exceed 1/4 inch.
4. Joint Spacing: 3 inches
5. Contraction Joint Depth: Plus 1/4 inch no minus
6. Joint Width: Plus 1/8 inch, no minus
3.9 Repairs and Protection

A. Remove and replace concrete pavement that is broken, damaged, or defective or that does not comply with requirements in this Section.

B. Protect concrete from damage. Exclude traffic from pavement for at least 14 days after placement.

C. Maintain concrete pavement free of stains, discoloration, dirt, and other foreign material. Sweep concrete pavement not more than two days before date scheduled for Substantial Completion/Beneficial Occupancy inspections.

End of Section 02751
SECTION 02764 - Pavement Joint Sealants

PART 1 - General

1.1 Summary

A. This Section includes the following:
   1. Expansion and isolation joints within cement concrete pavement.

1.2 Submittals

A. Product Data: For each type of product indicated.

PART 2 - Products

2.1 Manufacturers

A. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, products listed in other Part 2 articles.

2.2 Materials, General

A. Provide joint sealants, backing materials, and other related materials that are compatible with one another and with joint substrates under conditions of service and application, as demonstrated by joint-sealant manufacturer based on testing and field experience.

   1. Provide Primers: Product recommended by joint-sealant manufacturer for adhesion of sealant to joint substrates indicated.

B. Colors of Exposed Joint Sealants: As selected by Architect from manufacturer's full range including custom colors.

C. Type SL Silicone Sealant for Concrete: Single-component, low-modulus, neutral-curing, self-leveling silicone sealant complying with ASTM D 5893 for Type SL. Shore Hardness of 30-80 per ASTM C 661.

   1. Products:
      a. Crafo Inc.; RoadSaver Silicone SL
      b. Dow Corning Corporation, 890-SL
      c. Or any equivalent product.

2.3 Joint-Sealant Backer Materials

A. Provide joint-sealant backer materials that are nonstaining; are compatible with joint substrates, sealants, primers, and other joint fillers; and are approved for applications indicated by joint-sealant manufacturer based on field experience and laboratory testing.

B. Round Backer Rods for Cold-Applied Sealants: ASTM D 5249, Type 3, of diameter and density required to control sealant depth and prevent bottom-side adhesion of sealant.
PART 3 - Execution

3.1 Installation

A. Concrete curing requirement: The concrete must be allowed to cure and dry a minimum of 7 days in good drying weather before installing sealant. An additional day of good drying weather must be allowed for each day of poor, inclement weather.

B. Surface Cleaning of Joints: Clean out joints immediately before installing joint sealants to comply with joint-sealant manufacturer’s written instructions.

C. Joint Priming: Prime joint substrates where indicated or where recommended in writing by joint-sealant manufacturer, based on preconstruction joint-sealant-substrate tests or prior experience.

D. Sealant Installation Standard: Comply with recommendations in ASTM C 1193 for use of joint sealants as applicable to materials, applications, and conditions indicated.

E. Install backer materials to support sealants during application and at position required to produce optimum sealant movement capability. Do not leave gaps between ends of backer materials. Do not stretch, twist, puncture, or tear backer materials. Remove absorbent backer materials that have become wet before sealant application and replace them with dry materials.

F. Install sealants at the same time backings are installed to completely fill recesses provided for each joint configuration and to produce uniform, cross-sectional shapes and depths relative to joint widths that allow optimum sealant movement capability.

G. Clean off excess sealants or sealant smears adjacent to joints as the Work progresses by methods and with cleaning materials approved by manufacturers of joint sealants and of products in which joints occur.

End of Section 02764
SECTION 02875 - Post and Panel Signage

PART 1 - General

1.1 Related Documents

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

B. Related Sections include the following:

1. Section 03300 "Cast-in-Place Concrete."

1.2 Performance Requirements

A. Provide post and panel signs capable of withstanding the effects of gravity loads and wind loads indicated on drawings.

1.3 Submittals

A. Product Data: For each type of product indicated.

B. Sign Schedule: Use same designations indicated on Drawings.

1.4 Quality Assurance

A. Obtain each sign type indicated from one source from a single manufacturer.

B. Comply with the current edition of the "Americans with Disabilities Act (ADA) and California Title 24 Accessibility Regulations.

1.5 Project Conditions

A. Proceed with installation only when existing and forecasted weather conditions permit installation of signs to be performed according to manufacturers' written instructions and warranty requirements.

1.6 Coordination

A. Coordinate installation of anchorages and furnish setting drawings, templates, and directions for installing anchorages and other items that are to be embedded in concrete.

PART 2 - Products

2.1 Materials

A. Aluminum Sheet: ASTM B 209, alloy and temper recommended by aluminum producer and finisher for type of use and finish indicated, and with at least the strength and durability properties of Alloy 5005-H32. Provide smooth sign panel surfaces constructed to remain flat under installed conditions within a tolerance of plus or minus 1/16 inch measured diagonally from corner to corner. Provide 0.125 inch thick panel with predrilled holes for mounting sign to post.

B. Reflectorized Sign Film: 3M DG reflective sheeting Series 4000 or approved equal.
C. Fabricate posts to lengths indicated. Provide reverse sleeve method with galvanized inserts recommended by manufacturer, sized for close fit inside posts. Size inserts for direct embedment in concrete foundations and to attach sign posts securely and prevent sign from overturning when subjected to normal loading conditions prevailing at Project site. Drill posts and inserts for through bolts for fastening them together. Provide non-corrosive bolts for fastening posts to inserts. Fabricate sign posts from 1/2-inch thick, square galvanized steel tubing. Include post caps and related accessories required for complete installation. Hot-dip galvanize post assemblies after fabrication to comply with ASTM A123.

2.2 Accessories

A. Provide nonferrous-metal or hot-dip galvanized anchors and inserts for exterior installations and elsewhere as required for corrosion resistance.

PART 3 - Execution

3.1 Examination

A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of work.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 Installation

A. Excavate for sign foundation to elevations and dimensions indicated. Reconstruct subgrade that is not firm, undisturbed, or compacted soil, or that is damaged by freezing temperatures, rain, accumulated water, or construction activities by excavating a further 12 inches, backfilling with satisfactory soil, and compacting to original subgrade elevation.

B. Set reverse sleeves required for installation of signs. Protect portion of sleeve above ground from concrete splatter.

C. Locate signs and accessories where indicated. Install signs level, plumb, and at heights indicated, with sign surfaces free of distortion and other defects in appearance. Use nonremovable mechanical fasteners placed through predrilled holes. Attach signs with fasteners and anchors suitable for secure attachment to post.

3.3 Cleaning and Protection

A. After installation, clean soiled sign surfaces according to manufacturer’s written instructions. Protect signs from damage until acceptance by Owner.

END OF SECTION 02875
Section 03100- Concrete Formwork

Part 1 - General

1.01 Summary:

A. Section Includes:

1. Design and construction of formwork for concrete
2. Setting in forms, all anchor bolts, metal inserts, sleeves, etc., embedded in concrete.
3. Miscellaneous concrete work, including but not limited to areaways, cast-in-place valve boxes, pits, and other items as shown or required to complete all Work.

B. Related Work Specified Elsewhere:

1. Portland Cement Concrete Paving: Formwork for site concrete work, Section 02751.
2. Furnishing and placing reinforcing for cast-in-place concrete, Section 03200.
3. Furnishing, placing, finishing, and curing of cast-in-place concrete, Section 03300.
4. Placing of embedded anchor bolts and inserts, Section 03300.
5. Screeds for slabs, Section 03300.
6. Metal decking, Section 05315.

1.02 References, Codes and Standards: The following latest edition of the references, codes and standards are hereby made a part of this Section and work shall conform to the applicable requirements therein except as otherwise specified herein or shown on the Drawings. Latest edition of references and codes adopted by the Governing Agency shall apply. Nothing contained herein shall be construed as permitting work that is contrary to code requirements.

A. American Concrete Institute (ACI) – ACI 347 “Recommended Practice for Concrete Formwork”.
B. American Concrete Institute (ACI) – ACI 301 “Specifications for Structural Concrete Buildings.”
D. Building Code Requirements for Reinforced Concrete - ACI 318.

1.03 Definitions:
A. Unexposed Finish: A general-use finish, with no appearance criteria, applicable to all formed concrete concealed from view after completion of construction.

B. Exposed Finish: A general-use finish applicable to all formed concrete exposed to view and including surfaces which may receive a paint coating (if any).

1.04 System Requirements:

A. Formwork Design Requirements: Formwork products and execution specified herein are for finish surface quality only.

1. Design, layout and construction of formwork shall be solely the responsibility of the Contractor.

2. Design and construct formwork, shoring and bracing to conform to California Building Code (CBC) requirements and ACI 318.

3. Resulting concrete shall conform to shapes, lines and dimensions indicated and required.

4. Tolerances for concrete shall be as specified in ACI 117, ACI 301, ACI 318 and ACI 347, unless otherwise specified or indicated.

1.05 Submittals:

A. Record Document: Keep an accurate record of the dates of removal of forms, form shores and shores, and furnish copies to the Architect.

1.06 Quality Assurance:

A. Construct forms according to ACI 347 "Recommended Practice for Concrete Formwork", and conforming to tolerances specified in ACI 301, "Specifications for Structural Concrete for Buildings", as applicable, unless exceeded by code requirements or otherwise indicated or specified.

B. Prior to construction of formwork for concrete beams and slabs above grade, Contractor shall conduct a meeting at the site to determine and define all cambers required for the project. The Architect, Structural Engineer of record, Contractor and Contractor’s formwork installer shall be in attendance at this meeting.

C. Formwork Designer’s Qualifications: When required by authorities having jurisdiction, designer of formwork shall be a Civil or Structural Engineer registered to practice in the State of California.

1.07 Regulatory Requirements:

A. Regulatory Requirements: Conform to formwork construction requirements of the California Building Code (CBC) as amended and adopted by authorities having jurisdiction.

B. Coordination: Coordinate Work specified in this Section with other Sections which require placement of embedded products and provision of openings and recesses. If formwork is placed after reinforcement, resulting in insufficient concrete cover over reinforcement, request instructions from the Architect before proceeding.

1.08 Delivery, Storage, and Handling:

Concrete Formwork
03100-2
A. Deliver materials for forms in a timely manner to ensure uninterrupted progress.

B. Store materials by methods that prevent damage and permit easy access for inspection and identification.

Part 2 - Products

2.01 Materials:

A. Form lumber: WCLIB "Construction" grade or better, WWPA No. 1 or better, or equal.

B. Form plywood: PS-1, Group I, Exterior Grade B-B Plyform or better, minimum 5-ply and 3/4" thick for exposed locations and not less than 5/8" thick for unexposed locations, grade marked, not mill oiled. Plywood having medium or high density overlay is acceptable.


D. Lumber: Douglas fir or douglas fir-larch, grade appropriate for intended use, sound and undamaged straight edges, solid knot.

E. Fillets for Chamfered Corners: Wood molding at plywood or lumber forms; rigid plastic at steel, fiberglass and plastic forms.

F. Form ties: Prefabricated rod, flat band, wire, internally threaded disconnecting type, or equal, not leaving metal within 1-1/2" of concrete surface leaving no hole larger than 1".

Part 3 - Execution

3.01 Workmanship:

A. Rigidly construct forms to prevent mortar leakage, sagging, displacement or bulging between studs. Use clean, sound, approved form material, coated with specified materials only, not oil. Provide backing on all plywood joints.

B. Sides of all footings and grade beams shall be formed, unless permission is obtained to place concrete directly against earth. Where this permission is granted, the footing or grade beam dimension shall be increased 3". Remove formwork prior to backfilling operations.

3.02 Form Erection and Removal:

A. Conform to ACT 301 and ACT 347 except as exceeded by the requirements of Code, regulatory agencies, or herein.

B. Formwork Bracing and Shoring: Provide bracing and shores to ensure stability of formwork and accommodate all construction loads. Use form ties of sufficient strength and sufficient quantities to prevent formwork spreading. Maintain principal shores to support concrete until minimum required strength is achieved.
C. Construction: Coat forms with the specified resin coating, not form oil. Construct forms to exact shapes, sizes, lines, and dimensions required to obtain level, plumb, and straight surfaces. Provide openings, offsets, keys, reliefs, anchorages, recesses, moldings, chamfers, blocking, screeds, drips, bulkheads, and all other required features. Make forms easily removable without hammering or prying against concrete. Space forms apart with metal spreaders. Construct forms to accurate alignment, location and grades, and provide against sagging, leakage of concrete mortar, or displacement occurring during and after placing of concrete. Coordinate installation of inserts and anchors in forms according to Shop Drawings and requirements for work of other sections.

D. Corners and Angles: Provide 3/4" by 3/4" beveled chamfer strips for all exposed concrete corners and angles unless otherwise indicated. Form concealed concrete corners and angles square unless otherwise indicated.

E. Form Joints: Fill joints to produce smooth surfaces, intersections, and arrises. Use polymer foam or equivalent fillers at joints and where forms abut or overlap existing concrete to prevent leakage of mortar.

F. Cleanouts and Cleaning: Provide temporary openings in all wall forms and other vertical forms for cleaning and inspection. Clean forms and surfaces to receive concrete prior to placing.

G. Screeds: Set screeds and establish level for tops of concrete slabs and leveling for finish surfaces. Shape surfaces as indicated on the Drawings. Provide cradle, pad or base type screed supports for concrete over waterproof membranes and vapor retarders.

K. Form Cleaning, General: Clean and remove foreign matter within forms as erection and placement proceeds. Clean formed cavities of debris prior to concrete placement.

L. Formwork Reuse: Do not reuse wood and plywood forming materials which contact concrete, except as follows:
   1. High density plywood may be cleaned and reused for exposed concrete.
   2. Unfaced plywood may be reused for concealed concrete.
   3. Steel and fiberglass forming materials may be cleaned and reused.

M. Patching and Repairs: Patch tie holes with sheet metal patches and restore forms to like new condition prior to reuse.

N. Form Removal: Do not remove concrete forms until concrete attains sufficient strength to support its own weight and all superimposed loads as determined by testing field cured concrete cylinders, but not sooner than specified in ACI 347, paragraph 3.6.2.3. Load supporting forms may be removed when concrete has attained 75 percent of required 28 day compressive strength, provided construction is reshored.
   1. Avoid damage concrete surfaces during form removal.
   2. Remove or snap off metal spreader ties inside wall surface. Cut nails and form ties off flush and leave surfaces level and clean.
   3. Remove formwork in same sequence as concrete placement to achieve similar concrete surface coloration.
3.03 Formwork Tolerances:

A. Deflection: Limit deflection of forming surfaces from concrete pressure to L/240.

B. Finish Lines: Position formwork to maintain hardened concrete finish lines within following permissible deviations:

1. Variation from Plumb:

<table>
<thead>
<tr>
<th>Description</th>
<th>Tolerance</th>
</tr>
</thead>
<tbody>
<tr>
<td>In 10'-0&quot;</td>
<td>1/4 inch</td>
</tr>
<tr>
<td>In any story or 20'-0&quot;</td>
<td>3/8 inch</td>
</tr>
<tr>
<td>In 40'-0&quot; or more</td>
<td>3/4 inch</td>
</tr>
</tbody>
</table>

2. Variation from Level or Grades Indicated

<table>
<thead>
<tr>
<th>Description</th>
<th>Tolerance</th>
</tr>
</thead>
<tbody>
<tr>
<td>In 10'-0&quot;</td>
<td>1/4 inch</td>
</tr>
<tr>
<td>In any bay or 20'-0&quot; maximum</td>
<td>3/8 inch</td>
</tr>
<tr>
<td>In 40'-0&quot; or more</td>
<td>3/4 inch</td>
</tr>
</tbody>
</table>

3. Cross-Sectional Dimensions

<table>
<thead>
<tr>
<th>Description</th>
<th>Tolerance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Minus</td>
<td>1/4 inch</td>
</tr>
<tr>
<td>Plus</td>
<td>1/4 inch</td>
</tr>
</tbody>
</table>

C. Slab Openings: Variations in size and location of sleeves and slab openings shall not exceed 1/4 inch.

3.04 Survey and Adjustment:

A. Check forms before and during placement of concrete, using an instrument, and make corrections as work proceeds.

3.05 Embedded Piping and Rough Hardware:

A. Where work of other sections require openings for passage of pipes, conduits, ducts, and other inserts in the concrete, obtain all dimensions and other information. All necessary pipe sleeves, anchors, or other required inserts shall be accurately installed as part of the work of other sections, according to following requirements.

B. Openings: Size and locate formed openings, depressions, recesses and chases to accommodate products to be applied to, built into and pass through concrete Work. Coordinate size, location and placement of inserts, embedded products, openings and recesses with Work specified in other Sections.

C. Anchors and Other Devices: Set and build into concrete formwork anchorage devices and other embedded products required for Work to be attached to or supported by concrete elements.

D. Locating Embedded Products and Openings: Use setting drawings, diagrams, instructions and templates to set embedded products.

E. Conduits or Pipes: Locate so as not to reduce strength of concrete. In no case place pipes, other than conduits, in a slab 4-1/2" thick or less. Conduit buried in a concrete slab shall not have an Concrete Formwork 03100-5
outside diameter greater than 1/3 the slab thickness nor be placed below the bottom reinforcing steel or over top reinforcing steel. Space conduit a minimum of 5 diameters apart.

F. Sleeves: Pipe sleeves may pass through slabs or walls if not exposed to rusting or other deterioration and are of uncoated or galvanized iron or steel. Provide sleeves of diameter large enough to pass any hub or coupling on pipe, including any insulation.

G. Conduits: Conduits may be embedded in walls only if the outside diameter does not exceed 1/3 the wall thickness, are spaced no closer than 3 diameters on centers, and do not impair the strength of the structure.

3.06 Patching:

A. Schedule: Patch forming and tie holes immediately after form removal.

B. Cleaning: Clean surface of all loose materials and soiling.

C. Patching: Patch all holes and depressions with grouting gun and grout mix of one part cement and 2-1/2 parts mortar sand

3.07 Field Quality Control:

D. Inspection: Obtain inspection and approval of forms before placing structural concrete.

End of Section 03100
Section 03200 - Concrete Reinforcement

PART 1 - General

1.01 Summary

A. Section Includes:
   1. Reinforcing bars for cast-in-place concrete
   2. Reinforcing bars for masonry
   3. Accessories, including but not limited to, chairs and tie wires
   4. Miscellaneous concrete work, including but not limited to areaways, cast-in-place valve boxes, pits, and other items as shown or required to complete all Work

B. Related Work Specified Elsewhere:
   1. Reinforcement Concrete Paving, Section 02751
   2. Concrete Formwork: Formwork for cast-in-place concrete, provisions for access for reinforcement Work, Section 03100
   3. Cast in Place Concrete: Provisions for protection of reinforcement during concrete placement, Section 03300
   4. Installation of reinforcing bars in masonry, Section 04220

1.02 References, Codes and Standards: The following references, codes and standards are hereby made a part of this Section shall conform to the applicable requirements therein except as otherwise specified herein or shown on the Drawings. Latest edition of references and codes adopted by the Governing Agency shall apply. Nothing contained herein shall be construed as permitting work that is contrary to code requirements.

   A. Specifications for Structural Concrete for Buildings – ACI 301
   B. American Concrete Institute (ACI) – ACI 318, Building Code Requirements for Reinforced Concrete
   C. American Concrete Institute (ACI) – 315, "Manual of Standard Practice for Detailing Reinforced Concrete Structures"
   D. Concrete Reinforcing Steel Institute (CRSI) Manual of Standard Practice
   E. CRSI 63 - Recommended Practice for Placing Reinforcing Bars
   F. CRSI 65 - Recommended Practice for Placing Bar Supports, Specifications and Nomenclature

Concrete Reinforcement 03200 - 1

1.03 Submittals:

A. Timing: Allow a minimum of two weeks for review of submittals.

B. Shop Drawings: Submit including complete layouts, sections, and details for congested conditions, typical bending diagrams and offsets, splice lengths and locations, proposed layout where vertical and horizontal bars intersect, and wherever welding is proposed, detailed to conform to AWS and code requirements. After approval of initial submission, subsequent submittals may be waived.

C. Product Data:

1. Reinforcement supporting and spacing devices at exposed concrete only, to demonstrate non-corroding and non-staining characteristics.

2. Adhesive compounds.

D. Certifications: If steel is to be welded, submit certifications signed by AWS Certified Welding Inspector (CWI) of prequalified welding procedures, qualifications of welding procedures unless prequalified, qualification of welding operators, and qualification of welders.

E. Chemical Analysis: Provide for bars to be welded, in accordance with code.

1.04 Quality Assurance:

A. Source Quality Control: Refer to Section 01400 for general requirements and to following paragraphs for specific procedures. Testing Laboratory shall perform following conformance testing, shall select test samples of bars, ties, and stirrups from the material at the site or from place of distribution, each sampling including at least two 18" long pieces, and perform the following tests according to ASTM A615.

1. Identified Bars: If samples are obtained from bundles as delivered from the mill, identified as to heat number, accompanied by mill analyses and mill test reports, and properly tagged with Identification Certificate so as to be readily identified, perform one tensile and one bend test for each 10 tons or fraction thereof of each size of bars. Submit mill reports when samples are selected.

2. Unidentified Bars: When positive identification of reinforcing bars cannot be made and when random samples are obtained, perform tests for each 2.5 tons or fraction thereof, one tensile and one bend test from each size of bars.

B. Qualification of Welds, Welding Operators, and Welders: Comply with applicable Building Code standard. Perform welding procedure qualification, except for prequalified procedures, as required by AWS D1.4, prior to executing any welding of reinforcing steel.

1. Only AWS Certified Welding Inspectors shall be used for tests and qualifications associated with welding of reinforcing steel.

2. Only AWS qualified welders or welding operators shall perform welding of reinforcing steel.
C. Welding of reinforcing shall be in conformance with AWS & CBC. Do not weld reinforcing without approval of the structural engineer.

D. Install reinforcing in accordance with ACI 318, CRSI & CBC.

E. Coordination: Coordinate Work specified in this Section with other Sections which require placement of embedded products and provision of openings and recesses. If formwork is placed after reinforcement, resulting in insufficient concrete cover over reinforcement, request instructions from Architect (Structural Engineer) before proceeding.

1.05 Marking and Shipping:

A. Bundle bars, tag with identification, and transport and store so as not to damage any material. Use metal tags indicating size, length and other marking shown on placement drawings. Maintain tags after bundles are broken.

1.06 Extra Material:

A. Provide and install an additional 2% of the total rebar quantity for the project in addition to the quantities shown on drawings. This additional steel shall be installed during construction, in sizes and locations as directed. Provide unit price for purpose of adjusting contract price to reflect quantity of extra material actually used.

Part 2 - Products

2.01 Materials:

A. Reinforcing bars: ASTM A615, Grade 60, unless otherwise indicated on drawings.

B. Reinforcing bars for welding: ASTM A706, Grade 60.

C. Welded steel wire fabric conforming to ASTM A185 or A497 as indicated on the structural drawings.

D. Tie wire: ASTM A82, Annealed copper-bearing steel, 16 gauge minimum.

E. Chairs and similar support items:


   a) Supports at Slab on Grade: Provide devices with load-bearing pads or horizontal runners where base material will not support chair legs, to prevent puncture of vapor retarder or provide precast concrete block bar supports of equal or greater strength to specified concrete.

   b) Provide plastic coated, plastic-tipped (CRSI, Class 1) or stainless steel types at exposed-to-view concrete surfaces.
F. Welding electrodes: AWS D1.4, Table 5.1 and 5.5 low hydrogen electrodes, E9018 for Grade 60 steel, E70XX Series for grade 40 steel.

G. Mechanical Couplers or Splice Devices: Lenton, Barlock, Cadweld

2.02 Fabrication of Reinforcing Bars:

Do not fabricate reinforcing bars until reinforcing bar shop drawings have been reviewed for general conformance by the Architect.


B. Bending and Forming. Fabricate bars of the indicated sizes and bend and form to required shapes and lengths by methods not injurious to materials. Do not heat reinforce for bending. Bend bars No. 6 size and larger in the shop only. Bars with unscheduled kinks or bends are subject to rejection. Use only tested and approved bar materials.

C. Welding: 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. Preheat 6" each side of joint. Protect joints from drafts during the cooling process. Accelerated cooling is prohibited. Do not tack weld bars. Clean metal surfaces to be welded of all loose 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 undercut or overlaps, freedom from porosity and clinkers, and good fusion and penetration into the base metal. Cut out welds or parts of welds found defective with chisel and replace with proper welding. Prequalification of welds shall be in accordance with Code. No welds shall be made at bends in reinforcing bars.

Part 3 - Execution

3.01 Installation of Reinforcing:

A. Provide additional reinforcing bars at openings as required. Before placing bars, and again before concrete is placed, clean bars of loose mill scale, oil, or any other coating that might destroy or reduce bond.

B. Securing in Place: Accurately place bars and wire tie in precise position where bars cross. Bend ends of wire ties away from the forms. Wire tie bars to corners of ties and stirrups. Support bars according to the current edition of "Recommended Practice for Placing Bar Supports" of Concrete Reinforcing Steel Institute, using approved accessories and chairs. Place precast concrete cubes with embedded wire ties to support reinforcing steel bars in concrete placed on grade and in footings.

C. Coordination: Locate reinforcement to accommodate embedded products and formed openings and recesses.

D. Clearances: Maintain minimum clear distances between reinforcing bars and face of concrete as indicated on plans or directed.

E. Splices: Do not splice reinforcing bars at the points of maximum stress except where indicated. Lap splices as shown or required to develop full strength or stress of bars. Stagger splices in horizontal wall bars at least 24" longitudinally in alternate bars and opposite faces.
F. Splice Devices:

1. Type and manufacture, noted on drawings. If substitution is requested, Contractor shall supply manufacturer calculations and supporting data showing proposed substitution conforms to requirements indicated and supplied.

2. Install in accordance with manufacturer’s written instructions.

3. Splice in a manner developing at least 125% of the yielding strength of the bar.

G. Slab on Grade Reinforcement. Chair as required to maintain required clearances from dirt and top of slab.

H. Dowels: Secure tie dowels in place before depositing concrete. Provide No. 3 bars for securing dowels where no other reinforcement is provided.

I. Field Welding of Bars. As specified for fabrication.

J. Maintaining Bars In Position. Take adequate precautions to assure that reinforcing position and spacing is maintained during placement of concrete.

K. Adjustment and Inspection. Do not bend or straighten reinforcement in a manner injurious to material. Do not use bars with kinks or bends not shown on Drawings and reviewed shop drawings, or bars with reduced cross-section due to corrosion or other cause.

3.02 Field Quality Control:

A. Inspection. Obtain inspection and approval of reinforcing before concrete is placed.

B. Welding Inspection. Whether welding is done in the shop or at the site, perform welding of reinforcing bars under inspection of the Testing Laboratory Welding Inspector. All reinforcing welding shall have continuous inspection.

C. Notify structural engineer approximately 48 hours prior to completion of placement.

3.03 Corrections During Concrete Placement:

A. Corrections During Concrete Placement. Maintain reinforcing steel workers during placement of concrete for resetting reinforcement displaced by runways, workers and other causes.

3.04 Defective Work:

A. Defective Reinforcement Work. The following shall be considered defective and may be ordered to be removed and reconstructed at no change in Contract Time or Sum.

1. Bars with kinks or bends not shown on Drawings.

2. Bars injured due to bending or straightening.

3. Bars heated or bent.
4. Reinforcement not placed in accordance with Drawings and Specifications.

5. Rusty or oily bars.


END OF SECTION 03200
SECTION 03300 – Cast-in-Place Concrete

PART 1 - General

1.1 Summary

A. This section covers cast-in-place reinforced concrete piles or caissons including all materials, labor equipment and services necessary to complete this work.

1. Furnishing, placing, patching, and initial curing of cast-in-place concrete unless otherwise specified.

2. Grout and drypack, except as otherwise specified.

3. Placing of embedded anchor bolts and inserts.


5. Miscellaneous concrete work, including but not limited to areaways, cast-in-place valve boxes, pits, and other items as shown or required to complete all Work.


B. Related Work Specified Elsewhere:

1. Preparation and grading of earth subgrade under concrete, Section 02300.

2. Portland Cement Concrete Paving: Concrete for pedestrian traffic, Section 02751.

3. Furnishing, erection, and removal of forms, Section 03100.

4. Furnishing and placing reinforcing for cast-in-place concrete, Section 03200.

5. Reinforcing bars for masonry, Section 03200.

6. Grouting of masonry, Section 04220.

1.2. References, Codes, and Standards: The following references, codes and standards are hereby made a part of this Section work shall conform to the applicable requirements therein except as otherwise specified herein or shown on the Drawings. Latest edition of references and codes adopted by the Governing Agency shall apply. Nothing contained herein shall be construed as permitting work that is contrary to code requirements.


B. ACI 211.1 Standard Practice for Selecting Proportions for Normal, Heavyweight and Mass Concrete.

C. ACI 301 Specifications for Structural Concrete for Buildings.

D. ACI 302.1 – Recommended Practice for Concrete Floor and Slab Construction.

E. ACI 304 Recommended Practice for Measuring, Mixing, Transporting and Placing Concrete.
F. ACI 304.2 Placing Concrete by Pumping Methods.
G. ACI 305 Hot Weather Concreting.
H. ACI 306 Cold Weather Concreting.
I. ACI 308 – Recommended Practice for Curing Concrete.
J. ACI 309 Standard Practice for Consolidation of Concrete.
K. ACI 315 Details and Detailing of Concrete Reinforcement.
L. ACI 318 Building Code Requirements for Reinforced Concrete.
M. ACI 347 Recommended Practice for Concrete Formwork.
N. AWS D1.4 Structural Welding Code – Reinforcing Bars.
O. NRMA Concrete Plant Standards and Truck Mixer and Agitator Standards.
P. CRSI Placing Reinforcing Bars.
Q. “Guide for Surface Preparation for the Repair of Deteriorated Concrete Resulting from Reinforcing Steel Corrosion” (Guideline No. 03730) International Concrete Repair Institute.

1.3 Submittals:

A. Allow a minimum of two weeks for review of submittals.
B. Mix Designs: Submit mix designs for review and approval. Allow a minimum of two weeks for review of submittals. Also refer to Section 1.05.
C. Product Data: Proprietary admixtures, curing compounds, hardeners and sealers.
   1. Indicate compatibility of curing compounds and floor sealer with bond breaker for tilt-up concrete and finish materials to be applied to concrete.
   2. Indicate compatibility of curing compounds, hardeners and sealers with materials used for installation of applied flooring.
D. Product Data: Submit the coloring admix manufacturer’s technical data for products, methods, and color control procedures.
E. Samples: Conform to requirements specified in Section 01330.
F. Certificates: Certify that materials meet requirements of paragraph "Quality Assurance".
G. Delivery Tickets: With each transit truck, provide delivery ticket, signed by an authorized representative of the batch plant, containing all information required by ASTM C94, as well as time batched, type and brand of cement, cement content, maximum size of aggregate and total water content.

1.4 Quality Assurance:

A. Compliance with Regulations: All materials shall comply with the current rules and regulations of the local air quality management district, with the rules regarding volatile organic compounds, and with FDA rules and regulations for dangerous substances in construction products.

B. Concrete Manufacturer: Furnish concrete from licensed commercial ready-mix concrete plants conforming to ASTM C94 and approved by Building Official. Requirements herein govern when exceeding ASTM C94.

C. Allowable Tolerances: Construct concrete conforming to the tolerances specified in ACI 117 "Recommended Tolerances for Concrete Construction and Materials", as applicable, unless exceeded by requirements of regulatory agencies or otherwise indicated or specified.

D. Before plastering, install mockups of at least 8″ x 4″ in surface area to demonstrate aesthetic effects and set quality standards for materials and execution. Build mockups to verify selections made under sample submittals and to demonstrate aesthetic effects and set quality standards for fabrication and installation.

1. Build mockups for each type of exterior plaster texture, finish and installation. Construct mockup in a layered fashion to show all elements of the assembly. Include the following:
   a. Each sandblast texture and pattern
   b. Joint pattern and layout
   c. Concrete edges
   d. Sealant joints

2. Approved mockups may become part of the completed work if undisturbed at time of Substantial Completion.

3. Do not proceed with work until mockup is approved by Architect. Reconstruct mockup as necessary to obtain Architect's approval.

4. Coordinate with necessary trades to construct mockup to reflect actual construction. Obtain materials, and services of other trades to participate in mockup construction so mockup reflects actual construction and conditions proposed in finished work in all respects, including but not limited to, supporting structure, substrates, flashing, attachment, backings, opening and finished materials. Provide materials identical to materials that will be used in actual work.

5. Architect's review and comments or no-comment of mockup does not relieve contractor from fulfilling requirements of Contract Documents. Deviations from Contract requirements in completed work whether noted or not noted in mockup are contractor's responsibility and must be corrected at no additional cost or time to Contract.

6. Use workers trained and experienced in each particular trade required to construct each element of the mockup.

E. Conduct pre-installation meeting to comply with requirements in Section 01300 "Project Management and Coordination." Review project requirements and make adjustments in installation strategies to meet requirements without additional cost or time to Contract.

F. Testing Agency Services: Owner will engage an independent testing and inspection agency to conduct tests and perform other services specified for quality control during construction.
G. Source Quality Control: Refer to the following paragraphs for specific procedures. Concrete materials which, by previous tests or actual service, have shown conformance may be used without testing when so approved by the Architect and Building Official. Testing Laboratory shall perform following conformance testing:

1. Portland Cement: Furnish Mill Certificates, acceptable to Architect and Building Official, showing conformance with requirements specified, otherwise, the Testing Laboratory shall test each 250 barrels of cement in accordance with ASTM C150.

2. Aggregate For Normal Weight Concrete: Test the aggregate before and after concrete mix is designed and whenever character of aggregate varies or source of material is changed. Include a sieve analysis. Obtain samples of aggregates at the dry batching or ready-mix concrete plant in accordance with ASTM D75 and perform tests for the following properties:

<table>
<thead>
<tr>
<th>PHYSICAL PROPERTIES</th>
<th>Test Method</th>
<th>Minimum values</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sieve analysis</td>
<td>ASTM C136</td>
<td>Fine aggregate not darker than reference standard color</td>
</tr>
<tr>
<td>Organic impurities</td>
<td>ASTM C40</td>
<td>Loss after 5 cycles not more than 8 percent of coarse aggregate, nor more than 10 percent of fine aggregate</td>
</tr>
<tr>
<td>Soundness</td>
<td>ASTM C88</td>
<td>Weight loss not more than 10.5 percent after 100 revolutions, 42 percent after 500 revolutions</td>
</tr>
<tr>
<td>Abrasion</td>
<td>ASTM C131</td>
<td></td>
</tr>
<tr>
<td>Deleterious materials</td>
<td>ASTM C33</td>
<td></td>
</tr>
<tr>
<td>Materials finer than No. 200 sieve</td>
<td>ASTM C117</td>
<td>Not over 1 percent for gravel, 1.5 percent for crushed aggregate</td>
</tr>
<tr>
<td>Reactivity potential</td>
<td>ASTM C227, C289, C342</td>
<td>Ratio of silica released to reduction in alkalinity not to exceed 1.0</td>
</tr>
<tr>
<td>Sand equivalent</td>
<td>ASTM D2419</td>
<td>California sand equivalent values operating range not below 71 percent</td>
</tr>
</tbody>
</table>

1.5 Concrete Mix Designs: Testing Laboratory shall design concrete mixes for concrete requiring 28-day compressive strength exceeding 2,000 psi. Contractor shall bear all costs for concrete mix designs. All mix designs shall be signed and sealed by a Civil Engineer registered in the State of California.

A. Strength Requirements: Design mixes for structural concrete for minimum 28-day compressive strengths required by Drawings and Specifications. All mix designs for structural concrete shall be proportioned in accordance with Section 3.9 of ACI 301. If trial batches are used, the mix design shall be prepared by an independent testing laboratory and shall achieve an average compressive strength 1,200 psi higher than the specified strength. This over-design shall be increased to 1,400 psi when concrete strengths over 5,000 psi are used.

B. Basis of Mix Designs: Design all mixes for workability and durability of concrete. Control mixes in accordance with ACI 301. Make adjustments in water/cement ratios as necessary for required concrete strengths at the Contractor's expense. Calcium chloride, thiocyanates or admixtures containing more than 0.05 percent chloride ions are not permitted.

Cast-In-Place Concrete
03300 - 4
C. Maximum Aggregate Sizes: Not exceeding 3/4 of minimum clear space between bars and between bars and forms, nor larger than 1/5 of least dimensions between the forms. Design the mixes with 3/4" maximum size, except maximum 1-1/2" size for foundations and maximum 3/8" size at congested reinforcing or thin sections, when approved by the Architect.

1.6 Delivery, Storage, and Handling:

A. Deliver all materials in timely manner to ensure uninterrupted progress of the Work:

B. Store materials by methods that prevent damage and permit ready access for inspection and identification.

C. Runoff: Prevent run off of water contaminated by construction agents and chemicals from soil ing existing surfaces and from contaminating existing and future landscape areas.

1.7 Project Site Conditions:

A. Do not place concrete during rain or adverse weather conditions without means to prevent all damage. Conform to requirements specified hereinafter whenever concrete placement is required during cold or hot weather.

Part 2 - Products

2.1 Materials:

A. Portland cement: ASTM C150, Type II, low alkali, or Type V when in contact with soils. Do not change brand or source without prior approval.

B. Aggregates:


2. Structural Concrete: Maximum size not larger than 1/4 of narrowest dimension between forms, 1/3 depth of slab nor 3/4 of minimum clear spacing between individual reinforcing bars. Maximum aggregate size shall be 1-1/2 inch.

   1. Other than Structural Concrete: Conform to requirements for structural concrete.

C. Admixtures:

1. Chemical (Water Reducing) Admixture: ASTM C494, Type A, D, or E. Only one brand. When used, are subject to approval of Architect, and must reduce the mixing water at least 10 percent without entraining air in excess of 2 percent by volume. If the water reducing agent entrains more than 2 percent air, the water reduction shall be at least 12 percent, but in no case shall the water reducing agent entrain air in excess of 4 percent.


3. Pozzolan: ASTM C618, Class F or C Fly Ash, 100 pounds maximum per cubic yard, containing 1 percent or less carbon. Fly ash shall not be used in excess of 20 percent by weight of total cement quantity.

4. Super-Plasticizers (High Range Water Reducers): ASTM C494, Type F or G. Master Builders "Rheobuild", Euclid "Eucon 37" or equal, capable of producing concrete which
can be placed at 6-8 inch slump without segregation, capable of maintaining slump within 2" of that initially mixed for 90 minutes, and of maintaining concrete temperature within 2 degrees F. from time of batching for 90 minutes minimum.

D. Water: From potable domestic source

E. Curing Materials:

1. Curing, Hardening and Sealing Materials, General: Provide materials suitable for concrete finish and not detrimental to materials to be applied to concrete. Materials shall be compatible with concrete admixtures, shall be recommended by manufacturer for intended use and shall comply with applicable air quality requirements of authorities having jurisdiction

2. Liquid Curing compound: ASTM C309, Type I, Class B, W.R. Meadows 1100 Series, Master Builders "Masterkore-N-Seal W", or equal, complying with Rule 1113 of the South Coast Air Quality Management District and Federal Air Quality Regulation 40 CFR 52.254


4. Burlap sheet: Rinsed and free of preservatives or other agents that would discolor the concrete finishes.

F. Non-shrink grout: Conform to Corps of Engineers CRC-C 621, ASTM C1107 and as follows:

1. Metallic for concealed areas: Master Builders "Embedo 885", or equal, non-gas-forming and free of oxidizing catalysts and inorganic accelerators, used as dry or damp pack, or mixed to a 20-second flow, without segregation or bleeding at any temperature between 45 degrees F and 100 degrees F. Working time 30 minutes or more.

2. Non-metallic for exposed areas: Master Builders "Masterflow 928", or Euclid "Euco Hi-Flow Grout", with same characteristics as specified for concealed areas.

3. Epoxy grout where indicated: Multi-component, premeasured, fast-curing combination of thermosetting resins and inert fillers. Master Builders "Masterflow 648CP Plus", Sikadur 42 Industrial Group-Pak by Sika Chemical Corporation, or Euclid "Euco High Strength Grout".

G. Drypack: Field mixture of 1 part Portland cement to 2 parts fine aggregate mixed to a damp consistency such that a ball molded in the hands will stick together and hold its shape. At Contractor's option, the specified admixture may be added for increased workability at lower water/cement ratio. In lieu of field mixing, Contractor may use factory mixed drypack material, such as Master Builders "Construction Grout" or Euclid "Euco Dry Pack Grout".

H. Expansion Joint Filler: Asphalt impregnated fiber or non-extruding foam type, conforming to ASTM D994 and D1751, or D1752.

I. Construction Joint Materials: "Key-Kold" or "Kwik-Joint", of profiles indicated.

J. Bonding Agent: "Weld-Crete", manufactured by Larsen Products Co., P.O. Box 2127, Rockville, MD 20852, Master Builders "Concreseive", or equal.

Cast-In-Place Concrete
03300 - 6
2.2 Concrete Mixing:

A. Furnish ready-mixed concrete from an approved concrete batch plant. Conform to ASTM C94, except materials, testing, and mix designs as specified herein. Use transit mixer trucks equipped with automatic devices for recording number of revolutions of drum.

B. Admixtures: All approved admixtures shall be introduced into the concrete at the batch plant. Field additions are not acceptable.

C. Slump: Adjust quantity of water so concrete at point and time of placing does not exceed the following slumps when tested according to ASTM C143. Use the minimum water necessary for workability required by part of structure being cast.

<table>
<thead>
<tr>
<th>Part of Structure</th>
<th>Maximum Slump</th>
<th>Maximum Water-Cement Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>Footings, foundation walls, and mass concrete, not reinforced</td>
<td>4</td>
<td>0.55</td>
</tr>
<tr>
<td>Slabs on grade, reinforced and non-reinforced</td>
<td>4</td>
<td>0.45</td>
</tr>
<tr>
<td>Reinforced concrete over 8&quot; thick</td>
<td>4</td>
<td>0.5</td>
</tr>
<tr>
<td>Reinforced concrete 8&quot; or less thick</td>
<td>4</td>
<td>0.45</td>
</tr>
<tr>
<td>All other concrete</td>
<td>4</td>
<td>0.5</td>
</tr>
</tbody>
</table>

*If super-plasticizers are used, slumps may be 6"-8" for all concrete, with water-cement ratio unchanged or lower than slumps without admixture.

2.3 Slurry Concrete:

A. Slurry concrete shall conform to requirements of this section for regular concrete, except that testing will not be required. Slurring concrete shall contain not less than 2 sacks of cement per cubic yard. Aggregate may be material selected from excavation, free from organic matter, or imported fill, conforming to the following gradation:

<table>
<thead>
<tr>
<th>Sieve Size</th>
<th>Percent passing</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-1/2&quot;</td>
<td>100</td>
</tr>
<tr>
<td>1&quot;</td>
<td>80 - 100</td>
</tr>
<tr>
<td>3/4&quot;</td>
<td>60 - 100</td>
</tr>
<tr>
<td>3/8&quot;</td>
<td>50 - 100</td>
</tr>
<tr>
<td>No. 4</td>
<td>40 - 80</td>
</tr>
</tbody>
</table>
B. Water shall be added to produce a fluid, workable mix that will flow and can be pumped without segregation of aggregate. Materials shall be mechanically mixed until the cement and water are thoroughly dispersed.

Part 3 - Execution

3.1 Preparation for Concrete Placing:

A. Remove all free water from forms before concrete is deposited. Remove hardened concrete, debris, and foreign materials from interior surfaces of forms, exposed reinforcing, and from surfaces of mixing and conveying equipment.

B. Wetting: Wet wood forms sufficiently to tighten up cracks. Wet other materials sufficiently to reduce adsorption and to help maintain concrete workability.

C. Earth Subgrade: Dampen 24 hours before placing concrete, but do not muddy. Re-roll where necessary for smoothness and remove loose material.

D. Gravel Fill: Recompact disturbed gravel and bring to correct elevation.

E. Sand Beds or Subslab Drainage Fill: Recompact disturbed material and bring to correct elevation.

F. Screeds: Set screeds at walls and maximum 8-foot centers between. Set to provide level floor. Check with an instrument level, transit, or laser during placing operation to maintain level floor.

G. Expansion Joint Filler: Install where slabs abut buildings and elsewhere as indicated. Install full depth of concrete with top level with finished surface of concrete.

3.2 Concrete Placing:

A. Conveying and Placing: Comply with ACI 304. Do not place concrete until the reinforcing steel, embedded items, forms, or metal decking have been approved. Do not use aluminum tubes or any aluminum equipment for pumping concrete nor allow concrete to free fall from its point of release at mixer, hoppers, tremies, or conveying equipment more than 6 feet for concealed concrete and 3 feet for exposed concrete. Deposit concrete in 18” maximum lifts so that the surface is kept level throughout, a minimum being permitted to flow from one portion to another. Place concrete by methods that prevent segregation of materials.

1. Where new concrete is placed against or on old or existing concrete, apply bonding agent to properly prepared surface of old concrete prior to placement of new concrete. Prepare surface in accordance with ICRI.

2. Exception: When using super-plasticizers, the free fall, horizontal layer thickness and time limitations may be doubled.

B. Placement in Forms: Limit horizontal layers to depths which can be properly consolidated, but in no event greater than 24 inches.
1. Consolidate concrete by means of mechanical vibrators, inserted vertically in freshly placed concrete in a systematic pattern at close intervals. Penetrate previously placed concrete to ensure that separate concrete layers are knitted together.

2. Vibrate concrete sufficiently to achieve consistent consolidation without segregation of coarse aggregates.

3. Do not use vibrators to move concrete laterally.

C. Protection: Ensure that reinforcement, embedded products, joint fillers and joint devices are not disturbed during concrete placement.

D. Joints in Concrete: Locate construction joints only where approved, and obtain prior approval for points of stoppage of any pour. Clean and roughen the surface of construction joints by removing the entire surface and exposing 1/4" amplitude of clean aggregate solidly embedded in mortar matrix by sandblasting, chipping, use of an approved surface retarder, or equal. Water and keep hardened concrete wet for not less than 24 hours and sluice with portland cement slurry just before placing joining concrete. Cover horizontal surfaces of existing or previously placed and hardened concrete with a 2" thick layer of fresh concrete less 50% of coarse aggregate just before balance of concrete is placed.

E. Compacting: Compact each layer of the concrete as placed with mechanical vibrators or equivalent equipment. Transmit vibration directly to concrete and in no case through the forms unless approved. Accomplish thorough compaction. Supplement by rodding or spading by hand adjacent to forms. Compact concrete into corners and angles of forms and around reinforcement and embedded fixtures. Recompact deep sections with congestion due to reinforcing steel as required.

F. Operation of Vibrators: Do not horizontally transport concrete in forms with vibrators nor allow vibrators to contact forms or reinforcing. Push vibrators vertically into the preceding layers that are still plastic and slowly withdraw, producing maximum obtainable density in concrete without creating voids or segregation. In no case disturb concrete that has partially set. Vibrate at intervals not exceeding two-thirds the effective visible vibration diameter of the submerged vibrator. Avoid excessive vibration that causes segregation. Use and type of vibrators shall conform to ACI 309 "Recommended Practice for Consolidation of Concrete".

G. Correction of Segregation: Before placing next layer of concrete, and at the top of last placement for vertical elements, remove concrete containing excess water or fine aggregate or showing deficiency of coarse aggregate and fill the space with compacted concrete of correct proportions.

H. Waterproof Membranes: Perform work adjacent to waterproof membranes to prevent damage to membranes. Arrange work so that membrane is left unprotected for minimum period of time, as approved. Prior to placing concrete, inspect the membrane and arrange for repair to all damage which may have occurred.

I. Concrete Encased Columns: Clean columns as specified for cleaning other steel in contact with concrete. When concrete is not carried to structure above, stop concrete perpendicular to column axis at the same elevation on all parts of all columns in the space. Float top neatly to column.

J. Slabs:

1. Float Finish: Place, consolidate, strike off and level concrete slab to proper elevation. Use highway straightedge, bull float or darby. Remove all bleed water. After the concrete has stiffened sufficiently to permit the operation, and water sheen has
disappeared, the surface shall be floated, at least twice, to a uniform sandy texture. Remainder of finishing operations shall be as specified in Section 03300 Part 3 for each type of surface.

2. On-Grade Slabs: Place with maximum 40-foot edge dimension. Generally locate joints on column lines, exact locations as directed or approved.

3. On-Grade Slab Construction and Contraction Joints: Use types as indicated at column lines intermediate locations.

4. Expansion Joints: Conform to details and approved submittal. Provide expansion joint filler finished flush with slab surface except for those joints shown to be sealed with sealant. Conform to Section 07920 where sealant sealed joints are shown or specified, including the polymer joint filler, backing, and bond breaker.

5. Control Joints: Provide for concrete slabs as indicated. Form weakened-plane crack control joints, sectioning concrete into areas as indicated and so strength and appearance are not impaired. All joints shall be grooved contraction joints tooled as indicated in the Architectural Drawings. Provide protection for joint edges during sandblast finishing.

3.3 Cold Weather Provisions:

A. Normal Concrete. When the temperature is below 40 degrees F, the temperature of the concrete placed in the forms shall be at least 60 degrees F. When the temperature is below 30 degrees F, the temperature of the concrete as mixed shall be 65 degrees F. In all cases, when the daily average temperature is below 40 degrees F, the concrete shall be kept at 55 degrees F. for the 72 hours and then allowed to drop uniformly to the air temperature over the next 24 hours.

1. Concrete temperature shall be measured by placing a thermometer 2'' from the top of the concrete being placed.

B. Air-entrained concrete shall be kept at the above temperature for 27 hours and above freezing for an additional 72 hours.

C. No calcium chloride shall be used to accelerate hardening of concrete. Contractor to certify that any additive used does not contain calcium chloride.

D. If low temperature accelerating admixture is proposed, adjust concrete mix as required and obtain approval of Architect.

E. All concrete materials, reinforcement, forming materials and ground with which concrete is to come in contact shall be free of frost.

F. The covering or other protection used in connection with the curing shall remain in place and intact for at least 24 hours.

G. The work shall be protected from the elements, flowing water, and defacements of any nature during the construction operations.

H. Conform to the provisions of A.C.I. 306, Recommended Practice for Cold Weather Concreting, except as modified herein.

3.4 Hot Weather Provisions:

Cast-In-Place Concrete
03300 - 10
A. Conform to ACI 305R and the following requirements.

B. Take extra care to reduce the temperature of the concrete being placed, and to prevent rapid drying of newly placed concrete. When the outdoor ambient temperature is more than 90 degrees F., shade the fresh concrete as soon as possible after placing, and start curing as soon as the surface of the fresh concrete is sufficiently hard to permit it without damage. Using retarding admixture at 85°F or higher.

C. Concrete placement temperatures shall be controlled by the Contractor and shall not be limited to

1. Shading and cooling the aggregate,
2. Avoiding use of hot cement,
3. Cooling mixing water by additions of ice,
4. Insulating water supply lines and tanks; and
5. Insulating mixer drums or cooling them with sprays or wet burlap.

D. Unexposed Form Finish: Repair tie holes and patch defective areas. Rub down or chip off fins or other raised areas exceeding 1/4-inch height.

E. Exposed Form Finish: Repair and patch defective areas, with fins or other projections completely removed and smoothed.

1. Grout cleaned finish: Apply to surfaces indicated after all contiguous surfaces are accessible, do not clean as work progresses.
   a. Prepare grout using 1 part portland cement, 1-1/2 parts fine sand, and enough water to produce a mixture with consistency of thick paint. Achieve grout color matching concrete surface color by blending normal and white portland cements.
   b. Wet areas to be cleaned and apply grout mixture evenly by brush or spray. Scrub surface immediately after grout application to fill minor air bubbles, using cork float or stone, and remove excess grout while it is still plastic. After initial drying, rub surface vigorously with clean burlap, and keep moist for not less than 36 hours.

2. Contiguous unformed surfaces: Strike smooth and float to a similar texture tops of walls, horizontal offsets, and other unformed surfaces adjacent to or contiguous with formed surfaces. Continue final finish of formed surfaces across unformed surfaces, unless otherwise specifically indicated

3.5 Finishing Slabs:

A. Exterior Slab Finishes and Tolerances, General: See SCHEDULE at end of PART 3, herein, for finishes. Achieve flat, level planes except where slopes or grades are indicated. Tolerances shall be in accordance with FF (flatness) and FL (levelness) as defined in ACI 117.

B. Finishing Operations, General: Do not directly apply water to slab surface or dust with cement. Use hand or powered equipment only as recommended in ACI 302.1.

C. Screeding: Strikeoff to required grade and within surface tolerances indicated. Verify conformance to surface tolerances. Correct deficiencies while concrete is still plastic.
D. Bull Floating: Immediately following screeding, bull float or darby before bleed water appears to eliminate ridges, fill in voids, and embed coarse aggregate. Recheck and correct surface tolerances.

E. Final floating: Do not perform subsequent finishing until excess moisture or bleed water has disappeared and concrete will support either foot pressure with less than 1/4-inch indentation or weight of power floats without damaging flatness.

1. Float to embed coarse aggregate, to eliminate ridges, to compact concrete, to consolidate mortar at surface, and to achieve uniform, sandy texture.

2. Recheck and correct surface tolerances.

F. Troweling: Trowel immediately following final floating.

1. Apply first troweling with power trowel except in confined areas, and apply subsequent trowelings with hand trowels.

2. Wait between trowelings to allow concrete to harden. Do not over-trowel.

3. Begin final troweling when surface produces a ringing sound as trowel is moved over it. Consolidate concrete surface by final troweling operation. Completed surface shall be free of trowel marks, uniform in texture and appearance, and within surface tolerance specified.

4. Grind smooth surface defects which would telegraph through final floor covering system.

G. Finishes:

1. Non-Slip Broom Finish: Apply a non-slip broom finish to troweled finish at concrete surfaces as indicated on Architectural drawings. Immediately after float finishing, slightly roughen concrete surface by brooming with fiber-bristle broom perpendicular to main traffic route.

2. Smooth Troweled Finish: Bridge deck finish to be smooth troweled prior to sandblasting per Architectural drawings.

3. Sand-Blast Finish: Apply sandblast finish at concrete surfaces as indicated on drawings. Perform abrasive blasting after compressive strength of concrete exceeds 2000 psi. Coordinate with formwork removal to ensure that surfaces to be abrasive blasted are treated at same age for uniform results. Perform abrasive-blast finishing in as continuous an operation as possible, maintaining continuity of finish on each surface or area of Work. Maintain required patterns or variances in depths of blast to match design reference sample or mockup. Perform abrasive blasting to surface when strength and age of concrete equals strength and age of mockup at the time of the mockup’s abrasive blasting treatment.

H. Repair of Slab Surfaces: Test slab surfaces for smoothness and to verify surface plane to tolerance specified. Repair and replace defective areas. Areas of cracking or crazing may be required to be replaced at the direction of the Architect.

3.6 Concrete Curing and Sealing:

Cast-In-Place Concrete
03300 - 12
A. Curing, General: Protect freshly placed concrete from premature drying and excessive cold or hot temperatures. Use curing method compatible with applied finishes, waterproofing and other coatings. When coatings or waterproofing are to be applied to concrete or when concrete is intended to remain exposed, use moist curing (sheet) method only. See Schedule at end of this Section.

1. In hot, dry, and windy weather protect concrete from rapid moisture loss before and during finishing operations by fogging or with an evaporation-control material.

2. Moist Curing:
   a) Start initial curing as soon as free water has disappeared from concrete surface after placing and finishing when sufficiently hard to support the burlap and plastic covering without leaving marks in the concrete. Keep continuously moist for not less than 7 days prior to application of curing compounds.
   b) Place burlap sheets with half width laps and thoroughly saturate with water. Immediately cover with plastic sheets to maintain moisture in burlap. Provide means of keeping burlap and plastic from being displaced by wind.
   c) Check moisture content of burlap and re-saturate as required during initial 7 day curing.
   d) Remove burlap and plastic sheets after 7 days and apply curing compound.

3. Apply curing compounds after screeding and troweling.

B. Application of Liquid Agents: Apply agents in accordance with manufacturer’s instructions and recommendations.

C. Curing, Floors and Slabs: Apply curing compound on exposed interior slabs and on exterior slabs, walks, and curbs as follows:

1. Floor slabs to remain exposed and receive normal pedestrian and light vehicle traffic: Moist cure. Apply specified sealers or surface hardening compound as scheduled at end of this Section.

2. Equipment pads and bases: Match surrounding floor.

3.7 Patching Formed Concrete:

A. Remove fins, projections, and offsets. Cut out rock pockets, honeycomb, and all other defects to sound concrete, with edges of cuts straight and back-beveled. Dampen cut-outs and edges, and scrub with neat portland cement slurry just before patching, or an apply approved epoxy concrete adhesive.

B. Saturate form tie holes with water and fill voids and patches with flush smooth-finished mortar of same mix as concrete (less coarse aggregate), cure, and dry.

3.8 Miscellaneous Concrete Items:

A. Filling In: Fill in holes and openings left in concrete structures for passage of Work specified in other Sections, after such Work is in place. Mix, place, and cure concrete as specified to blend with in-place construction. Provide other miscellaneous concrete filling shown or required to complete 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: Provide machine and equipment bases and foundations as shown on drawings. Set anchor bolts for machines and equipment to template at correct elevations, complying with diagrams or templates of manufacturer furnishing machines and equipment.

3.9 Grouting and Drypacking:

A. Install as indicated or required. Where grouting and drypacking is part of the work of other sections, it shall conform to the following requirements, as applicable.

B. Drypacking: Mix materials thoroughly with minimum amount of water. Pre-saturate surfaces to receive dry pack for 24-hours prior to placement. Install drypack by forcing and rodding to fill voids and provide complete bearing under plates. Finish exposed surfaces smooth and cure with damp burlap or liquid curing compound.

C. Non-Shrink Grouting:

1. Mixing: Mix the approved non-shrink grout material with sufficient water per manufacturers recommendations.

2. Application: Surfaces to receive the non-shrink grout shall be clean, and shall be pre-saturated thoroughly 24-hours before placing the mortar. Before grouting, surfaces to be in contact shall be roughened and cleaned thoroughly, all loose particles shall be removed and the surface flushed thoroughly with neat cement grout immediately before the grouting mortar is placed. Place fluid grout from one side only and puddle, chisel, or pump for complete filling of voids; do not remove the dams or forms until grout attains initial set. Finish exposed surfaces smooth, and cure as recommended by grout manufacturer.

3.10 Site Concrete Work:

A. Contractor shall obtain from Owner concrete mix designs and information for concrete paving installed at Library. Contractor shall use this information when ordering concrete for that portion of paving and bench work indicated to match Library concrete work.

B. Use joint fillers at all construction joints. Cure all concrete for at least 10 days with liquid curing compound or sheet material except as otherwise specified. Construct all site concrete of 2,000 psi concrete unless otherwise indicated or specified. Provide reinforcing bars or mesh only where indicated. Conform to requirements specified hereinbefore for slab finishing and curing as applicable.

C. Concrete Curbs: Provide 1/2" thick expansion joints, at beginning and at end of curves, intersections, and 20-foot intervals between, set plumb, square, and to same profile as the curbs. Edge curb tops to 1/2" radius and vertical joints to 1/4" radius. Apply smooth finish followed by fine hair brush finish.

C. Concrete Gutters: Provide 1/2" thick expansion joints as above for curbs and apply a light broom finish with a 3" wide steel trowel finish at flow line.
D. Combination Curb and Gutter: As above for curbs and gutters, including expansion joints, 3" troweled flow line at base of curb.

E. Concrete Walls: Provide 1/2" expansion joints as specified for curbs and where walls abut rigid structures, aligned with joints in curbs where adjoining, and apply light broom finish perpendicular to traffic direction. Score walls as shown or directed.

F. Control Joints: Provide sawed joints for concrete walls and exterior concrete pavement as indicated. Use "Zip Strip" as distributed by S.C.A. Construction Supply, Santa Fe Springs, Calif., or equal only where specifically indicated. Install tops of the joints flush with the concrete surface and depth of joint a minimum of 1/4 the thickness of slab.

G. Provide heavy sandblast where indicated at colored concrete to match heavy sandblast texture at Library paving.

H. Concrete Color: W.R. Grace Topcast #3 where indicated to match Library Paving.

3.12 Slurry Concrete:

A. Slurry concrete shall be used as fill or backfill where indicated, and wherever excavations are carried below design depths without approval. Slurry concrete shall be placed within 1 hour after mixing, and shall be placed in manner that will prevent voids in, or segregation of, the concrete.

B. Backfilling over slurry concrete shall not be done less than 4 hours after placing.

3.13 Field Quality Control:

A. Delivery tickets: Have available copies of delivery tickets complying with ASTM C94 for each load of concrete delivered to site. Include on the tickets the additional information specified in the ASTM document.

B. Continuous Inspection: Construct structural concrete exceeding 2,500 psi compressive strength under continuous inspection of inspector. Obtain inspection and approval of forms and reinforcing by Building Department as required and by the Inspector before placing structural concrete.

C. Testing of Concrete: Testing Laboratory shall perform following tests. Samples for testing shall be obtained in accordance with ASTM C172, and shall be taken from as close to point of placement as possible:

1. Compressive Strength Tests: Cast one set of four or more cylinders from each day’s placing and each 150 cubic yards, or fraction thereof, or not less than once for each 2,000 square feet of surface area for slabs and walls, of each strength of structural concrete. Date cylinders, assign record number, and tag showing the location from which sample was taken. Also record slump test result of sample. Do not make more than two series of tests from any one location or batch of concrete.

2. Slump Tests: Make slump test for each set of test cylinders.

3. Test Cylinders: Samples will be made in accordance with ASTM C172. Cast cylinders according to ASTM C31; 24 hours later, store cylinders under moist curing conditions at about 70 degrees F. Test according to ASTM C39, one at 7 and two at 28 day ages. The remaining cylinder(s) shall be kept in reserve in case tests are unsatisfactory.
4. Shrinkage Test: Cast 4" by 4" by 11" long bars with 10" effective gauge length, cured for 7 days in moist room and as specified in ASTM C157. Make measurements at 7-day intervals to 35 day age. Allowable shrinkage shall not exceed 0.45% after period of 35 days.

D. Core Tests: If tests show the compressive strength of any concrete falls below the required minimum, additional testing of concrete which unsatisfactory tests represent may be required. Make core tests according to ASTM C42. Fill core holes with drypack concrete of strength required for concrete. Contractor shall bear cost of tests for below-strength concrete even if such tests indicate concrete has attained required minimum compressive strength, and all costs for required corrections.

E. Field Certifications: For all concrete, provide signed copy of batch plant’s certificate stating quantity of each material, amount of water, admixtures, departure time and date accompanying each load of materials or concrete.

3.15 Defective Concrete

A. Defective Concrete: The following concrete will be deemed to be defective, and shall be removed promptly from the job site.

1. Concrete which is not formed as indicated, is not true to intended alignment, is not plumb or level where so intended, is not true to intended grades and levels.

2. Has voids or honeycomb that have been cut, resurfaced, or filled, unless with the approval of the Architect.

3. Has sawdust, shavings, wood, or embedded debris.


B. Repairs and Replacements:

1. Where defective concrete is found after removal of the forms, remove and replace concrete back to nearest joint.

2. Work uneven surfaces and angles of concrete to a surface matching adjacent concrete surfaces.

3.16 Protection:

A. Protection: Protect concrete from marring and damage due to weather and construction activities.

1. Protective measures shall include providing temporary coverings, as specified in Section 01500 - Construction Facilities and Temporary Controls, and prohibiting all non-essential construction activities, including cleaning and maintenance of construction equipment.

2. In particular, protect concrete floor slabs from oil, paint and other products which might penetrate and degrade concrete surface.

3.17 Floor and Slab Curing and Finishing Schedule:

Cast-In-Place Concrete

03300 - 16
<table>
<thead>
<tr>
<th>Location</th>
<th>Finishing</th>
<th>Curing and Sealing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exterior slabs, pedestrian traffic, exposed concrete finish</td>
<td>Smooth trowel finish. FF25/FL20, with medium broom texture, sloped to drum.</td>
<td>Moist cure followed by cleaning and application of curing and sealing compound.</td>
</tr>
<tr>
<td>Bridge Deck</td>
<td>Smooth trowel finish. Sandblasted to pattern and texture indicate in Architectural drawings FF25.</td>
<td>Moist cure followed by cleaning and application of curing and sealing compound.</td>
</tr>
</tbody>
</table>

END OF SECTION 03300
Section 04220-Concrete Unit Masonry

Part 1 - General

1.01 Summary:

A. Section Includes:
   1. Concrete block masonry.
   2. Grouting of masonry.
   3. Installing reinforcing steel bars in masonry.

B. Related Work Specified Elsewhere:
   1. Furnishing and delivery of steel bar reinforcing for masonry - Section 03200
   2. Dowels in concrete for masonry - Section 03200

1.02 References, Codes and Standards: The following references, codes and standards are hereby made a part of this Section shall conform to the applicable requirements therein except as otherwise specified herein or shown on the Drawings. Latest edition of references and codes shall apply. Nothing contained herein shall be construed as permitting work that is contrary to code requirements.

A. American Concrete Institute “Specifications for Masonry Structures” – ACI 530.1/ASCE6

B. International Building Code with State of California Amendments (CBC)

1.03 Submittals:

A. Allow for a minimum of two weeks for review of submittals.

B. Samples: Submit the following:
   1. Three Samples of each type of masonry unit to show full range of color and texture, for selection and approval.
   2. Samples of cured dry mortar showing finish color.

C. Mix Designs: Submit for mortar and grout.

D. Shop Drawings: submit reinforcing, detailing fabrication, bending, and placement of unit masonry reinforcing bars. Comply with ACI 315 - Details and Detailing of Concrete Reinforcing showing bar schedules, stirrup spacing, diagrams of bent bars, and arrangement of masonry reinforcement.

1.04 Job Conditions:

A. Inspect and verify surfaces to receive Work of this Section. Report all conditions that prevent correct installation of masonry.
1.05 Delivery, Storage, and Handling:

A. Delivery: Deliver masonry materials to project in undamaged condition.

B. Storing and Handling Concrete Masonry Units: Store and handle masonry units off the ground, under cover, and in a dry location to prevent their deterioration or damage due to moisture, temperature changes, contaminants, corrosion, and other causes. If units become wet, do not place until units are in an air-dried condition.

C. Storage of Cementitious Materials: Store cementitious materials off the ground, under cover, and in dry location.

D. Storage of Aggregates: Store aggregates where grading and other required characteristics can be maintained and contamination avoided.

E. Storage of Accessories: Store masonry accessories including metal items to prevent corrosion and accumulation of dirt and oil.

1.06 Quality Assurance:

A. Tolerances: Unit masonry shall be placed within 1/8" of dimensions noted. Reinforcement shall be placed within tolerances recommended by ACI Detailing Manual, Special Publication, SP-66, & CBC.

B. Certificates: Submit material certificates for the following, signed by manufacturer and Contractor certifying that each material complies with requirements.

1. Cement: Each different cement product required for mortar and grout including name of manufacturer, brand, type, and weight slips at time of delivery.

2. Reinforcing bars: Each material and grade indicated for reinforcing bars.

C. Preconstruction Testing: Owner will employ and pay a qualified independent testing and inspection agency to perform the following preconstruction testing indicated as well as other inspection and testing services required by referenced unit masonry standard or indicated herein for source and field quality control.

1. Concrete masonry unit tests: For each different concrete masonry unit indicated, units will be tested for strength, absorption, and moisture content in accordance with ASTM C140.

2. Prism tests: For each type of wall construction indicated, masonry prisms will be tested in accordance with ASTM E447, Method B.


Part 2 - Products

2.01 Basic Materials:

A. Portland cement: ASTM C150, Type I or II, low alkali; mortar cement or plastic cement not permitted. Use one brand.
B. Hydrated lime: ASTM C207, Type S.

C. Mortar sand: ASTM C144, minimum 4% passing No. 100 sieve, uniformly graded fine to coarse.

D. Grout aggregates: ASTM C404, natural, Size No. 1 or No. 2 for fine aggregate, Size No. 8 for coarse aggregate.

E. Mortar admixture: None without prior approval of Architect and Structural Engineer.

F. Grout admixture: Sika Chemical Corp. GA Grout Aid, type as required.

G. Water: From domestic potable source.

H. Control joint filler: Dur-O-Wal “Rapid Control Joint”, wide flange unless regular flange is shown, approved sizes.

2.02 Concrete Block Materials:

A. General: Block shall conform to ASTM C90, Grade N, standard precision type normal weight units, steam-cured or yard air cured for 28 days, meeting Quality Control Standards of Concrete Masonry Association, with color and texture to match existing unless otherwise indicated or specified. Include matching jamb, lintel, control joint, bond beam, wall cap, and other special shape, type, or size units as required.

2.03 Mortar and Grout Proportions and Mixing:

A. Strengths: Minimum compressive strengths, 1,800 psi for mortar and 2,000 psi for grout at 28 days.

B. Proportions: Accurately measure all mortar and grout by the volume method using calibrated containers. Shovel measurements are not acceptable.

1. Mortar: Per CBC Section 2103A.8, one part portland cement, 2-1/2 to 3 parts sand based on dry loose volume, and not less than 1/4-part nor over 1/2-part lime.

2. Grout: Per CBC Section 2103A.12, and as follows. Mix with enough water to produce consistency for pouring without segregation.

C. Mixing: Place half of the required water and sand in an operating machine mixer; then add portland cement, remainder of sand and water, and then hydrated lime. Machine mix not less than 5 minutes after all ingredients are charged.

D. Retempering: Retemper mortar within one hour after leaving the mixer and maintain high plasticity. Add water in a basin formed in the mortar and rework mortar into water. Discard all mortar that is not used within one hour or that has begun to initially set.

2.04 Mortar and Grout Proportions And Mixing:

A. Concrete Masonry Unit Tests: For each type, class, and grade of concrete masonry unit indicated, units will be tested by qualified independent testing laboratory for strength, absorption, and moisture content in accordance with ASTM C140.
Part 3 - Execution

3.01 Installation of Concrete Block Masonry:

A. General: Lay out unit masonry to minimize cutting of units and use of odd joint sizes or bond. Construct all masonry in accordance with Code and Concrete Masonry Association standards for reinforced masonry. Place and embed in masonry anchors, bolts, regets, sleeves, conduits, and all other items furnished under other Sections, fully grouted in place. Work out details and be responsible for size, position, and arrangement of embedded items and necessary openings. Cut units by machine saw. Install only clean uncracked units.

B. Setting: Install masonry to preserve unobstructed vertical continuity of block cells. Full bed face shells and cross webs in mortar. Fill header or end joints solid with mortar to a depth from face of wall or unit not less than the thickness of the longitudinal face shells. Provide corner bond by lapping units in successive vertical courses.

C. Cleanout Openings: Provide openings at the bottom of cells containing bar reinforcing, and at each lift or pour of grout exceeding 48" height. Remove all overhanging mortar and other obstructions or debris from the interior of block cells. Seal cleanouts with matching whole units and mortar joints.

D. Reinforcing: Use deep-cut bond beam units at horizontal reinforcing bars. Install open end units for vertical bars unless otherwise shown. Hold vertical reinforcing bars in correct position at top, bottom, and intervals not over 160 bar diameters between, and secure in place with wood frames or similar devices as required for proper alignment. Install horizontal reinforcement as erection progresses, laps wire tied. Maintain a minimum 3/4" clear space between masonry and bars. Make laps and splices in bars not less than 40 bar diameters unless otherwise indicated.

E. Grouting: Fill all cells containing reinforcement with grout except where grout filling of all cells is shown. Pour in 4-foot lifts, waiting about 1-hour between lifts. Pour full height in each section of the wall in one work shift. Consolidate grout by puddling or internal vibration, then reconsolidate about 10 minutes later before plasticity is lost. Form horizontal construction joints by stopping the grout pour 1-1/2" below the top of masonry units. High lift grout placement may be used at Contractor's option as approved by the Architect and Structural Engineer and according to Code.

F. Bond and Joints: Lay units with 1/2-unit running bond, vertical joints in alternate courses aligned and plumb. Make joints uniformly 3/8" size, concealed joints struck flush. Compact and dense concave tool exposed joints with 1-1/2" diameter plastic or similar non-staining tool.

G. Weep Holes: Provide 1/4" diameter weep holes at bottom of ungrouted cells of exterior walls, or provide weep holes at maximum 32" centers with drain slots under webs of intervening units.

3.02 Wall Control Joints:

A. Provide for walls where shown, control joint filler placed for full height of each joint. Caulk exterior face of joints according to Section 07920.

3.03 Curing:

A. Keep newly constructed masonry damp for 3 days with regulated fog spray of water sufficient only to moisten faces of masonry but not in an amount as to cause water to flow down over
masonry. Do not saturate masonry with water for curing or any other purposes and protect from rain or flooding during curing period.

3.04 Cleaning:

A. Clean mortar and grout off exposed surfaces immediately and as the Work progresses. Acceptably repair imperfect joints, holes, defaced units, chipped edges or corners, and all other defects, or replace the defective units as required for approval. Mortar or grout staining on exposed masonry surfaces is subject to sandblast cleaning of the entire surface involved to obtain clean uniform approved appearance, as directed and at no additional contract cost.

3.07 Field Quality Control:

A. Testing: Testing Laboratory shall test mortar and grout to extent shown, directed, or required by Code.

B. Continuous Inspection: Required if indicated, and for high lift grouting operations.

End of Section 04220
Section 05120 - Structural Steel

PART 1 - GENERAL

1.01 Summary:

A. Section Includes:
   1. Structural steel framing.
   2. Steel pipe and tube framing
   3. Shop priming and field touch-up to extent specified.

B. Related Work Specified Elsewhere:
   1. Setting of anchor bolts and inserts in concrete – Section 03200.
   2. Metal decking installation – Section 05315.
   3. Reinforcing steel – Section 03200.
   4. Miscellaneous metal fabrications – Section 05500.

1.02 References


1.03 Submittals:

A. Product Data: Submit copies of producer’s or manufacturer’s data and installation instructions for the following products. Include laboratory test reports and other data required to show compliance with these specifications:
   1. Structural steel, including certified copies of mill test reports covering chemical and physical properties.
   2. Unfinished bolts and nuts.
   3. High strength bolts, including nuts and washers.

B. Shop Drawings: Submit covering all structural steel including welding, accessories, and fastenings. Fully detail minor connections and fastenings not shown or specified to meet required conditions. Include detailed sequence plan for shop and field welding that minimizes locked-in
stresses and distortion. Submit Shop Drawings for steel bridge no later than 21 calendar days from Date of Notice to Proceed.

1.04 Quality Assurance

A. Qualifications of Fabricator: Fabricate structural steel in shop of a licensed fabricator approved by Building Department.

B. Requirements of Regulatory Agencies: Work of this section shall conform to Code and Title 8, CCR.

C. Source Quality Control

1. Identified mill order steel: If steel can be identified by heat and melt numbers, and is accompanied by mill analyses and test reports, commercial stock may be used without physical testing. Submit an affidavit attesting to compliance in accord with the Specifications. Comply with CBC Section 2203A.1.

2. Identified local stock steel: For hot-rolled structural steel shapes, plate and tube required to meet a minimum specified yield not exceeding 36,000 psi, mill analyses and test reports certified by the manufacturer may constitute sufficient evidence of conformity with specifications provided materials can be identified in fabricating shop in accord with ASTM A36, by a qualified representative of an independent testing laboratory. When in compliance with these conditions, physical testing will not be required.

3. Unidentified Structural Steel:

   a. When material required to meet a minimum specified yield of 36,000 psi cannot be identified or its source is questionable, make one set of tension tests and one set or bend tests for each 20 tons or fractional part thereof of each heat. Additional tests may be ordered when deemed necessary.

   b. When material required to meet a minimum specified yield greater than 36,000 psi cannot be identified or its source is questionable, make one set of tension tests and one set of bend tests for each piece.

4. High Strength Bolts: Furnish certified copy of manufacturer’s test reports stating that high strength bolts and heat-treated steel structural bolts meet the requirements of ASTM A325 and ASTM A490, respectively.

   a. Testing laboratory shall take samples and test not less than 3 samples including nuts, bolts and washers from each lot and each size of each lot.

D. Erection and Bracing Plan and Procedure: Refer to Section 1710, Title 8, CCR, and Building Code. Employ and pay a California registered civil engineer to prepare an erection and bracing plan and erection procedure for structural steel including columns, beams, and girders, who shall be solely responsible for its compliance. Follow the plan and procedure exactly. Keep a copy at the job site as required by California Division of Industrial Safety. File two copies of stamped erection and bracing plan and procedure for record purposes only, not for review or approval.
**Product Delivery and Handling:**

A. **Delivery and Handling:** Protect all materials from damage during shipping, handling and storage on the site. Steel showing dents, creases, deformations, weathering, or other defects is not acceptable.

B. **Welding Electrodes:** Deliver to the site in unbroken packages bearing the manufacturer's name and label identifying the contents.

**Project Site Conditions:**

A. **Site Measurements:** Take field measurements as required. Report any major discrepancy between drawings and field dimensions.

B. **Protection of Floors:** Use caution to protect floor slab and adjacent work from damage. Do not overload floors. Use rubber tired equipment to handle and move steel. Do not place steel members directly on floor; use pads of timber or like material for cushioning.

C. **Temporary Flooring:** Provide necessary temporary planking, scaffolding, and flooring for erection of structural steel or support of erection machinery. Conform use of temporary floors or steel decking to code.

D. **Connection of Steel Decking Temporary Flooring:** Temporarily weld steel decking to supports where used as a working platform. Distribute concentrated loadings from welding machines and other heavy machinery with planking or equal. Replace decking damaged by use as a working platform at no additional contract cost.

**Part 2 - Products**

**2.01 Materials:**

A. **Steel shapes:** ASTM A36, or A992. Exposed Steel: ASTM A847, A588, A709, A606, A242. All exposed connections shall use Cor-Ten or Weathering Steel bolts, nuts and washers.

B. **Bar stock for anchor bolts and anchor bolts:** ASTM F1554.

C. **Machine bolts and nuts:** ASTM A307, Grade A.

D. **Welding electrodes:**

   1. Carbon steel covered arc welding electrodes for steels: AWS A5.1, E70XX Series, low hydrogen, having a minimum yield point of 60,000 psi of as required for base materials.

   2. Electrodes and fluxes for submerged arc welding: AWS A5.17, E70NX Series.


E. **Non-shrink grout:** Conform to requirements of Section 03300.

**2.02 Fabrication:**
A. Fabricate structural steel in accordance with the approved submittals, reference standards as applicable, and requirements herein. Fabricate and form the work to meet actual installation conditions verified at the site.

B. Cleaning and Straightening: Thoroughly wire brush material, clean of loose mill scale and rust, and straighten by methods that will not injure the steel prior to fabrication. Remove twists or bends after punching or working component parts of a member before the parts are assembled. Produce finished members free from twists, bends, and open joints when erected.

C. Contact: Pin components parts of built-up members and maintain in close contact using clamps or temporary bolting during welding operations. Accurately mill compression bearing surfaces of joints depending on contact bearings or saw cut square to axis, or as detailed. Cut other joints straight and true.

D. Joining: Provide members of the sizes, weights, shapes, and arrangements indicated, closely fitted and finished true to line and in precise position as necessary to allow proper joining of parts in the field. Drifting to enlarge unfair holes is not allowed without prior approval.

E. Drilling, Punching, and Reaming: Hole burning to make or enlarge previous holes is allowed only with prior approval. Prepare required holes in structural steel members for attachment or passage of work of other trades. Precisely locate finished holes to ensure passage of all bolts through steel assemblies without drifting. Enlarge holes only by reaming. Poor matching of holes is cause for rejection.

F. Holes For Anchor Bolts: Punch and drill or ream holes in base and bearing plates. Do not make or enlarge the holes by burning except for grouting holes in column bases.

G. Base Plates: Press or mill steel column base plates 4" thick or less for straight contact bearing between plate and column.

H. Gas Cutting: Use of a cutting torch is allowed where the metal being cut is not stressed during the operation, and provided stresses are not transmitted through a flame-cut surface. Make all gas cuts with a smooth regular contour. Deduct 1/8" from width of gas cut edges to determine effective width of members that are gas cut. Make radius of reentrant gas cuts as large as possible, but 1" minimum.

I. Maximum fabrication, delivery and erection time for steel bridge and related components – 8 weeks.

2.03 Connections:

A. Make connections with common bolts unless otherwise shown.

B. High-Strength Steel Bolting: For joints connected by high strength steel bolts, hardened washers, and nuts tightened to high tension, conform materials, method of installation and tension control, type of wrenches, and inspection to the reference standards and the following requirements:

1. High-strength bolts shall have a suitable identifying mark placed on top of the head at the factory.

2. Tightening of nuts shall be done with calibrated wrenches or by the turn of the nut method. Minimum bolt tension for the size of bolt used shall conform to tables listed in reference standards.
3. Calibrated wrenches shall be checked individually for accuracy at least once daily for actual conditions of application.

4. Fully tightened bolts shall be marked with identifying symbol.

5. Hardened washers shall be installed in accordance with AISC standards.

6. Clean all contact surfaces of bolted parts and threads free of scale, slag, burrs, and pits, as well as dirt and foreign materials which would prevent solid seating of parts.

7. Bolt lengths shall equal the grip plus 1-1/4-inch.

8. Install all high-strength bolts under inspection required by Title 24 CCR, 1994 UBC, Section 2228.1.

C. Tension Set or Load Indicator Bolts, Nuts, and Washers: As manufactured by Cold Form Specialties, Bethlehem Steel, or approved equal, may be used for field installation of the high-strength bolts. In multi-bolt joints, the nuts shall be tightened in stages (a little at a time) without breaking the spline in any of them until the final stage, to minimize slackening of the installed bolts.

2.04 Welding:

A. Conform to AWS D1.1, as modified by referenced AISC Standards, and as indicated or noted on the Drawings. Employ certified welding operators who are thoroughly trained and experienced in arc welding and produce uniformly reliable groove and fillet welds in flat, vertical, and overhead positions, and make neat and consistent welds. Weld structural steel joints by the shielded electric-arc method unless otherwise shown or specified. Provide inspection and testing of welds as required under Article "Field Quality Control" hereinafter.

B. Weld Finishing: Grind exposed welds subject to contact to smooth surfaces free of holes, slag, or other defects, flush with the adjoining surfaces. No finish treatment is required for permanently concealed welds and other exposed welds.

C. Storage and Care of Electrodes: Coatings of low-hydrogen type electrodes shall be thoroughly dry as used. Conform to AWS D1.1; use electrodes as taken from hermetically sealed packages within time limit specified therein after package is opened. Electrodes not used within allowable time period and electrodes that have been exposed more than one hour to air having a relative humidity of 75% or greater shall be dried according to AWS D1.1 before they are used, or shall be reconditioned according to electrode manufacturer's recommendations. Electrodes so dried or reconditioned not used within allowable time period after drying is completed shall be redried before use. Electrodes of any class that have been wet shall not be used under any conditions.

D. Preparation: Clean steel surfaces to be welded of paint, grease, oil, mill scale, and foreign matter. Clean weld each time the electrode is changed. Chip full surface of hand guided and controlled flame cut edges before welding. Surfaces prepared with automatic or mechanically guided and controlled equipment need not be ground or chipped before welding.

E. Shop Ultrasonic Testing: Ultrasonically test all column materials greater than 1-1/2" in thickness for laminations within 12-inches (6-inches on each side) of direct groove welds from column splices and gusset flange connections prior to welding. Conform to ultrasonic testing procedures specified under "Field Quality Control", hereinafter.
F. Procedures: During assembling and welding, hold components of a built-up member with adequate clamps or other means to keep parts straight and in close contact. Do no welding in wind until adequate protective screening is set up. Cut out defective welds or parts of welds with a chisel or air arc and replace.

G. Weld Characteristics: Clean and wire brush all welds. Visual inspection of finished welds must show uniform section, smoothness of welded metal, feather edges without undercut or overlays, freedom from porosity and inclusions, and good fusion and penetration into base metal at edges and ends of fillet welds.

H. Lamination Checking: Prior to welding, ultrasonically test column materials greater than 1-1/2" in thickness for lamination within 12" (6" on each side) of a direct groove weld from column splices and girder flange connections. Conform to the ultrasonic testing procedures specified under "Field Quality Control" hereinafter.

Part 3 - Execution

3.01 Erection of Structural Steel:

A. Brace and secure structural steel members until permanent connections are completed. Provide accessories and fasteners to secure steel in place as shown and required. Conform to Code, AISC Standards, and erection and bracing plan and procedure.

B. Employ qualified riggers and plan erection to require minimum cutting. Erect members plumb, true to line and level, and in precise positions. Provide temporary bracing and guy to resist loads and stresses to which the structure may be subjected, including those due to erection equipment and its operation.

C. Damaged Members: During erection, straighten or replace members which are bent, twisted, or damaged as directed. If heating is required, perform heating by methods that ensure a uniform temperature throughout the entire member. When directed, remove members damaged to an extent impairing appearance, strength, or serviceability and replace with new members at no extra cost to the Owner.

D. Anchor Bolts: Furnish and deliver anchor bolts with setting drawings and templates. Verify position of bolts prior to delivery of steel; report errors or deviation for correction.

E. Steel Columns: Set column bases in exact position for alignment, plumb and straight, supported on adjustable bolt supports or shims until grout has set. Set center of base true to column center within 1/16" and adjust column height exactly. Maintain bases at exact position and level during grouting. Fill grout space solid with non-shrink grout.

F. Connections: Hold steel in correct position during welding and bolting, and provide for dead loads, wind, and all erection stresses. Do no welding or final bolting until members have been aligned and plumbed.

1. Field Welding: Conform to requirements for shop fabrication.

2. Common Bolts: Tighten and upset bolt threads to preclude loosening, or use approved self-locking nuts.

3. High-Strength Bolting: Tighten by turn of the nut method or with calibrated torque wrenches as specified for the shop high-strength bolting and according to Code, AISC Standards and the Reference Standard.
G. Tolerances: Erect members to the tolerances conforming to referenced AISC Standards and Code, and as follows:

1. Vertical Dimensions: Measured from top of beams at their connection at any column, variation not more than 1/4" plus or minus per story or, when variations are accumulative from floor to floor, not exceeding 3/8" per story exclusive of column shortening due to dead load.

2. Plumb Displacement: Center line of columns from established column line, not more than 1" toward or away from established center line.

3. Floor Elevation: Floor elevation will be considered level if floor framing members on any one floor, measured from top of column connections, do not vary more than 1/2" plus or minus.

4. Horizontal Dimension Variances: Governed by specified column plumb displacement.

3.03 Field Quality Control

A. Inspection: According to Reference Standards. Inspector shall visually inspect welds, shall be present to inspect and approve all groove and penetration welding, and shall inspect all erection including the grouting under base plates.

B. Tests of Welding and Bolting: Testing Laboratory shall inspect all shop and field welding, conform to requirements of code and building department, and certify in writing, after completion of work, that welding has been performed in accordance with the drawings, specifications, and code.

C. Inspection of High-Strength Bolts: Testing Laboratory shall check bolt tightness on a minimum of 10% of the bolts, selected at random, for each high-strength bolted joint. Inspection procedure shall conform to the reference standard.

D. Full Penetration and Groove Weld Inspection: Testing Laboratory shall inspect full penetration and groove welds for connections of column to column, column to girder, girder to girder, and similar connections by ultrasonic testing or other approved non-destructive tests. Conform to building department requirements for reinspection of the welds after installation.

E. Ultrasonic Testing: Testing Laboratory specially trained and fully qualified technician shall operate ultrasonic testing equipment, examine welds, and maintain a record of welds examined, defects found, and disposition of each defect. All defective welds shall be repaired and costs for retesting defective welds shall be paid by the Contractor.

1. Rate of Testing: Test welds requiring ultrasonic testing at 100 percent. No reduction in testing rate will be permitted.

2. Backing Strips: Remove backing strips whenever ultrasonic indications arising from weld roots can be interpreted as either a weld defect or a backing strip, and retest weld if no root defect is visible. If no defect is disclosed by retest and no significant amount of the base and weld metal is removed, joint needs no further repair or welding. Repair all defects disclosed. Contractor shall bear the cost of removals and repairs.

3. Questionable Root Indications: Root indications that prove not to be defective welds shall not count against the welder to increase the test rate.
4. Ultrasonic Instrumentation: Calibrated by technician to evaluate the quality of the welds in accordance with AWS D1.1, Sections 5 and 6.

END OF SECTION- 05120
Section 05315- Metal Floor Decking

Part 1 - General

1.01 Summary

A. This section covers Metal Floor Decking

1. Composite steel floor deck with accessories.
2. Bent plate and sheet metal closures at decking edges and openings.
3. Holes through decking, with reinforcing.

B. Related Work Specified Elsewhere

1. Structural steel framing and supports for steel decking, Section 05120.
2. Structural concrete fill on steel floor deck, Section 03300.

1.02 References, Codes and Standards: The following references, codes and standards are hereby made a part of this Section shall conform to the applicable requirements therein except as otherwise specified herein or shown on the Drawings. Latest edition of references and codes adopted by the Governing Agency shall apply. Nothing contained herein shall be construed as permitting work that is contrary to code requirements.

A. American Iron and Steel Institute (AISI) Specification for Design of Cold-Formed Steel Structural Members

B. American Welding Society (AWS) Specification for Welding Sheet Steel in Structures AWS D1.1 and AWS D1.3

C. American Society of Testing and Materials (ASTM) Reference Numbers:

1. ASTM A653, Sheet Steel, Zinc-Coated (Galvanized) by the Hot-Dip Process.
2. ASTM A653, General Requirements for Sheet Steel, Zinc-Coated (Galvanized) by the Hot-Dip Process.

D. Steel Deck Institute (SDI) Metal deck profiles shall be in conformance with SDI Standards.

E. Factory Mutual (FM) Metal deck profiles shall be in conformance with FM Standard 4451 where applicable.


1.03 Submittals:

A. Shop Drawings: Submit drawings fully detailing and dimensioning all steel decking including accessories, fastenings, welding, holes with reinforcing, flashings, and closures. Indicate welding according to AWS Standard Welding Symbols. Show dimensioned layouts for openings and reinforcing details.
B. Calculations and Data: If steel decking of type differing from that indicated or specified is proposed, submit the manufacturer’s calculations and supplementary data showing that proposed decking conforms to requirements indicated and specified. Include the decking manufacturer's technical product data and copies of code approvals for proposed decking. Submit with shop drawings and obtain approval prior to fabrication and delivery of decking.

1.04 Quality Assurance:

A. Qualifications of Welders: Employ welding operators currently tested and certified in accordance with code and approved by the Building Department.

B. Requirements of Regulatory Agencies: Provide steel floor and roof deck system that, with concrete fill, meets UL and code requirements for fire-rated deck system.

C. Source Quality Control: Furnish the decking manufacturer’s certified mill analyses and test reports covering all decking.

PART 2 - PRODUCTS

2.01 Decking Materials:

A. Furnish metal roof decking having galvanized coating conforming to ASTM A653, Class B. Decking shall be fabricated of steel conforming to ASTM A653, Grade A, minimum yield 38,000 psi, unless otherwise noted.

B. Composite Floor Deck: Type and manufacture noted on drawings, lengths to span over at least three supports unless otherwise indicated.

C. Decking Accessories: Provide indicated and required decking accessories including, without limitation, welding washers and welding anchors, closures, transitions, and filler strips, as required for complete installations. Provide bent plate closures, angles, channels, and attachments as required for openings through decking.

D. Galvanizing Repair Paint: Zinc rich paint conforming to Mil Spec MIL-P-21035 (SHIPS).

PART 3 - EXECUTION

3.01 Installation of Decking: Verify dimensions and actual site conditions to ensure proper fit and installation.

A. Placing: Place steel decking on supports with full bearings, end joints centered over supports, and adjust to correct final position before completing permanent attachments. Place units in straight alignment for the entire length of run of flutes with close registration of flutes and with maximum 1/8” gap between ends of units, minimum 2” bearing on the supports. Do not splice units except at supports. Conform to code approvals and approved submittals.

B. Cutting and Fitting: Perform cutting and fitting at columns, perimeters, shafts, stairs, and other openings. Provide tight fitting closures at the open uncovered ends and edges of decking, and all miscellaneous supports required to carry the metal decking. Secure hole reinforcement to decking with fillet welds placed on both sides of reinforcing members.
Place reinforcement channels and angles across flutes and to project a distance beyond sides of openings equal to the maximum size of the opening unless otherwise shown. Perform field cutting and trimming square and neat, equal to factory cutting.

C. Welding: Use materials and methods in accordance with recommendations of metal decking manufacturer and approved submittals. Conform to AWS D1.1 and to the patterns and weld types shown. Finished welds free of sharp points or edges. Field coat all welds and abraded surfaces upon completion with repair material. Omit the field coating where welds or abrasions are covered by concrete fill or sprayed fireproofing. Install welded shear studs according to Section 05065.

D. Damaged Decking: Remove and replace all metal decking showing denting or other damage that adversely affects decking strength or subsequent materials, as directed.

3.02 Cleaning and Touch-Up:

A. Remove surplus materials. Clean and touch-up raw edges of decking cut for openings with anodic galvanizing repair paint. Leave decks ready to receive subsequent materials.

3.03 Field Quality Control:

A. Install all metal decking under continuous inspection, welding approved by Inspector before being covered. Conform welder qualifications and welding inspection to Code.

End of Section 05315
SECTION 05500 - Metal Fabrications

PART 1 - General

1.1 Related Documents

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

B. Related Sections include:

1. Section 05120 “Structural Steel.”

1.2 Definitions

A. Exposed Steel: Structural steel having enhanced atmospheric corrosion resistance with specific carbon, manganese & sulfur contents to allow bare steel surface to corrode & develop a resistant barrier against further corrosion.

1.3 Performance Requirements

A. Provide metal fabrications that allow for thermal movements resulting from the following maximum change (range) in ambient and surface temperatures by preventing buckling, opening of joints, overstressing of components, failure of connections, and other detrimental effects. Base engineering calculation on surface temperatures of materials due to both solar heat gain and nighttime-sky heat loss.

1. Temperature Change (Range): 120°F, ambient, 180°F, material surfaces.

1.4 Submittals

A. Product Data: For the following:

1. Non-slip aggregates and non-slip-aggregate surface finishes

2. Galvanized paint.

B. Shop Drawings: Show fabrication and installation details for metal fabrications.

1. Include plans, elevations, sections, and details of metal fabrications and their connections. Show anchorage and accessory items.

2. Provide templates for anchors and bolts specified for installation under other Sections.

3. For installed products indicated to comply with design loads, include structural analysis data signed and sealed by the qualified professional engineer responsible for their preparation.

C. Samples for each wire mesh panel type: 12” by 12” wire mesh panel constructed of specified frame members and wire mesh. Show method of connecting, fabricating, and finishing members at intersections and corners. Demonstrate connection between mesh and framing member.

D. Mill Certificates: Signed by manufacturers of stainless-steel sheet certifying that products furnished comply with requirements.

E. Welding certificates.
F. Qualification Data. For professional engineer and for installer.

1.5 Quality Assurance

A. Welding: Qualify procedures and personnel according to the following:

1. AWS D1.1, "Structural Welding Code--Steel."
2. AWS D1.6, "Structural Welding Code--Stainless Steel."

B. Conduct pre-installation meeting at Project site to comply with requirements in Section 01310 *Project Management and Coordination.*

C. Build mockup to verify selections made under sample submittals and to demonstrate aesthetic effects and set quality standards for fabrication and installation.

1. Build full size mockup of exposed steel letter panel and full size mockups for each type of wire mesh panel. Assemble full size mockup of sign assembly with letter panel and wire mesh panel.
2. Approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion/Beneficial Occupancy.
3. Do not proceed with work until mockups are approved by Architect. Reconstruct mockups as necessary for approval.
4. Construct all parts of mockups including substrates, backing, and supports from identical material that will be used in the work.
5. Coordinate with necessary trades to construct mockup to reflect actual construction. Obtain materials, services, and other trades to participate in mockup construction so mockup reflects construction and conditions proposed in finished work in all respects including, but not limited to, supporting structure, substrates, attachments, backing, and finished materials.
6. Architect’s review and comment, or no comment, of mockup does not relieve contractor from fulfilling requirements of Contract Documents. Deviations from contract requirements in completed work whether noted or not noted in mockup, are contractor’s responsibility and must be corrected at no additional cost to Owner.

1.6 Delivery, Storage and Handling

A. Protect items from damage during shipping, handling and storage. Work showing dents, creases, deformations, weathering, or other defects is not acceptable. Deliver welding electrodes to site in unbroken packages bearing manufacturer’s name and contents identification.

1.7 Project Conditions

A. Verify actual locations of structure and framing and other construction contiguous with metal fabrications by field measurements before fabrication and indicate measurements on Shop Drawings.

1. Where field measurements cannot be made without delaying the Work, establish dimensions and proceed with fabricating metal fabrications without field measurements. Coordinate wall and other contiguous construction to ensure that actual dimensions correspond to established dimensions.
2. Provide allowance for trimming and fitting at site.

1.8 Coordination

A. Coordinate installation of anchorages for metal fabrications. Furnish setting drawings, templates, and directions for installing anchorages and items with integral anchors. Deliver such items to Project site in time for installation.
B. Coordinate installation of steel weld plates and angles for casting into concrete that are specified in this Section but required for work of another Section. Deliver such items to Project site in time for installation.

PART 2 - Products

2.1 Metals

A. Provide materials with smooth, flat surfaces, unless otherwise indicated. For metal fabrications exposed to view in the completed Work, provide materials without seam marks, roller marks, rolled trade names, or blemishes.

2.2 Ferrous Metals

A. Exposed Steel Sheet and Shapes: ASTM A606 Type 4, A588.
B. Stainless-Steel Bars and Shapes: ASTM A276, Type 304.
C. Abrasive-Surface Floor Plate: Stainless Steel Type 304 plate with abrasive material metallically bonded to steel. Subject to requirements provide products by one of, or equal to, the following:
   1. IKG Industries, a Harsco company, Mebac.
   2. W. S. Molnar Company, ShipNOT.

2.3 Fasteners

A. Provide fasteners and connectors of approved types as required for the installations, whether or not indicated. Provide galvanized fasteners for galvanized items and for exterior use. Fasten metal work to solid masonry and concrete with expansion bolts. Provide screws threaded full length to screw head. Select fasteners for type, grade, class, and use required.
B. Steel Bolts and Nuts: Regular hexagon-head bolts, ASTM A 307, Grade A; with hex nuts, ASTM A 563, and, where indicated, flat washers.
C. Stainless-Steel Bolts and Nuts: Regular hexagon-head annealed stainless-steel bolts, nuts and, where indicated, flat washers; ASTM F 593 for bolts and ASTM F 594 FOR NUTS, Alloy Group 2.
D. Machine Screws: ASME B18.6.3.
E. Plain Washers: Round, ASME B18.22.1.

2.4 Exposed Steel Letter Panels

A. Panels: Exposed steel sheet.

2.5 Stainless Steel Wire Mesh Panels

A. Mesh: Stainless steel type 304 wire, intercrimp weave woven into square mesh.
B. Panel Frame Angle: Cold rolled stainless steel type 304 angle.
2.6 Exposed Steel Wire Mesh Panels
A. Mesh: Exposed steel, intercrimp weave woven into square mesh.
B. Panel Frame: Exposed steel channel.

2.7 Miscellaneous Materials
A. Welding Rods and Bare Electrodes: Select according to AWS specifications for metal alloy welded.
B. Primer for Galvanized Coatings: Acid etch type primer.

2.8 Fabrication, General
A. Conform to approved submittals. Fabricate and form the work to meet actual installation conditions as verified at the site. Obtain necessary templates and information and provide all holes and drilling indicated or required for securing work of other sections to metal fabrications.
B. Fabricate items to design shown. Furnish members in longest lengths commercially available within the limits shown and specified. Fabricate straight, true, free from warp and twist, and where applicable square and in same plane. Provide holes, sinkages and reinforcement shown and required for fasteners and anchorage items. Provide openings, cut-outs, and tapped holes for attachment and clearances required for other work. Prepare members for the installation and fitting of hardware. Provide reinforcement to support cut edges where required. Fabricate surfaces and edges free from sharp edges, burrs and projections which may cause injury.
C. Preassemble items in the shop to greatest extent possible. Disassemble units only as necessary for shipping and handling limitations. Use connections that maintain structural value of joined pieces. Clearly mark units for reassembly and coordinated installation.
D. Cut, drill, and punch metals cleanly and accurately. Remove burrs and ease edges to a radius of approximately 1/32 inch, unless otherwise indicated. Remove sharp or rough areas on exposed surfaces.
E. Form bent-metal corners to smallest radius possible without causing grain separation or otherwise impairing work.
F. Form exposed work true to line and level with accurate angles and surfaces and straight edges.
G. Welding shall conform to AWS D1.1, as modified by referenced AISC Standards, and as indicated or noted on Drawings. Unless otherwise indicated or specified, weld joints by shielded electric-arc method. Welds shall show good fusion, be free from cracks and porosity and accomplish secure and rigid joints in proper alignment. Where exposed in the finished work, continuous weld for the full length of the members joined and have depressed areas filled and protruding welds finished smooth and flush with adjacent surfaces. Grind exposed welds subject to contact to smooth surfaces free of holes, slag, or other defects. Blend smooth and flush with adjoining surfaces. No finishing treatment is required for concealed welds. Cut out defective welding and replace. Weld corners and seams continuously to comply with the following:

1. Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals
2. Obtain fusion without undercut or overlap.
3. Remove welding flux immediately.
4. At exposed connections, grind and finish exposed welds and surfaces smooth and blended so no roughness or pitting shows after finishing and contour of welded surface matches that of adjacent surface.

H. Form exposed connections with hairline joints, flush and smooth, using concealed fasteners where possible. Where exposed fasteners are required, use Phillips flat-head (countersunk) screws or bolts, unless otherwise indicated. Locate joints where least conspicuous. Miter and weld members at corners.

I. Fabricate seams and other connections that will be exposed to weather in a manner to exclude water. Provide weep holes where water may accumulate.

J. Cut, reinforce, drill, and tap metal fabrications as indicated to receive finish hardware, screws, and similar items.

K. Accurately cut, machine and fit joints, corners, copes, and miters. Fit removable members to be easily removed. Design and construct field connections as indicated on approved submittals. Fit pieces together as required. Joints shall be firm when assembled. Conceal joining, fitting and welding on exposed work. Do not show rivets and screws on the exposed face. The fit of components and the alignment of holes shall eliminate the need to modify component or to use exceptional force in the assembly of item and eliminate the need to use other than common tools.

L. Fabricate items not specifically mentioned, as required to complete the entire work.

M. Provide all metal fabrications indicated, specified, and required to complete the work, including all anchors and supports. Include all parts necessary to complete metal fabrication work whether or not specifically indicated.

N. Form exposed work true to line and level with accurate angles and surfaces and straight sharp edges. Ease exposed edges to radius of approximately 1/32” unless otherwise indicated. Form bent-metal corners to smallest radius possible without causing grain separation or otherwise impairing work.

O. For fabrication of metal work which will be exposed to view in finished work, use only materials which are smooth and free of surface blemishes including pitting, seam marks, roller marks, mill scale, rolled trade names and roughness.

P. Close fit exposed joints to hairline joints. Cut off exposed bolts and screws flush with adjacent metal. Cut, drill punch and tap as required for installation and attachment of other work to metal work.

Q. Make threaded connections up tight so threads are entirely concealed. Provide Phillips flat head countersunk bolts and screws in exposed work and elsewhere as required, unless otherwise indicated.

2.9 Fabrication, Wire Mesh Panels

A. Fabricate wire mesh items from components of sizes not less than those indicated. Provide bolts, hardware, and accessories as required for complete installation. Weld corner joints of framing and grind smooth, leaving no evidence of joint.

B. Securely weld mesh to frame.

2.10 Fabrication, Exposed Steel Letter Panels

A. Fabricate exposed steel letter panels from components of sizes not less than those indicated. Cut out characters from exposed steel sheet using computer controlled high precision laser cutting with laser cutters that are compatible with material being cut.
2.11 Miscellaneous Framing and Supports

A. Provide steel framing and supports not specified in other Sections as needed to complete the Work.

B. Fabricate units from steel shapes, plates, and bars of welded construction, unless otherwise indicated. Fabricate to sizes, shapes, and profiles indicated and as necessary to receive adjacent construction retained by framing and supports. Cut, drill, and tap units to receive hardware, hangers, and similar items. Furnish inserts if units are installed after concrete is placed.

2.12 Stainless-Steel Finishes

A. Remove tool and die marks and stretch lines or blend into finish.

B. Grind and polish surfaces to produce polished finish, free of cross scratches. Run grain with long dimension of each piece.

C. Directional Satin Finish: No. 4.

D. When polishing is completed, passivate and rinse surfaces. Remove embedded foreign matter and leave surfaces chemically clean.

PART 3 - Execution

3.1 Examination

A. Examine substrate conditions where work is to be performed. Verify field dimensions and shop drawing dimensions used in fabrication. Provide written notification of discrepancies with Contract Documents; do not proceed until corrected. Proceeding with installation constitutes acceptance of substrate conditions by contractor.

3.2 Installation

A. Perform cutting, drilling, and fitting required for installing metal fabrications. Set metal fabrications accurately in location, alignment, and elevation, with edges and surfaces level, plumb, true, and free of rack, and measured from established lines and levels.

B. Fit exposed connections accurately together to form hairline joints. Weld connections that are not to be left as exposed joints but cannot be shop welded because of shipping size limitations. Do not weld, cut, or abrade surfaces of exterior units that have been hot-dip galvanized after fabrication and are for bolted or screwed field connections.

C. Comply with the following field welding requirements:

1. Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals
2. Obtain fusion without undercut or overlap
3. Remove welding flux immediately.
4. At exposed connections, finish exposed welds and surfaces smooth and blended so no roughness shows after finishing and contour of welded surface matches that of adjacent surface.

D. Provide anchorage devices and fasteners where metal fabrications are required to be fastened to in-place construction.
E. Set work accurately, in alignment and where shown, plumb, level, free from rack and twist, and set parallel or perpendicular as required to line and plane of surface.

F. Field weld in accordance with AWS. Design and finish as specified for shop welding. Use continuous weld unless specified otherwise. Install anchoring devices and fasteners as shown and as necessary for securing metal fabrications to building construction as specified.

3.3 Installing Miscellaneous Framing and Supports

A. Install framing and supports to comply with requirements of items being supported, including manufacturers’ written instructions and requirements indicated on Shop Drawings.

3.4 Adjusting and Cleaning

A. Immediately after erection, clean field welds, bolted connections, and abraded areas. Wire brush welds and damaged coating to expose clean bright metal. Touchup galvanized coatings in abraded areas. Apply one coat of galvanizing repair paint for interior fabrication. Use the specified hot-applied galvanizing repair compound for exterior fabrications.

B. Respray and touchup primer in abraded areas. Do not apply metal primer in wet weather unless steel is protected from dampness and is dry. Clean field welds, field bolts, and all damaged shop primer after erection and apply a coat of the same primer used for the shop coat.

END OF SECTION 05500
SECTION 05721 - Ornamental Railings

PART 1 - General

1.1 Related Documents

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 Definitions

A. Railings: Guards, handrails, and similar devices used for protection of occupants at open-sided floor areas, pedestrian guidance and support, visual separation, or wall protection.

1.3 Performance Requirements

A. In engineering railings to withstand structural loads indicated, determine allowable design working stresses of railing materials based on the following:
   1. Stainless Steel: 60 percent of minimum yield strength.

B. Provide railings capable of withstanding the effects of gravity loads and the following loads and stresses within limits and under conditions indicated.
   1. Top Rails of Guards:
      a. Uniform load of 50 lb/ft applied in any direction.
      b. Concentrated load of 200 lb applied in any direction.
      c. Uniform and concentrated loads need not be assumed to act concurrently.
   2. Infill of Guards:
      a. Concentrated load of 50 lb applied horizontally on an area of 1 sq. ft
      b. Uniform load of 25 lb/sq. ft applied horizontally
      c. Infill load and other loads need not be assumed to act concurrently.

C. Provide exterior railings that allow for thermal movements resulting from a maximum temperature change (range) of 120°F, ambient, 180°F. Material surfaces to prevent buckling, opening of joints, overstroming of components, failure of connections, and other detrimental effects. Base engineering calculation on surface temperatures of materials due to both solar heat gain and nighttime-sky heat loss.

D. Prevent galvanic action and other forms of corrosion by insulating metals and other materials from direct contact with incompatible materials.

1.4 Submittals

A. Shop Drawings: Include plans, elevations, sections, details, and attachments to other work.
   1. For installed products indicated to comply with design loads, include structural analysis data signed and sealed by the qualified professional engineer responsible for their preparation.

B. Samples:
1. For selection of color, texture, or design, including mechanical finishes.
2. Sections of each distinctly different linear railing member, including top rails and posts.
3. Samples of wire mesh panel: 12" by 12" wire mesh panel constructed of specified frame members and wire mesh. Show method of connecting, fabricating, and finishing members at intersections and corners. Demonstrate connection between mesh and framing members.
4. Welded connections.

C. Mill Certificates: Signed by manufacturers of stainless-steel products certifying that products furnished comply with requirements.

D. Welding certificates.

1.5 Quality Assurance

A. Obtain each type of railing through one source from a single manufacturer or fabricator.

B. Information on Drawings and in Specifications establishes requirements for system's aesthetic effects and performance characteristics. Aesthetic effects are indicated by dimensions, arrangements, alignment, and profiles of components and assemblies as they relate to sightlines, to one another, and to adjoining construction. Performance characteristics are indicated by criteria subject to verification by one or more methods including structural analysis, preconstruction testing, field testing, and in-service performance.

C. Drawings indicate size, profiles, and dimensional requirements of railings and are based on the specific system indicated. Do not modify intended aesthetic effects, as judged solely by Architect, except with Architect's approval. If modifications are proposed, submit comprehensive explanatory data to Architect for review. Railings that do not comply with intended aesthetic effects will be corrected by contractor with no additional cost or time to Contract.

D. Welding: Qualify procedures and personnel according to the following:

1. AWS D1.1, "Structural Welding Code--Steel."
3. AWS D1.6, "Structural Welding Code--Stainless Steel."

E. Build mockups to verify selections made under sample submittals and to demonstrate aesthetic effects and set quality standards for fabrication and installation.

1. Build mockups for each type, application, form and finish of railing, consisting of not less than two posts, top rail, infill railing, and anchorage system components that are full height and are not less than 48 inches in length.
2. Approved mockups may become part of the completed work if undisturbed at time of Substantial Completion/Beneficial Occupancy.
3. Do not proceed with railing work until mockup is approved by Architect. Reconstruct mockups as necessary for approval.
4. Construct all parts of mockup including substrates, backing, and supports from identical material that will be used in the work.
5. Coordinate with necessary trades to construct mockup to reflect actual construction. Obtain material, services and other trades to participate in mockup construction so mockup reflects construction and conditions proposed in finished work in all respects, including but not limited to, supporting structure, substrates, flashing, attachment, backing and finished materials.
6. Architect's review and comments or no-comment of mockup does not relieve contractor from fulfilling requirements of Contract Documents. Deviations from Contract requirements in completed work whether noted or not noted in mockup are contractor's responsibility and must be corrected at no additional cost to Owner.
1.6 **Project Conditions**

A. Verify actual locations of walls and other construction contiguous with railings by field measurements before fabrication and indicate measurements on Shop Drawings.

1. Where field measurements cannot be made without delaying the Work, establish dimensions with appropriate trades to coordinate and proceed with fabricating railings without field measurements. Coordinate wall and other contiguous construction to ensure that actual dimensions correspond to established dimensions.

2. Provide allowance for trimming and fitting at site.

1.7 **Coordination and Scheduling**

A. Coordinate installation of anchorages for railings. Furnish setting drawings, templates, and directions for installing anchorages. Deliver such items to Project site in time for installation.

B. Do not support railings temporarily by any means that do not satisfy structural performance requirements.

**PART 2 - Products**

2.1 **Metals, General**

A. Provide materials with smooth surfaces, without seam marks, roller marks, rolled trade names, stamps, stains, discolorations, or blemishes.

2.2 **Stainless Steel**

A. Tubing: ASTM A 554, Grade MT 304.

B. Plate and Sheet: ASTM A 666, Type 304.

C. Woven-Wire Mesh: Intermediate-crimp, square pattern, woven-wire mesh, made from wire complying with ASTM A 580, Type 304.

2.3 **Fasteners**

A. Provide the following:

1. Stainless-Steel Components: Type 304 stainless-steel fasteners.

B. Fasteners for Anchoring Railings to Other Construction: Select fasteners of type, grade, and class required to produce connections suitable for anchoring railings to other types of construction indicated and capable of withstanding design loads.

2.4 **Fabrication**

A. Fabricate railings to comply with requirements indicated for design, dimensions, member sizes and spacing, details, finish, and anchorage, but not less than that required to support structural loads.

B. Assemble railings in the 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. Use connections that maintain structural value of joined pieces.
C. Cut and drill metals cleanly and accurately. Remove burrs and ease edges to a radius of approximately 1/32 inch, unless otherwise indicated. Remove sharp or rough areas on exposed surfaces.

D. Form work true to line and level with accurate angles and surfaces.

E. Fabricate connections that will be exposed to weather in a manner to exclude water. Provide weep holes where water may accumulate.

F. Cut, reinforce, drill, and tap as indicated to receive finish hardware, screws, and similar items.

G. Miter all corners.

H. Cope components at connections to provide close fit. Weld all around at connections, including at fittings.
   1. Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals.
   2. Obtain fusion without undercut or overlap.
   3. Remove flux immediately.
   4. At exposed connections, grind all welds smooth and finish exposed surfaces smooth and blended so no roughness shows after finishing and welded surface matches contours and smoothness of adjoining surfaces.
   5. Provide continuous welds at all exposed welds.

I. Woven-Wire Mesh Infill Panels.
   1. Fabricate infill panels from woven-wire mesh passed through and welded to metal channel frames.
   2. Make wire mesh and frames from stainless steel Type 304.
   3. Orient wire mesh with wires perpendicular and parallel to top rail.

2.5 Finishes, General

A. Variations in appearance of abutting or adjacent pieces are not acceptable. Noticeable variations in same piece are not acceptable.

2.6 Stainless-Steel Finishes

A. Remove tool and die marks and stretch lines or blend into finish.

B. Grind and polish surfaces to produce uniform finish indicated, free of cross scratches. Run grain of directionally textured finishes with long dimension of each piece.

C. Directional Satin Finish: No. 4.

PART 3 - Execution

3.1 Examination

A. Review all substrate conditions prior to installation. Do not proceed until adverse conditions have been corrected. Proceeding with installation constitutes contractor’s acceptance of substrate conditions.
3.2 Installation, General

A. Perform cutting, drilling, and fitting required for installing railings. Set railings accurately in location, alignment, and elevation, measured from established lines and levels and free of rack.

1. Do not weld, cut, or abrade surfaces of railing components that have been coated or finished after fabrication and that are intended for field connection by mechanical or other means without further cutting or fitting.
2. Set posts plumb within a tolerance of 1/16 inch in 3 feet.
3. Align rails so variations from level for horizontal members.

B. Use proper anchorage devices and fasteners where necessary for securing railings and for properly transferring loads to in-place construction.

3.3 Railing Connections

A. Use fully welded joints for permanently connecting railing components. Comply with requirements for welded connections in Part 2 "Fabrication" Article whether welding is performed in the shop or in the field.

3.4 Anchoring Rails

A. Attach base plates to walls with anchors as indicated.

B. Secure base plates to walls as indicated.

C. Cover base plates with escutcheon plate of same metal as rail post, welded to post after anchoring base plates.

3.5 Field Quality Control

A. Owner will engage a qualified testing and inspecting agency to perform field tests and inspections and prepare test reports. Payment for these services will be made by Owner.

B. Testing agency will randomly select completed railing assemblies for testing that are representative of different railing designs and conditions in the completed Work. Railings will be tested according to ASTM E 894 and ASTM E 935 for compliance with performance requirements.

C. Remove and replace railings where test results indicate that they do not comply with specified requirements unless they can be repaired in a manner satisfactory to Architect and will comply with specified requirements.

D. Additional testing and inspecting, at Contractor's expense, will be performed to determine compliance of replaced or additional work with specified requirements.

3.6 Cleaning

A. Clean stainless steel by washing thoroughly with clean water and soap, rinsing with clean water, and wiping dry.

3.7 Protection

A. Protect finishes of railings from damage during construction period with temporary protective coverings. Remove protective coverings at time of Substantial Completion/Beneficial Occupancy.
B. Restore finishes damaged during installation and construction period so no evidence remains of correction work. Return items that cannot be refinished in field to shop, make required alterations and refinish entire unit, or provide new units.

END OF SECTION 05721
SECTION 07195 – Anti-Graffiti Coatings

PART 1 - General

1.1 Related Documents

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

B. Related Sections include the following:

1. Section 03300 “Cast-in-Place Concrete.”
2. Section 04810 “Concrete Masonry Units.”
3. Section 09900 “Painting.”

1.2 Performance Requirements

A. Provide anti-graffiti coating system complying with the following:

1. Permanent coating system. Coatings shall not require re-application regardless of number of graffiti taggings during warranty period.
2. Show no signs of deterioration or change of appearance after graffiti removal during the warranty period. No ghosting, staining, or shadowing.
3. Capability of removing 100% of all types of paint and graffiti materials from treated surfaces without damaging the coating or the substrate.
4. Upon graffiti removal, no evidence of graffiti shall remain.
5. Capable of withstanding a minimum of 120 cleaning cycles over the same area without measurable coating deterioration.
6. Shall not increase dirt pick-up of substrate.
7. Meet the following test results for the following chemicals:

   a. MEK: No effect after 5 days.
   b. Carboxylic Acid: No effect after 5 days.
   c. 75% Phosphoric Acid: No effect after 5 days.
   d. 37% HCL: 3 hours blister.
   e. 50% Sulfuric Acid: No effect after 5 days.
   f. 20% NIT: 68 hours blister.

1.3 Submittals

A. Product Data: For each component of coating system including primers.

1. An inclusive list of required coating materials. Indicate each material and cross reference the specific coating, finish system, and substrate. Identify each material cross-reference by manufacturer’s catalog number and general classification.
2. Manufacturer’s technical information, including label analysis and instructions for handling, storing, applying each material specified, and coverage rates.

B. Certification by manufacturer that installer has been trained to apply specified products.

C. Provide samples for each material to be applied, on an 8” x 8” piece of actual substrate material. Coat only half of substrate for comparison. Indicate on back of sample which half is coated.
D. Submit lists of completed projects with project names and addresses, names and address of Architect and Owner.

1.4 Quality Assurance

A. Provide an experienced installer, approved by manufacturer, who has completed anti-graffiti coating system applications similar in material and extent to those indicated for Project, and whose work has a record of successful in-service performance.

B. Obtain base coatings, top coatings, and removal agent from the same manufacturer.

C. At no time shall the number of coats and coverage rates be less than recommended in manufacturer's technical data sheets.

D. Manufacturer shall be available to make recommendations specific to Project, substrate, coating appearance and cleaning options.

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 with the following information:

1. Name or title of material.
2. Product description (generic classification or binder type).
3. Manufacturer's stock number and date of manufacture.
4. Content by volume, for pigment and vehicle constituents.
5. Thinning instructions.
6. Application instructions.
7. Color name and number.
8. Handling instructions and precautions.
9. Shelf life.

B. Store materials not in use in tightly covered containers in a well-ventilated area at a minimum ambient temperature of 45°F. Maintain containers used in storage in a clean condition, free of foreign materials and residue. Keep storage area neat and orderly. Remove oily rags and waste daily. Take necessary measures to ensure that workers and work areas are protected from fire and health hazards resulting from handling, mixing, and applying coatings.

C. Store material in a covered well-ventilated area protected from the elements.

1.6 Project Conditions

A. Apply coatings only when temperature of surfaces to be coated and surrounding air temperatures are between 45° and 95°F.

B. Do not apply coatings in snow, rain, fog, mist, or when relative humidity exceeds 85% at temperatures less than 5°F above the dew point, or to damp or wet surfaces. Allow wet surfaces to dry thoroughly and attain temperature and conditions specified before proceeding with or continuing coating operation.

1.7 Extra Materials

A. Furnish extra graffiti removal materials, one full case (12, 16-ounce bottles). Package coating materials in unopened, factory-sealed containers for storage and identify with labels describing contents.
1.8 Warranty

A. Provide written warranty from the manufacturer and installer, jointly on letterhead, that the coating materials installed will remain for a period of five years from date of Substantial Completion. The installer shall guarantee the coating installed against poor workmanship for a period of 2 years from the date of the Notice of Completion.

PART 2 - Products

2.1 Anti-Graffiti System Manufacturer

A. Subject to requirements, provide products by one of, or equal to, the following:

1. Dunn Edwards Corporation: Graffiti Melt Coating.
3. Rainguard Products Co.: Vandil-Guard.
4. Tamms Industries: AG-400.
5. Ramproof Systems: Graffituraser.

PART 3 - Execution

3.1 Examination

A. With installer present, examine substrates and conditions under which anti-graffiti coatings will be applied, for compliance with coating application requirements.

1. Apply coatings only after unsatisfactory conditions have been corrected and surfaces to receive coatings are thoroughly dry.
2. Start of application is construed as installer’s acceptance of surfaces within that particular area.

B. Review other Work in which primers or coatings are provided to ensure compatibility of total systems for various substrates. On request, furnish information on characteristics of specified finish materials to ensure compatible primers.

1. If a potential incompatibility of primers applied by others exists, obtain the following from the primer installer before proceeding:
   a. Confirmation of primer’s suitability for expected service conditions.
   b. Confirmation of primer’s ability to be top coated with materials specified.

2. Notify Architect about anticipated problems before using the coatings specified over substrates primed by others.

C. Proceeding with application constitutes acceptance of substrate conditions by contractor.

3.2 Preparation

A. Remove plates, machined surfaces, and similar items already in place 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 that were removed, use workers skilled in the trades involved.
B. Before applying coatings, clean substrates of substances that could impair bond of coatings. 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. Clean and prepare surfaces to be coated according to manufacturer’s written instructions for each substrate condition and as specified.

1. Provide barrier coats over incompatible primers or remove primers and reprime substrate.
2. Prepare cementitious substrates, concrete masonry, concrete and block surfaces to be coated. Cementitious surfaces to receive coating shall have cured not less than 30 days under normal dry weather conditions, shall have clean, dust free surfaces and shall have all voids filled. Remove efflorescence, chalk, dust, dirt, grease, oils, and release agents. Roughen as required to remove glaze. If hardeners or sealers have been used to improve curing, use mechanical methods to prepare surfaces. Do not coat surfaces if moisture content exceeds manufacturer’s written recommendations.
3. Moisture content of cementitious substrates should be no higher than 15% as registered on an electronic moisture meter.
4. Surfaces shall be structurally sound, dry, clean and free of dust, dirt, grime, oils, scale, rust, silicones, curing compounds, alkali, acid residues, etc.

D. Carefully mix and prepare coatings materials according to manufacturer’s written instructions. Maintain containers used in mixing and applying coatings in a clean condition, free of foreign materials and residue. Stir materials before applying to produce a mixture of uniform density. Stir as required during application.

3.3 Application

A. Apply coatings according to manufacturer’s written instructions. Use applicators and techniques best suited for the material being applied. Do not apply coatings over dirt, rust, scale, grease, moisture, scuffed surfaces, or conditions detrimental to forming a durable coating film. Allow sufficient time between successive coats as recommended in writing by manufacturer to permit proper drying. Do not recoat surfaces until coating has dried to where it feels firm, does not deform or feel sticky under moderate thumb pressure, and application of another coat does not cause undercoat to lift or lose adhesion.

B. Do not apply to surfaces with a temperature below 45°F or over 95°F.

C. Make vertical and horizontal passes to entirely cover and saturate all surfaces from every angle. Pay particular attention to joints. Fully cover all surface areas indicated to receive coating. Provide necessary means and sequencing to reach all surfaces indicated to receive anti-graffiti coatings.

3.4 Field Quality Control

A. Owner reserves the right to invoke the following procedure at any time and as often as Owner deems necessary during the period when coatings are being applied:

1. Owner will engage the services of a qualified testing agency to sample coating material being used. Samples of material delivered to Project site will be taken, identified, sealed, and certified in presence of contractor.
2. Testing agency will perform appropriate tests for the following characteristics as required by Owner:
   a. Quantitative materials analysis
   b. Absorption

Anti-Graffiti Coatings
07195 - 4
c. Accelerated weathering.
d. Accelerated yellowness.
e. Alkali and mildew resistance.
f. Abrasion resistance.
g. Washability.

3. Owner may direct contractor to stop applying coatings if test results show materials being used do not comply with specified requirements. Contractor shall remove noncomplying coating materials from Project site, 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.

B. Apply alkyd-based anti-graffiti coating to a 2-foot-square treated area selected by the Architect. Five days minimum after application, demonstrate complete removal of graffiti in the presence of the Architect.

3.5 Cleaning

A. At end of each work day, remove rubbish, empty cans, rags, and other discarded materials from Project site.

B. After completing coating application, clean splattered surfaces. Remove splattered coatings by washing, scraping, or other methods. Do not scratch or damage adjacent finished surfaces.

3.6 Protection

A. Protect work of other trades, whether being coated or not, against damage from coating operation. Correct damage by cleaning, repairing, replacing, and recoating, as approved by the Architect, and leave in an undamaged condition.

1. Provide “Wet Paint” signs to protect newly coated finishes. After completing coating operations remove temporary protective wrappings provided by others to protect their work.

2. At completion of construction activities of other trades, touch up and restore damaged or defaced coated surfaces.

END OF SECTION 07195
SECTION 09900 - Painting

PART 1 - General

1.1 Related Documents

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

B. Related Sections include the following:

1. Section 05521 “Pipe and Tube Railings”
2. Section 04220 “Concrete Unit Masonry”
3. Section 03300 “Cast in Place Concrete”

1.2 Submittals

A. Product Data: For each type of product indicated.

B. Samples for Verification: For each type of paint system and in each color and gloss of topcoat indicated.

1. Submit 7 (seven) samples on rigid backing, 8 inches square.
2. Step coats on samples to show each coat required for system including primer.
3. Label each coat of each sample with manufacturer and product designation name and number.

C. Submit manufacturer’s current written instructions and recommended methods of installation including substrate preparation and application rates.

1.3 Quality Assurance

A. MPI Standards:

1. Products: Complying with MPI standards indicated and listed in "MPI Approved Products List."

B. Provide painter with 10 (ten) years experience in the type of painting applications specified for this project.

C. Coordinate with other trades and Work of other Sections that will be applying primers to Work of those Sections, to ensure compatibility of the total paint system over substrate. Provide information on top coats to ensure use of compatible primers. Omit primer on metal surfaces that have been shop primed.

D. This Section includes painting of all Work, items and surfaces which are normally painted in a project of this type and level of quality, and shall be included in the Contract, whether or not painting of a specific item or surface is specifically called out and included in the drawings or mentioned in specifications.

E. Include painting of all items and assemblies even if color is not yet indicated.

1.4 Delivery, Storage, And Handling
A. Deliver paint materials to project site in manufacturer’s original unopened containers bearing manufacturer’s label, with manufacturer’s name, logo, paint type, sheen, stock number, date of manufacture, contents by volume for pigment solids and vehicle constituents, thinning instructions, color name and number, and shelf life. Store materials not in use in tightly covered containers in well-ventilated areas with ambient temperatures continuously maintained at not less than 45°F.

1. Maintain containers in clean condition, free of foreign materials and residue.
2. Place oily rags and waste in a metal container and remove from project site daily.

1.5 Project Conditions

A. Apply paints only when temperature of surfaces to be painted and ambient air temperatures are between 55°F and 95°F. Avoid painting surfaces when exposed to direct sunlight.

B. Do not apply paints when relative humidity exceeds 85 percent, at temperatures less than 50°F above the dew point. Do not apply paint in damp or rainy conditions, or to damp or wet surfaces, or when inclement weather is expected within the drying/curing time recommended in writing by manufacturer.

C. Moisture test surfaces prior to applying any paint coatings. Verify that substrates have a maximum moisture content that complies with paint manufacturer’s written recommendations, and in no case higher than 12% maximum moisture content. Submit written test results.

D. Perform pH tests on concrete and masonry substrates. Verify pH levels are within paint manufacturer’s written recommendations, but in no case higher than 10. Submit written test results. If required by paint manufacturer’s written recommendations due to alkali content, apply a surface primer to concrete and masonry, such as Frazee 266 EPOTILT, or approved equal, prior to applying acrylic block filler.

1.6 Extra Materials

A. Furnish extra materials described below that are from same production run (batch mix) as materials applied and that are packaged for storage and identified with labels describing contents.

1. Furnish an additional 5 gallons of each material and color applied.

PART 2 - Products

2.1 Manufacturers

A. Subject to requirements, provide products by Dunn-Edwards Corporation.

2.2 Paint Materials

A. Provide materials for use within each paint system that are compatible with one another and compatible with substrates indicated, under conditions of service and application as demonstrated by manufacturer, based on testing and field experience.

B. For each paint system, provide products recommended in writing by topcoat manufacturer for substrate indicated. Provide all products within a paint system by a single manufacturer including prep coats and primers.

C. Provide products that comply with jurisdictional requirements for VOC content, exclusive of colorants added to a tint base.

D. Provide paint that contains 30-45% solids, minimum.
E. In areas prone to mildew growth such as coastal areas or high humid environments, add a mildewcide to paint materials in quantities recommended in writing by manufacturer.

F. All paints and primers shall be ready mixed in original containers.

PART 3 - Execution

3.1 Examination

A. Examine substrates and conditions, with Applicator present, for compliance with requirements for maximum moisture content, pH levels and other conditions affecting performance of work.

B. Verify suitability of substrates, including surface conditions and compatibility with existing finishes and primers.

C. Unsatisfactory surfaces and materials must be corrected by applicable trade before painting.

D. In reconstruction areas where permanent installed items have been removed, provide textures, primers, and coatings as needed to eliminate ghosting and to make surface visually indistinguishable in all respects to adjacent exposed surfaces.

E. Begin coating application only after unsatisfactory conditions have been corrected and are within manufacturer's written recommendations and requirements of Contract documents. Architect shall be final judge on satisfactory conditions. Beginning coating application constitutes Contractor's acceptance of substrates and conditions.

F. Notify Architect with written RFI of any problems anticipated using paint materials specified over substrates indicated or project conditions. Failure to provide written RFI prior to starting painting operations constitutes Contractor's acceptance of substrates and conditions.

3.2 Preparation

A. Comply with manufacturer's written instructions and recommendations in "MPI Architectural Painting Specification Manual" for preparation of substrates indicated. Surfaces which cannot be prepared or painted as specified shall be immediately brought to the attention of the Architect in writing. Starting of Work without such written notification constitutes Contractor's acceptance of substrates and conditions.

B. Remove plates, machined surfaces, and similar items already in place that are not to be painted. If removal is impractical or impossible because of size or weight of item, provide surface-applied protection before surface preparation and painting.

1. After completing painting operations, use workers skilled in the trades involved to reinstall items that were removed. Remove surface-applied protection if any.

2. Do not paint over labels of independent testing agencies or equipment name, identification, performance rating, or nomenclature plates.

3. Do not apply paint in areas where dust is being generated.

C. Clean substrates of substances that could impair bond of paints, including dirt, oil, grease, dust, and incompatible paints and encapsulants.

1. Remove incompatible primers and coatings, and reprime substrate with compatible primers as required to produce paint systems indicated.

2. Prepare all surfaces per manufacturer's written recommendation and per SSPC SP1, SP2 and SP3 as required by substrate and paint system requirements and as required by Contract documents.
3. Screen, cover or mask adjacent surfaces and materials which are not to receive paint or paint dust. Use appropriate light or medium tack masking tape.

D. Concrete Substrates: Remove release agents, curing compounds, efflorescence, and chalk. Do not paint surfaces if moisture content or alkalinity of surfaces to be painted exceeds that permitted in manufacturer’s written instructions and Contract documents.

E. Concrete Masonry Substrates: Remove efflorescence and chalk. Do not paint surfaces if moisture content or alkalinity of surfaces to be painted exceeds that permitted in manufacturer’s written instructions, and requirements of contract documents.

F. Galvanized-Metal Substrates: Remove grease and oil residue from galvanized sheet metal with a solvent or water based degreaser. To produce clean surfaces, etch cleaned galvanized metal surfaces with an etching solution, such as Jasco Prep and Prime or approved equal before applying primer. Clean acid etch solution completely from surfaces. Prime within 3 hours of acid etching.

G. Existing surfaces to be recoated shall be thoroughly cleaned and prepared as recommended in writing by paint manufacturer. Patches and bare areas shall be spot primed with same primer as required for new surfaces.

3.3 Application

A. Coating systems specified indicate a minimum number of coats. Do not thin primers or paints; apply paint taken directly from manufacturer’s containers. Apply at coverage rates recommended by paint manufacturer. Apply primer coat as recommended by manufacturer to properly prepare surface for finish coats, one coat minimum. Apply additional primer coats, as necessary, to cover suction spots or unsealed areas, to properly prepare surface for finish coats at no additional cost to Owner. Apply finish coats as recommended by manufacturer, two coats minimum. Apply additional finish coats as needed to completely hide base substrates and achieve the desired consistency, uniformity in finish surface, and desired sheen at no additional cost to Owner.

B. Apply paints according to manufacturer’s written instructions.

1. Flat finishes may be rolled or brushed on concrete and CMU. Spray-apply primer, intermediate and finish coats on all other surfaces.

C. Do not paint over dirt, rust, scale, grease, mildew, mold, moisture scuffed surfaces, or conditions detrimental to durable uniform paint film.

D. Tint each undercoat a lighter shade to facilitate identification of each coat if multiple coats of same material are to be applied. If undercoats or other conditions show through topcoat, apply additional coats until cured film as a uniform paint finish, color, and appearance. Comply with manufacturer’s written recommendations for drying times between succeeding coats.

E. Lightly sand and remove all dust between succeeding coats.

F. Apply paints to produce surface films without cloudiness, spotting, holidays, laps, runs, sags, ropiness, or other surface imperfections. Cut in sharp lines and color breaks.

G. Do not paint over UL labels. Paint exposed conduit and supporting hangers to match adjacent surfaces.

H. Apply block filler to masonry units with squeegee in two directions, up-down and left-right, at a rate to ensure complete coverage with pores and pits filled free of pinholes and depressions.
I. Make edges of paint adjoining other material or color clean and sharp with no overlapping.

J. Refinish whole wall where portion of finish is deemed unacceptable by Architect.

K. All materials shall be spray-applied evenly with proper film thickness and free of runs, sags, skips and other defects, except CMU with flat or eggshell finish.

L. Provide wet paint signs, barricades, warning tape and other devices to protect newly finished surfaces. Remove after Work is completed and paint has thoroughly dried.

3.4 Field Quality Control

A. Testing of Paint Materials. Owner reserves the right to invoke the following procedure at any time and as often as Owner deems necessary during the period when paints are being applied:

1. Owner will engage the services of a qualified testing agency to sample paint materials being used. Samples of material delivered to Project site will be taken, identified, sealed, and certified in presence of Contractor.

2. Testing agency will perform tests for compliance with product requirements.

3. Owner may direct Contractor to stop applying paints if test results show materials being used do not comply with product requirements. Contractor shall remove noncomplying-paint materials from Project site, pay for testing, and repaint rejected surfaces. Contractor at Owner’s discretion shall remove rejected materials from previously painted surfaces prior to re-preparing surfaces and re-applying approved paint coating systems.

3.5 Cleaning and Protection

A. At end of each workday, remove rubbish, empty cans, rags, and other discarded materials from Project site.

B. After completing paint application, clean spattered surfaces. Remove spattered paints by washing, scraping, or other methods. Do not scratch or damage adjacent finished surfaces. Clean and repair blemishes to all surfaces caused by Work of this Section.

C. Protect work of other trades against damage from paint application. Correct damage to work of other trades by cleaning, repairing, replacing, and refinishing, as approved by Architect, and leave in an undamaged condition.

D. At completion of construction activities of other trades, touch up and restore damaged or defaced painted surfaces. Leave surfaces in a first class condition.

E. Runs, sags, misses, holidays, stains and other defects in painted surfaces, including inadequate coverage, mil thickness, inconsistent sheen or uniformity of appearance shall be satisfactorily repainted as necessary. If a portion of a larger area is deemed unsatisfactory, the entire area of surface shall be stripped, re-prepared and re-painted with approved paint systems, as Owner’s discretion.

3.6 Painting Schedule

A. The following paint schedule is based upon Frazee Paint Systems as a basis of design; other paint systems may be proposed on an “approved equal” basis. Architect is sole judge of acceptability of paint system.

B. Exterior Paint Systems:

1. Concrete Masonry Units:
<table>
<thead>
<tr>
<th>Finish</th>
<th>Resin</th>
<th>Coat</th>
<th>Product</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flat</td>
<td>100% Acrylic</td>
<td>1st Coat</td>
<td>262 Acrylic Block Filler</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2nd Coat</td>
<td>203 Duratec II</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3rd Coat</td>
<td>203 Duratec II</td>
</tr>
</tbody>
</table>

2. Concrete

<table>
<thead>
<tr>
<th>Finish</th>
<th>Resin</th>
<th>Coat</th>
<th>Product</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flat</td>
<td>100% Acrylic</td>
<td>1st Coat</td>
<td>266P246 Acrylic/Epoxy Tilt-Up Primer</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2nd Coat</td>
<td>209 Acri-Kote</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3rd Coat</td>
<td>209 Acri-Kote</td>
</tr>
</tbody>
</table>

3. Non-Ferrous Metal: Galvanized

<table>
<thead>
<tr>
<th>Finish</th>
<th>Resin</th>
<th>Coat</th>
<th>Product</th>
</tr>
</thead>
<tbody>
<tr>
<td>Semi-Gloss</td>
<td>100% Acrylic</td>
<td>1st Coat</td>
<td>561 Acrylic Metal Primer</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2nd Coat</td>
<td>124 Mirro Glide SG</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3rd Coat</td>
<td>124 Mirro Glide SG</td>
</tr>
</tbody>
</table>

END OF SECTION 09900
SECTION 11150 - Parking Control Equipment

PART 1 - General

1.1 Related Documents

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 Submittals

A. Product Data: For each type of product indicated.

B. Shop Drawings: Include plans, elevations, sections, details, and attachments to other work. Detail equipment assemblies and indicate dimensions, required clearances, method of field assembly, components, and location and size of each field connection.

C. Qualification Data: For installer.

1.3 Quality Assurance

A. Upon receipt of bollard units thoroughly inspect all materials to ensure that all parts are received in good condition.

B. Store units in a dry location away from possible damage until time of installation.

1.4 Coordination

A. Coordinate installation of anchorages for parking control equipment. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves and items with integral anchors that are to be embedded in concrete. Deliver such items to Project site in time for installation of items into work of other Sections.

PART 2 - Products

2.1 Materials

A. Bollard Post: Steel tube, ASTM A 513, Type 1.

B. Bollard Ground Sleeve and Filler Piece: Steel tube, ASTM A 513, Type 5.

2.2 Manufacturers

A. Subject to requirements, provide products by Traffic Guard Direct, Inc. or equal.

2.3 Finishes

A. Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.

B. TGIC polyester outdoor finish, color to be selected by Architect from manufacturer’s full range of colors including custom colors.
PART 3 - Execution

3.1 Examination

A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances, critical dimensions, and other conditions affecting performance.

B. Proceed with installation only after unsatisfactory conditions have been corrected. Proceeding with installation constitutes acceptance of substrate conditions by Contractor.

3.2 Installation

A. Anchor ground sleeves in place with concrete footings. Center and align ground sleeves in holes above bottom of excavation. Set top of ground sleeve flush with the finish surface. Place concrete and vibrate or tamp for consolidation. Support and brace ground sleeve in position until concrete is hardened.

B. Do not insert bollard into ground sleeve until concrete is fully hardened. Attach bollard to ground sleeve per manufacturer's written instructions.

3.3 Adjusting and Cleaning

A. After completing installation of bollards, inspect finishes and repair damaged finishes. Do not paint moving parts that may restrict proper function of bollard.

END OF SECTION 11150
16010 – General Electrical Requirements

Part 1 General

1.1 Summary

A. This Section includes the general requirements for Division 16 - Electrical.

1. Division 1 and the General Conditions apply to all work of this section.
2. Division 16 supplements the applicable requirements of other Divisions.

B. The Work includes 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 division, complete, as shown on the drawings and/or specified herein.

1. Examine all divisions for related work required to be included as work under this division.

C. Owner-furnished items: Pick up Owner-furnished items and handle, deliver, install, and make all final connections.

1. Assume responsibility for the items when consigned at the storage facility in accord with requirements of the Contract Documents.

D. Related Sections:

1. General related specifications including:
   a. Access to electrical installations.
   b. Excavation for electrical installations within the project boundaries, and from building to utility connections.

1.2 References

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this and the other sections of Division 16.

B. In addition, the products covered in this Section, except as noted, shall be designed, manufactured, and tested in accordance with the latest revisions of the applicable standards of:

1. ANSI American National Standards Institute
4. IEEE Institute of Electrical and Electronics Engineers.
5. CEC California Electrical Code (NFPA 70)
7. NFPA National Fire Protection Association
8. UL Underwriters Laboratories, Inc.
1.3 Quality Assurance

A. Regulation: All the electrical equipment and materials, including their installation, shall conform to the following latest applicable codes and standards:

2. California State Fire Marshal.
3. Occupational Safety and Health Act (OSHA).
4. Requirements of Serving Utility Companies.
5. Local Codes and Ordinances.
6. Requirements of the California Division of the State (DSA).
7. California Administrative Code, Title 8, Chapter 4, Industrial Safety Orders.
9. Variances: In instances where two or more codes are at variance, the most restrictive requirement shall apply.

B. Contractor’s Expense: Obtain and pay for all required bonds, insurance, licenses, and pay for all taxes, fees and utility charges required for the electrical work.

1.4 Submittals

A. Submit all of the items described in Paragraphs 1, 2, and 3 (below) as a single submittal. Partial submittals will not be accepted. Contractor shall review submittals for conformance with Contract Documents, and make necessary revisions. Contractor shall also verify dimensions of equipment and be satisfied as to fit and that they comply with all code requirements relating to adequacy and clear working space. Submit the following in accordance with Division 1, with the additional electrical systems-related document requirements and additional number of copy sets as specified below:

1. Detailed shop drawings and associated product data/material lists (also see applicable technical specification sections following for additional requirements), six submittal document sets, for:

   a. Lighting fixtures and lighting control equipment

2. Contractor shall submit shop drawings sealed by a Structural Engineer registered in the State of California to demonstrate compliance with the following requirement:

   Confirm that electrical equipment has been seismically-braced and anchored to resist a horizontal force (including a simultaneous vertical force of one-third the horizontal values shown) acting in any direction using the following criteria:

   Fixed equipment on grade: 33% of operating weight.
   Fixed equipment on structure: 33% of operating weight.
   Emergency power equipment* on grade: 50% of operating weight.
   Emergency power equipment* on structure: 75% of operating weight.

   For flexibly-mounted equipment, use twice the above values.

3. Product data/material lists (also see applicable technical specification sections following for additional requirements), at least six submittal document sets, for:
4. Substitutions: Catalog numbers and specific brands or trade names followed by designation "or equal" are used in conjunction with material and equipment required by the Specifications to establish the standards of quality, utility, and appearance required. Substitutions which are equal in quality, safety, and appearance to those specified may be accepted, subject to the following provisions:

a. All substitutions must be submitted in writing to the Owner. Contractor shall submit to the Owner a typewritten list containing a description of each proposed substitute material or equipment.

b. The Owner will accept, in writing, proposed substitutions that are, in the Owner's opinion, equal in quality, utility and appearance to the material or equipment specified. Such acceptance shall not relieve Contractor from complying with the requirements of the Drawings and the Specifications.

c. Contractor shall be responsible for all costs of any changes resulting from Contractor's proposed substitutions which affect other parts of the Work or the work of separate Contractors.

   1) Contractor also agrees to compensate the Owner for time and expenses spent reviewing substitutions.

d. The decision of the Owner shall be final.

5. Instruction Materials (also see applicable technical specification sections following for additional requirements). Submit all document sets, for:

a. Provide prior to the time of the personnel instruction period, instruction manuals associated with all systems listed above.

b. Include the following information, as a minimum, in each copy of the instruction manual:

   1) Manufacturers' names and addresses.
   2) Serial numbers of items furnished.
   3) Catalog cuts, exploded views and brochures, complete with technical and performance data for all equipment, marked to indicate actual items furnished and the intended use.
   4) Recommended maintenance procedures.

B. Project record documents:

1. Mark Record Documents daily to indicate all changes made in the field.

   a. In addition to general requirements of Record Documents, indicate on Project Record Drawings all changes of equipment locations and ratings, fuse sizes, trip sizes and settings on magnetic-only circuit breakers.
b. Alterations in raceway runs and sizes, changes in wire sizes, circuit designations, installation details, one line diagrams, control diagrams and schedules.

2. Use green to indicate deletions and red to indicate additions
   a. Use the same symbols and follow as much as possible the same drafting procedures used on the Contract Drawings.

3. Locate conduit stubbed-out for future use, underground feeder conduits, and feeder pull box locations using building lines by indicating on the Project Record Drawings.

1.5 Quality Assurance

A. As a minimum Specification requirement, all materials and methods shall comply with applicable governing codes.

B. Material and equipment substitution
   1. Equipment other than that specified will be accepted only when written approval is given by the Owner, in accordance with Division 1.
   2. The Contractor shall be held responsible for all physical changes in piping, equipment, etc. resulting from equipment substitution and likewise bear any increased cost of other trades in making said substitution. Approval by the Owner of equipment other than that specified does not relieve the Contractor of this responsibility.

1.6 Owner’s Instructions

A. Prior to completion of the contract, and at the Owner’s convenience, instruct verbally and demonstrate to the Owner’s personnel, the operation of the systems as listed in Part 1 above.

1.7 System Startup

A. Do not energize or place electrical equipment in service until all relevant parties have been duly notified and are present or have waived their rights to be present. Where equipment to be placed in service involves service or connection from another contractor of the Owner, notify the Owner in writing when the equipment will be ready. Notify the Owner’s Representative two weeks in advance of the date the various times of equipment will be complete.

PART 2 Products

PART 3 Execution

3.1 Examination

A. Site verification of conditions. Contractor shall survey the entire project site and become thoroughly familiar with actual existing conditions. The intent of the work is shown on the drawings and described hereinafter. By the act of participation in the pre-bid conference and site inspection tour specified in the applicable Division 1 section, the Contractor shall be deemed to have made such a study and examination and to accept all conditions present at the site. No request for additional payment shall be considered as valid, due to failure to allow for conditions which may exist.
B. Electrical work shown: Electrical drawings are generally diagrammatic. Verify equipment sizes with shop drawings and manufacturers' data and coordinate location layout with other trades. Report immediately to the Owner any conflicts in the drawings and specifications with any code or between the electrical work and the work of other trades. No work shall be commenced where a conflict exists prior to receiving proper instructions. Any work or materials shown on the drawings and not mentioned in this division, or vice-versa, shall be executed the same as if specifically mentioned by both. Notify the Owner of any changes of location requirements prior to installation.

3.2 Seismic Bracing

A. Contractor shall be responsible for anchors and connections of electrical work to building structure to prevent damage as a result of earthquake, including manufactured equipment, the connection and integrity of shop-fabricated and field-fabricated materials and equipment. All building equipment and connections therefore shall be designed to resist seismic forces in conformance with Title 24 of the California Administrative Code. Contractor shall submit shop drawings sealed by a Structural Engineer registered in the State of California to demonstrate compliance with the following requirements:

1. Electrical equipment: For requirements, see Part 1 above.
2. Raceway: All raceway shall be supported and braced per SMACNA “Guidelines for Seismic Restraint Systems and Plumbing Fiping Systems.” (See Table 23-P of Title 24 for limitations.)

3.3 Demolition, Alteration and Extension Work

A. Provide and perform demolition, alteration, extension, preparatory and miscellaneous work as indicated.

B. Existing Conditions: Make a detailed survey of the existing conditions pertaining to the work. Check the locations of all existing structures equipment, wiring, etc. include all demolition, alteration and extension work in bid.

3.4 Service Interruptions and Utility

A. Coordinate with the Owner any interruption of services necessary to accomplish the work.

B. Coordinate with the utility company all work associated with power and communications/signal distribution systems and service entrance equipment.

3.5 Field Quality Control

A. Site Tests:

1. Perform all necessary tests required to ascertain that the electrical system has been properly installed, that the power supply to each item of equipment is correct, and that the system is free of grounds, ground faults, and open circuits, that all motors are rotating in the proper directions, and such other tests and adjustments as may be required for the proper completion and operation of the electrical system.

2. If, during the course of testing, it is found that system imbalance is in excess of 20%, rearrange single-pole branch circuits in lighting and receptacle panels to bring system balance within 20% on all phases. Record all such changes on the panelboard schedule and submit a summary of changes to the Owner's Representative.

General Electrical Requirements

16010 - 5
3.6 Cleaning

A. Clean exterior surfaces of equipment and remove all dirt, cement, plaster and other debris. Protect interior of equipment from dirt during construction and clean thoroughly before energizing.

B. Clean-out cracks, corners and surfaces on equipment to be painted, remove grease and oil spots so that paint may be applied without further preparation.

C. Locate underground conduit stubbed-out for future use, underground feeder conduits, and feeder pull box locations, using building lines by indicating on the Project Record Drawings.

End of Section 16010
16050 – Basic Electrical Materials and Methods

PART 1 General

1.1 Summary

A. Work Included: 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 Division, complete, as shown on the drawings and/or specified herein. The work includes, but is not limited to:

1. Examine all divisions for related work required to be included as work under this Division.
2. General provisions and requirements for electrical work.

1.2 References

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1, apply to this and the other sections of Division 16.

B. In addition, the products covered in this Section, except as noted, shall be designed, manufactured, and tested in accordance with the latest revisions of the applicable standards of:

1. ANSI American National Standards Institute
2. ASTM American Society for Testing and Materials
3. IEEE Institute of Electrical and Electronics Engineers
4. CEC California Electrical Code
5. NECA National Electrical Contractors Association: "Standard of Installation"
6. NEMA National Electrical Manufacturers Association
7. UL Underwriters Laboratories, Inc.

1.3 Submittals (Additional Requirements)

A. General: Submit the following in accordance with the Conditions of the Contract and Division 1 Specification Sections, and Section 16010, "General Electrical Requirements."

B. Product Data: Submit product data for each type of product specified.

C. Shop Drawings: Submit shop drawings for the following:

1. Lighting fixtures, supports, and controls.

1.4 Quality Assurance

A. Qualifications of Manufacturer: Company specializing in manufacturing products specified in this Section with minimum five years documented experience.

B. Electrical Component Standard: Components and installation shall comply with CEC, NFPA 70, "California Electrical Code."

C. NEMA and UL Compliance: Products shall comply with applicable requirements of NEMA and UL standards. Provide products and components listed and labeled by UL.

D. NECA Installation Standards: Perform work in accordance with NECA "Standard of Installation."
E. Source Quality Control: Quality control testing shall meet applicable Underwriters' Laboratories Inc. Standards.

1.5 Delivery, Storage and Handling

A. General: Deliver, store, protect, and handle products to site in accordance with the General and Supplementary Conditions, Division 1 Specification Sections, and Section 16010, "General Electrical Requirements."

B. Store and protect product in accordance with manufacturer’s instructions, and in a manner to prevent damage from the elements, personnel, equipment, and moisture.

1.6 Project Conditions or Site Conditions

A. Verify that field measurements are as shown prior to commencing the work.

PART 2 Products

2.1 Materials and Equipment

A. Materials, equipment, and devices shall, as a minimum, meet requirements of UL, where UL standards are established for those items, and requirements of CEC.

2.2 Raceways

A. Metal Conduit and Tubing:

1. Rigid Metal Conduit: Steel, hot-dipped galvanized including the threads, with an outer coating of zinc bichromate, complete with one coupling and one end thread protector, manufactured in accordance with ANSI C80.1 and UL 6. Fittings: threaded, hot-dipped galvanized, manufactured in accordance with ANSI C80.4.

   a. Where indicated, provide galvanized rigid steel conduit and fittings with polyvinyl chloride (PVC) coating of nominal .020 inch (20 mil) thickness conforming to NEMA RN-1, Type A, Robroy Industries, or equal.

2. Intermediate Metal Conduit: Hot-dipped galvanized steel including the threads, manufactured in accordance with UL 1242.

3. Electrical Metallic Tubing: Welded, electro-galvanized thin wall steel tubing, manufactured in accordance with ANSI C80.3 and UL 797. Maximum size: 2 inches. Fittings: compression type (indenter or setscrew type not allowed); gland compression type, zinc plated steel body, cadmium plated malleable iron nut, O-Z/Gedney.

4. Flexible Metal Conduit: Hot-dipped galvanized steel interlocking, single strip type manufactured in accordance with UL1. Connectors: squeeze type, malleable iron, cadmium plated, straight and angle connectors for all sizes and twist-in connectors for 3/4-inch flexible metal conduit. Provide integral copper ground wire on sizes 1-1/4" and smaller.


B. Nonmetallic Conduit and Ducts:
1. Rigid Nonmetallic Conduit: NBMA TC 2 and UL 651, Schedule 40. Polyvinyl chloride (PVC) heavy-wall conduit, with tapered sleeve couplings, rated and labeled for use with 90°C rated conductors, manufactured in accordance with ANSI C33.91. Fittings: NEMA TC-3, cemented type, from the same manufacturer as the conduit.
2. PVC and ABS Plastic Utilities Duct Fittings: NEMA TC 9-1. Match to duct type and material.
3. Conduit, Tubing, and Duct Accessories: Types, sizes, and materials complying with manufacturer’s published product information. Mate and match accessories with raceway.

C. Conduit Bodies: Provide types, shapes, and sizes as required to suit individual applications and NEC requirements. Provide matching gasketed covers secured with corrosion resistant screws. For metallic conduit and tubing, use metallic conduit bodies. Use bodies with threaded hubs for threaded raceways.

D. Wireways and Auxiliary Gutters: Provide electrical wireways shall be of types, sizes, and number of channels as indicated. Fittings and accessories including but not limited to couplings, offsets, elbows, expansion joints, adapters, hold-down straps, and end caps shall match and mate with wireway as required for complete system. Where features are not indicated, select for fulfill wiring requirements comply with applicable provisions of NEC. Use sheet steel wireways with screw-on covers and corrosion resistant hardware. For dry locations coat with rust inhibitor and finish with gray baked enamel. For wet locations use hot-dipped galvanized material finished with gray baked enamel, provide gaskets for covers.

E. Accessories:
1. General: Reducers, bushings, washers, etc., shall be cadmium plated malleable iron of the shape and dimension best suited for the application.
2. End bells: Hot-dipped galvanized, threaded malleable iron, O-Z/Gedney Type THS, or equal.
4. Locknuts 1-1/2" and smaller: Zinc plated heavy stock steel, O-Z/Gedney, or equal. Locknuts 2" and larger: Cadmium plated malleable iron, O-Z/Gedney, or equal.
5. Hubs: Cadmium plated malleable iron, tapered threads, neoprene "O" ring, insulated throat, O-Z/Gedney, or equal.
6. Expansion Fittings: Hot-dipped galvanized malleable iron with bonding jumpers. Linear: O-Z/Gedney Type AX and TX, or equal. Linear, with deflection: O-Z/Gedney Type AXDX, or equal.
7. Escutcheons: Chrome plated sectional floor and ceiling plates, Crane No. 10, or equal

2.3 Underground Duct Banks

A. Materials:
1. Manufacturers: Carlon, Triangle, Pittsburgh, Robroy, Spang, Steel City, NEPCO.
2. Rigid Nonmetallic Conduit: NEMA TC 2 and UL 651, Schedule 40. Polyvinyl chloride (PVC) heavy-wall conduit, with tapered sleeve couplings, rated and labeled for use with 90°C rated conductors, manufactured in accordance with ANSI C33.91. Fittings: cemented type, from the same manufacturer as the conduit.
3. Rigid Metal Conduit: Hot-dipped galvanized steel including the threads, with an outer coating of zinc bichromate, complete with one coupling and one end thread protector, manufactured in accordance with ANSI C80.1 and UL 6. Fittings: threaded, hot-dipped galvanized, manufactured in accordance with ANSI C80.4.
   a. Where indicated, provide galvanized rigid steel conduit and fittings with polyvinyl chloride (PVC) coating of nominal .020 inch (20 mil) thickness conforming to NEMA RN-1, Type A.
4. PVC and ABS Plastic Utilities Duct Fittings: NEMA TC 9-1. Match to duct type and material.
5. Duct Accessories: Types, sizes, and materials complying with manufacturer’s published product information. Mate and match accessories with raceway.

6. Precast Concrete Pullboxes: Concrete pullboxes shall be Parkway or Traffic type, as required by location use. Pre-cast in sections with cover marked "Electric" or "Telephone" and with brass hexhead screws. Traffic type shall be constructed for H-20 loading. Acceptable manufacturers: Associated Concrete Products (Quickset), Brooks, or Jensen.

7. Cable Tags: 2" diameter, black anodized aluminum with 3/16" diameter hole. Lettering shall be 5/32" machine engraved and coated with clear lacquer. Include feeder designation and size as follows: phase designation, tag "A", "B", or "C" as required, manufacturer's name; system voltage; date cable first energized.

2.4 Wire and Cable

A. Provide wire and cable suitable for the temperature, conditions, and location where installed, except as otherwise indicated.

1. Conductor: Copper. Provide solid conductor for No. 10 AWG and smaller. Provide stranded conductors for sizes No. 8 and larger.
   a. Use stranded conductors at motors and other applications where subject to vibration, and for control circuits.

2. Minimum Size Conductor: No. 12 AWG, except as otherwise indicated.
   a. Control circuits: No. 14 AWG.

3. Insulation voltage rating: 600 volts.

B. Building wire and cable: Single conductor insulated wire. Insulation: ANSI, Type THHN/THWN, rated 75°C or Type XHHW, rated 90°C.

C. Connectors: Provide UL Listed factory fabricated, solderless metal connectors of sizes, ampacity ratings, materials, types and classes for applications and for services indicated. Use connectors with temperature ratings equal to or greater than those of the wires upon which used.

D. Pull Cord: 1/8" polypropylene or nylon.

2.5 Boxes and Fittings

A. Provide indicated types, sizes, and NEMA enclosure classes. Where not indicated, provide units of types, sizes, and classes appropriate for the use and location. Provide all items complete with covers and accessories required for the intended use. Provide gaskets for units in damp or wet locations.

1. Materials and Finishes:
   a. Sheet steel: Flat rolled, code gauge, galvanized steel.
   b. Fasteners for general use: Corrosion resistant screws and hardware, including cadmium and zinc plated items.
   c. Fasteners for wet or damp locations: Stainless steel screws and hardware.
   d. Cast metal for boxes, enclosures and covers: Copper-free aluminum except as otherwise indicated.
   e. Exterior finish: Gray-baked enamel for items exposed in finished locations except as otherwise indicated.
   f. Painted interior finish: Where indicated, white baked enamel.
g. Fittings for boxes, cabinets, and enclosures: Conform to UL 514B. Malleable iron or zinc-plated steel for conduit hubs, bushings and box connectors.

B. Metal outlet, device, and small wiring boxes:

1. General: Conform to UL 514A and UL 514B. Boxes shall be of type, shape, size, and depth to suit each location and application. Minimum size to be 4" square.
2. Steel Boxes: NEMA OS 1. Boxes shall be sheet steel with stamped knockouts, threaded screw holes and accessories suitable for each location including mounting brackets and straps, cable clamps, exterior rings and fixture studs.

C. Pull and junction boxes:

1. General: Conform to UL 50, for boxes over 100 cubic inches in volume. Boxes shall have bolted-on covers of material same as box, and shall be of the size and shape to suit the application.
2. Steel Boxes: Sheet steel with welded seams. Where necessary to provide a rigid assembly, construct with internal structural steel bracing.
3. Hot-Dip Galvanized Steel Boxes: Sheet steel with welded seams. Where necessary to provide a rigid assembly, construct with internal structural steel bracing. Hot-dip galvanize after fabrication. Cover shall be gasketed.

2.6 Grounding and Bonding

A. Materials: All materials shall be copper. Provide types indicated and sizes and ratings required to comply with CEC. Where types, sizes, ratings, and quantities indicated are in excess of CEC requirements, the more stringent requirements and the greater size, rating, and quantity indications govern.

B. Wire and cable conductors shall be as follows, except as otherwise indicated:

1. Equipment grounding conductor: Green insulated copper.
2. Grounding electrode conductor: Stranded copper cable.
3. Bare copper conductors: Shall conform to the following:
   c. Tinned Conductors: ASTM B 33.

C. Connector products:

1. General: Listed and labeled as grounding connectors for the materials used.
2. Pressure Connectors: High-conductivity plated units.
3. Bolted Clamps: Heavy-duty units listed for the application.
4. Exothermic Welded Connections: Provided in kit form and selected for the specific types, sizes, and combinations of conductors and other items to be connected.

D. Grounding electrodes:

1. Ground Rods: Copper-clad steel with high-strength steel core and electrolytic-grade copper outer sheath, molten-welded to core. Size: 3/4 inch in diameter by 10 feet in length.
2. Plate Electrodes: Copper plates, minimum 0.10 inch thick, size as indicated.

E. Test (ground) wells: precast concrete, 12" round x 18" deep open bottom valve box, with cast iron grate cover plate marked "GROUND".

2.7 Supporting Devices
A. Supports: Individual conduits shall be rigidly supported and clamped with one hole malleable iron conduit clamps, conduit beam clamps, conduit hangers, or wall brackets, as necessary for the type of construction and as indicated. The use of perforated flat steel straps or wire for supporting conduits will not be permitted.

B. Support Attachments: Kwik-bolt, sleeve anchors, wedge anchors, toggle bolts, and hollow all anchors, as manufactured by Hilti or Red Head.

C. Light Steel Framing: Light steel framing members for conduit hangers and other supports shall be formed from 12 gauge (minimum) steel, unless otherwise indicated.

1. Finish: Hot-dipped galvanized steel for light steel framing members and fittings and all hardware, such as hanger rods, couplings, bolts, nuts, etc., shall be electro-galvanized, unless otherwise indicated.

2.8 Electrical Identification

A. Manufacturers: Brady, Ideal Industries, Markal, Panduit, Thomas & Betts.

B. Electrical identification products:

1. Adhesive Marking Labels for Raceway and Metal-clad Cable: Pre-printed, flexible, self-adhesive labels with legend indicating voltage and service (Power, Lighting, Air Conditioning, Voice and Data Communications, Control, Fire Alarm and Detection).

2. Label Size, as follows:

   b. Raceways Larger than 1-Inch: 1-1/8 inches high by 8 inches long.

3. Color: Black legend on orange background.

4. Colored Adhesive Marking Tape for Raceways, Wires, and Cables: Self-adhesive vinyl tape not less than 3 mils thick by 1 inch to 2 inches in width.

5. Pretensioned Flexible Wraparound Colored Plastic Sleeves for Raceway and Cable Identification: Flexible acrylic bands sized to suit the raceway diameter and arranged to stay in place by pretensioned gripping action when coiled around the raceway or cable.

6. Underground Line Marking Tape: Permanent, bright-colored, continuous printed, plastic tape compounded for direct burial service not less than 6 inches wide by 4 mils thick. Printed legend indicative of general type of underground line below.

7. Wire/Cable Designation Tape Markers: Vinyl or vinyl-cloth, self-adhesive, wraparound, cable/conductor markers with preprinted numbers and letters.

8. Aluminum, Wraparound, Cable Marker Bands: Bands cut from 0.014- inch thick, aluminum sheet, fitted with slots or ears for securing permanently around wire or cable jacket or around groups of conductors. Provide for legend application with stamped letters or numbers.

9. Plasticized Card Stock Tags: Vinyl cloth with preprinted and field printed legends to suit the application. Orange background, except as otherwise indicated, with eyelet for fastener.

10. Aluminum-Faced Card Stock Tags: Weather-resistant, 18-point minimum card stock faced on both sides with embossable aluminum sheet, 0.002 inches thick, and laminated with moisture-resistant acrylic adhesive. Pre-print legend to suit the application, and punch for tie fastener.

11. Brass or Aluminum Tags: Metal tags with tampered legend, punched for fastener. Dimensions: 2 inches by 2 inches by 19 gauge.

12. Engraved, plastic-laminated Labels, Signs, and Instruction Plates: Engraving stock melamine plastic laminate, 1/16-inch minimum thick for signs up to 20 square inches, or 8 inches in length; 1/8-inch
thick for larger sizes. Engraved legend in white letter on black face and punched for mechanical fasteners.

13. Warning and caution signs for indoor use: Shall be minimum 18 gauge steel, white porcelain enamel finish, with red lettering, punched for fasteners, with colors, legend, and size appropriate to the location. Lettering to read, "DANGER - HIGH VOLTAGE," unless otherwise indicated.

14. Exterior Metal-Backed Butyrate Warning and Caution Signs: Weather-resistant, nonfading, preprinted cellulose acetate butyrate signs with 20-gauge, galvanized steel backing, with colors, legend, and size appropriate to the location. Provide 1/4-inch grommets in corners for mounting.

15. Fasteners for Plastic-Laminated and Metal Signs: Self-tapping stainless steel screws or number 10/32 stainless steel machine screws with nuts and flat lock washers.

16. Cable Ties: Fungus-inert, self-extinguishing, one-piece, self-locking nylon cable ties, 0.18-inch minimum width, 50-lb minimum tensile strength, and suitable for a temperature range from minus 50°F to 350°F. Provide ties in specified colors when used for color coding.

2.9 Disconnect (Safety) Switches

A. Disconnect switches shall be rated 600 volts A.C., NEMA Type HD heavy duty, horsepower-rated, quick-make/quick-break, non-fusable or fusible, Class "R", with the number of poles and ampere rating as shown. Enclosure shall be NEMA Type 1, lockable. Maximum voltage, current and horsepower rating shall be clearly marked on the switch enclosure. Switches equipped with dual-element time-delay fuses shall be permanently labeled with fuse type and rating.

1. For outdoor locations, or shown as "WP" (weatherproof), the enclosure shall be NEMA Type 3R, unless otherwise indicated.

2.10 Lighting

A. Manufacturers: As indicated herein, and as shown on the Lighting Fixture Schedule.

B. Lighting Fixtures, General:

1. Work covered includes manufacturing, equipping, wiring, and assembling of all lighting fixtures. Provide lighting fixtures complete for each and every light outlet in the type, quality, and size of fixture indicated in lighting fixture schedule.

2. The lighting fixtures shown on fixture schedule are marked with the corresponding type letter, indicating thereby the particular type of fixture to be installed on the respective outlets.

3. Include a lighting fixture on every light outlet shown, unless otherwise indicated to be omitted. If the type of lighting fixture is not specifically noted, provide without extra cost to the Owner, a lighting fixture of the same type called for under a similar condition elsewhere on the Contract Drawings.

4. Catalog number on the lighting fixture schedule are for the purpose of indicating the general type, quality, and size of fixtures that will be required. The use of Catalog Numbers for a lighting fixture does not necessarily include all accessories that may be required for a complete and operational installation.

5. All luminaries and other lighting equipment delivered to the job complete, wired and including all supporting means, such as plaster frames, supports, hangers, canopies, sockets, holds, all current or voltage modifiers, such as ballasts, starters, all light control materials; specifically diffusers, louvers, lenses, reflectors and refractors.

6. All lighting fixtures constructed and installed in accordance with local building codes and directives by the NFPA and shall bear the label of approval of the U.L. All materials new and of best grade of approved manufacturing standards. Workmanship of highest order to assure trouble-free operation and durability of equipment. Lighting fixtures constructed by labor agreeable with that employed on the project.

7. Lighting fixtures to be designed for highest relative efficiency and service. Maintenance to be simple and re-lamping possible without use of special tools.
8. Provide all light-sources, lamps and other light-producing media called for and suitable for specified equipment and functions.

9. The fixture housing shall be a one piece die-cast aluminum housing. The lens shall be sealed to the housing and shade with molded silicon gaskets.

10. All internal and external hardware shall be stainless steel

11. The fixture shall be attached to the arm assembly with three stainless steel bolts. The connection shall be sealed with a silicon compression gasket.

12. The fixture shall be listed with ETL for outdoor, wet location use, UL 1598 and have a minimum IP rating of 65.

C. Lamps: LED MicroEmitters shall be provided with 20 LED microemitters (60 diodes). Precision injection molded, highly specular reflectors are positioned to achieve directional control toward desired task for IES full cutoff classification. Secondary reflectors with a concave, specular medium hammet tone finish are used to redirect light downward. No fasteners to be placed on the reflective surface. The MicroEmitter assembly shall be fastened to the housing as a one-piece module with quick-connects on the wiring. Standard color temperatures are 3500 K and 5100 K. Full compliance with LM-79-2008 is required.

D. Ballasts/Drivers:

1. Available in 120 through 277 volts. Mount all electrical components directly to driver tray to allow for maximum heat dissipation. The LED constant current driver shall operate at 350mA. Include a self-monitoring and lumen adjusting LifeShield protection system to minimize lumen depreciation in extreme and fluctuating environmental conditions.

E. Warranty:

1. All LED fixtures, including housing, LED’s and electrical components shall be warranted for five years. Contact manufacturer for complete warranty language, exceptions and limitations.

PART 3 EXECUTION

3.1 INSTALLATION

A. General: The electrical installation shall conform to the requirements of CEC, “California Electrical Code,” and to the requirements specified herein.

B. Wiring Method: The wiring method shall be as follows, except as otherwise noted.

1. Exterior:
   a. Exposed: Rigid steel conduit.
   b. Concealed: Rigid steel conduit.

     1) In or under slab on grade: Nonmetallic conduit, Schedule 40 PVC. Conduit leaving the slab (including exposed conduit riser) shall be rigid steel conduit.

     2) Underground: Rigid nonmetallic conduit. Use Schedule 40 PVC. Provide concrete encasement where indicated.

   c. Connection to vibrating equipment, including transformers and hydraulic, pneumatic, or electric solenoid or motor-driven equipment: Liquidtight flexible metal conduit, maximum length 18 inches.

C. Grounding and Bonding:
1. General: Grounding shall be provided in accordance with all applicable codes and regulations of the State of California and the local authorities having jurisdiction.
   2. An equipment grounding conductor shall be provided in all raceway containing phase conductors.
   3. The maximum resistance to ground shall not exceed 5 ohms.

D. Raceway Installation:

1. General Requirements: Install electrical raceways in accordance with manufacturer’s written installation instructions, applicable requirements of CEC, and as follows.
   a. Minimum size: 3/4 inch unless otherwise indicated.
   b. Size conduits as indicated on the drawings and as required by the CEC for the number and sizes of wires to be installed into the conduit.
   c. Make conduit field cuts square with saw and ream out to full size. Shoulder conduits in couplings. Remove burrs, and swab inside conduits before conductors are pulled in.
   d. Make all conduit joints mechanically tight, electrically continuous, and watertight. Pitch conduits in a manner to avoid creating moisture traps.
   e. Install minimum 3/16" polypropylene pull cords from end-to-end in all empty raceways, tagged with the identification of service intended and location of opposite end. Leave at least 24 inches of pull cord at each end.
   f. Provide code sized green grounding conductor in all conduit.

2. Perform excavating, trenching, backfilling, and compacting as shown, and as specified in the section in Division 2 which prescribes excavation, backfilling and compacting for utilities. Minimum cover for runs below finished grade outside buildings: 24 inches except where noted.

3. Complete installation of electrical raceways before starting installation of conductors within raceways.
   a. Protect inside of conduit from dirt and rubbish during construction by capping all openings with plastic caps intended for the purpose. Cap or plug conduits with standard manufactured accessories as soon as the conduits have been permanently installed in place.

4. Install all conduits at elevations and locations to avoid interference with grading or other work, the structure, finished ceilings, walls. Avoid causing cutting of masonry structural members.
   a. Do not place conduits in close proximity to equipment, systems, and service lines, such as hot water supply and return lines, which could be detrimental to the conduit and its contents. Maintain a minimum 3" separation, except in crossing, which shall be a minimum 1".
      1) Minimum separation from uninsulated hot water pipes, steam pipes, heater flues or vents: 6 inches. Avoid running conduit directly under water lines.
      2) Elevation of Raceway: Where possible, install horizontal raceway runs above water and steam piping.

5. Conceal conduit, unless indicated otherwise, within finished walls, ceilings, and floors. Keep raceways at least six (6) inches away from parallel runs of flues and steam or hot water pipes. Install raceway level and square and at proper evaluations.
   a. Run conduits embedded in structural slabs in the middle of the slab below the top and above the bottom reinforcing steel. Minimum cover for conduit in concrete floors, walls or roof: 1/3 thickness of slab, but in no case less than 1-1/2" cover except where penetration is made. Do not install conduit larger than 1" in slabs. Tie raceways to reinforcing rods or otherwise secure them to prevent sagging or shifting during concrete placement. Space raceways laterally to prevent
voids in the concrete. Where nonmetallic conduit is used, raceways must be converted to Schedule 80 or rigid steel conduit before rising above the floor.

b. Where conduit installed in concrete or masonry extends across building construction joints, provide expansion fittings as manufactured by O.Z.; Crouse-Hinds; Appleton; or equal, with approved ground straps and clamps. Expansion fittings installed in concrete shall be water tight, concrete tight, deflection/expansion type.

c. Run concealed raceways with a minimum of bends in the shortest practical distance considering the type of building construction and obstructions except as otherwise indicated. This does not apply to conduits in crawl spaces.

6. Install and neatly rack exposed conduits parallel with and perpendicular to building walls. Do not install exposed diagonal conduit runs.

   a. Run exposed, parallel, or banked raceways together. Make bends in parallel or banked runs from the same center line so that the bends are parallel. Factory elbows may be used in banked runs only where they can be installed parallel. This requires that there be a change in the plane of the run such as from wall to ceiling and that the raceways be of the same size. In other cases provide field bends for parallel raceways.
   
   b. Use blockouts for concentrations of conduits in a confined area.
   
   c. Route and suspend conduits crossing expansion joints to permit expansion, contraction, and deflection utilizing approved fittings to prevent damage to the building, conduits, and supporting devices.
   
   d. Install exposed raceways parallel and perpendicular to nearby surfaces of structural members and follow the surface contours as much as practical.
   
   e. Provide conduit bodies for exposed conduit runs at junctions, bends or offsets where required. Do not use elbows or bends around outside corners of beams, walls or equipment. Make conduit body covers accessible.

7. Concrete Wall or Stab Penetations: All core drilling, sleeves, blockouts or other penetrations must be approved by the Structural Engineer prior to installation.

   a. Space sleeves and core drills to insure a minimum dimension of 3 times the nominal trade diameter of the largest adjacent conduit between sleeves or core drills.
   
   b. Use blockouts for concentrations of conduits in a confined area.

8. Join raceways with fittings designed and approved for the purpose and make joints tight. Where joints cannot be made tight, use bonding jumpers to provide electrical continuity of the raceway system. Make raceway terminations tight. Where terminations are subject to vibration, use bonding bushings or wedges to assure electrical continuity. Where subject to vibration or dampness, use insulating bushings to protect conductors.

9. Make bends and offsets so the inside diameter is not effectively reduced. Unless otherwise indicated, keep the legs of a bend in the same plane and the straight legs of offsets parallel.

   a. Make no bends with a radius less than 12 times the diameter of the cable it contains nor more than 90°. Make field bends with tools designed for conduit bending. Heating of metallic conduit to facilitate bending is not permitted.
   
   b. Bends and offsets in 1" and smaller conduits may be done with approved bending devices. Do not install conduits which have had their walls crushed and deformed and their surface finish damaged due to bending.
   
   c. Run conduits parallel to and at right angles to building lines.
   
   d. Where space conditions prohibit the use of standard ells, elbows, and conduits, use cast ferrous alloy fittings of such forms and dimensions as best required for application.

10. Other Requirements:
a. Connect motors, equipment containing motors, equipment mounted on an isolated foundation, transformers, and other equipment and devices which are subject to vibration and which require adjustment with liquidtight flexible metallic conduit from the device to the conduit serving it. Size the flexible conduit length more than 12 diameters, but less than 18 diameters. Rigidly support the points of attachment on each side of the connection. Use external bonding jumpers on sizes 1-1/2" and above.

b. Install escutcheons on all exposed conduits passing through interior floors, walls, or ceilings. Install fire seals on all conduits passing through fire rated partitions. Install wall and floor fire seals on all conduits passing through exterior walls and floors, or use standard galvanized steel pipe sleeves; diameters greater than the outside diameter of the sleeved conduit and fill the annular space with mastic or caulk with lead.

c. Make conduit projections from covered areas to areas exposed to the weather watertight by proper flashing. Extend flashing a minimum of 6 inches in all directions from conduit.

d. Cap conduits indicated to be stubbed-out underground using glued on PVC caps intended for this purpose.

e. Install a coupling flush with the floor on all conduits stubbed-up through the floor slab.

f. Do not penetrate walls with flexible conduit where subject to physical damage. Use recessed box with extension ring for transition from interior to exterior of wall.

g. Terminations:

1) Where raceways are terminated with locknuts and bushings, align the raceway to enter squarely and install the locknuts with dished part against the box. Where terminations cannot be made secure with one locknut, use two locknuts, one inside and one outside the box.

2) Where terminating in threaded hubs, screw the raceway or fitting tight into the hub so the end bears against the wire protection shoulder. Where chase nipples are used, align the raceway so the coupling is square to the box, and tighten the chase nipple so no threads are exposed.

3) At switchboards, manholes and floor standing distribution panelboards, provide insulated throat bushings or bell ends on all non-metallic conduit entries and bushings on all metallic conduit entries.

4) Install insulated throat threaded hubs on conduits entering enclosures without threaded hubs.

5) Install end bells on conduits stubbed through slabs and foundations into electrical enclosures.

h. Install raceway sealing fittings in accordance with the manufacturer's written instructions. Locate fittings at suitable, approved, accessible locations and fill them with UL Listed sealing compound. For concealed raceways, install each fitting in a flush steel box with a blank cover plate having a finish similar to that of adjacent plates or surfaces. Install raceway sealing fittings at the following points and elsewhere as indicated:

1) Where conduits enter or leave hazardous locations.

2) Where conduits pass from warm locations to cold locations, such as the boundaries of refrigerated spaces and air conditioned spaces.

3) Where required by the CEC.

i. Stub-up Connections: Extend conduits through concrete floor for connection to freestanding equipment with an adjustable top or coupling threaded inside for plugs and set flush with the finished floor. Extend conductors to equipment with rigid steel conduit; flexible metal conduit may be used six (6) inches above the floor. Where equipment connections are not made under this contract, install screwdriver operated threaded flush plugs flush with floor.

1) Protect stub-ups from damage where conduits rise from floor slabs. Arrange so that curved portion of bends is not visible above the finished slab.
j. Flexible Connections: Use short length (maximum of 6 feet) of flexible conduit for recessed and semi-recessed lighting fixtures, for equipment subject to vibration, noise transmission, or movement; and for all motors. Use liquidtight flexible conduit in wet locations. Install separate ground conductor across flexible connections.

k. PVC Coated Rigid Steel Conduit:

1) Do not store conduit in direct sunlight.
2) Use pipe straps, no pipe wrenches or channel wrenches, when tightening connections to avoid damaging PVC coating.
3) Patch all gouges or cuts in the PVC coating after installing conduit. Use manufacturer’s recommended patching paste. Build up area to be patched to full mil thickness of coating and feather out paste on sides of damaged area a minimum of 1/2-inch to provide a completely bonded seal.
4) Field bend conduit with shoes for a mechanical bender sized for the next larger size conduit.
5) Bends used in or below concrete slabs shall be, rigid steel type elbows, use for all stub-ups with flush floor coupling at transitions.

l. Use raceway fittings that are of types compatible with the associated raceway and suitable for the use and location. For intermediate steel conduit, use threaded rigid steel conduit fittings except as otherwise indicated.

E. Underground Duct Banks:

1. Exercise care in excavating, trenching and working near existing utilities. Trenching and backfill:

a. Contractor shall trench underground duct path and manhole location with utmost care in order to avoid existing underground facilities. Trench size shall be kept to a minimum. No oversized trench shall be made unnecessarily.

b. All trench excavations by the Contractor shall be backfilled by same in accordance with this specification.

c. All material excavated during underground electrical work is not pre-qualified for backfill.

d. All fill must be placed in layers not exceeding 8 inches in depth and hand tamped or machine compacted to at least 95 percent of its maximum dry density as computed by the ASTM method of performing a compaction test (D-1557-70).

e. All compacted fill will be under continuous inspection by the Inspector. Compaction tests will be arranged for by the Inspector in cooperation with the Contractor.

f. Puddling or water-flooding for settling backfill will not be permitted except in landscaped areas. The addition of water shall be limited to achieving optimum moisture content for tamp procedures.

g. Where Contractor trenches crosses any finished road (paved or gravel), he shall be responsible for restoring the road to its original condition. Repaving shall be with the same surrounding material and to a quality equal or exceeding its surround.

h. Do not backfill for a period of at least 24 hours after pouring concrete. Upon receipt of the Inspector’s approval proceed with backfill. Backfill with 1 sack slump concrete and repair of surface to be completed within 24 hours of approval. Provide wet sand backfill in landscape areas.

i. Survey slope of trenches and ducts between terminations to provide drainage. No pockets shall be permitted.

2. Connections to Existing Ducts: Where connections to existing duct lines are indicated, excavate the lines to the maximum depth necessary. Cut off the lines and remove loose concrete from the conduits before installing new concrete encased ducts. Provide a reinforced concrete collar, poured monolithically with the new duct line, to take the shear at the joint of the duct lines. Remove existing cables which constitute interference with the work.
3. Connection to Existing Handholes and Manholes: For duct line connections to existing structures, break the structure wall out to the dimensions required and preserve steel in the structure wall. Cut steel and bend out to tie into the reinforcing of the duct line enclosure. Chip out the structure wall to form a key for the duct line enclosure.

4. Connections to Existing Concrete Pads: For duct line connections to concrete pads break an opening in the pad out to the dimensions required and preserve steel in pad. Cut the steel and bend out to tie into the reinforcing of the duct line enclosure. Chip out the opening in the pad to form a key for the duct line enclosure.

5. Removal of Ducts: Where duct lines are removed from existing manholes, close openings and waterproof manhole. Chip out the wall opening to provide a key for the new section of wall.

F. Installation of boxes and fittings:

1. Outlet boxes and Fittings: Install outlet and device boxes and associated covers and fittings of materials and NEMA types suitable for each locations and in conformance with the following requirements, except as otherwise indicated:

   a. Locations exposed to weather or dampness: Cast metal, NEMA type 3R.
   b. Wet locations: NEMA type 4 enclosures

       1) In exposed work, exterior of buildings, in wet location, and flush in non-waterproofed walls below grade provide FS and FD boxes.
   c. Corrosive locations: NEMA type 4X enclosures.

2. Pull and Junction Boxes: Install pull and junction boxes of materials and NEMA types as follows, except as otherwise indicated:

   a. Locations exposed to weather or dampness: NEMA type 3R, sheet steel.
   b. Wet locations: NEMA type 4 enclosures.
   c. Corrosive locations: NEMA type 4X enclosures.

G. Lighting:

1. Inspect Architectural and Structural drawings and specifications, including bridge details to determine materials to be utilized and installed. Include all outlet boxes and conduit with all appropriate hardware and fixture accessories to support fixture.

2. Installation:

   a. Installation of all lighting fixtures done by experienced electrician.
   b. Contractor to be responsible for proper coordination of all lighting fixture locations. Provide support for all lighting fixtures.
   c. Provide suitable coverplate or canopy for each lighting fixture outlet box where the lighting fixture does not provide a suitable cover.
   d. Lighting fixtures located on exterior of building installed with cadmium plated brass screws and gasketed.
   e. Protect the lighting fixtures from damage during their unloading or removal, storage or installation, any broken fixtures, lenses, etc., must be replaced with new parts, without any additional expense to the Owner, undue delay or inconvenience.
   f. Upon completion of the installation of the lighting fixtures and lighting equipment, they must be in first-class operating order and in perfect condition as to finish, etc. Check for proper operation and appearance, alignment of fixtures and proper placement of lenses, louvers, lamps and other light-controlling or modifying appurtenances.
   g. Where special lighting effects, flood or spotlighting is involved, perform final adjustment under the direct supervision of Architect.
h. Cleaning: Immediately prior to occupancy, damp clean all lenses, lighting fixture trims, reflectors, 
clean lamps or install new lamps as directed, with lenses and fixtures free of labels.
i. Use of Lighting Fixtures: As soon as any portion of lighting fixture work is ready for operation, 
the Owner shall have the right to operate the same under the supervision of the Contractor. This 
shall in no way be interpreted to mean the acceptance of such part of the installation or relieve the 
Contractor of his responsibility for the complete work or any part thereof.
j. Color and type of finish of all lighting fixtures as approved by the Architect.
k. Install fixtures and accessories in accordance with manufacturer's recommendations and industry 
standard practice.
l. Coordinate work of this section with that of other trades.
m. Provide lighting fixtures, lamps, switches, and control systems, and wiring.
n. If designation omitted on drawings, provide same type fixture employed in areas of similar usage 
(contact this engineer for final direction).
o. Install in accordance with manufacturer's instructions, submittal data, and details on drawings.

6. Adjustment and cleaning:

a. Adjust lamp positions for desired effects.
   1) Adjust lamp positions for desired effects.
   2) Align fixtures with bridge and paving lines.

b. Cleaning:
   1) Remove dirt, grease, and foreign materials from fixtures.
   2) Remove fingerprints, smudges, and dirt from fixtures' lenses and lamps.

3.2 Field Quality Control

A. Examine surfaces to which conduits are to be secured for:
   1. Defects which will adversely affect the execution and quality of work.
   2. Deviations from allowable tolerances for the building material.

B. Do not start work until defects and deviations are corrected.

3.3 Cleaning

A. Upon completion of installations of raceways, inspect interiors of raceways; clear all blockages and remove 
brulls, dirt, and construction debris.

3.4 Protection of Finished Work

A. Protect inside of conduit from dirt and rubbish during construction by capping all openings with plastic 
caps intended for the purpose.

B. Protect stub-ups from damage where conduits rise from floor slabs. Arrange so curved portion of bends is 
not visible above the finished slab.

3.5 Grounding

A. Electrically ground metallic cabinets, boxes, and enclosures. Where wiring to item includes a grounding 
conductor, provide a grounding terminal in the interior of the cabinet, box, or enclosure.
3.6 Cleaning and Finish Repair

A. Upon completion of installation, inspect components. Remove burrs, dirt, and construction debris and repair damaged finish including chips, scratches, abrasions and weld marks. Clean surfaces to be painted.

B. Galvanized finish: Repair damage using a zinc-rich paint recommended by the manufacturer.

C. Painted finish: Repair damage using matching corrosion-inhibiting touch-up coating.

End of Section 16050