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# RIO HONDO COMMUNITY COLLEGE

**Soccer Field**

**DSA #03-115542**

**Bid Package Number 2037**

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NOTICE TO CONTRACTORS CALLING FOR BIDS

Notice is hereby given that the RIO HONDO COMMUNITY COLLEGE DISTRICT ("District") of Los Angeles County, California, acting by and through its Governing Board ("Board"), will receive up to, but not later than 1:00 PM December 18, 2014 in the Purchasing Office, sealed bids for the award of a contract for the procurement of the following:

Bid# 2037 Soccer Field Renovation

The project consists of site improvements of a new Soccer Field, 6-lane track, new scoreboard, site lighting and bleachers.

Bids received after the time specified above or after any extensions due to material changes shall be returned unopened. All bids shall be made and presented on a form furnished by the District. Bids shall be received in the office of the Director, Contract Management and Vendor Services, and shall be opened publicly read aloud at the above stated time and place.

Each bid must conform with and be responsive to the contract documents, copies of which are on file and may be obtained at the mandatory bidder’s conference and job-walk or on line at: http://www.riohondo.edu/facilities/RFQ/index.htm. Each bid shall be accompanied by (1) the security referred to in the contract documents; (2) the list of proposed subcontractors; (3) the Non-collusion Affidavit; and (4) a list of three similar jobs the contractor has completed in the last three years.

A mandatory bidder’s conference and job-walk will be conducted on December 02, 2014 at 1:00 PM beginning at the Rio Hondo College – Gymnasium, 3600 Workman Mill Rd., Whittier, CA 90601. Because the Pre-Bid Meeting and Job Walk are mandatory, the Bid Proposal submitted by a Bidder whose representative(s) did not attend the entirety of the Mandatory Pre-Bid Meeting and Job Walk will be rejected by the District as being non-responsive. Parking permits are required for parking in campus parking lots. Doors to the meeting will be shut 10 minutes after the published time of the Mandatory Pre-Bid Meeting and Job Walk and any bidder arriving later than this time will be rejected by the District as being non-responsive.

The District has obtained from the Department of Industrial Relations the general prevailing rate of per diem wages and the general prevailing rate for holiday and overtime work for the Los Angeles County Area for each trade, craft, classification, or type of work needed to execute the contract. Holiday rates shall be paid as specified in the collective bargaining agreement applicable to each particular trade, craft, classification, or type of work employed on the project.

Copies of schedules of rates so determined are available on the Internet at: http://www.dir.ca.gov/dir/s&r/statistics_research.html and are on file and available at the District Office noted above. In accordance with Section 1773.2 of the California Labor Code, the Contractor shall post a copy of the determination of prevailing rate of wages at each jobsite. The schedule of per diem wages is based upon a working day of (8) eight hours. The rate for holiday and overtime work shall be at time plus one-half. The Contractor and any subcontractor(s) shall pay not less than the specified prevailing rates of wages to all workers employed by them in the execution of the contract. In accordance with provisions of the Public Contract Code Section 22300, substitution of eligible and equivalent securities for any monies withheld to ensure performance under this contract will be permitted at the request and expense of the Contractor.

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

The District reserves the right to reject any and all bids or to waive irregularities in any bid.

Rio Hondo Community College District is an “Equal Opportunity” employer. Qualified Disabled Veteran Business Enterprises (DVBE), Minority Business Enterprises (MBE), and Woman Owned Business Enterprises (WBE) are encouraged to participate in this project.

Timothy L. Connell
Director, Contract Management and Vendor Services
Rio Hondo Community College District
City of Whittier, County of Los Angeles, State of California
562/908-3413

Publish: November 24, 2014 and December 01, 2014
- Pasadena Star News
- San Gabriel Valley Tribune
- Whittier Daily News
SECTION 00010

NOTICE TO CONTRACTORS CALLING FOR BIDS

DISTRICT: RIO HONDO COMMUNITY COLLEGE DISTRICT

PROJECT IDENTIFICATION: SOCCER FIELD RENOVATION

PROJECT NO: Bid No. 2037

BIDS DUE BY: December 18, 2014 at 1:00 PM

SUBMIT BIDS TO: Rio Hondo Community College District
3600 Workman Mill Road, Room A-103
Whittier, California 90601
Telephone (562) 908-3413
Facsimile (562) 908-3462
Timothy Connell
Director, Contract Management and Vendor Services

BID AND CONTRACT DOCUMENTS AVAILABLE: On line at: http:\www.riohondo.edu or at the mandatory bidder’s conference and job walk.

MANDATORY PRE-BID JOB WALK LOCATION: Rio Hondo College, Board Room, 3600 Workman Mill Rd.,
Whittier, CA 90601

JOB WALK DATE/TIME: December 2, 2014 at 1:00 PM

NOTICE IS HEREBY GIVEN that Rio Hondo Community College District, acting by and through its Board of Trustees, hereinafter the “District” will receive up to, but not later than the above-stated date and time, sealed Bid Proposals for the Contract for the Work generally described as: SOCCER FIELD RENOVATION PROJECT

1.01 Submittal of Bid Proposals. All Bid Proposals shall be submitted on forms furnished by the District. Bid Proposals must conform with, and be responsive to, the Bid and Contract Documents, copies of which may be obtained from the District as set forth above. Only Bid Proposals submitted to the District prior to the date and time set forth above for the public opening and reading of Bid Proposals shall be considered.
1.02 **Bid and Contract Documents.** Bidder may obtain, at Bidder’s sole cost and expense, the Bid and Contract Documents at the location stated above.

1.03 **Bid Proposal.** Each Bid Proposal shall consist of:
   A. Bid Proposal
   B. Bid Security
   C. List of Subcontractors
   D. Non-Collusion Affidavit
   E. DIR

   All information or responses of a Bidder in its Bid Proposal and other documents accompanying the Bid Proposal shall be complete, accurate and true; incomplete, inaccurate or untrue responses or information provided therein by a Bidder may be grounds for the District to reject such Bidder’s Bid Proposal for non-responsiveness.

1.04 **Job-Walk.** The District will conduct a **ONE TIME ONLY MANDATORY PRE-BID JOB WALK** for the Work to be held at the location, date and time stated above. It is mandatory for the Prime contractor to attend the job-walk.

1.05 **Prevailing Wage Rates.** The Project is subject to the provisions of Labor Code §§1720* et seq.* and regulations set forth in Title 8 §§16000 * et seq.* of the California Code of Regulations which govern the payment of prevailing wages on public works projects. All bidders shall be governed by and required to comply with these statutes and regulations in connection with the Project. Pursuant to Labor Code §1771, the Contractor receiving award of the Contract and Subcontractors of any tier shall pay not less than the prevailing wage rates to all workers employed in the execution of the Contract. Pursuant to Labor Code §1773, the Director of the Department of Industrial Relations has determined the generally prevailing rates of wages in the locality in which the Work is to be performed. Copies of these determinations, entitled “PREVAILING WAGE SCALE”, are maintained at the District’s offices located at 3600 Workman Mill Road, Whittier, CA 90601, and are available to any interested party upon request. Copies of rate schedules are also available on the Internet at [http://www.dir.ca.gov/DIR/S&R/statistics_research.html](http://www.dir.ca.gov/DIR/S&R/statistics_research.html). The Contractor awarded the Contract for the Work shall post a copy of all applicable prevailing wage rates for the Work at conspicuous locations at the Site of the Work.

1.08 **Contractors License Classification.** In accordance with the provisions of California Public Contract Code §3300, the District requires that Bidders possess a valid and Current **Class B General Building** California Contractors License at the time that the bid for the work is submitted.
1.09 **Contract Time.** Substantial Completion of the Work shall be achieved within **Two Hundred Eighty (280) CALENDAR DAYS** after the date for commencement of the Work as set forth in the Notice to Proceed issued by the District. Failure to achieve Substantial Completion within the Contract Time will result in the assessment of Liquidated Damages.

1.10 **Bid Security.** Each Bid Proposal shall be accompanied by Bid Security in an amount not less than **TEN PERCENT (10%)** of the maximum amount of the Bid Proposal, inclusive of any additive Alternate Bid Item(s). Failure of any Bid Proposal to be accompanied by Bid Security in the form and in the amount required shall render such Bid Proposal to be non-responsive and rejected by the District.

1.11 **No Withdrawal of Bid Proposals.** No Bidder shall withdraw its Bid Proposal for a period of **Ninety (90) days** after the award of the Contract by the District’s Board of Trustees. During this time, all Bidders shall guarantee prices quoted in their respective Bid Proposals.

1.12 **Substitute Security.** In accordance with the provisions of California Public Contract Code §22300, substitution of eligible and equivalent securities for any monies withheld by the District to ensure the Contractor’s performance under the Contract will be permitted at the request and expense of the Contractor. The foregoing notwithstanding, the Bidder to whom the Contract is awarded shall have **thirty (30) days** following action by the District’s Board of Trustees to award the Contract to such Bidder to submit its written request to the District to permit the substitution of securities for retention. The failure of the Bidder to make such written request to the District within said thirty (30) day period shall be deemed a waiver of the Bidder’s rights under California Public Contract Code §22300.

1.13 **Waiver of Irregularities.** The District reserves the right to reject any or all Bid Proposals or to waive any irregularities or informalities in any Bid Proposal or in the bidding.

1.14.1 **Award of Contract.** The Contract for the Work, if awarded, will be by action of the District’s Board of Trustees to the responsible Bidder submitting the lowest responsive Bid Proposal. If the Bid Proposal requires Bidders to propose prices for Alternate Bid Items, the District’s selection of Alternate Bid Items, if any, for determination of the lowest priced Bid Proposal and for inclusion in the scope of the Contract to be awarded shall be in accordance with this Notice and the Instructions for Bidders.

1.14.2 **Inquiries and Clarifications.** This document is for informational purposes and shall not relieve the Bidder of the requirements to fully familiarize itself with all the factors affecting the Project and his Bid. The Bidder is advised that all inquiries and clarifications about the Bid Documents, Drawings, Specifications, etc., shall be submitted
to the District in writing on or before **1:00 PM- December 8th, 2014.** The District will respond at its earliest possible opportunity but no later than **December 12th, 2014.** Verbal communication by either party with regard to this matter is invalid. Inquiries shall be sent to:

**Timothy Connell**  
**Director of Contract Management and Vendor Services,**  
**Rio Hondo Community College District,**  
3600 Workman Mill Road, Whittier, CA 90601  
**or by Fax at (562) 908-3462.**

1.16 **Delivery.** It is the bidder’s responsibility to deliver their bid prior to the time stated for opening of bids. The bidder should plan their delivery schedule to arrive early taking into consideration accident, breakdown, freeway congestion, traffic delays, check-in at the parking control booth, parking, etc. The District will not consider or take into account any excuse by the bidder for delivery of its bid after the time stated for the bid opening. Late bids will be returned to the bidder unopened.

END OF SECTION
SECTION 00100

INSTRUCTIONS FOR BIDDERS

1.01 Preparation and Submittal of Bid Proposal.

A. Bid Proposal Preparation. All information required by the bid forms must be completely and accurately provided. Numbers shall be stated in both words and figures where so indicated in the bid forms; conflicts between a number stated in words and in figures are governed by the words, except where the figures represent an express, correctly calculated sum. Partially completed Bid Proposals may be deemed non-responsive. Bid Proposals submitted on other than the bid forms included herein shall be deemed non-responsive. Bid Proposals not conforming to these Instructions for Bidders and the Notice to Contractors Calling for Bids (“Call for Bids”) may be deemed non-responsive and rejected. Each Bidder is solely responsible for all costs and expenses incurred by the Bidder in preparing and submitting a Bid Proposal to the District.

B. Bid Proposal Submittal. Bid Proposals shall be submitted at the place designated in the Call for Bids in sealed envelopes bearing on the outside the Bidder’s name and address along with an identification of the Work for which the Bid Proposal is submitted. Bidders are solely responsible for timely submission of Bid Proposals to the District at the place designated in the Call for Bids.

C. Date and Time of Bid Proposal Submittal. A Bid Proposal is considered submitted only if the outer envelope containing the Bid Proposal is stamped by the District’s date/time stamp machine at the place designated for submittal of the Bid Proposal. The date/time stamp is controlling and determinative as to the date and time of the Bidder’s submittal of its Bid Proposal. Bid Proposals received after the date and time specified in the Call for Bids are non-responsive and will be returned to the Bidder unopened.

D. Alternate Bid Item(s). If the Bid Proposal forms do not specifically call for the submittal of alternate bid item(s) and a Bidder submits alternate bid item(s), the District may deem the Bid Proposal to be non-responsive and reject the same. In the event that alternate item(s) are specifically called for in the Bid Proposal forms, any Bid Proposal which does not include bid(s) for the alternate item(s) may result in the Bid Proposal being deemed by the District to be non-responsive and rejected. In the event that bids for alternate item(s) are specifically called for in the Bid Proposal forms, the Bidder is referenced to the provisions of the Contract Documents permitting the District, during performance of the Work of the Contract Documents, to add or delete such alternate item(s) with the cost or
credit (inclusive of all direct and indirect costs, supervision, overhead and profit) for such alternate item(s) to be in the amount(s) set forth in the Bidder’s Bid Proposal for such alternate item(s).

1.02 **Bid Security.** Bid Security shall be in the form of: (a) cash, (b) a certified or cashier’s check made payable to the District or (c) a Bid Bond, in the form and content attached hereto, in favor of the District executed by the Bidder as a principal and an Admitted Surety Insurer under Code of Civil Procedure §§995.120 and 995.311 as surety (the “Bid Security”) in an amount not less than the percentage of the maximum amount of the Bid Proposal. Any Bid Proposal submitted without the required Bid Security is non-responsive and will be rejected.

1.03 **Signatures.** All bid forms shall be executed by an individual duly authorized to execute the same on behalf of the Bidder.

1.04 **NOT USED**

1.05 **Modifications.** Changes to the Bid Proposal which are not specifically called for or permitted may result in the District’s rejection of the Bid Proposal as being non-responsive. No oral or telephonic modification of any submitted Bid Proposal will be considered. A written modification may be considered only if actually received by the District ten (10) days prior to the scheduled closing time for receipt of Bid Proposals.

1.06 **Erasures; Inconsistent or Illegible Bid Proposals.** Bid Proposals must not contain any erasures, interlineations or other corrections unless the same are suitably authenticated by affixing in the margin immediately opposite such erasure, interlineation or correction the surname(s) of the person(s) signing the Bid Proposal. Any Bid Proposal not conforming to the foregoing may be deemed by the District to be non-responsive. If any Bid Proposal, or portions thereof, is determined by the District to be illegible, ambiguous or inconsistent, the District may reject such a Bid Proposal as being non-responsive.

1.07 **Examination of Site and Contract Documents.** Each Bidder shall, at its sole cost and expense, inspect the Site to become fully acquainted with the Contract Documents and conditions affecting the Work. The failure of a Bidder to receive or examine any of the Contract Documents or to inspect the Site shall not relieve such Bidder from any obligation with respect to the Bid Proposal, the Contract or the Work required under the Contract Documents. The District assumes no responsibility or liability to any Bidder for, nor shall the District be bound by, any understandings, representations or agreements of the District’s agents, employees or officers concerning the Contract Documents or the Work made prior to execution of the Contract. The submission of a Bid Proposal shall be deemed prima facie evidence of the Bidder’s full compliance with the requirements of this section.
1.08 **Withdrawal of Bid Proposal.** Any Bidder may withdraw its Bid Proposal without penalty by written request received by the District prior to the scheduled closing time for the receipt of Bid Proposals. Requests for withdrawal of bid proposals after scheduled closing time shall be in accordance with Public Contract Code §§5100 et seq.

1.09 **Documents Required Upon Award of Contract.** The Agreement which the successful Bidder, as Contractor, will be required to execute along with the other documents which will be required to be furnished are included in the Contract Documents and shall be carefully examined by the Bidder.

1.10 **Interpretation of Drawings, Specifications or Contract Documents.** Any Bidder in doubt as to the true meaning of any part of the Contract Documents or who finds discrepancies, errors or omissions therein; or who finds variances in any of the Contract Documents with applicable rules, regulations, ordinances and/or laws, may submit to the District a written request for an interpretation or correction thereof. It is the sole and exclusive responsibility of the Bidder to submit such request not less than seven (7) days prior to the scheduled closing for the receipt of Bid Proposals. Interpretations or corrections of the Contract Documents will be by written addendum issued by the District, a copy of which will be sent to each Bidder who attends the non mandatory pre-bid job walk. No person is authorized to render an oral interpretation or correction of any portion of the Contract Documents to any Bidder, and no Bidder is authorized to rely on any such oral interpretation or correction. Failure to request interpretation or clarification of any portion of the Contract Documents pursuant to the foregoing is a waiver of any discrepancy, defect or conflict therein.

1.11 **Request for Substitutions Prior to Bid Opening.** Any Bidder may submit Request(s) for Substitution on the form provided herein, together with all substantiating data, no later than ten (10) days prior to the scheduled closing time for receipt of the Bid Proposals, in accordance with Public Contract Code §3400. The District shall use its best efforts to consider and act upon such Request for Substitution in a timely fashion. Actions taken, if any, concerning the Request for Substitution will be by written addendum issued by the District, a copy of which will be sent to each Bidder who attends the non mandatory pre-bid job walk. In the absence of written addendum, the Request for Substitution shall be deemed denied for purposes of the District’s evaluation of the Bid Proposals and award of the Contract.

1.12 **District’s Right to Modify Contract Documents.** Before the scheduled closing time for receipt of Bid Proposals, the District may modify the Work, the Contract Documents, or any portion(s) thereof by the issuance of written addenda disseminated to all Bidders who have attended the non mandatory pre-bid job walk. If the District issues any addenda, the failure of any Bidder to acknowledge such addenda in its Bid Proposal may render the Bid Proposal non-responsive. All addendums will be posted to the district website.

[http://www.riohondo.edu/facilities/RFQ/index.htm](http://www.riohondo.edu/facilities/RFQ/index.htm)
1.13 **Bidders Interested in More Than One Bid Proposal.** No person, firm, corporation or other entity shall submit or be interested in more than one Bid Proposal for the same Work; provided, however, that a person, firm or corporation that has submitted a sub-proposal to a Bidder or who has quoted prices for materials to a Bidder is not thereby disqualified from submitting a sub-proposal, quoting prices to other Bidders or submitting a Bid Proposal for the proposed Work to the District.

1.14 **Bidder’s Qualifications.** Each Bidder shall submit with its Bid Proposal a Statement of Bidder’s Qualifications which is included within the Contract Documents. All information required by the Statement of Bidder’s Qualifications shall be completely and fully provided. Any Bid Proposal not accompanied by the Statement of Bidder’s Qualifications completed with all information required and bearing the signature of the Bidder’s duly authorized representative under penalty of perjury will render the Bid Proposal non-responsive and rejected. If the District determines that any information provided by a Bidder in the Statement of Bidder’s Qualifications 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.

1.15 **Award of Contract**

A. **Waiver of Irregularities or Informalities.** The District reserves the right to reject any and all Bid Proposals or to waive any irregularities or informalities in any Bid Proposal or in the bidding.

B. **Award to Lowest Responsive Responsible Bidder.** The award of the Contract, if any, will be to the responsible Bidder submitting the lowest responsive Bid Proposal on the basis of the Base Bid Proposal.

C. **Selection of Alternate Bid Items; Basis of Award of Contract.** The selection of Bid Alternates for determination of the lowest Bid Proposal will be based upon the Base Bid Proposal alone or a combination of the Base Bid Proposal and one or more Bid Alternates as selected by the District in accordance with the following “blind bidding” procedures. After opening timely submitted Bid Proposals and before the public reading of the Bid Proposals, District staff who will not be engaged in the selection of Bid Alternates (“Clerical Staff”) will assign each Bidder an alphabetical letter for identification purposes. The Clerical Staff will mask all portions of the Bid Proposal and other documents submitted with Bid Proposals so that the identity of each Bidder and each listed subcontractor is not revealed. The Clerical Staff will maintain a list (“Bidders List”) which identifies each Bidder’s name and a corresponding alphabetical letter assigned to each Bidder. After completing the Bidders List, the Clerical Staff will publicly read the
Bid Proposal amounts of each Bidder for the Base Bid as well as each Bid Alternate. In this public reading, Bidders will not be identified by name, only by alphabetical letter assigned to each Bidder. After the public reading of Bid Proposals, the Clerical Staff will provide the Project Manager, Architect and District staff responsible for selection of Bid Alternates (“Review Team”) copies of the Bid Proposals with the identities of Bidders and listed subcontractors masked. Bid Proposals reviewed by the Review Team will identify Bidders only by alphabetical letters. At such time as the Review Team has completed its review of the Bid Proposals, has selected Bid Alternates and has determined which Bidder (by the alphabetical letter designation assigned by Clerical Staff) has submitted the lowest Bid Proposal based upon the Base Bid and any combination of the Bid Alternates as determined by the Review Team, the Clerical Staff will make available to the Review Team the Bidders List so that the identity of the Bidder to be awarded the Contract can be identified. Until such time as the Review Team has completed review of Bid Proposals and determination of which Bidder has submitted the lowest responsive Bid Proposal, there will be no communication between members of the Clerical Staff and members of the Review Team regarding the identities of Bidders or listed subcontractors or any disclosure of any portion of the Bidders List.

D. **Alternate Bid Items Not Included in Award of Contract.** During performance of the Work, it is the District’s option to add or delete from the scope of the Work Alternate Bid Items that were not included in the award of Contract. District may elect to have work done at price(s) set forth in the Alternate Bid Items Proposal.

E. **Responsive Bid Proposal.** A responsive Bid Proposal shall mean a Bid Proposal which conforms, in all material respects, to the Bid and Contract Documents.

F. **Responsible Bidder.** A responsible Bidder is a Bidder who has the capability in all respects to perform fully the requirements of the Contract Documents and the moral and business integrity and reliability that will assure good faith performance. In determining responsibility, the following criteria will be considered: (i) the ability, capacity and skill of the Bidder to perform the Work of the Contract Documents; (ii) whether the Bidder can perform the Work promptly and within the time specified, without delay or interference; (iii) the character, integrity, reputation, judgment, experience and efficiency of the Bidder; (iv) the quality of performance of the Bidder on previous contracts, by way of example only, the following information will be considered: (a) the administrative, consultant or other cost overruns incurred by the District on previous contracts with the Bidder; (b) the Bidder's compliance record with contract general conditions on other projects; (c) the submittal by the Bidder of excessive and/or unsubstantiated extra cost proposals and claims on other projects; (d) the Bidder's record for completion of work within the contract time and the Bidder's
compliance with the scheduling and coordination requirements on other projects; (e) the Bidder's demonstrated cooperation with the District and other contractors on previous contracts; (f) whether the work performed and materials furnished on previous contracts was in accordance with the Contract Documents; (v) the previous and existing compliance by the Bidder with laws and ordinances relating to contracts; (vi) the sufficiency of the financial resources and ability of the Bidder to perform the work of the Contract Documents; (vii) the quality, availability and adaptability of the goods or services to the particular use required; (viii) the ability of the Bidder to provide future maintenance and service for the warranty period of the Contract; (ix) whether the Bidder is in arrears on debt or contract or is a defaulter on any surety bond; (x) such other information as may be secured by the District having a bearing on the decision to award the Contract, to include without limitation the ability, experience and commitment of the Bidder to properly and reasonably plan, schedule, coordinate and execute the Work of the Contract Documents and whether the Bidder has ever been debarred from bidding or found ineligible for bidding on any other projects. The ability of a Bidder to provide the required bonds will not of itself demonstrate responsibility of the Bidder. Upon request of the District, Bidder must promptly submit satisfactory evidence of any of the items listed above.

1.16 Subcontractors

A. Designation of Subcontractors; Subcontractors List. Each Bidder shall submit a list of its proposed Subcontractors for the proposed Work as required by the Subletting and Subcontracting Fair Practices Act (California Public Contract Code §§4100 et seq.) on the form furnished (Section 00215). Any Bidder’s failure to comply with the District’s request may render such Bidder’s bid non-responsive and subject to rejection by the District.

B. Work of Subcontractors. The organization or arrangements of the Specifications and Drawings shall not limit the extent of the Work of the Contract Documents. Accordingly, all Bidders are encouraged to disseminate all of the Specifications, Drawings and other Contract Documents to all persons or entities submitting sub-bids to the Bidder. The omission of any portion or item of Work from the Bid Proposal or from the sub-bidders’ sub-bids is not a basis for adjustment of the Contract Price or the Contract Time.

1.17 Workers’ Compensation Insurance. Pursuant to California Labor Code §3700, the successful Bidder shall secure Workers' Compensation Insurance for its employees engaged in the Work of the Contract. The successful bidder shall sign and deliver to the District the Workers Compensation Insurance certificate provided in Section 00415 prior to performing any of the Work under the Contract.
1.18 **Bid Security Return.** The Bid Security of three or more low Bidders, the number being solely at the discretion of the District, will be held by the District for ten (10) days after the period for which Bid Proposals must be held open (which is set forth in the Call for Bids) or until posting by the successful Bidder(s) of the bonds, certificates of insurance required and return of executed copies of the Agreement, whichever first occurs, at which time the Bid Security will be returned to them.

1.19 **Forfeiture of Bid Security.** If the Bidder awarded the Contract fails or refuses to execute the Agreement within seven (7) days from the date of receiving notification that it is the Bidder to whom the Contract has been awarded, the District may declare the Bidder's Bid Security forfeited as damages caused by the failure of the Bidder to enter into the Contract and may thereupon award the Contract for the Work to the responsible Bidder submitting the next lowest responsive Bid Proposal or may call for new bids, in District’s sole and exclusive discretion.

1.20 **Contractor’s License.** No Bid Proposal will be considered from a Bidder who, at the time Bid Proposals are opened, is not licensed to perform the Work of the Contract Documents, in accordance with the Contractors License Law, California Business & Professions Code §§7000 et seq. This requirement is not a mere formality and cannot be waived by the District or its Board of Trustees. The required California Contractor's License classification(s) for the Work is set forth in the Call for Bids. The Contractor will be required to maintain the license(s) through the duration of the Contract. Any questions concerning a Contractor may be referred to the Registrar, Contractors’ State License Board, P.O. Box 2600, Sacramento, CA 95826.

1.21 **Anti-Discrimination.** It is the policy of the District that there be no discrimination against any prospective or active employee engaged in the Work because of race, color, ancestry, national origin, religious creed, sex, age or marital status. All Bidders agree to comply with the District’s anti-discrimination policy and all applicable Federal and California anti-discrimination laws including but not limited to the California Fair Employment & Housing Act beginning with California Government Code §§12940 et seq. and California Labor Code §1735. In addition, all Bidders agree to require like compliance by any Subcontractor employed by them on the Work of the Contract.

1.22 **Job-Walk.**

A. **District Conduct of Job-Walk.** The District will conduct a Job Walk at the time and place designated in the Call for Bids. Regardless of whether the Job Walk is or is not designated as being mandatory, the District may, in its sole and exclusive discretion, elect to conduct one or more Job Walks in addition to that set forth in the Call for Bids, in which event the District shall notify all Bidders who have obtained the Contract Documents pursuant to the Call for Bids of any such additional Job Walk. If the District elects to conduct any Job Walk in addition to
that set forth in the Call for Bids, the District shall, in its notice of any such
additional Job Walks, indicate whether Bidders’ attendance at such additional Job-
Walks is/are mandatory; in the event that any such additional Job Walks is/are
designated as being mandatory, the provisions of this section 1.22 shall be deemed
to apply to such additional Job Walks.

B. Mandatory Job Walk. If the Job Walk is designated in the Call for Bids as being
mandatory, the failure of any Bidder to have its authorized representative present
at the Job Walk will be grounds for the District to reject such bid and the Bid Proposal
will be returned to the Bidder unopened. Where the Job Walk is mandatory, a Bidder may have more than one authorized representative and/or
representatives of its Subcontractors present at the Job Walk; provided, however
that attendance by representatives of the Bidder's Subcontractors without
attendance by a representative of the Bidder shall not be sufficient to meet the
Bidder's obligations hereunder and will be grounds for the District to declare the
Bid Proposal of such Bidder to be non-responsive. Notwithstanding any other
provisions of the Call for Bids or these Instructions for Bidders, in the event that
the Job Walk is designated in the Call for Bids as being mandatory, the District
will not consider the Bid Proposal of any Bidder who has obtained the Bid and
Contract Documents, pursuant to Call for Bids, after the date and time set forth
therein for such mandatory Job Walk; any Bid Proposal submitted by any such
Bidder shall be deemed non-responsive, rejected and returned unopened to the
Bidder submitting the same.

1.23 Drug Free Workplace Certificate. In accordance with California Government Code
§§8350 et seq., the Drug Free Workplace Act of 1990, the successful Bidder will be
required to execute a Drug Free Workplace Certificate concurrently with execution of the
Agreement. The successful Bidder will be required to implement and take the affirmative
measures outlined in such provisions. Failure of the successful Bidder to comply with the
measures outlined in such provisions may result in penalties, including without limitation,
the termination of the Agreement, the suspension of any payment of the Contract Price
otherwise due under the Contract Documents and/or debarment of the successful Bidder.

1.24 Compliance with Immigration Reform and Control Act of 1986. The Bidder is
solely and exclusively responsible for employment of individuals for the Work of the
Contract in conformity with the Immigration Reform and Control Act of 1986, 8 USC
§§1101 et seq. (“IRCA”); the successful Bidder shall also require that any person or entity
employing labor in connection with any of the Work of the Contract shall so similarly
comply with the IRCA.
1.25 **Notice of Intent to Award Contract.** Following the public opening and reading of Bid Proposals, the District will issue a Notice of Intent to Award the Contract, identifying the Bidder to whom the District intends to award the Contract and the date/time/place of the District’s Board of Trustees meeting at which award of the Contract will be considered.

1.26 **Bid Protest.** Any Bidder submitting a Bid Proposal to the District may file a protest of the District’s intent to award the Contract provided that each and all of the following are complied with:

A. The bid protest is in writing;

B. The bid protest is filed and received by the District’s Vice President, Business not more than five (5) calendar days following the date of issuance of the District’s Notice of Intent to Award the Contract; and

C. The written bid protest sets forth, in detail, all grounds for the bid protest, including without limitation all facts, supporting documentation, legal authorities and argument in support of the grounds for the bid protest; any matters not set forth in the written bid protest shall be deemed waived. All factual contentions must be supported by competent, admissible and creditable evidence.

Any bid protest not conforming to the foregoing shall be rejected by the District as invalid. Provided that a bid protest is filed in strict conformity with the foregoing, the District’s Vice President, Business or designee, shall review and evaluate the basis of the bid protest. The District’s Vice President, Business or designee shall provide the Bidder submitting the bid protest with a written statement concurring with or denying the bid protest. The District’s Board of Trustees will render a final determination and disposition of a bid protest by taking action to adopt, modify or reject the disposition of a bid protest as reflected in the written statement of the District’s Vice President, Business or designee. Action by the District’s Board of Trustees relative to a bid protest shall be final and not subject to appeal or reconsideration by the District, any employee or officer of the District or the District’s Board of Trustees. The issuance of a written statement by the Vice President, Business (or designee) and subsequent action by the District’s Board of Trustees shall be express conditions precedent to the institution of any legal or equitable proceedings relative to the bidding process, the District’s intent to award the Contract, the District’s disposition of any bid protest or the District’s decision to reject all Bid Proposals. In the event that any such legal or equitable proceedings are instituted and the District is named as a party thereto, the prevailing party(ies) shall recover from the other party(ies), as costs, all attorneys’ fees and costs incurred in connection with any such proceeding, including any appeal arising therefrom.
1.27 **Public Records.** All documents included in Bid Proposals become the exclusive property of the District upon submittal to the District. All Bid Proposals and other documents submitted in response to the Call for Bids become a matter of public record, except for information contained in such Bid Proposals deemed to be Trade Secrets (as defined in California Civil Code §3426.1). A Bidder that indiscriminately marks all or most of its Bid Proposal as exempt from disclosure as a public record, whether by the notations of "Trade Secret," "Confidential," "Proprietary," or otherwise, may render the Bid Proposal non-responsive and rejected. The District is not liable or responsible for the disclosure of such records, including those exempt from disclosure if disclosure is deemed required by law, by an order of Court, or which occurs through inadvertence, mistake or negligence on the part of the District or its officers, employees or agents. At such time as Bid Proposals are deemed a matter of public record, pursuant to the above, any Bidder or other party shall be afforded access for inspection and/or copying of such Bid Proposals, by request made to the District in conformity with the California Access to Public Records Act, California Government Code §§6250, et. seq.

**END OF SECTION**
SECTION 00210

BID PROPOSAL

TO:   RIO HONDO COMMUNITY COLLEGE DISTRICT, a California Community College District, acting by and through its Board of Trustees (“District”), 3600 Workman Mill Road, Whittier, California 90601.

FROM:   ________________________________________________________________
         (Name of Bidder as listed on License)

         ________________________________________________________________
         (Address)

         ________________________________________________________________
         (City, State, Zip Code)

         ________________________________________________________________
         (Telephone)

         ________________________________________________________________
         (Fax)

         ________________________________________________________________
         (Email)

         (Name(s) of Bidder's Authorized Representative(s) & Title)
1.01 Bid Proposal.

A. Bid Proposal Amount. Pursuant to and in compliance with the Notice to Contractors Calling for Bids, the Instructions for Bidders and the other documents relating thereto, the undersigned Bidder, having reviewed the Instructions for Bidders and all other Contract Documents and upon compliance with all requirements therein with reference to the submittal of this Bid Proposal, hereby proposes and agrees to perform the Contract including, without limitation, all of its component parts; to perform everything required to be performed; to provide and furnish any and all of the labor, materials, tools, equipment, applicable taxes, and services necessary to perform the Work of the Contract in strict compliance with the Contract Documents and complete in a workmanlike manner all of the Work required for the Project described as:

Bid #2037 – Soccer Field Renovation.

for the sum of:

Total Bid Amount: $____________________________________________
(Total Bid Amount in Figures)

_______________________________________________________________
(Total Bid Amount in Words)

Allowance Amount: $300,000.000
(Total Bid Amount in Figures)

Three Hundred Thousand
(Total Bid Amount in Words)

for the sum of:

Total Bid and Allowance Amount $________________________________
(Total Bid Amount in Figures)

_______________________________________________________________
(Total Bid Amount in Words)
B. Acknowledgment of Bid Addenda. In submitting this Bid Proposal, the undersigned Bidder acknowledges receipt of all Bid Addenda issued by or on behalf of the District, as set forth below. The Bidder confirms that this Bid Proposal incorporates and is inclusive of, all items or other matters contained in Bid Addenda.

_______ No Addenda Issued
(initial)

_______ Addenda Nos. _________________ received, acknowledged and (initial) incorporated into this Bid Proposal.

C. Alternate Bid Items. The Bidder’s price proposal(s) for Alternate Bid Items is/are set forth in the form of Alternate Bid Item Proposal included herewith. The Bidder acknowledges that the award of the Contract, if at all, shall be in accordance with the Instructions for Bidders.

1.02 Rejection of Bid; Holding Open of Bid. It is understood that the District reserves the right to reject this Bid Proposal and that this Bid Proposal shall remain open and not be withdrawn for the period of time specified in the Call for Bids, except as provided by law.

1.03 Documents Comprising Bid Proposal. The undersigned Bidder has submitted as its Bid Proposal the following: Bid Proposal (00210), List of Subcontractors (00215), Non-Collusion Declaration (00220), DIR (00230) and Bid Security (Cash, Cashier’s Check, Certified Check or Bid Bond – 00260), Statement of Bidder’s Qualifications (00240). The Bidder acknowledges that if this Bid Proposal and the foregoing documents are not fully in compliance with applicable requirements set forth in the Call for Bids, the Instructions for Bidders and in each of the foregoing documents, the Bid Proposal may be rejected as non-responsive.

1.04 Award of Contract. It is understood and agreed that if written notice of the acceptance of this Bid Proposal and award of the Contract thereon is mailed or delivered by the District to the undersigned after the opening of Bid Proposals and within the time this Bid Proposal is required to remain open or at any time thereafter before this Bid Proposal is withdrawn, the undersigned will execute and deliver to the District the Agreement in the form attached hereto in accordance with the Bid Proposal as accepted within five (5) working days after notification of acceptance and award. Concurrently with delivery of the executed Agreement to the District, the Bidder awarded the Contract shall deliver to the District: (1) the Labor and Material Payment Bond; (2) the Performance Bond; (3) the Drug-Free Workplace Certificate; (4) Certificates of Insurance evidencing all insurance coverages required to be provided under the Contract Documents; (5) the Certificate of Workers’ Compensation Insurance; and (6) Letter of Assent for Project Labor Agreement. The Work under the Contract Documents shall be commenced by the undersigned Bidder,
if awarded the Contract, on the date stated in the District's Notice to Proceed issued pursuant to the Contract Documents. Completion of the Work and all Interim Milestones shall be achieved within the Contract Time and Interim Milestones specified in the Contract Documents.

1.05 **Notices.** All notices or other correspondence shall be addressed to the District and the Bidder at their respective addresses set forth herein. Notices shall be effective only if in writing and in conformity with the requirements for service of notices set forth in the Contract Documents.

1.06 **Contractor's License.** The undersigned Bidder is currently and duly licensed in accordance with the California Contractors License Law, California Business & Professions Code §§7000 et seq., under the following:

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<th>License Number:</th>
<th>Class</th>
<th>Expiration Date</th>
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By executing this Bid Proposal, the Bidder hereby certifies that: (a) it is duly licensed, in the necessary class(es), for performing the Work of the Contract Documents; (b) that such license shall be in full force and effect throughout the duration of the performance of the Work under the Contract Documents; and (c) that all Subcontractors providing or performing any portion of the Work of the Contract Documents shall be so similarly and appropriately licensed to perform or provide such portion of the Work.

1.07 **Designation of Subcontractors.** In compliance with the Subletting and Subcontracting Fair Practices Act (California Public Contract Code §§4100, et seq.) and amendments thereof, each Bidder shall set forth in the Subcontractors List: (a) the name and location of the place of business of each Subcontractor who will perform work or labor or render services to the Bidder in or about the construction of the Work to be performed under the Contract Documents in an amount in excess of one-half of one percent (0.5%) of the Bidder's Bid Proposal; and (b) the trade and/or portion of the Work which will be performed by each listed Subcontractor. The Bidder shall list only one Subcontractor for each trade and/or portion of the Work as is defined by the Bidder in its Bid Proposal. If a Bidder fails to list a Subcontractor for a portion of the work in excess of one-half of one percent (0.5%) of the Bidder’s Bid Proposal or if the Bidder specifies more than one Subcontractor for the same portion of Work to be performed under the Contract Documents valued in excess of one-half of one percent (0.5%) of the Bidder's Bid Proposal amount, the Bidder shall be deemed to have agreed that it is fully qualified to perform that portion of the Work itself and that it shall perform that portion of the Work.
1.08 **Confirmation of Figures.** By submitting this Bid Proposal, the Bidder confirms that it has checked all of the above figures and understands that neither the District nor any of its agents, employees or representatives shall be responsible for any errors or omissions on the part of the undersigned Bidder in preparing and submitting this Bid Proposal.

1.09 **Acknowledgment and Confirmation.** The undersigned Bidder acknowledges its receipt, review and understanding of the Drawings, the Specifications and other Contract Documents pertaining to the proposed Work. The undersigned Bidder certifies that the Contract Documents are, in its opinion, adequate, feasible and complete for providing, performing and constructing the Work in a sound and suitable manner for the use specified and intended by the Contract Documents. The undersigned Bidder certifies that it has, or has available, all necessary equipment, personnel, materials, facilities and technical and financial ability to complete the Work for the amount bid herein within the Contract Time and in accordance with the Contract Documents. The undersigned Bidder certifies that its bid amount includes funds sufficient to allow the Bidder to comply with all applicable local, state and federal laws and regulations governing the labor and services to be provided for the performance of the Work of the Contract and shall indemnify, defend and hold District harmless from and against any and all claims, demands, losses, liabilities and damages arising out of or relating to Bidder’s failure to comply with applicable law in this regard.

By: ____________________________

(Signature)

(Corporate Seal)

______________________________

(Typed or Printed Name of Bidder’s Authorized Representative)

Title: ____________________________

END OF SECTION
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<tr>
<th>1. Licensed Name of Subcontractor</th>
<th>2. Address of Office, Mill or Shop</th>
<th>3. Trade or Portion of Work</th>
<th>4. License No.</th>
<th>5. $$$ Value of Work</th>
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Name of Bidder: _______________________________
Authorized Signature: ________________________

[Duplicate and attach additional page(s) as required.]
NON-COLLUSION DECLARATION

STATE OF CALIFORNIA
COUNTY OF __________________________

I, ___________________________, being first duly sworn, deposes and says that I
am the ___________________________ of __________________________, the party
submitting the foregoing Bid Proposal (the “Bidder”). In connection with the foregoing Bid
Proposal, the undersigned declares, states and certifies that:

1.01 The Bid Proposal is not made in the interest of, or on behalf of, any undisclosed person,
partnership, company, association, organization or corporation.

1.02 The Bid Proposal is genuine and not collusive or sham.

1.03 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 other bidder or anyone else to put in sham bid, or to refrain from bidding.

1.04 The Bidder has not in any manner, directly or indirectly, sought by agreement,
communication, or conference with anyone to fix the bid price, or that of any other
bidder, or to fix any overhead, profit or cost element of the bid price or that of any other
bidder, or to secure any advantage against the public body awarding the contract or of
anyone interested in the proposed contract.

1.05 All statements contained in the Bid Proposal and related documents are true.

1.06 The Bidder has not, directly or indirectly, submitted the 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 person, corporation, partnership, company, association,
organization, bid depository, or to any member or agent thereof to effectuate a collusive
or sham bid.

Executed this _____ day of ______________, 20____ at __________________________
(City, County and State)
I declare under penalty of perjury under the laws of the State of California that the foregoing is true and correct.

________________________________________________________________________
Signature

________________________________________________________________________
(Address)

________________________________________________________________________
Name Printed or Typed

________________________________________________________________________
(City, County and State)

________________________________________________________________________
(Area Code and Telephone Number)
VERIFICATION OF CONTRACTOR AND
SUBCONTRACTORS’ DIR REGISTRATION

I am the ___________________ of ____________________________________________ (“Bidder”)

(Title/Position)                                                                                           (Bidder Name)

Submitting the accompanying Bid Proposal for the work described as Soccer Field Renovation.

1. The Bidder is currently registered as a contractor with the Department of Industrial Relations (“DIR”).

2. The Bidder’s DIR Registration Number is: _______________. The expiration date of the Bidder’s DIR Registration is ____________, 20___.

3. If the Bidder is awarded the Contract for the Work and expiration date of the Bidder’s DIR Registration will occur: (i) prior to expiration of the Contract Time for the Work; or (ii) prior to the Bidder completing all obligations under the Contract for the Work, the Bidder will take all measures necessary to renew the Bidder’s DIR Registration so that there is no lapse in the Bidder’s DIR Registration while performing Work under the Contract.

4. The Bidder, if awarded the Contract for the Work will remain a DIR registered contractor for the entire duration of the Work.

5. The Bidder has independently verified that each subcontractor identified in the Subcontractors List submitted with the Bid Proposal of the Bidder is currently a DIR registered contractor.

6. The Bidder has provided the DIR Registration Number for each subcontractor identified in the Bidder’s Subcontractors’ List or within twenty-four (24) hours of the opening of Bid Proposals for the Work, The Bidder will provide the District with the DIR Registration Number for each subcontractor identified in the Bidder’s Subcontractors List.

7. The Bidder’s solicitation of subcontractor bids included notice to prospective subcontractors that (i) all sub-tier subcontractors must be DIR registered contractors at all times during performance of the Work; and (ii) prospective subcontractors may only solicit sub-bids from and contract with lower-tier subcontractors who are DIR registered contractors.

8. If any of the statements herein are false or omit material facts rendering a statement to be false or misleading, the Bidder’s Bid Proposal is subject to rejection for non-responsiveness.

9. I have personal first hand-knowledge of all of the foregoing.

I declare under penalty of perjury under California law that the foregoing is true and correct.

Executed this ___ day of _____________________, 20___ at _________________________.

(City and State)

________________________________________
(Signature)

________________________________________
(Name, typed or printed)

RIO HONDO COMMUNITY COLLEGE

SOCCER FIELD RENOVATION

DIR REGISTRATION

00230
SECTION 00240

STATEMENT OF BIDDER’S QUALIFICATIONS

1.01 Bidder’s Organization

A. Form of entity of Bidder, i.e., corporation, partnership, etc.

1. If a corporation, state the following:
   - State of Incorporation:
   - Date of Incorporation:
   - President/Chief Executive Officer:
   - Secretary:
   - Treasure/Chief Financial Officer:

2. If a partnership, state the following:
   - Date of Organization:
   - Type of Partnership (general, limited):
   - Names of all general partners; if any of the general partners are not natural persons, provide the information for each such general partner requested by Paragraphs 1.01.A.1, 1.01.A.2 and 1.01.A.4 as appropriate:

3. If a proprietorship, state the following:
   - Names of all proprietors:

4. If a joint venture, state the following:
   - Date of organization:
   - Names of all Joint Venture members. For each Joint Venture member, identify the form of entity and provide the information requested by Paragraphs 1.01.A.1, 1.01.A.2 and 1.01.A.4 for each Joint Venture member as appropriate:
5. Bidder’s form of entity is other than listed above, describe the type of entity or organization and identify all principals or owners of equity in the entity or organization

B. Number of years your organization has been in business as a contractor: ______

C. Number of years your organization has conducted business under its present name: ______

1. If your organization has conducted business under a name or name style different than your organization’s present name, identify all prior name(s) or name style(s): 

2. For each name or name style identified in Paragraph 1.01.C.1, state the dates during which you conducted business under each name or style: 

1.02 Financial

A. Attach a current audited, reviewed or compiled Financial Statement for your organization prepared by a Certified Public Accountant licensed under the laws of the State of California utilizing generally accepted accounting practices applied in a consistent manner. The Financial Statement must include a current balance sheet and income statement showing: (i) current assets (i.e., cash, accounts receivable, accrued income, deposits, material inventory, etc.); (ii) net fixed assets; (iii) other assets; (iv) current liabilities (i.e., accounts payable, accrued salaries, accrued payroll taxes, etc.); and (v) other liabilities (i.e., capital, capital stock, earned surplus, retained earnings, etc.).

B. Is the attached Financial Statement for the identical organization as the Bidder? 

   ______ Yes    ______ No.

If not, explain the relationship and financial responsibility of the organization whose Financial Statement is provided (i.e., parent/subsidiary, etc.).
1.03 Licensing

A. California Contractors License:
   License Number: ________________________________
   Expiration Date: ________________________________
   Responsible Managing Employee/Officer: ________________
   License Classification(s): ________________________________

B. Has a claim or other demand ever been made against your organization’s California Contractors License Bond? _____ Yes _____ No

   If yes, on a separate attachment, state the following: (i) the name, address and telephone number of each person or entity making claim or demand; (ii) the date of each claim or demand; (iii) the circumstances giving rise to each such claim or demand; and (iv) the disposition of each such claim or demand.

C. Has a complaint ever been filed against your organization’s California Contractors License with the California Contractors State License Board? _____ Yes _____ No

   If yes, on a separate attachment, state the following for each complaint: (i) the name, address and telephone number of each person or entity making the complaint; (ii) the date of each complaint; (iii) the circumstances giving rise to each such complaint; and (iv) the disposition of each such complaint, including without limitation, any disciplinary or other action imposed or taken by the California Contractors State License Board as a result of any such complaint.

D. Attach to this Statement true and correct copies of the following:

   1. Your organization’s California Contractors License (the copy must clearly and legibly show: (i) the licensee name; (ii) the expiration date; (iii) the classification(s) of licensure).

   2. The Contractors License Bond posted by your organization in connection with your California Contractors License pursuant to California Business & Professions Code §§7071.5 and 7071.6.

   3. If your organization’s California Contractors License is issued by virtue of the qualification of a responsible managing employee or responsible managing officer, the Qualifiers Bond if required pursuant to California Business & Professions Code §7071.9).
1.04 Experience

A. List the categories of work your organization typically performs with your own forces:

B. Claims and lawsuits (if you answer yes to any of the following, you must attach details).

1. Have any lawsuits or other administrative, legal, arbitration or other proceedings, ever been brought or commenced against your organization or any of its principals, officers or equity owners in connection with any construction contract or construction project? ______ Yes ______ No

If so, describe the circumstances, the amount demanded or other relief demand and the disposition of each such lawsuit or other proceeding.

2. Has your organization ever filed a lawsuit or commenced other administrative, legal or other proceedings in connection with any construction contract or construction project? ______ Yes ______ No

If so, describe the circumstances, the amount demanded or other relief demand and the disposition of each such lawsuit or other proceeding.

3. Are there any judgments, orders, decrees or arbitration awards pending, outstanding against your organization or any of the officers, directors, employees or principals of your organization? ______ Yes ______ No

If so, describe each such judgment, order, decree or arbitration award and the present status of the satisfaction or discharge thereof.

C. On a separate attachment, list all construction projects your organization has in progress and for each project listed, state: (i) a general description of the work performed by your organization on the project; (ii) the dollar value of the work performed or to be performed by your organization; (iii) the owner’s name, name of the owner’s representative and the address and telephone number of the owner and the owner’s representative; (iv) the project architect’s name, address, telephone number and contact person; (v) percent presently complete; and (vi) the current scheduled completion date.

D. On a separate attachment, list all construction projects completed by your organization in the past five (5) years and for each project identified, state: (i) a
general description of the work performed by your organization on the project; (ii) the dollar value of the work performed or to be performed by your organization; (iii) the owner’s name, name of the owner’s representative and the address and telephone number of the owner and the owner’s representative; (iv) the project architect’s name, address, telephone number and contact person; (v) percent presently complete; and (vi) the current scheduled completion date.

E. Has your organization ever refused to sign a contract awarded to it?
   ______ Yes ______ No

   If so, on a separate attachment, state the following: (i) describe each such contract; (ii) the owner’s name, address, telephone number and contact person; and (iii) the circumstances of your refusal to sign such contract.

F. Has your organization ever failed to complete a construction contract?
   ______ Yes ______ No

   If so, on a separate attachment, state the following: (i) describe each such contract; (ii) the owner’s name, address, telephone number and contact person; and (iii) the circumstances of your failure to complete such contract.

G. Has your organization ever been declared in default of a construction contract?
   ______ Yes ______ No

   If so, on a separate attachment, state the following: (i) describe each such contract; (ii) the owner’s name, address, telephone number and contact person; and (iii) the circumstances of each such declaration of default.

H. Has any construction contract to which your organization is a party been terminated for the convenience of the project owner? ______ Yes ______ No

   If so, identify the project and project owner along with a description of the circumstances under which the convenience termination occurred.

I. Has a claim or other demand ever been asserted against any Bid Bond, Performance Bond, or Payment Bond posted by your organization in connection with any construction contract or your submittal of a bid proposal for a construction contract? ______ Yes ______ No

   If so, on a separate attachment, state the following: (i) the name, address, telephone number and contact person for each claimant; (ii) the date upon which each such demand or claim was made; and (iii) the disposition of each such demand or claim.
1.05 References (include name, contact person, telephone/FAX and address for each reference provided)

A. Trade References (three (3) minimum)


B. Bank References


C. Public Works Inspectors of Record


D. Owner references (three (3) minimum, preferably California K-12 school districts and/or California community college districts)


E. Insurance Carriers (General Liability, Auto, and Workers’ Compensation)


F. Surety Firms (issuing your Bid, Performance and Payment Bonds)


1.06 Accuracy and Authority

The undersigned is duly authorized to execute this Statement of Bidders Qualifications
under penalty of perjury on behalf of the Bidder. The undersigned warrants and
represents that he/she has personal knowledge of each of the responses to this Statement
of Bidder’s Qualifications and/or that he/she has conducted all necessary and appropriate
inquiries to determine the truth, completeness and accuracy of responses to this Statement
of Bidder’s Qualifications.

The undersigned declares and certifies that the responses to this Statement of Bidder’s
Qualifications are complete and accurate; there are no omissions of material fact or
information that render any response to be false or misleading and there are no
misstatements of fact in any of the responses.

Executed this ______ day of ____________, 20___ at ______________________
(City and State)

I declare under penalty of perjury under California law that the foregoing is true and correct.

__________________________________________
(Signature)

__________________________________________
(Typed or written name)

END OF SECTION
SECTION 00250

BID BOND

KNOW ALL MEN BY THESE PRESENTS,

That we, ____________________________________________________________, as Principal, and ____________________________________________________________, as Surety, are held and firmly bound, along with our respective heirs, executors, administrators, successors and assigns, jointly and severally, unto RIO HONDO COMMUNITY COLLEGE DISTRICT, hereinafter “Obligee,” for payment of the penal sum hereof in lawful money of the United States, as more particularly set forth herein.

THE CONDITION OF THIS OBLIGATION IS SUCH THAT:

WHEREAS, the Principal has submitted the accompanying Bid Proposal for the Work commonly described as ___________________________________________________________ and the Bid Proposal must be accompanied by Bid Security.

WHEREAS, subject to the terms of this Bond, the Surety is firmly bound unto the Obligee in the penal sum of TEN PERCENT (10%) of the maximum amount of the Bid Proposal submitted by the Principal to the Obligee, as set forth above, inclusive of additive alternate bid items, if any.

NOW THEREFORE, if the Principal shall not withdraw said Bid Proposal within the period specified therein after the opening of the same, or, if no period be specified, for Ninety(90) days after opening of said Bid Proposal; and if the Principal is awarded the Contract, and shall within the period specified therefore, or if no period be specified, within five (5) days after the prescribed forms are presented to him for signature, enter into a written contract with the Obligee, in accordance with the Bid Proposal as accepted, and give such bond(s) 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, or in the event of the withdrawal of said Bid Proposal within the period specified for the holding open of the Bid Proposal or the failure of the Principal to enter into such Contract and give such bonds within the time specified, if the Principal shall pay the Obligee the difference between the amount specified in said Bid Proposal and the amount for which the Obligee may procure the required Work and/or supplies, if the latter amount be in excess of the former, together with all costs incurred by the Obligee in again calling for Bids or otherwise procuring said Work or supplies, then the above obligation shall be void and of no effect, otherwise to remain in full force and effect.

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, the Work to be performed
thereunder, the Drawings or the Specifications accompanying the same, or any other portion of the Contract Documents shall in any way affect its obligations 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, the Call for Bids, the Work, the Drawings or the Specifications, or any other portion of the Contract Documents.

In the event that suit or other proceeding is brought upon this Bond by the Obligee, the Surety shall pay to the Obligee all costs, expenses and fees incurred by the Obligee in connection therewith, including without limitation, attorneys’ fees.

IN WITNESS WHEREOF, the Principal and Surety have executed this instrument this _____ day of _____________, 20____ by their duly authorized agents or representatives.

Bidder:
(Corporate Seal)

__________________________
(Principal’s Name)

By:
__________________________
(Signature)

__________________________
(Typed or Printed Name & Title)

__________________________
(Address)

Surety
(Corporate Seal)

__________________________
(Surety’s Name)

By:
__________________________
(Signature of Attorney-in-Fact for Surety)

(Attach Attorney-in-Fact Certificate) ________________________
(Typed or Printed Name)

__________________________
(Address of Surety’s Office where Bond is issued)

__________________________
/Area Code and Telephone Number of Surety)
SECTION 00300
AGREEMENT

THIS AGREEMENT is made this ____ day of _____________, 20___, in the County of Los Angeles, State of California, by and between RIO HONDO COMMUNITY COLLEGE DISTRICT, a California Community College District, hereinafter called the “District” and ______ ________________________, hereinafter called the “Contractor”, with a principal place of business located at ______________________________.

WITNESSETH, that the District and the Contractor in consideration of the mutual covenants contained herein agree as follows:

1.01 The Work. Within the Contract Time and for the Contract Price, subject to adjustments thereto pursuant to the Contract Documents, the Contractor shall perform and provide all necessary labor, materials, tools, equipment, utilities, services and transportation to complete in a workmanlike manner all of the Work required in connection with the work of improvement commonly referred to as: BID #2037, Soccer Field Renovation.

Contractor shall complete all Work covered by the Contract Documents, including without limitation, the Drawings and Specifications prepared by the Architect, and other Contract Documents enumerated in Article 5 below, along with all modifications and addenda thereto issued in accordance with the Contract Documents.

1.02 Contract Time. The Work shall be commenced on the date stated in the District’s Notice to Proceed. The Contractor shall achieve Substantial Completion of the Work within _____________ (____) calendar days after the date stated in the District’s Notice to Proceed (see Section 1.01 of the Contract Special Conditions and as otherwise provided in the Contract Documents).

1.03 Contract Price. The District shall pay the Contractor as full consideration for the Contractor’s full, complete and faithful performance of the Contractor’s obligations under the Contract Documents, subject to any additions or deduction as provided for in the Contract Documents, the Contract Price of ________________________________ Dollars ($______________). The Contract Price is based upon the Contractor’s Base Bid Proposal and the following Alternate Bid Items, if any:

The District’s payment of the Contract Price shall be in accordance with the Contract Documents.

1.04 Liquidated Damages. In the event of the failure or refusal of the Contractor to achieve Completion of the Work of the Contract Documents within the Contract Time, as adjusted, the Contractor shall be subject to assessment of Liquidated Damages in accordance with the Contract Documents.
1.05 **The Contract Documents.** The Contract Documents consist of the following:

- Notice to Contractors Calling for Bids
- Instructions for Bidders
- Bid Proposal
- Subcontractors List
- Non-Collusion Declaration
- DIR
- Bid Bond
- Agreement
- Statement of Bidders Qualifications
- Construction Forms
- Soils Report
- Civil Engineering Survey
- Labor and Material Payment Bond
- Performance Bond
- Certificate of Workers Compensation
- Drug Free Workplace Certification
- General Conditions
- Special Conditions
- Labor Compliance Program
- Drawings
- Specifications
- Guarantee

1.06 **Authority to Execute.** The individual(s) executing this Agreement on behalf of the Contractor is/are duly and fully authorized to execute this Agreement on behalf of Contractor and to bind the Contractor to each and every term, condition and covenant of the Contract Documents.

IN WITNESS WHEREOF, this Agreement has been duly executed by the District and the Contractor as of the date set forth above.

---

**DISTRICT**

RIO HONDO COMMUNITY COLLEGE DISTRICT,

a California Community College District

By: ________________________________

Vice President, Business

---

**CONTRACTOR**

__________________________________________

(Contractor’s License Number)

By: ________________________________

Name: ________________________________

Title: ________________________________

(Corporate Seal)

---

**END OF SECTION**
SECTION 00400

LABOR AND MATERIAL PAYMENT BOND

(CIVIL CODE §3247)

KNOW ALL MEN BY THESE PRESENTS,

That we, ________________________________, as Principal, and ________________________________, as Surety, are held and firmly bound, along with our respective heirs, executors, administrators, successors and assigns, jointly and severally, unto RIO HONDO COMMUNITY COLLEGE DISTRICT, hereinafter "Obligee", for payment of the penal sum of __________________________ Dollars ($ ________ ) in lawful money of the United States, as more particularly set forth herein.

THE CONDITION OF THIS OBLIGATION IS SUCH THAT:

WHEREAS, the Obligee, by resolution of its Board of Trustees, has awarded to the Principal a Contract for the work commonly described as: “Bid# 2037, Soccer Field Renovation”

WHEREAS, the Principal, on or about ________________, 20__, entered into a Contract with the Obligee for performance of the Work; the Agreement and all other Contract Documents set forth therein are incorporated herein and made a part hereof by this reference.

WHEREAS, by the terms of the Contract Documents, the Principal is required to furnish a bond for the prompt, full and faithful payment to any Claimant, as hereinafter defined, for all labor, materials or services used, or reasonably required for use, in the performance of the Work.

NOW THEREFORE, if the Principal shall promptly, fully and faithfully make payment to any Claimant for all labor, materials or services used or reasonably required for use in the performance of the Work, then this obligation shall be void; otherwise, it shall be, and remain, in full force and effect.

The term "Claimant" shall refer to any person, corporation, partnership, proprietorship or other entity including without limitation, all persons and entities described in California Civil Code §3181, providing or furnishing labor, materials or services used or reasonably required for use in the performance of the Work under the Contract Documents, without regard for whether such labor, materials or services were sold, leased or rented. This Bond shall inure to the benefit of all Claimants so as to give them, or their assigns and successors, a right of action upon this Bond.
In the event that suit is brought on this Bond by any Claimant for amounts due such Claimant for labor, materials or services provided or furnished by such Claimant, the Surety shall pay for the same and reasonable attorneys’ fees pursuant to California Civil Code §3250.

The Surety, for value received, hereby stipulates and agrees that no change, extension of time, alteration, deletion, addition, or any other modification to the terms of the Contract Documents, the Work to be performed thereunder, the Specifications or the Drawings, or any other portion of the Contract Documents, shall in any way limit, restrict or otherwise affect its obligations under this Bond; the Surety hereby waives notice from the Obligee of any such change, extension of time, alteration, deletion, addition or other modification to the Contract Documents, the Work to be performed under the Contract Documents, the Drawings or the Specifications of any other portion of the Contract Documents.

IN WITNESS WHEREOF, the Principal and Surety have executed this instrument this _______ day of _____________, 20___ by their duly authorized agents or representatives.

(Corporate Seal)  (Principal Name)

By: ____________________________

(Signature)

_______________________________

(Typed or Printed Name)

Title: ____________________________

(Corporate Seal)  (Surety Name)

By: ____________________________

(Signature of Attorney-in-Fact for Surety)

(Attach Attorney-in-Fact Certificate)  (Typed or Printed Name of Attorney-in-Fact)

_______________________________

(Address)

_______________________________

(Area Code and Telephone Number of Surety)
SECTION 00410

PERFORMANCE BOND

KNOW ALL MEN BY THESE PRESENTS,

That we____________________________, as Principal, and ________________, as Surety, are held and firmly bound, along with our respective heirs, executors, administrators, successors and assigns, jointly and severally, unto RIO HONDO COMMUNITY COLLEGE DISTRICT, hereinafter “Obligee”, for payment of the penal sum of______________ Dollars ($__________) in lawful money of the United States, as more particularly set forth herein.

THE CONDITION OF THIS OBLIGATION IS SUCH THAT:

WHEREAS, the Obligee, by action of its Board of Trustees, has awarded to the Principal a Contract for the Work commonly described as: “Bid# 2037, Soccer Field Renovation”

WHEREAS, the Principal, on or about_________ 20__, entered into a contract with the Obligee for performance of the Work; the Agreement and all other Contract Documents set forth therein are incorporated herein and made a part hereof by this reference.

WHEREAS, by the terms of the Contract Documents (“Contract”), the Principal is required to furnish a bond ensuring the Principal’s prompt, full and faithful performance of the Work of the Contract.

WHEREAS, the Principal and the Surety, jointly and severally, bind themselves, their heirs, executors, administrative, successors and assigns, to the Obligee for the prompt, full and faithful performance of the Contract, which is incorporated herein by this reference.

NOW, THEREFORE, if the Principal shall promptly, fully and faithfully perform each and all of the obligations and things to be done and performed by the Principal in strict accordance with the terms of the Contract as said Contract may be modified or amended from time to time; and if the Principal shall indemnify and save harmless the Obligee and all of its officers, agents and employees from any and all losses, liability and damages, claims, judgments, stop notices, costs, and fees of every description, whether imposed by law or equity, which may be incurred by the Obligee by reason of the failure or default on the part of the Principal in the performance of any or all of the terms or the obligations of the Contract, including all modifications and amendments thereto, and any warranties or guarantees required thereunder; then this obligation shall be void; otherwise, it shall be, and remain, in full force and effect.
In the event the Principal is declared by the Obligee to be in breach or default in the performance of the Contract, then, after written notice from the Obligee to the Surety, as provided for herein, the Surety shall either remedy the default or breach of the Principal or shall take charge of the Work of the Contract and complete the Contract with a Contractor other than the Principal at its own expense; provided, however, that the procedure by which the Surety undertakes to discharge its obligations under this Bond shall be subject to the advance written approval of the Obligee.

If the Surety does not proceed to cure or remedy the Principal's default(s) of its performance of the Contract with reasonable promptness, the Surety shall be deemed to be in default on this Bond fifteen (15) calendar days after receipt of a written notice from Obligee to the Surety demanding that the Surety perform its obligations under this Bond, and the Obligee shall be entitled to enforce any remedy available to Obligee.

Within fifteen (15) calendar days of Obligee's written notice to the Surety of the failure of performance of the Contract by the Principal, it shall be the duty of the Surety to give to the Obligee an unequivocal notice in writing of the Surety's election to remedy the default(s) of the Principal promptly, or to arrange for performance of the Contract promptly by a Contractor other than the Principal, time being of essence to this Bond. In said Notice of Election, the Surety shall state the date of commencement of its cure or remedy of the Principal's default(s) or its performance of the Contract. The Surety's obligations for cure or remedy, include but are not limited to: correction of defective or incomplete work and completion of the Contract, additional legal, design professional and delay costs arising from Surety's actions or failure to act; and liquidated damages, or if no liquidated damages are specified in the Contract, actual damages caused by delayed performance or non-performance by the Principal. The Surety shall give prompt written notice to the Obligee upon completion of the cure or remedy of the Principal's default(s) of its performance of the Contract.

In the event the Surety shall fail to issue its Notice of Election to Obligee within the time provided for herein above, the Obligee may thereafter cause the cure or remedy of the Principal's failure of performance or default or to complete the Work. The Principal and the Surety shall be each jointly and severally liable to the Obligee for all damages and costs sustained by the Obligee as a result of the Principal's failure of performance under the Contract Documents or default in its performance of obligations thereunder, including without limitation the costs of cure or completion exceeding the then remaining balance of the Contract Price.

The Surety, for value received, hereby stipulates and agrees that no change or adjustment of the Contract Time or Contract Price, alterations, deletions, additions or any other modifications to the Contract Documents, or the Work to be performed thereunder, shall in any way limit, restrict, or otherwise affect the obligations of the Surety under this Bond. Surety waives notice of any change or adjustment of the Contract Time or Contract Price, alterations, deletions, additions or any other modifications to the Contract Documents, or the Work to be performed thereunder and agrees to automatically adjust the penal sum of this Bond to reflect any adjustments of the Contract Time or Contract Price which increase the Contract Price.
Principal and Surety agree that if Obligee is required to engage the services of an attorney in connection with enforcement of this Bond, each shall pay Obligee's costs and reasonable attorney's fees incurred, with or without suit, in addition to the above penal sum.

The guarantees contained in this Bond survive Final Completion of the Work called for in the Contract Documents with respect to the obligations and liabilities of the Principal, which survive Final Completion of the Work.

IN WITNESS WHEREOF, the Principal and Surety have executed this instrument this _______ day of ______________, 20__ by their duly authorized agents or representatives.

(Corporate Seal) (Principal Name)

By: ________________________________

(Signature)

(Typed or Printed Name)

Title: ______________________________

(Corporate Seal) (Surety Name)

By: ________________________________

(Signature of Attorney-in-Fact for Surety)

(Attach Attorney-in-Fact Certificate) (Typed or Printed Name of Attorney-in-Fact)

(Address)

(Area Code and Telephone Number of Surety)
SECTION 00415

CERTIFICATE OF WORKERS' COMPENSATION INSURANCE

I, __________________________ the __________________________, of __________________________, declare, state and certify that:

1.01 I am aware that California Labor Code §3700(a) and (b) provides:

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

A. By being insured against liability to pay compensation 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 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."

1.02 I am aware that the provisions of California Labor Code §3700 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 this Contract.

By: __________________________

(Signature)

______________________________

(Date)
SECTION 00417

DRUG-FREE WORKPLACE CERTIFICATION

I, __________________________, the __________________________, of __________________________, declare, state and certify that:

1.01 I am aware of the provisions and requirements of California Government Code §§8350 et seq., the Drug Free Workplace Act of 1990.

1.02 I am authorized to certify, and do certify, on behalf of Contractor that a drug free workplace will be provided by Contractor 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 Contractor's workplace and specifying actions which will be taken against employees for violation 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. Contractor's policy of maintaining a drug-free workplace;
      3. The availability of drug counseling, rehabilitation and employee-assistance programs; and
      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), above, and that as a condition of employment by Contractor in connection with the Work of the Contract, the employee agrees to abide by the terms of the statement.

1.03 Contractor agrees to fulfill and discharge all of Contractor's obligations under the terms and requirements of California Government Code §8355 by, inter alia, publishing a statement notifying employees concerning: (a) the prohibition of any controlled substance in the workplace, (b) establishing a drug-free awareness program, and (c) requiring that each employee engaged in the performance of the Work of the Contract be given a copy of the statement required by California Government Code §8355(a) and requiring that the employee agree to abide by the terms of that statement.
1.04 Contractor and I understand that if the District determines that Contractor has either: (a) made a false certification herein, or (b) violated this certification by failing to carry out and to implement the requirements of California Government Code §8355, the Contract awarded herein is subject to termination, suspension of payments, or both. Contractor and I further understand that, should Contractor violate the terms of the Drug-Free Workplace Act of 1990, Contractor may be subject to debarment in accordance with the provisions of California Government Code §§8350, et seq.

1.05 Contractor and I acknowledge that Contractor and I are aware of the provisions of California Government Code §§8350, et seq. and hereby certify that Contractor and I will adhere to, fulfill, satisfy and discharge all provisions of and obligations under the Drug-Free Workplace Act of 1990.

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

Executed at ________________________ this __________ day of ________, 20___

(City and State)

____________________________________

(Signature)

____________________________________

(Typed or Printed Name)
SECTION 00520

DISABLED VETERAN BUSINESS ENTERPRISE (“DVBE”) PARTICIPATION GOAL

1. **DVBE Participation Policy.** The District is committed to achieving a Participation Goal for Disabled Veteran Business Enterprises ("DVBEs"). Through the DVBE participation program, the District encourages contractors to ensure maximum opportunities for the participation of DVBEs in the Work of the Contract.

2. **Definitions.**

   2.1 **Disabled Veteran.** A "Disabled Veteran" means a veteran of the military, naval, or air service of the United States with at least ten percent (10%) service-connected disability who is domiciled in the State of California.

   2.2 **Disabled Veteran Business Enterprise.** A "Disabled Veteran Business Enterprise" ("DVBE") means a business enterprise certified by the Office of Small and Minority Business, State of California, Department of General Services, pursuant to Military and Veterans Code §999, or an enterprise certifying that it is a DVBE by meeting all of the following requirements: (a) it is a sole proprietorship at least fifty-one percent (51%) owned by one or more Disabled Veterans, or in the case of a publicly owned business, at least fifty-one percent (51%) of its stock is owned by one or more Disabled Veterans; or a subsidiary wholly owned by a parent corporation, but only if at least fifty-one percent (51%) of the voting stock of the parent corporation is owned by one or more Disabled Veterans; or a joint venture in which at least fifty-one percent (51%) of the joint venture's management and control and earnings are held by one or more Disabled Veteran; (b) the management and control of the daily business operations are by one or more Disabled Veterans; provided that the Disabled Veteran(s) exercising management and control of the business enterprise are not required to be the same Disabled Veteran(s) who is/are the equity Owner(s) of the business enterprise; and (c) it is a sole proprietorship, corporation, or partnership with its home office located in the United States and which is not a branch or subsidiary of a foreign corporation, foreign firm, or other foreign-based business. The terms "foreign corporation" "foreign firm" and "foreign-based business" shall be deemed to mean a business entity that is incorporated or which has its principal headquarters located outside the United States of America.

3. **DVBE Participation Goal.** The term "Participation Goal" is a numerically expressed objective for DVBE participation in performing the Work of the Contract. The Participation Goal is not a quota, set-aside or rigid proportion. Through action of the District’s Board of Trustees, the District has established a DVBE Participation Goal of Three Percent (3%) of the total Contract Amount.

4.1 Certification of Participation. At the time of execution of the contract, the Contractor will provide a statement to the District of anticipated participation of Disabled Veteran Business Enterprises in the contract.

4.2 Submission of Report. During performance of the Contract, Contractor shall monitor the Work of the Contract, award of subcontracts and contracts for materials, equipment and supplies for the purpose of determining DVBE participation in the Work of the Contract. Contractor shall report on a monthly basis all DVBE’s utilized in the performance of the Work, the type or classification of the Work performed by each such DVBE and the dollar value of the Work performed by each such DVBE. In addition, upon completion of the Work of the Contract, Contractor shall submit a report to the District in the form attached hereto identifying all DVBEs utilized in the performance of the Work, the type or classification of the Work performed by each such DVBE and the dollar value of the Work performed by each such DVBE. The submission to the District of such report shall be deemed a condition precedent to the District's obligation to make payment of the Final Payment under the Contract Documents. The submission of such report shall be in addition to, and not in lieu of, any other conditions precedent set forth in the Contract Documents for the District's obligation to make payment of the Final Payment. The District reserves the right to request additional information or documentation from the Contractor evidencing efforts to comply with the DVBE Participation Goal.

4.3 Contract Audit. Contractor agrees that the District, or its designee, shall have the right to review, obtain and/or copy any and all writings, materials, documents and other records pertaining to the performance of the Contract. Contractor agrees that the District, or its designee, shall have access to any of Contractor’s premises upon reasonable notice, during usual business hours for the purpose of interviewing employees and inspecting and/or copying such writings, materials, documents and other documents which may be relevant to a matter under investigation for the purpose of determining compliance with the DVBE Participation Goal.
CERTIFICATION – PARTICIPATION OF
DISABLED VETERAN BUSINESS ENTERPRISES

I certify that I have read the foregoing SECTION 00520 DISABLED VETERAN BUSINESS ENTERPRISE (“DVBE”) PARTICIPATION GOAL and will comply with the requirements as set forth in this contract.

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DVBE PARTICIPATION REPORT

Contractor Name: ______________________________________
Project Name: _________________________________________
Date: _________________________________________________

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<tr>
<th>Firm Name of DVBE</th>
<th>Trade/Portion of Work</th>
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Does the cumulative dollar value of the foregoing DVBE participation meet or exceed three percent (3%) of the final Contract Amount, as adjusted by all change orders?

        YES   ___________   NO   ___________

If your response is "NO", please attach to this Report a detailed description of the reasons for your failure to achieve the District's DVBE Participation Goal.
SECTION 00530

GUARANTEE

RIO HONDO COMMUNITY COLLEGE DISTRICT

______________________________ (Contractor’s Name) hereby unconditionally guarantees that the work performed under and pursuant to District’s Contract No. ________ for the Project known as – “Bid # 2037, Soccer Field Renovation” (“Project”) has been done in strict accordance with the requirements of the Contract and therefore further guarantees the work of the contract to be and remain free of defects in workmanship and materials for a period of one (1) year from the date of completion of the contract, unless a longer guarantee period is called for by the Contract Documents, in which case the terms of the longer guarantee shall govern. The Contractor hereby agrees to repair or replace any and all work, together with any other work which may have been damaged or displaced in so doing, that may prove to be not in accordance with the requirements of the Contract or that may be defective in its workmanship or materials within the guarantee period specified, without any expense whatsoever to the District, ordinary wear and tear and unusual abuse and neglect only excepted. The Contractor has provided contract bonds which will remain in full force and effect during the guarantee period.

The Contractor further agrees that within ten (10) calendar days after being notified in writing by the District of any work not in accordance with the requirements of the contract or any defects in the work, he will commence and prosecute with due diligence all work necessary to fulfill the terms of this guarantee, and to complete the work within a reasonable period of time. In the event he fails to so comply, he does hereby authorize the District to proceed to have such work done at the Contractor’s expense and he will pay the cost thereof upon demand. The District shall be entitled to all costs, including reasonable attorneys’ fees, necessarily incurred upon the Contractor’s refusal to pay the above costs.

Notwithstanding the foregoing paragraph, in the event of an emergency constituting an immediate hazard to the health or safety of the employees of the District, or its property or licensees, the District may undertake at the Contractor’s expense without prior notice, all work necessary to correct such hazardous condition when it was caused by the work of the Contractor not being in accordance with the requirements of this contract, or being defective, and to charge the same to the Contractor as specified in the preceding paragraph.

The guarantee set forth herein is not intended by the parties, nor shall it be construed, as in any way limiting or reducing the District’s rights to enforce all terms of the contract referenced hereinabove or the time for enforcement thereof. This guarantee is provided in addition to, and not in lieu of, the District’s rights on such contract.
CONTRACTOR’S SIGNATURE

SUBCONTRACTOR’S SIGNATURE

Representative to be contacted for services:

Name: ______________________________

Address: ____________________________

Phone No.: __________________________

Fax No.: _____________________________
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ARTICLE 1: DEFINITIONS; GENERAL

1.1 Architect. The Architect is the person or entity identified as such in the Agreement; references to the "Architect" includes the Architect's authorized representative and his, her or its successor(s).

1.2 Construction Equipment. "Construction Equipment" is equipment utilized for the performance of any portion of the Work, but which is not incorporated into the Work.

1.3 Contract Documents. The Contract Documents consist of the Agreement between the District and the Contractor, Conditions of the Contract (whether General, Special or otherwise), Drawings, Specifications, including addenda thereto issued prior to execution of the Agreement and any other documents listed in the Agreement. The Contract Documents shall include modifications issued after execution of the Agreement. The Contract Documents form the Contract for Construction.

1.4 Contract Document Terms. The term "provide" means "provide complete in place" or to "furnish and install" such item. Unless otherwise provided in the Contract Documents, the terms "approved;" "directed;" "satisfactory;" "accepted;" "acceptable;" "proper;" "required;" "necessary" and "equal" shall mean as approved, directed, satisfactory, accepted, acceptable, proper, required, necessary and equal, in the opinion of the District, its agents or representatives. The term "typical" as used in the Drawings shall require the installation or furnishing of such item(s) of the Work designated as "typical" in all other similar areas; Work in such other areas shall conform to that shown as "typical" or as reasonably inferable therefrom.

1.5 Contractor. The Contractor is the person or entity identified as such in the Agreement; references to "Contractor" include the Contractor's authorized representative.

1.6 Contractor's Superintendent. The Contractor's Superintendent is the individual employed by the Contractor whose principal responsibility shall be the supervision and coordination of the Work; the Contractor's Superintendent shall not perform routine construction labor.

1.7 Days. Unless otherwise expressly stated, references to "days" in the Contract Documents shall be deemed to be calendar days.

1.8 Deferred Approval Items. Deferred approval items are those items that shall not be started until detailed plans, specifications, and engineering calculations have been accepted and signed by the Architect/Engineer and the Division of the State Architect.

1.9 District. The "District" refers to Rio Hondo Community College District and its authorized representatives, including the Construction Manager, the Program Manager, the District's Board of Trustees and the District’s officers, employees, agents and representatives.

1.10 District's Inspector. The District's Inspector is the individual designated and employed by the District in accordance with the requirements of Title 24 of the California Code of Regulations. The District's Inspector shall be authorized to act on behalf of the District as provided for in the
Contract Documents and in Title 24 of the California Code of Regulations, as the same may be amended from time to time.

1.11 **Division of State Architect ("DSA").** The DSA is the California Division of the State Architect including without limitation the DSA's Office of Construction Services, Office of Design Services and the Office of Regulation Services; references to the DSA in the Contract Documents shall mean the DSA, its offices and its authorized employees and agents. The authority of the DSA over the Work and the performance thereof shall be as set forth in the Contract Documents and Title 24 of the California Code of Regulations.

1.12 **Drawings and Specifications.** The Drawings are the graphic and pictorial portions of the Contract Documents, wherever located and whenever issued, showing generally, the design, location and dimensions of the Work and may include without limitation, plans, elevations, sections, details, schedules, notes or diagrams. The Specifications are that portion of the Contract Documents consisting of the written requirements for materials, equipment, construction systems, standards, criteria and workmanship for the Work and related services. The Drawings and Specifications are intended to delineate and describe the Work and its component parts so as to permit skilled and competent contractors to bid upon the Work and prosecute the same to completion.

1.13 **Intent and Correlation of Contract Documents.**

1.13.1 **Work of the Contract Documents.** The intent of the Contract Documents is to include all items necessary for the proper execution and completion of the Work by the Contractor. The Contract Documents are complementary and what is required by one shall be as binding as if required by all. Performance by the Contractor shall be required to the extent consistent with the Contract Documents and reasonably inferable therefrom as being necessary to produce the intended results. Organization of the Specifications into divisions, sections or articles, and the arrangement of Drawings shall not control the Contractor in dividing the Work among Subcontractors or in establishing the extent of Work to be performed by any trade. Where any portion of the Contract Documents is silent and information appears elsewhere in the Contract Documents, such other portions of the Contract Documents shall control. Work not particularly detailed, marked or specified shall be the same as similar parts that are detailed, marked or specified.

1.13.2 **Technical Terms.** Unless otherwise stated in the Contract Documents, words or terms, which have, well-known technical or construction industry meanings are used in the Contract Documents in accordance with such recognized meanings.

1.13.3 **Conflict in Contract Documents.** The Contract Documents are intended to be fully cooperative and to agree. If Contractor observes any conflict, inconsistency or ambiguity, Contractor shall promptly notify the District and the Architect in writing of such conflict, inconsistency or ambiguity prior to commencement of affected Work. If a conflict, inconsistency or ambiguity arises, the following order or precedence shall generally apply, provided, however, that the order of precedence shall not be so rigidly interpreted as to create an absurd or costly result: Special Conditions shall take precedence over General Conditions, Specifications shall take precedence over Drawings and shall govern as to materials, workmanship and installation procedures. Plans identify the scope and location of the Work. With regard to Drawings, figures govern over scaled dimensions, larger details
govern over general drawings, addenda and change order drawings govern over contract
drawings, contract drawings govern over standard drawings.

1.14 Material Supplier. A Material Supplier is any person or entity who only furnishes
materials, equipment or supplies for the Work without fabricating, installing or consuming them in
the Work.

1.15 Project. The Project is the total construction of which the Work performed by the
Contractor under the Contract Documents may be the whole or a part of the Project and which may
include construction by the District or by separate contractors.

1.16 Construction Manager. The Construction Manager, if any, is the individual or entity
designated as such in the Special Conditions. The Construction Manager is an independent
contractor retained by the District and shall be authorized and empowered to act on behalf of the
District. The removal or replacement of the designated Construction Manager shall not result in
adjustment of the Contract Price or the Contract Time or otherwise affect, limit or restrict
Contractor's obligations hereunder.

1.17 Record Documents. The Record Documents are a set of the Drawings and Specifications
marked by the Contractor during the performance of the Work to indicate completely and accurately
the actual as-built condition of the Work. The Record Documents shall be sufficient for a capable
and qualified draftsman to modify the Drawings to reflect and indicate the Work actually in place at
Final Completion of the Work.

1.18 Shop Drawings; Samples; Product Data ("Submittals"). Shop Drawings are diagrams,
schedules and other data specially prepared for the Work by the Contractor or a Subcontractor of any
tier, manufacturer, Material Supplier, or distributor to illustrate some portion of the Work. Samples
are physical examples of materials, equipment or workmanship forming a part of, or to be
incorporated into the Work. Product Data are illustrations, standard schedules, performance charts,
instructions, brochures, diagrams and other information furnished by the Contractor to illustrate
materials or equipment for some portion of the Work. Shop Drawings, Samples and Product Data
prepared or furnished by the Contractor or any of its Subcontractors or Material Suppliers are
collectively referred to as "Submittals".

1.19 Site. The Site is the physical area designated in the Contract Documents for Contractor’s
performance, construction and installation of the Work.

1.20 Subcontractors; Sub-Subcontractors. A Subcontractor is a person or entity who has a
direct contract with the Contractor to perform a portion of the Work. "Subcontractor" does not
include a separate contractor to the District or subcontractors of any separate contractor. A Sub-
Subcontractor is a person or entity of any tier, who has a direct or indirect contract with a
Subcontractor to perform a portion of the Work at the site.

1.21 Special Conditions. If made a part of the Contract Documents, Special Conditions are
special or supplemental provisions, not otherwise provided for in the Agreement or the General
Conditions.

1.22 Surety. The Surety is the person or entity that executes, as surety, the Contractor's Labor
and Material Payment Bond and/or Performance Bond or other bonds provided by the Contractor.
1.23 Work. The "Work" is the construction and services required by the Contract Documents, whether completed or partially completed, and includes all other labor, materials, equipment or services provided or to be provided by the Contractor to fulfill the Contractor's obligations under the Contract Documents. The Work may constitute the whole or a part of the Project.

ARTICLE 2: DISTRICT

2.1 Information Required of District.

2.1.1 Surveys; Site Information. District may provide information concerning physical characteristics of the Site. Information not provided by the District concerning physical characteristics of the Site, which is required, shall be obtained by Contractor without adjustment to the Contract Price or the Contract Time.

2.1.2 Drawings and Specifications. All of the Drawings and the Specifications shall remain the property of the District; the Contractor shall not use the Drawings or the Specifications in connection with any other work of improvement other than the Work of the Project.

2.1.3 Furnishing of Information. Information or services to be provided by the District under the Contract Documents shall be furnished by the District with reasonable promptness to avoid delay in the orderly progress of the Work. Information about existing conditions furnished by the District under the Contract Documents is obtained from sources believed to be reliable, but the District neither guarantees nor warrants that such information is complete and accurate. The Contractor shall verify all information provided by the District. To the extent that the Contract Documents depict existing conditions on or about the Site, or the Work involves the renovation, removal or remodeling of existing improvements, or the Work involves any tie-in or other connection with any existing improvements, the conditions and/or existing improvements depicted in the Contract Documents are as they are believed to exist.

2.2 District's Right to Stop the Work. In addition to the District's right to suspend the Work or terminate the Contract pursuant to the Contract Documents, the District may, by written order, direct the Contractor to stop the Work, or any portion thereof, until the cause for such stop work order has been eliminated, if the Contractor: (i) fails to correct Work which is not in conformity and in accordance with the requirements of the Contract Documents, or (ii) otherwise fails to carry out the Work in conformity and accordance with the Contract Documents. The right of the District to stop the Work hereunder shall not be deemed a duty on the part of the District to exercise such right for the benefit of the Contractor or any other person or entity, nor shall the District's exercise of such right waive or limit the exercise of any other right or remedy of the District under the Contract Documents or at law.

2.3 Partial Occupancy or Use.

2.3.1 District's Right to Partial Occupancy. The District may occupy or use any completed or partially completed portion of the Work, provided that the District and the Contractor have accepted, in writing, the responsibilities assigned to each of them for payments, retainage, if any, security, maintenance, utilities, damage to the Work, insurance
and the period for correction of the Work and commencement of warranties required by the Contract Documents for such portion of the Work partially used or occupied by the District. If the Contractor and the District are unable to agree upon the matters set forth above, the District may nevertheless use or occupy any portion of the Work, with the responsibility for such matters subject to resolution in accordance with the Contract Documents. Immediately prior to such partial occupancy or use of the Work, or portions thereof, the District, the District's Inspector, the Contractor and the Architect shall jointly inspect the portions of the Work to be occupied or to be used to determine and record the condition of the Work. The District’s use or occupancy of the Work or portions thereof pursuant to the preceding shall not be deemed “completion” of the Work as that term is used in Public Contract Code §7107.

2.3.2 No Acceptance of Defective or Nonconforming Work. Unless otherwise expressly agreed upon by the District and the Contractor, the District's partial occupancy or use of the Work or any portion thereof, shall not constitute the District's acceptance of the Work not complying with the requirements of the Contract Documents or which is otherwise defective.

2.4 The District's Inspector. In addition to the authority and rights of the District's Inspector as provided for elsewhere in the Contract Documents, all of the Work shall be performed under the observation of the District's Inspector in accordance with the provisions of Title 24 of the California Code of Regulations. The District's Inspector shall have access to all parts of the Work at any time, wherever located, including shop inspections, and whether partially or completely fabricated, manufactured, furnished or installed. The performance of the duties of the District's Inspector under the Contract Documents shall not relieve or limit the Contractor's performance of its obligations under the Contract Documents.

ARTICLE 3: ARCHITECT

3.1 Architect's Administration of the Contract.

3.1.1 Administration of Contract. The Architect will provide administration of the Contract as described in the Contract Documents, and will be one of the District's representatives during construction until the time that Final Payment is due the Contractor. The Architect will advise and consult with the District, the Construction Manager and the District's Inspector with respect to the administration of the Contract and the Work. The Architect shall have the responsibilities and powers established by law, including Title 24 of the California Code of Regulations.

3.1.2 Periodic Site Inspections. The Architect will visit the Site at intervals appropriate to the stage of construction to become generally familiar with the progress and quality of the completed Work and to determine, in general, if the Work is being performed in a manner indicating that the Work, when completed, will be in accordance with the Contract Documents. The Architect will not be required to make exhaustive or continuous Site inspections to check quality or quantity of the Work. On the basis of Site observations as an architect, the Architect will keep the District informed of the progress of the Work, and will endeavor to guard the District against defects and deficiencies in the Work.

3.1.3 Contractor Responsibility for Construction Means, Methods and Sequences. The Architect will not have control over or charge of and will not be responsible for
construction means, methods, techniques, sequences or procedures, or for safety precautions and programs in connection with the Work, these being solely the Contractor's responsibility. The Architect will not have control over or charge of and will not be responsible for acts or omissions of the Contractor, Subcontractors, or their agents or employees, or of any other persons performing portions of the Work.

3.1.4 Verification of Applications for Payment. In accordance with Article 8 hereof, the Architect, in conjunction with the Construction Manager, will review the Contractor's Applications for Progress Payments and for Final Payment, verify the extent of Work performed and the amount properly due the Contractor on such Application for Payment.

3.1.5 Rejection of Work. The Architect is authorized to reject Work which is defective or does not conform to the requirements of the Contract Documents. Whenever the Architect considers it necessary or advisable, additional inspections or testing of the Work may be conducted, whether or not such Work is fabricated, installed or completed. Neither this authority of the Architect nor a decision made in good faith by the Architect to exercise or not to exercise such authority shall give rise to a duty or responsibility to the Contractor, Subcontractors, Material Suppliers, their agents or employees, or other persons performing portions of the Work.

3.1.6 Architect’s Review of Submittals. The Architect will review and approve or take other appropriate action upon the Contractor's Submittals, but only for the limited purpose of checking for conformance with the design concept expressed in the Contract Documents. Review of Submittals is not conducted for the purpose of determining the accuracy and completeness of other details such as dimensions and quantities, or for substantiating instructions for installation or performance of equipment or systems, all of which remain the responsibility of the Contractor as required by the Contract Documents. The Architect's review of the Contractor's Submittals shall not relieve the Contractor of its obligations under the Contract Documents. The Architect's review of Submittals shall not constitute approval of safety measures, programs or precautions or, unless otherwise specifically stated by the Architect, of any construction means, methods, techniques, sequences or procedures. The Architect's approval of a specific item in a Submittal shall not indicate approval of an assembly of which the item is a component. The Architect's review of Submittals will be conducted promptly so as not to delay or hinder the progress of the Work or the activities of the Contractor, the District or the District's separate contractors while allowing sufficient time, in the Architect's reasonable professional judgment, to permit adequate review of Submittals. The foregoing notwithstanding, the Architect's review and return of Submittals will conform with the time limits and other conditions, if any, set forth in the Specifications or the Submittal Schedule if the Submittal Schedule is required by other provisions of the Contract Documents. The Architect’s review and return of Submittals will require a minimum of fourteen (14) days from date of receipt of complete submittal. Deferred approval submittals indicated in the Contract Documents require additional time for processing and review of all submittals.

3.1.7 Changes to the Work; Change Orders. The Architect in conjunction with the Construction Manager will prepare Change Orders and may authorize minor changes in the Work in accordance with Article 9.9 hereof.
3.1.8 Completion. The Architect will conduct observations to determine the date(s) of interim milestones, if any, and the dates of Substantial and Final Completion. The Architect will verify that the Contractor has complied with all requirements of the Contract Documents and is entitled to receipt of Final Payment.

3.1.9 Interpretation of Contract Documents. The Architect will interpret and decide matters concerning the requirements of the Contract Documents on written request of either the District or the Contractor, or as deemed necessary. The Architect's response to such requests will be in writing with reasonable promptness and within the time limits specified in the Contract Documents. Interpretations and decisions of the Architect will be consistent with the intent of and reasonably inferable from the Contract Documents and will be in writing or in the form of drawings with transmittal letter. When making such interpretations and decisions, the Architect will endeavor to secure faithful performance by both the District and the Contractor, will not show partiality to either and will not be liable for results of interpretations or decisions so rendered in good faith. The Architect's decisions on matters relating to aesthetic effect will be final if consistent with the intent expressed in the Contract Documents.

ARTICLE 4: THE CONTRACTOR

4.1 Communications. All communications regarding the Work, the performance thereof or the Contract Documents shall be in writing; oral communications, unless reduced to writing, are not binding on the parties. Communications between the Contractor and the District shall be through the District’s Construction Manager. Communications between separate contractors, if any, shall be through the District’s Construction Manager. All written communications between the Contractor and any Subcontractor, Material Supplier or others directly or indirectly engaged by the Contractor to perform or provide any portion of the Work shall be available to the District, the Construction Manager and the Architect for review, inspection and reproduction as may be requested from time to time. Failure or refusal of the Contractor to permit the District, the Construction Manager or Architect to review, inspect or reproduce such written communications may be deemed a default of Contractor hereunder.

4.2 Contractor Review of Contract Documents.

4.2.1 Examination of Contract Documents. The Contractor shall carefully study and compare the Contract Documents with each other and with information furnished by the District pursuant to the Contract Documents and shall at once report to the District any errors, inconsistencies or omissions discovered. If the Contractor performs any Work knowing, or with reasonable diligence should have known that, it involves an error, inconsistency or omission in the Contract Documents without prior written notice to the District of the same, the Contractor shall assume full responsibility for such performance and shall bear all attributable costs for correction of the same.

4.2.2 Field Measurements. Prior to commencement of the Work, or portions thereof, the Contractor shall take field measurements and verify field conditions at the Site and shall carefully compare such field measurements and conditions and other information known to
the Contractor with information provided in the Contract Documents. Errors, inconsistencies or omissions discovered shall be reported to the District at once.

4.2.3 Dimensions; Layouts and Field Engineering. Dimensions indicated in the Drawings are intended for reference only. The Contractor shall be solely responsible for dimensioning and coordinating the Work of the Contract Documents. All field engineering required for laying out the Work and/or establishing grades for earthwork operations shall be by the Contractor at its expense. Any field engineering or other engineering to be provided or performed by the Contractor under the Contract Documents and required or necessary for the proper execution or installation of the Work shall be provided and performed by an engineer duly registered under the laws of the State of California in the engineering discipline for such portion of the Work.

4.2.4 Request for Information. If the Contractor encounters any condition which the Contractor believes, in good faith and with reasonable basis, is the result of an ambiguity, conflict, error or omission in the Contract Documents (collectively “the Conditions”), it shall be the affirmative obligation of the Contractor to timely notify the District, in writing immediately, but no later than three (3) calendar days, of the Conditions encountered and to request information from the District necessary to address and resolve any such Conditions before proceeding with any portion of the Work affected or which may be affected by such Conditions. If the Contractor fails to timely notify the District in writing of any Conditions encountered and the Contractor proceeds to perform any portion of the Work containing or affected by such Conditions, the Contractor shall bear all costs associated with or required to correct, remove, or otherwise remedy any portion of the Work affected thereby without adjustment of the Contract Time or the Contract Price. The Contract Time shall not be subject to adjustment in the event that the Contractor fails to timely request information from the Architect. The foregoing notwithstanding, in the event that the Architect reasonably determines that any of Contractor's request(s) for information: (i) does not reflect adequate or competent supervision or coordination by the Contractor or any Subcontractor; or (ii) does not reflect the Contractor's adequate or competent knowledge of the requirements of the Work or the Contract Documents; or (iii) is not justified for any other reason, Contractor shall be liable to the District for all costs incurred by the District associated with the processing, reviewing, evaluating and responding to any such request for information, including without limitation, fees of the Architect and any other design consultant to the Architect or the District.

4.2.5 Work in Accordance With Contract Documents. The Contractor shall perform all of the Work in strict conformity with the Contract Documents and approved Submittals.

4.3 Site Investigation; Subsurface Conditions.

4.3.1 Contractor Investigation. The Contractor shall be responsible for, and by executing the Agreement acknowledges, that it has carefully examined the Site and has taken all steps it deems reasonably necessary to ascertain all conditions which may affect the Work, or the cost thereof, including, without limitation, conditions bearing upon transportation, disposal, handling or storage of materials; availability of labor or utilities; access to the Site; and the physical conditions and the character of equipment, materials, labor and services necessary
to perform the Work. Any failure of the Contractor to do so will not relieve it from the responsibility for fully and completely performing all Work without adjustment to the Contract Price or the Contract Time. The District assumes no responsibility to the Contractor for any understandings or representations concerning conditions or characteristics of the Site, or the Work, made by any of its officers, employees or agents prior to the execution of the Agreement, unless such understandings or representations are expressly set forth in the Agreement.

4.3.2 Subsurface Data. By executing the Agreement, the Contractor acknowledges that it has examined the subsurface data available and satisfied itself as to the character, quality and quantity of surface and subsurface materials, including without limitation, obstacles which may be encountered in performance of the Work, insofar as this information is reasonably ascertainable from an inspection of the Site, review of available subsurface data and analysis of information furnished by the District under the Contract Documents. Subsurface data or other soils investigation report provided by the District hereunder are not a part of the Contract Documents. Information contained in such data or report regarding subsurface conditions, elevations of existing grades, or below grade elevations are approximate only and is neither guaranteed nor warranted by the District to be complete and accurate. The Contractor shall examine all subsurface data to make its own independent interpretation of the subsurface conditions and acknowledges that its bid is based upon its own opinion of the conditions which may be encountered. The District assumes no responsibility for any conclusions or interpretations made by Contractor on the basis of available subsurface data or other information furnished by District under the Contract Documents.

4.3.3 Subsurface Conditions.

4.3.3.1 Procedures. If the Work under the Contract Documents involves digging trenches or other excavations that extend deeper than four feet below the surface, the Contractor shall promptly and before the following conditions are disturbed, notify the District's Inspector, in writing, of any: (i) material that the Contractor believes may be material that is hazardous waste, as defined in California Health and Safety Code §25117, that is required to be removed to a Class I or Class II or Class III disposal site in accordance with provisions of existing law; (ii) subsurface or latent physical conditions at the site differing from those indicated; or (iii) unknown physical conditions at the site of any unusual nature, different materially from those ordinarily encountered and generally recognized as inherent in the Work or the character provided for in the Contract Documents. If upon notice to the District of the conditions described above and upon the District's investigation thereof, the District determines that the conditions so materially differ or involve such hazardous materials which require an adjustment to the Contract Price or the Contract Time, the District shall issue a Change Order in accordance with Article 9 hereof. In accordance with California Public Contract Code §7104, any dispute arising between the Contractor and the District as to any of the conditions listed in (i), (ii) or (iii) above, shall not excuse the Contractor from the completion of the Work within the Contract Time and the Contractor shall proceed with all Work to be performed under the Contract Documents. The District reserves the right to terminate the Contract pursuant to Article 15.2 hereof should the District determine
not to proceed because of any condition described in (i), (ii) or (iii) above.

4.3.3.2 Trenching. For all excavations in excess of five (5) feet involving an estimated expenditure in excess of $25,000, Contractor shall submit to the District for acceptance a detailed Drawing showing the design of shoring, bracing, sloping or other provisions to be made for the protection of workmen from the hazard of caving ground. If such design varies from the standards established by the Construction Safety Orders of the California Division of Industrial Safety, the Drawing shall be prepared by a registered civil or structural engineer. None of the aforementioned trenching shall be started before Contractor receives notification of acceptance from the District. Contractor shall comply with all other applicable requirements of California Labor Code §6705, and as therein provided, no provisions of that Section or this Section shall be construed to impose tort liability upon the District. In any event, Contractor shall not commence any excavation work until it has secured all necessary permits including the required CAL OSHA excavation/shoring permit. Any permits shall be prominently displayed on the Project premises prior to commencement of any excavation.

4.4 Supervision and Construction Procedures.

4.4.1 Supervision of the Work. The Contractor shall supervise and direct performance of the Work, using the Contractor's best skill and attention. The Contractor shall be solely responsible for, and have control over, construction means, methods, techniques, sequences and procedures and for coordinating all portions of the Work under the Contract Documents, unless Contract Documents give other specific instructions concerning these matters. The Contractor shall be responsible for inspection of completed or partially completed portions of Work to determine that such portions are in proper condition to receive subsequent Work.

4.4.2 Responsibility for the Work; Coordination of the Work. The Contractor shall be responsible to the District for acts and omissions of the Contractor's employees, Subcontractors and their agents and employees, and all other persons performing any portion of the Work under a contract with the Contractor. The Contractor shall not be relieved of the obligation to perform the Work in accordance with the Contract Documents either by activities or duties of the Construction Manager, District's Inspector or the Architect in the Architect's administration of the Contract, or by tests, inspections or approvals required or performed by persons other than the Contractor. The Contractor shall be responsible for all necessary or appropriate coordination of the Work and component parts thereof so that Substantial Completion of the Work will be achieved within the Contract Time and the Work will be completed for the Contract Price. The coordination of the Work is a material obligation of the Contractor hereunder and shall include without limitation, conducting regular coordination meetings with its Subcontractors and Material Suppliers, sequencing the operations of Subcontractors and Material Suppliers, and adapting its planned means, methods and sequences of construction operations as necessary to accommodate field or changed conditions at the Site.

4.4.3 Surveys. The Contractor shall prepare or cause to be prepared all detailed surveys necessary for performance of the Work. The Contractor shall be responsible for the establishment, location, maintenance and preservation of benchmarks, reference points and
stakes for the Work, the cost of which shall be included within the Contract Price. The Contractor shall be solely responsible for all loss or costs resulting from the loss, destruction, disturbance or damage of benchmarks, reference points or stakes.

4.4.4 Construction Utilities. The Contractor shall arrange for the furnishing of and shall pay the costs of all utility services, including, without limitation, electricity, water, gas and telephone necessary for performance of the Work and the Contractor's obligations under the Contract Documents. The Contractor shall furnish and install necessary or appropriate temporary distributions of utilities, including meters, to the Site. Any such temporary distributions shall be removed by the Contractor upon completion of the Work. The costs of all such utility services, including the installation and removal of temporary distributions thereof, shall be borne by the Contractor and included in the Contract Price.

4.4.5 Existing Utilities; Removal, Relocation and Protection. In accordance with California Government Code §4215, the District shall assume the responsibility for the timely removal, relocation, or protection of existing main or trunkline utility facilities located on the Site which are not identified in the Drawings, Specifications or other Contract Documents. Contractor shall be compensated for the costs of locating, repairing damage not due to the Contractor's failure to exercise reasonable care, and removing or relocating such utility facilities not indicated in the Drawings, Specifications and other Contract Documents with reasonable accuracy, and for equipment on the Site necessarily idled during such work. Contractor shall not be assessed Liquidated Damages for delay in completion of the Work when such delay is caused by the failure of the District or the utility district to provide for removal or relocation of such utility facilities. Nothing in this Article 4.4.5 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 Site can be inferred from the presence of other visible facilities, such as buildings, meters and junction boxes, on or adjacent to the Site. If the Contractor encounters utility facilities not identified by the District in the Drawings, Specifications, or other Contract Documents, the Contractor shall immediately notify, in writing, the District and the utility owner. In the event that such utility facilities are owned by a public utility, the public utility shall have the sole discretion to perform repairs or relocation work or permit the Contractor to do such repairs or relocation work at a price determined in accordance with Article 9 of these General Conditions.

4.4.6 Conferences and Meetings. A material obligation of the Contractor under the Contract Documents is the attendance by the Contractor's supervisory personnel for the Work and the Contractor's management personnel as required by the Contract Documents or as requested by the District. The Contractor's personnel participating in conferences and meetings relating to the Work shall be authorized to act on behalf of the Contractor and to bind the Contractor. The Contractor is solely responsible for arranging for the attendance by Subcontractors, Material Suppliers at meetings and conferences relating to the Work as necessary, appropriate or as requested by the District.

4.4.6.1 Pre-Construction Conference. The Contractor's representatives (and representatives of Subcontractors as requested by the District) shall attend a Pre-Construction Conference at such time and place as designated by the District. The Pre-Construction Conference will address items such as the Contractor's access to the Site,
review of construction procedures and requirements and other matters pertaining
generally to construction of the Work.

4.4.6.2 Progress Meetings. Progress meetings will be conducted on regular intervals
(weekly unless otherwise expressly indicated elsewhere in the Contract Documents. The
Contractor's representatives and representatives of Subcontractors (as requested by the
District) shall attend Progress Meetings. Progress Meetings will be chaired by the
Architect or the Construction Manager and will generally include as agenda items: Site
safety, field issues, coordination of Work, construction progress and impacts to timely
completion, if any. The purposes of the Progress Meetings include: a formal and regular
forum for discussion of the status and progress of the Work by all Project participants, a
review of progress or resolution of previously raised issues and action items assigned to
the Project participants, and reviews of the Progress Schedule and Submittals.

4.4.6.3 Special Meetings. As deemed necessary or appropriate by the District,
Special Meetings will be conducted with the participation of the Contractor,
Subcontractors as requested by the District and other Project participants.

4.4.6.4 Minutes of Meetings. Following conclusion of the Pre-Construction
Conference, Progress Meetings and Special Meetings, the Construction Manager will
prepare and distribute minutes reflecting the items addressed and actions taken at a
meeting or conference. Unless the Contractor notifies the Architect and the Construction
Manager in writing of objections or corrections to minutes prepared hereunder within
five (5) dates of the date of distribution of the minutes, the minutes as distributed shall
constitute the official record of the meeting or conference. If the Contractor timely
interposes objections or notes corrections, the resolution of such matters shall be
addressed at the next scheduled Progress Meeting.

4.5 Labor and Materials.

4.5.1 Payment for Labor, Materials and Services. Unless otherwise provided in the
Contract Documents, the Contractor shall provide and pay for labor, materials, equipment,
tools, applicable taxes, and other facilities and services necessary for proper execution and
completion of the Work, whether temporary or permanent and whether or not incorporated in
the Work.

4.5.2 Employee Discipline and Skills. The Contractor shall enforce strict discipline and
good order among the Contractor's employees, the employees of any Subcontractor of any
tier, and all other persons performing any part of the Work at the Site. The Contractor shall
not permit employment of unfit persons or persons not skilled in tasks assigned to them. The
Contractor shall dismiss from its project employees and direct any Subcontractor of any tier
to dismiss from their employment on the project any person deemed by the District to be
unfit or incompetent to perform Work and thereafter, the Contractor shall not employ nor
permit the employment of such person for performance of any part of the Work without the
prior written consent of the District, which consent may be withheld in the reasonable
discretion of the District.
4.5.3 **Contractor's Superintendent and Project Manager.** The Contractor shall employ a competent superintendent, project manager and all necessary assistants who shall be in attendance at the Site at all times during performance of the Work. The Contractor's communications relating to the Work or the Contract Documents shall be through the Contractor's superintendent and/or project manager. The superintendent shall represent the Contractor at the Site and communications given to the superintendent shall be binding as if given to the Contractor. The Contractor shall dismiss from the project the superintendent, project manager or any of his/her assistants if they are deemed, in the sole reasonable judgment of the District, to be unfit, incompetent or incapable of performing the functions assigned to them. In such event, the District shall have the right to approve of the replacement superintendent, project manager or assistant.

4.5.4 **Prohibition on Harassment.**

4.5.4.1 **District's Policy Prohibiting Harassment.** The District is committed to providing a campus and workplace free of sexual harassment and harassment based on factors such as race, color religion, national origin, ancestry, age, medical condition, marital status, disability or veteran status. Harassment includes without limitation, verbal, physical or visual conduct which creates an intimidating, offensive or hostile environment such as racial slurs; ethnic jokes; posting of offensive statements, posters or cartoons or similar conduct. Sexual harassment includes without limitation the solicitation of sexual favors, unwelcome sexual advances, or other verbal, visual or physical conduct of a sexual nature.

4.5.4.2 **Contractor's Adoption of Anti-Harassment Policy.** Contractor shall adopt and implement all appropriate and necessary policies prohibiting any form of discrimination in the workplace, including without limitation harassment on the basis of any classification protected under local, state or federal law, regulation or policy. Contractor shall take all reasonable steps to prevent harassment from occurring, including without limitation affirmatively raising the subject of harassment among its employees, expressing strong disapproval of any form of harassment, developing appropriate sanctions, informing employees of their right to raise and how to raise the issue of harassment and informing complainants of the outcome of an investigation into a harassment claim. Contractor shall require that any Subcontractor or Sub-subcontractor performing any portion of the Work to adopt and implement policies in conformity with this Article 4.5.4.

4.5.4.3 **Prohibition on Harassment at the Site.** Contractor shall not permit any person, whether employed by Contractor, a Subcontractor, Sub-subcontractor, or any other person or entity, performing any Work at or about the Site to engage in any prohibited form of harassment. Any such person engaging in a prohibited form of harassment directed to any individual performing or providing any portion of the Work at or about the Site shall be subject to appropriate sanctions in accordance with the anti-harassment policy adopted and implemented pursuant to Article 4.5.4.2 above. Any person performing or providing Work on or about the Site who engages in a prohibited form of harassment directed to any student, faculty member or staff of the District or directed to any other person on or about the Site shall be subject to immediate removal.
and shall be prohibited thereafter from providing or performing any portion of the Work. Upon the District's receipt of any notice or complaint that any person employed directly or indirectly by Contractor in performing or providing the Work has engaged in a prohibited form of harassment, the District will promptly undertake an investigation of such notice or complaint. In the event that the District, after such investigation, reasonably determines that a prohibited form of harassment has occurred, the District shall promptly notify the Contractor of the same and direct that the person engaging in such conduct be immediately removed from the Site. Unless the District's determination that a prohibited form of harassment has occurred is grossly negligent or without reasonable cause, the District shall have no liability for directing the removal of any person determined to have engaged in a prohibited form of harassment nor shall the Contract Price or the Contract Time be adjusted on account thereof. Contractor and the Surety shall defend, indemnify and hold harmless the District and its employees, officers, Board of Trustees, agents, and representatives from any and all claims, liabilities, judgments, awards, actions or causes of actions, including without limitation, attorneys' fees, which arise out of, or pertain in any manner to: (i) the assertion by any person dismissed from performing or providing work at the direction of the District pursuant to this Article 4.5.4.3; or (ii) the assertion by any person that any person directly or indirectly under the employment or direction of the Contractor has engaged in a prohibited form of harassment directed to or affecting such person. The obligations of the Contractor and the Surety under the preceding sentence are in addition to, and not in lieu of, any other obligation of defense, indemnity and hold harmless whether arising under the Contract Documents, at law or otherwise; these obligations survive completion of the Work or the termination of the Contract.

4.6 Taxes. The Contractor shall pay, without adjustment of the Contract Price, all sales, consumer, use and other taxes for the Work or portions thereof provided by the Contractor under the Contract Documents.

4.7 Permits, Fees and Notices; Compliance with Laws.

4.7.1 Payment of Permits, Fees. Unless otherwise provided in the Contract Documents, the Contractor shall secure, pay for, and include in the Contract Price the building permits, other permits, governmental fees, licenses and inspections necessary or required for the proper execution and completion of the Work.

4.7.2 Compliance with Laws. The Contractor shall comply with and give notices required by laws, ordinances, rules, regulations and other orders of public authorities bearing on performance of the Work.

4.7.3 Notice of Variation from Laws. If the Contractor knows, or has reason to believe, that any portion of the Contract Documents are at variance with applicable laws, statutes, ordinances, building codes, regulations or rules, the Contractor shall promptly notify the District, in writing, of the same. If the Contractor performs Work knowing, or with reasonable diligence should have known, it to be contrary to laws, statutes, ordinances, building codes, rules or regulations applicable to the Work without such notice to the District, the Contractor shall assume full responsibility for such Work and shall bear the
attributable costs arising or associated therefrom, including without limitation, the removal, replacement or correction of the same.

4.8 Submittals.

4.8.1 Purpose of Submittals. Shop Drawings, Product Data, Samples and similar submittals (collectively “Submittals”) are not Contract Documents. The purpose for submission of Submittals is to demonstrate, for those portions of the Work for which Submittals are required, the manner in which the Contractor proposes to provide or incorporate such item of the Work in conformity with the information given and the design concept expressed in the Contract Documents.

4.8.2 Contractor's Submittals.

4.8.2.1 Prompt Submittals. The Contractor shall review, confirm and submit to the Architect with the number of copies of Submittals within the timeframes required by the Contract Documents. Contractor’s submission of Submittals in conformity with the Submittal Schedule is a material consideration of the Contract. In the event that the District reasonably determines that all or any portion of any Submittal fails to comply with the requirements of the Contract Documents and/or such Submittals are not otherwise complete and accurate so as to require re-submission more than one (1) time, Contractor shall bear all costs associated with the review and approval of such resubmitted Submittals; provided that such costs are in addition to, and not in lieu of, any liquidated damages imposed under the Contract Documents for Contractor's delayed submission of Submittals. Submittals not required by the Contract Documents may be returned without action. No adjustment to the Contract Time or the Contract Price shall be granted to the Contractor on account of its failure to make timely submission of any Submittals.

4.8.2.2 Approval of Contractor's Confirmation of Submittals. All Submittals prepared by Subcontractors, of any tier, Material Suppliers, manufacturers or distributors shall bear the written approval of the Contractor thereto prior to submission to the Architect for review. Any Submittal not bearing the Contractor's written approval shall be subject to return to the Contractor for re-submittal in conformity herewith, with the same being deemed to not have been submitted. Any delay, impact or cost associated therewith shall be the sole and exclusive responsibility of the Contractor without adjustment of the Contract Time or the Contract Price.

4.8.2.3 Verification of Submittal Information. By approving and submitting Submittals, the Contractor represents to the District and Architect that the Contractor has determined and verified materials, field measurements, field construction criteria, catalog numbers and similar data related thereto and has checked and coordinated the information contained within such Submittals with the requirements of the Work and of the Contract Documents.

4.8.2.4 Information Included in Submittals. All Submittals shall be accompanied by a written transmittal or other writing by the Contractor providing an identification of the portion of the Drawings or the Specifications pertaining to the Submittal, with each
Submittal numbered consecutively for ease of reference along with the following information: (i) date of submission; (ii) project name; (iii) name of submitting Subcontractor; and (iv) if applicable, the revision number. The foregoing information is in addition to, and not in lieu of, any other information required for the Architect's review, evaluation and approval of the Contractor's Submittals.

4.8.2.5 Contractor Responsibility for Deviations. The Contractor shall not be relieved of responsibility for correcting deviations from the requirements of the Contract Documents by the Architect's approval of Submittals unless the Contractor has specifically informed the Architect in writing of such deviation at the time of submission of the Submittal and the District has given written approval to the specific deviation. The Contractor shall not be relieved of responsibility for errors or omissions in Submittals by the Architect’s approval thereof.

4.8.2.6 No Performance of Work without Approval. The Contractor shall perform no portion of the Work requiring the Architect’s review and approval of Submittals until the Architect has completed its review and granted its approval of such Submittal. The Contractor shall not perform any portion of the Work forming a part of a Submittal or which is affected by a related Submittal until the entirety of the Submittal or other related Submittal has been fully approved.

4.8.3 Architect Review of Submittals. The purpose of the Architect’s review of Submittals and the time for the Architect’s return of Submittals to the Contractor shall be as set forth elsewhere in the Contract Documents, including without limitation, Article 3.1.6 of the General Conditions. If the Architect returns a Submittal as rejected or requiring correction(s) and re-submission, 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 order to obtain the Architect's approval. When professional certification of performance criteria of materials, 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.

4.8.4 Deferred Approval Items. In the event that any portion of the Work is designated in the Contract Documents as a "Deferred Approval" item, Contractor shall be solely and exclusively responsible for the preparation of Submittals for such item(s) in a timely manner so as not to delay or hinder the completion of the Work within the Contract Time.

4.9 Materials and Equipment.

4.9.1 Specified Materials, Equipment. Except as otherwise provided, references in the Contract Documents to any specific article, device, equipment, product, material, fixture, patented process, form, method or type of construction, by name, make, trade name, or catalog number, with or without the words "or equal" shall be deemed to establish a minimum standard of quality or performance, and shall not be construed as limiting competition.
4.9.2 Approval of Or Equal, Substitutions or Alternatives. The Contractor may propose to furnish alternatives or substitutes for a particular item specified in the Contract Documents, provided that the Contractor provides advance written notice to the District of such proposed or equal, substitution or alternative and certifies to the District that the quality, performance capability, functionality and appearance of the proposed alternative or substitute will meet or exceed the quality, performance capability, functionality, and appearance of the item or process specified, and must demonstrate to the District that the use of the substitution or alternative is appropriate and will not delay completion of the Work or result in an increase to the Contract Price. The Contractor shall submit all data to the District to permit the Architect's proper evaluation of the proposed substitution or alternative. The Contractor shall not provide, furnish or install any substitution or alternative without the District's prior approval of the same; any alternative or substitution installed or incorporated into the Work without first obtaining the District's approval of the same shall be subject to removal pursuant to Article 12 hereof. The Architect's decision shall be final regarding the approval or disapproval of the Contractor's proposed substitutions or alternatives. In the event a substitution or alternative is approved by the District and purchase, fabrication and/or installation or such approved substitution or alternative shall be less expensive than the originally specified item, the Contract Price shall be reduced by the actual cost savings realized by the Contractor's furnishing and/or installation of such approved substitution or alternative. The Contractor shall be solely responsible for all costs and fees of the Architect, of the Architect's consultant(s) and/or governmental agencies to review and/or approve any proposed substitution or alternative. The Contractor shall be solely responsible for any increase in the cost of any approved substitution or alternative or any Work affected by such alternative or substitution. The foregoing notwithstanding, all requests for the Architect's review and approval of any proposed substitution or alternative and all engineering, construction, dimension and performance data substantiating the equivalency of the proposed substitution or alternative shall be submitted by Contractor not later than thirty-five (35) days following the date of the District's award of the Contract to Contractor by action of the District's Board of Trustees; any request for approval of proposed alternatives or substitutions submitted thereafter may be rejected summarily. The foregoing process and time limits shall apply to any proposed substitution or alternative regardless of whether the substitute or alternate item is to be provided, furnished or installed by Contractor, any Subcontractor, any Sub-Subcontractor, Material Supplier or Manufacturer.

4.9.3 Placement of Material and Equipment Orders. Contractor shall, after award of the Contract, promptly and timely place all orders for materials and/or equipment necessary for completion of the Work so that delivery of the same shall be made without delay or interruption to the timely completion of the Work. Contractor shall require that any Subcontractor of any tier performing any portion of the Work similarly place orders for all materials and/or equipment to be furnished by any such Subcontractor. Upon request of the District, the Contractor shall furnish reasonably satisfactory written evidence of the placement of orders for materials and/or equipment necessary for completion of the Work, including without limitation, orders for materials and/or equipment to be provided, furnished or installed by any Subcontractor of any tier.

4.9.4 District's Right to Place Orders for Materials and/or Equipment. If the
Contractor fails or refuses to provide reasonably satisfactory written evidence of the placement of orders for materials and/or equipment necessary for completion of the Work, or should the District determine, in its sole and reasonable discretion, that such orders have not been placed in a manner that assures timely delivery of such materials and/or equipment to the Site so the Work can be completed without delay or interruption, the District shall have the right, but not the obligation, to place such orders on behalf of the Contractor. If the District exercises such right, the District’s conduct in that regard does not assume control of the work. Rather, Contractor remains responsible for the means, methods, techniques, sequences or procedures for completion of the Work and is not relieved from any of Contractor's obligations under the Contract Documents, including without limitation, completion of the Work within the Contract Time and for the Contract Price. If the District exercises the right hereunder to place orders for materials and/or equipment on behalf of Contractor pursuant to the foregoing, Contractor shall reimburse the District for all costs and fees incurred by the District in placing such orders; such costs and fees may be deducted by the District from the Contract Price then or thereafter due the Contractor.

4.10 Safety.

4.10.1 Safety Programs. The District has implemented an Injury and Illness Prevention Program (“IIPP”) in accordance with the provisions of Labor Code §§ 3201.5 and 6401.7. If the Contractor elected at bid time to adopt the District’s IIPP pursuant to paragraph 4.2.5 of the Instructions for Bidders, Contractor shall perform the Work in accordance with the provisions of the District’s IIPP. If at bid time the District determined that the Contractor’s IIPP was instituted in accordance with Labor Code §§ 3201.5 and 6401.7, the District agrees that such IIPP may be used by the Contractor for the performance of the Work and Contractor shall perform the Work in accordance therewith. Contractor shall be solely responsible for ensuring that all Work of the Project, whether performed by the Contractor, Subcontractors or Sub-Subcontractors or others, is performed in accordance with the agreed upon IIPP for the Project and as required by applicable law, ordinance, regulation or governmental orders in connection with the performance of the Contract, or otherwise required by the type or nature of the Work, and including but not limited to the terms and conditions of the District’s OCIP Procedures Manual (Section 00650 of the Contract Documents).

4.10.2 Contractor’s/Subcontractors’ Safety Coordinators. The Contractor shall designate, and shall require each Subcontractor and Sub-Subcontractor to designate, a responsible member of that entity’s organization at the Site whose duty shall be the prevention of accidents and the implementation and maintenance of safety precautions and programs (“Safety Coordinator”). This person shall be the Contractor's, Subcontractor’s or Sub-Subcontractor’s superintendent unless otherwise designated by the Contractor, Subcontractor or Sub-Subcontractor in writing to the District.

4.10.3 Safety Precautions. The Contractor shall be solely responsible for initiating and maintaining reasonable precautions for safety of, and shall provide reasonable protection to prevent damage, injury or loss to: (i) employees on the Work and other persons who may be affected thereby; (ii) the Work and materials and equipment to be incorporated therein, whether in storage on or off the Site, under care, custody or control of the Contractor or the
Contractor's Subcontractors of any tier; and (iii) other property or items at the site of the Work, or adjacent thereto, such as trees, shrubs, lawns, walks, pavements, roadways, structures and utilities whether or not designated for removal, relocation or replacement in the course of construction. The Contractor shall erect and maintain, as required by existing conditions and conditions resulting from performance of the Contract, reasonable safeguards for safety and protection of property and persons, including, without limitation, posting danger signs and other warnings against hazards, promulgating safety regulations and notifying District and users of adjacent sites and utilities. The Contractor shall give or post all notices required by applicable law and comply with applicable laws, ordinances, rules, regulations and lawful orders of public authorities bearing on safety of persons or property or their protection from damage, injury or loss.

4.10.4 OCIP Safety Coordinators. In furtherance of the District’s OCIP insurance program, the District may provide one or more OCIP Safety Coordinators for the Project. Such OCIP Safety Coordinators shall be independent contractors retained by the District’s OCIP Administrator and shall be authorized to act on behalf of the District for the purpose of monitoring Contractor’s compliance with applicable safety laws, ordinances, regulations or governmental orders. No act, omission or other conduct on the part of the OCIP Safety Coordinator shall be construed to limit, restrict or relieve the Contractor from Contractor’s sole responsibility for ensuring that all Work of the Project is performed in accordance with applicable laws, ordinances, rules, regulations and lawful orders of public authorities.

4.10.5 Safety Committee Meetings. The Contractor’s Safety Coordinator and the Safety Coordinator of certain major Subcontractors as designated by the District shall form a Safety Committee for the Project. The Safety Committee shall attend Safety Meetings chaired by representatives of the District’s OCIP Administrator. Such meetings will generally include Site safety issues as agenda items. The purposes of the Safety Meetings include providing a formal and regular forum for discussion of safety issues and review of progress or resolution of previously raised issues and action items assigned to the Project participants. Safety meetings will be conducted at regular intervals (monthly unless otherwise expressly indicated elsewhere in the Contract Documents). Following conclusion of each Safety Meeting, the OCIP Administrator will prepare and distribute minutes reflecting the items addressed and actions taken at the meeting. Unless the Contractor notifies the OCIP Administrator in writing of objections or corrections to minutes prepared hereunder within five (5) days of the date of distribution of the minutes, the minutes as distributed shall constitute the official record of the meeting. If the Contractor timely interposes objections or notes corrections, the resolution of such matters shall be addressed at the next scheduled Safety Meeting.

4.10.6 Site Safety Surveys. The OCIP Safety Coordinator, in conjunction with members of the Safety Committee and representatives of the OCIP insurers, shall conduct on-Site surveys to monitor unsafe acts or unsafe conditions as determined by applicable laws, ordinances and regulations. In the event the OCIP Safety Coordinator observes an unsafe act or condition, the OCIP Safety Coordinator shall notify the Contractor’s Safety Coordinator of the observed unsafe act or unsafe condition and recommend that the item be corrected to conform to applicable laws, ordinances and regulations. Such recommendation shall not
include any direction or recommendation concerning the means, methods, techniques, sequences or procedures for correction of the item, such being the sole responsibility of the Contractor. Under no circumstances shall any recommendation, action, direction, omission or other conduct of the OCIP Safety Coordinator result in any adjustment of the Contract Price or Contract Time.

4.10.7 Emergencies. In an emergency affecting safety of persons or property, the Contractor shall promptly act to prevent threatened damage, injury or loss.


4.11.1 Use of Hazardous Materials. In the event that the Contractor, any Subcontractor or anyone employed directly or indirectly by them shall use, at the Site, or incorporate into the Work, any material or substance deemed to be hazardous or toxic under any law, rule, ordinance, regulation or interpretation thereof (collectively "Hazardous Materials"), the Contractor shall comply with all laws, rules, ordinances or regulations applicable thereto and shall exercise all necessary safety precautions relating to the use, storage or disposal thereof. Unless otherwise provided, Contractor shall be solely responsible for the transportation and disposal of any Hazardous Materials on or about the Site.

4.11.2 Prohibition on Use of Asbestos Containing Building Materials ("ACBMs"). Notwithstanding any provision of the Drawings or the Specifications to the contrary, it is the intent of the District that ACBMs not be used or incorporated into any portion of the Work. If any portion of the Work depicted in the Drawings or the Specifications shall require materials or products which the Contractor knows, or should have known with reasonably diligent investigation, to contain ACBMs, Contractor shall promptly notify the District of the same so that an appropriate alternative can be made in a timely manner so as not to delay the progress of the Work. Contractor warrants to the District that there are no materials or products used or incorporated into the Work which contain ACBMs. Whether before or after completion of the Work, if it is discovered that any product or material forming a part of the Work or incorporated into the Work contains ACBMs, the Contractor shall at its sole cost and expense remove such product or material in accordance with any laws, rules, procedures and regulations applicable to the handling, removal and disposal of ACBMs and to replace such product or material with non-ACBM products or materials and to return the affected portion(s) of the Work to the finish condition depicted in the Drawings and Specifications relating to such portion(s) of the Work. Contractor's obligations under the preceding sentence shall survive the termination of the Contract, the warranty period provided under the Contract Documents, the Contractor's completion of the Work or the District's acceptance of the Work. In the event that the Contractor shall fail or refuse, for any reason, to commence the removal and replacement of any material or product containing ACBMs forming a part of, or incorporated into the Work, within ten (10) days of the date of the District's written notice to the Contractor of the existence of ACBM materials or products in the Work, the District may thereafter proceed to cause the removal and replacement of such materials or products in any manner which the District determines to be reasonably necessary and appropriate; all costs, expenses and fees, incurred by the District in connection with such removal and replacement shall be the responsibility of the Contractor and the Contractor's Performance Bond Surety.
4.11.3 **Encountering of Hazardous Materials.** If the Contractor encounters Hazardous Materials at the Site which have not been rendered harmless or for which there is no provision in the Contract Documents for their containment, removal, abatement or handling, the Contractor shall immediately stop the Work in the affected area and shall immediately notify the District, in writing, of such condition. The Contractor shall diligently proceed with the Work in all other unaffected areas. The Contractor shall proceed with the Work in the affected area only after the Hazardous Materials have been rendered harmless, contained, removed or abated. Adjustments, if any, to the Contract Time or Price shall be made in accordance with Articles 7 and 9.

4.11.4 **Material Safety Data Sheets.** Contractor is required to insure that Material Safety Data Sheets (MSDS) for any material requiring a MSDS pursuant to the federal “hazard communication” standard or employee’s right-to-know law are available in a readily accessible place on the Work premises. The Contractor is also required to insure (i) the proper labeling of any substance brought onto the Work premises, and (ii) that the persons working with the material, or within the general area of the material, are informed about the hazards of the substance and follow proper handling and protection procedures.

4.11.5 **Compliance with Proposition 65.** Contractor is required to comply with the provisions of California Health and Safety Code § 25249.5, et seq., which requires the posting and giving of notice to persons who may be exposed to any chemical known to the State of California to cause cancer. The Contractor agrees to familiarize itself with such statutory provisions and to fully comply with the requirements set forth therein.

4.12 **Maintenance of Documents.**

4.12.1 **Documents at Site.** The Contractor shall maintain at the Site: (i) one record copy of the Drawings, Specifications and all addenda thereto; (ii) Change Orders approved by the District and all other modifications to the Contract Documents; (iii) Submittals reviewed by the Architect; (iv) Requests for Information and responses thereto; (v) Record Drawings; (vi) Material Safety Data Sheets (“MSDS”) accompanying any materials, equipment or products delivered or stored at the Site or incorporated into the Work; and (vii) all building and other codes or regulations applicable to the Work, including without limitation, Title 24, Part 2 of the California Code of Regulations. During performance of the Work, all documents maintained by Contractor at the Site shall be available to the District, the Construction Manager, the Architect, the District’s Inspector and DSA for review, inspection or reproduction. Upon completion of the Work, all documents maintained at the Site by the Contractor pursuant to the foregoing, except for (vii), shall be assembled and transmitted to the District.

4.12.2 **Maintenance of Record Documents.** During its performance of the Work, the Contractor shall continuously maintain Record Documents which are marked to indicate all field changes made to adapt the Work depicted in the Documents to field conditions, changes resulting from Change Orders and all concealed or buried installations, including without limitation, piping, conduit and utility services. The Record Documents shall be clean and all changes, corrections and dimensions shall be marked in a neat and legible manner in a contrasting color. The District’s inspection or review shall not be deemed to be the District’s
approval or verification of the completeness or accuracy of the Record Documents. The
failure or refusal of the Contractor to continuously maintain complete and accurate Record
Documents or to make available the Record Documents for inspection and review by the
District may be deemed by the District to be Contractor's default of a material obligation
hereunder. Payments to the Contractor are conditioned upon continuous maintenance and
completion of the Record Documents pursuant to Articles 8.3.2 and 8.3.3. If the Contractor
fails or refuses to continuously maintain the Record Documents in a complete and accurate
manner, the District may take appropriate action to cause such maintenance, and all costs
incurred in connection therewith shall be charged to the Contractor; the District may deduct
such costs from any portion of the Contract Price then or thereafter due the Contractor.

4.13 Use of Site. The Contractor shall confine operations at the Site to areas permitted by law,
ordinances or permits, subject to any restrictions or limitations set forth in the Contract Documents.
The Contractor shall not unreasonably encumber the Site or adjoining areas with materials or
equipment. The Contractor shall be solely responsible for providing security at the Site with all such
costs included in the Contract Price. The District shall at all times have access to the Site.

4.14 Noise and Dust Control. The Contractor shall be responsible for complying with the
requirements of the city and county having jurisdiction with regard to noise ordinances governing
construction sites and activities. Construction equipment noise is subject to the control of the
Environmental Protection Agency’s Noise Control Program (Code of Federal Regulations, Title 40,
Part 204). The Contractor shall be solely responsible for maintaining all areas of the Work free from
all materials and products that by becoming airborne may cause respiratory inconveniences to
District students and personnel. Damages and/or any liability derived from the Contractor’s failure
to comply with these requirements shall be the sole cost of the Contractor, including all penalties
incurred for violations of local, state and/or federal regulations.

4.14.1 The Contractor shall be fully and solely responsible for maintaining and up keeping
all areas of the Work and Project Premises, outdoors and indoors, free from flying debris, grinding
powder, sawdust, dirt and dust in general as well as any other product, product waste or work waste,
that by becoming airborne may cause respiratory inconveniences to persons, particularly to students
and District personnel. Additionally, the Contractor shall take specific care to avoid deposits of
airborne dust or other elements that may accumulate on top of equipment, on walls, on floors,
furniture and/or any other permanent or movable items. Prior to the commencement of any Work,
the Contractor shall determine the probabilities of creating such an environment and provide all of
the necessary protective equipment and/or items to contain the dust or airborne elements under a
complete and secured control. Such protection devices, systems or methods shall be in accordance
with the regulations set forth by the EPA and OSHA, and other applicable; State and/or Federal
regulations. Additionally, the Contractor shall be the sole party responsible to clean up and remove
any and all deposits of dust and other elements. Damages and/or any liability derived from the
Contractor's failure to comply with these requirements shall be exclusively the cost of the
Contractor, including, without limitation, any and all penalties that may be incurred for violations of
local, state and/or federal regulations, and any amounts expended by the District to pay such
damages shall be due and payable to the District. The District may also retain or withhold any
amounts expended hereunder from progress payments otherwise due Contractor in accordance with
the Contract Documents. Contractor shall protect all of the District's property, fixed or movable, and
shall replace any damaged item or part thereof and professionally clean any end all items that might became covered or partially covered to any degree by dust or other airborne elements. If school is in session at any point during the progress of the Project, and, in the District's reasonable discretion, (lying debris, grinding powder, sawdust, dirt or dust from any Work disrupts or disturbs the students or faculty or the normal operation of the school, at the District's request, the Contractor shall schedule the performance of all such Work around normal school hours or make other arrangements so that the Work does not cause such disruption or disturbance. In no event shall Contractor have a right to receive additional compensation or an extension to the Contract Time as a result of any such rescheduling or the making of such other arrangements.

In the event that the Contractor fails to comply with the requirements for dust control, noise control, or any other maintenance or clean up requirement of this Contract, the District shall so notify the Contractor and the Contractor shall be obligated to take immediate action. Should the Contractor fail to respond with immediate and responsive action and not later than twenty-four (24) hours from the District's notification, the District shall have the absolute right to proceed as it may deem necessary to remedy such matter. Any and all costs incurred in connection with such actions shall be the sole responsibility of, and be borne by, Contractor.

4.15 Cutting and Patching. The Contractor shall be responsible for cutting, fitting or patching required to complete the Work or to make the component parts thereof fit together properly in accordance with the Contract Documents. Only tradespersons skilled and experienced in cutting and patching shall perform such work. The Contractor shall not damage or endanger any portion of the Work, or the fully or partially completed construction of the District or separate contractors by cutting, patching, excavation or other alteration. The Contractor shall not cut, patch or otherwise alter the construction by the District or separate contractor without the prior written consent of the District or separate contractor thereto, which consent shall not be unreasonably withheld. The Contractor shall not unreasonably withhold consent to the request of the District or separate contractor to cut, patch or otherwise alter the Work.

4.16 Clean-Up. The Contractor shall at all times keep the Site and all adjoining areas free from the accumulation of any waste material, rubbish or excess materials and equipment, placed, caused by performance of the Work. The Contractor shall maintain the Site in a "rake-clean" standard on a daily basis. Prior to completion of the Work, Contractor shall remove from the Site all rubbish, waste and excess material, tools, Construction Equipment, machinery, temporary facilities and barricades, and any other items which are not the property of the District under the Contract Documents. Upon completion of the Work, the Site and all adjoining areas shall be left in a neat and broom clean condition satisfactory to District. The Construction Manager is authorized to direct the Contractor's clean-up obligations hereunder. If the Contractor fails to clean up as provided for in the Contract Documents, the District may do so, and all costs incurred in connection therewith shall be charged to the Contractor; the District may deduct such costs from any portion of the Contract Price then or thereafter due the Contractor.

4.17 Access to the Work. The Contractor shall provide the DSA, the District, the LCP administrator, the Construction Manager, the District's Inspector, the Architect and the Architect's consultant(s) with access to the Work, whether in place, preparation and progress and wherever located.

4.18 Information for the District's Inspector. The Contractor shall furnish the District's
Inspector access to the Work for obtaining such information as may be necessary to keep the District's Inspector fully informed respecting the progress, quality and character of the Work and materials, equipment or other items incorporated therein.

4.19 Inspector’s Field Office. The Contractor shall provide and include in the Contract Price a temporary furnished office at the Site as specified in the Special Conditions or elsewhere in the Contract Documents, for use by the District, the Construction Manager and the District's Inspector, until removal of the same is authorized by the District.

4.20 Patents and Royalties. The Contractor and the Surety shall defend, indemnify and hold harmless the District and its agents, employees and officers from any claim, demand or legal proceeding arising out of or pertaining, in any manner, to any actual or claimed infringement of patent rights in connection with performance of the Work under the Contract Documents.

4.21 Prevailing Wage Rates; Employment of Labor.

4.21.1 Determination of Prevailing Rates. Pursuant to the provisions of Division 2, Part 7, Chapter 1, Article 2 of the California Labor Code at §§1770 et seq., the District has obtained from the Director of the Department of Industrial Relations the general prevailing rate of per diem wages and the prevailing rate for holiday and overtime work in the locality in which the Work is to be performed. These rates are on file at the District’s principal office. The Contractor shall post, at appropriate and conspicuous locations on the Site, a schedule showing all determined general prevailing wage rates.

4.21.2 Payment of Prevailing Rates. This Project is a public works project as defined in Labor Code §1720, and must be performed in accordance with the requirements of Labor Code §§1720 to 1815 and Title 8 California Code of Regulations §§16000 to 17270, which govern the payment of prevailing wage rates on public works projects. The Contractor, and any Subcontractor, of any tier, shall pay their workers engaged in the Work not less than the general prevailing wage rate, regardless of any contractual relationship which may be alleged to exist between the Contractor or any Subcontractor, of any tier, and such worker. Contractor, consistent with California Public Contract Code §6109, is prohibited from performing a portion of work with a Subcontractor who is debarred pursuant to Labor Code §§1777.1 or 1777.7.

4.21.3 Prevailing Wage Penalty. The Contractor shall, as a penalty, forfeit up to Fifty Dollars ($50.00) to the District for each calendar day or portion thereof, for each worker paid less than the prevailing rates as determined by the Director of the Department of Industrial Relations for such work or craft in which such worker is employed for the Work by the Contractor or by any Subcontractor, of any tier. Pursuant to California Labor Code §1775, the difference between prevailing wage rates and the amount paid to each worker each calendar day, or portion thereof, for which each worker paid less than the prevailing wage rate, shall be paid to each worker by the Contractor.

4.21.4 Sufficient Contract Price. Contractor represents and warrants that the Contract Price includes sufficient funds to allow Contractor and all Subcontractors to comply with all applicable laws and contractual agreements. Contractor shall defend, indemnify and hold the District harmless from and against any and all claims, demands, losses, liabilities and
damages arising out of or relating to the failure of Contractor or any Subcontractor to comply with any applicable law in this regard, including, but not limited to Labor Code §2810. Contractor agrees to pay any and all assessments, including wages, penalties, forfeitures and liquidated damages, made or asserted against the District in relation to any such failure.

4.21.5 Payroll Records.

4.21.5.1 Submission of Certified Payroll Records to District. Pursuant to California Labor Code §1776, the Contractor and each Subcontractor, of any tier, shall keep an accurate certified 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 person employed for the Work. If there is no work in a given week or on a given day, Contractor and each Subcontractor must keep a certified Non-Performance payroll record, indicating “no work” for that week or day(s). Contractor shall submit all certified payroll records to the Program Manager in complete, unredacted form with an original signature on the Statement of Compliance along with, and as a condition to, its Application for Payment.

4.21.5.2 Inspection of Certified Payroll Records. Additionally, the certified payroll records shall be available for inspection at all reasonable hours at the principal office of the Contractor on the following basis: (i) a certified copy of an employee's payroll record shall be made available for inspection or furnished to such employee or his/her authorized representative on request; (ii) a certified copy of all payroll records shall be made available for inspection or furnished upon request to the District, the Division of Labor Standards Enforcement and the Division of Apprenticeship Standards of the Department of Industrial Relations; (iii) a certified copy of all payroll records shall be made available upon request to the public for inspection 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, the requesting party shall, prior to being provided the records, reimburse the cost of preparation by the Contractor, Subcontractors and the entity through which the request was made. The public shall not be given access to such records at the principal office of the Contractor; (iv) the Contractor shall file a certified copy of the payroll records with the entity that requested such records within ten (10) days after receipt of a written request; (v) any copy of records made available for inspection as copies and furnished upon request to the public or any public agency 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 or any Subcontractor, of any tier, performing a part of the Work shall not be marked or obliterated. The Contractor shall inform the District of the location of payroll records, including the street address, city and county and shall, within five (5) working days, provide a notice of a change or location and address.

4.21.5.3 Submission of Payroll Records. Contractor shall provide, and shall cause all Subcontractors to provide, payroll records as defined in Title 8 California Code of
Regulations §16000 to the District, within ten (10) days of written request, at no cost to
the District. The District will not return documents to Contractor.

4.21.5.4 Penalty For Noncompliance. In the event of noncompliance with the
requirements of this Article 4.21.5, the Contractor shall have ten (10) days in which to
comply, subsequent to receipt of written notice specifying in what respects the
Contractor must comply herewith. Should noncompliance still be evident after such 10-
day period, the Contractor shall, as a penalty to the District, forfeit Twenty-Five Dollars
($25.00) 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, such penalties shall be withheld from
any portion of the Contract Price then or thereafter due the Contractor. The responsibility
for compliance with the foregoing provisions shall rest upon the Contractor.

4.21.5.5 Liquidated Damages. Should Contractor neglect, fail or refuse to submit any
documents pursuant to this Article 4.21.5, Contractor agrees to pay to the District the
sum of twenty-five ($25) dollars per worker per day in liquidated damages, not as a
penalty but as liquidated damages, for every day beyond ten (10) days after such
documents are due. The liquidated damages amounts are agreed upon by and between
the Contractor and the District because of the difficulty of fixing the District’s actual
damages in the event of failure to submit such documents. The Contractor and District
specifically agree that said amounts are reasonable estimates of the District’s damages in
such event, and that such amounts do not constitute a penalty. The Contractor and
District acknowledge and agree that the liquidated damages contained in this provision
are reasonable under the circumstances existing at the time of the Contractor’s execution
of the Contract.

4.21.6 Hours of Work.

4.21.6.1 Limits on Hours of Work. Pursuant to California Labor Code §1810, eight
(8) hours of labor shall constitute a legal day’s work. Pursuant to California Labor Code
§1811, the time of service of any worker employed at any time by the Contractor or by a
Subcontractor, of any tier, upon the Work or upon any part of the Work, is limited and
restricted to eight (8) hours during any one calendar day and forty (40) hours during any
one calendar week, except as hereafter provided. Notwithstanding the foregoing
provisions, Work performed by employees of Contractor or any Subcontractor, of any
tier, in excess of eight (8) hours per day and forty (40) hours during any one week, shall
be permitted upon compensation for all hours worked in excess of eight (8) hours per day
at not less than one and one-half (1½) times the basic rate of pay.

4.21.6.2 Penalty for Excess Hours. The Contractor shall pay to the District a penalty
of Twenty-five Dollars ($25.00) for each worker employed on the Work by the
Contractor or any Subcontractor, of any tier, for each calendar day during which such
worker is required or permitted to work more than eight (8) hours in any calendar day
and forty (40) hours in any one calendar week, in violation of the provisions of Labor
Code §1810 et seq.

4.21.6.3 Contractor Responsibility. Any Work performed by workers necessary to
be performed after regular working hours or on Sundays or other holidays shall be performed without adjustment to the Contract Price or any other additional expense to the District.

4.21.7 Apprentices.

4.21.7.1 Employment of Apprentices. Labor Code §1777.5 and Title 8 California Code of Regulations §200 et seq. provide detailed requirements for employing apprentices on public works projects. Contractor is responsible for compliance with Labor Code §1777.5 and applicable regulations on the Project. This responsibility includes, but is not limited to, the obligation to employ properly registered apprentices and pay such apprentices at least the prevailing wage rate for their appropriate apprentice classification. Only apprentices, as defined in California Labor Code §3077 who are in training under apprenticeship standards and written apprenticeship agreements under California Labor Code §§3070 et seq. are eligible to be employed for the Work. The employment and training of each apprentice shall be in accordance with the provisions of the apprenticeship standards and apprentice agreements under which such apprentice is training. Any apprentices employed to perform any of the Work shall be paid the standard wage paid to apprentices under the regulations of the craft or trade for which such apprentice is employed, and such individual shall be employed only for the work of the craft or trade to which such individual is registered. This Article 4.21.7 shall not apply to contracts of general contractors, or to contracts of specialty contractors not bidding for work through a general or prime contractor, when the contract involves less than Thirty Thousand Dollars ($30,000.00). The term "Apprenticeable Craft or Trade," as used herein shall mean a craft or trade determined as an apprenticeable occupation in accordance with rules and regulations prescribed by the Apprenticeship Council.

4.21.7.2 Apprenticeship Certificate. When the Contractor or any Subcontractor, of any tier, in performing any of the Work employs workers in any Apprenticeable Craft or Trade, the Contractor and such Subcontractor shall apply to the Joint Apprenticeship Committee administering the apprenticeship standards of the craft or trade in the area of the site of the Work for and obtain a certificate approving the Contractor or such Subcontractor under the apprenticeship standards for the employment and training of apprentices in the area or industry affected, provided, however, that the approval as established by the Joint Apprenticeship Committee or Committees shall be subject to the approval of the Administrator of Apprenticeship. Contractors or Subcontractors shall not be required to submit individual applications for approval to local Joint Apprenticeship Committees provided they are already covered by the local apprenticeship standards for that craft or trade.

4.21.7.3 Contract Award Information. Contractor shall submit contract award information using the Division of Apprenticeship Standards (DAS 140) Form to the applicable apprenticeship committee within ten (10) days of the date of execution of contract and no later than the first day of work as per Title 8 California Code of Regulations §230. Contractor shall submit a copy of the completed DAS 140 Form to the District’s Labor Compliance Program at the same time.
4.21.7.4 **Ratio of Apprentices to Journeymen.** The ratio of Work performed by apprentices to journeymen, who shall be employed in the Work, may be no higher than the ratio stipulated in the apprenticeship standards under which the Joint Apprenticeship Committee operates, but in no case shall the ratio be less than one hour of apprentice work for each five hours of labor performed by a journeyman, except as otherwise provided in California Labor Code §1777.5. Any ratio shall apply during any day or portion of a day when any journeyman is employed at the site of the Work and shall be computed on the basis of the hours worked during the day by journeymen so employed. The Contractor shall employ apprentices for the number of hours computed as above before the end of the Contract, and Subcontractors before the end of the subcontract. The Contractor shall, however, endeavor, to the greatest extent possible, to employ apprentices during the same time period that the journeymen in the same craft or trade are employed at the site of the Work. Any Work performed by a journeyman in excess of eight hours per day or 40 hours per week shall not be used to calculate the hourly ratio required by this Article. Where an hourly apprenticeship ratio is not feasible for a particular craft or trade, the Division of Apprenticeship Standards, upon application of an apprenticeship committee, may order a minimum ratio of not less than one apprentice for each five journeymen in a craft or trade classification. Upon proper showing by the Contractor or Subcontractor that it employs apprentices in such craft or trade in the State of California on all of its contracts on an annual average of not less than one apprentice to each five journeymen, the Division of Apprenticeship Standards may grant a certificate exempting the Contractor from the 1-to-5 ratio as set forth in this Article and California Labor Code §1777.5.

4.21.7.5 **Exemption from Ratios.** The Joint Apprenticeship Committee shall have the discretion to grant a certificate, which shall be subject to the approval of the Administrator of Apprenticeship, exempting the Contractor from the 1-to-5 ratio set forth in this Article when it finds that any one of the following conditions are met: (i) unemployment for the previous three-month period in such area exceeds an average of fifteen percent (15%) or; (ii) the number of apprentices in training in such area exceeds a ratio of 1-to-5 in relation to journeymen, or; (iii) the Apprenticeable Craft or Trade is replacing at least one-thirtieth (1/30) of its journeymen annually through apprenticeship training, either on a statewide basis or on a local basis, or; (iv) if assignment of an apprentice to any Work performed under a public works contract would create a condition which would jeopardize such apprentice's life or the life, safety or property of fellow employees or the public at large, or if the specific task to which the apprentice is to be assigned is of such a nature that training cannot be provided by a journeyman. When such exemptions from the 1-to-5 ratio between apprentices and journeymen are granted to an organization which represents contractors in a specific trade on a local or statewide basis, the member contractors will not be required to submit individual applications for approval to local Joint Apprenticeship Committees, provided they are already covered by the local apprenticeship standards.

4.21.7.6 **Contractor's Compliance.** The responsibility of compliance with this Article for all Apprenticeable Trades or Crafts is that of the Contractor. In the event the Contractor knowingly fails to comply with the provisions of this Article and California
Labor Code §1777.5, pursuant to California Labor Code §1777.7, the Contractor shall forfeit, as a civil penalty, not more than One Hundred Dollars ($100.00) for each calendar day of noncompliance. A contractor or subcontractor that knowingly commits a second or subsequent violation of this Article and California Labor Code §1777.5 shall forfeit as a civil penalty not more than Three Hundred Dollars ($300.00) for each calendar day of noncompliance. Notwithstanding the provisions of California Labor Code §1727, upon receipt of a determination that a civil penalty has been assessed by the Chief of the Division of Apprenticeship Standards, the District shall withhold such amount from the Contract Price then due or to become due. In the event a Contractor or Subcontractor is determined by the Chief to have knowingly committed a serious violation of Labor Code §1777.5, the Chief may also deny the Contractor or Subcontractor and its responsible officers the right to be on or be awarded or perform work as a subcontractor on any public works contract for a period of up to one (1) year for a first violation and up to three (3) years for a second or subsequent violation.

4.21.8 Employment of Independent Contractors. Pursuant to California Labor Code §1021.5, Contractor shall not willingly and knowingly enter into any agreement with any person, as an independent contractor, to provide any services in connection with the Work where the services provided or to be provided requires that such person hold a valid contractors license issued pursuant to California Business and Professions Code §§7000 et seq. and such person does not meet the burden of proof of his/her independent contractor status pursuant to California Labor Code §2750.5. In the event that Contractor shall employ any person in violation of the foregoing, Contractor shall be subject to the civil penalties under California Labor Code §1021.5 and any other penalty provided by law. In addition to the penalties provided under California Labor Code §1021.5, Contractor's violation of this Article 4.21.8 or the provisions of California Labor Code §1021.5 shall be deemed an event of Contractor's default under Article 15.1 of these General Conditions. The Contractor shall require any Subcontractor of any tier performing or providing any portion of the Work to adhere to and comply with the foregoing provisions.

4.22 Labor Compliance Program. Pursuant to California Labor Code §1771.7, District has implemented a Labor Compliance Program, initially approved on April 9, 2003. Contractor shall post “Notice of Initial Approval” of the District's Labor Compliance Program at the Site in accordance with 8 California Code of Regulations §16429. The Labor Compliance Program includes, without limitation, provisions requiring Contractor to comply with the prevailing rates of wages, maintenance and submission of weekly certified payroll records, employment of apprentices and, compliance with legal hours of work, and debarment. Contractor, and any Subcontractors, are required to comply with the requirements of the Labor Compliance Program, at no additional cost to District. Contractor shall include, and shall require the Subcontractors to include, contractual provisions in all contracts they enter into for the performance of the Work, requiring each Subcontractor, of every tier, who furnishes any labor for the performance of Work, to comply with these provisions at no additional cost. Contractor and all Subcontractors shall comply with California Labor Code §§1720-1781, applicable regulations and the Labor Compliance Program, and shall pay appropriate penalties for failure to comply pursuant to the California Labor Code, including, but not limited to, Sections 1775, 1776, 1777.7 and 1813, and the Labor Compliance Program. Contractor will be responsible for all failures by all Subcontractors, to comply with the
District’s LCP requirements. Contractor shall attend any pre-construction meetings held by the District and/or its Labor Compliance Program to discuss labor requirements. Contractor and the Subcontractors shall allow the District, its Labor Compliance Program, the Department of Industrial Relations and designated representatives of each to conduct worker interviews at the Site during working hours. Compliance by Contractor with the requirements of this Article shall be a condition to Contractor’s right to payment under its Applications for Payment. For questions or assistance concerning the Labor Compliance Program, please contact Ben Ocasio or Sophia Espinoza of The Solis Group, 234 N. El Molino Avenue, Suite 202, Pasadena, CA 91101, (626) 685-6989.

4.23 Not Applicable

4.24 Assignment of Antitrust Claims. Pursuant to California Public Contract Code §7103.5, the Contractor and its Subcontractor(s), of any tier, hereby offers and agrees to assign to the District all rights, title and interest in and to all causes of action they may have under Section 4 of the Clayton Act, (15 U.S.C. §15) or under the Cartwright Act (California Business and Professions Code §§16700 et seq.), arising from purchases of goods, services or materials hereunder or any Subcontract. This assignment shall be made and become effective at the time the District tenders Final Payment to the Contractor, without further acknowledgment by the parties. If the District receives, either through judgment or settlement, a monetary recovery in connection with a cause of action assigned under California Public Contract Code §7103.5, the assignor thereof shall be entitled to receive reimbursement for actual legal costs incurred and may, upon demand, recover from the District any portion of the recovery, including treble damages, attributable to overcharges that were paid by the assignor but were not paid by the District as part of the Contract Price, less the expenses incurred by the District in obtaining that portion of the recovery. Upon demand in writing by the assignor, the District shall, within one year from such demand, reassign the cause of action assigned pursuant to this Article if the assignor has been or may have been injured by the violation of law for which the cause of action arose: and (i) the District has not been injured thereby; or (ii) the District declines to file a court action for the cause of action.

ARTICLE 5: SUBCONTRACTORS

5.1 Subcontracts. Any Work performed for the Contractor by a Subcontractor shall be pursuant to a written agreement between the Contractor and such Subcontractor which specifically incorporates by reference the Contract Documents and which specifically binds the Subcontractor to the applicable terms and conditions of the Contract Documents. The foregoing notwithstanding, no contractual relationship shall exist, or be deemed to exist, between any Subcontractor and the District, unless the Contract is terminated and District, in writing, elects to assume the Subcontract. Each Subcontract for a portion of the Work shall provide that such Subcontract may be assigned to the District if the Contract is terminated by the District pursuant to Article 15.1 hereof, subject to the prior rights of the Surety obligated under a bond relating to the Contract. Upon request, the Contractor shall provide to the District copies of executed Subcontracts and Purchase Orders, including amendment thereto, to which Contractor is a party within seven (7) days of District’s request for same. The Contractor's failure or refusal, for any reason, to provide copies of such Subcontracts or Purchase Orders shall be deemed the Contractor's default of a material term of the Contract Documents.
5.2 Substitution of Listed Subcontractor.

5.2.1 Substitution Process. Any request of the Contractor to substitute a listed Subcontractor will be considered only if such request is in strict conformity with this Article 5.2 and California Public Contract Code §4107. All costs and fees incurred by the District in the review and evaluation of a request to substitute a listed Subcontractor shall be borne by the Contractor; such costs and fees may be deducted by the District from the Contract Price then or thereafter due the Contractor.

5.2.2 Responsibilities of Contractor Upon Substitution of Subcontractor. Neither the substitution nor the District's consent to Contractor's substitution of a listed Subcontractor shall relieve Contractor from its obligation to complete the Work within the Contract Time and for the Contract Price. In the event that the District determines that revised or additional Submittals are required of the newly substituted Subcontractor, the District shall promptly notify the Contractor, in writing, of such requirement and the time for submittal. In the event that the revised or additional Submittals are not submitted by Contractor within the time specified, Contractor shall be subject to the per diem assessments for late Submittals as set forth in Article 4.8 of these General Conditions. Any revised or additional Submittals required pursuant to this Article 5.2.2 shall conform with the requirements of Article 4.8 of these General Conditions. Contractor shall reimburse the District for all fees and costs incurred or associated with the processing, review and evaluation of any revised or additional Submittals required pursuant to this Article 5.2.2; the District may deduct such fees and costs from any portion of the Contract Price then or thereafter due the Contractor. In the event that additional or revised Submittals are required pursuant to this Article 5.2.2, such requirement shall not result in an increase to the Contract Time or the Contract Price.

5.3 Subcontractors' Work. Whenever the Work of a Subcontractor is dependent upon the Work of the Contractor or another Subcontractor, the Contractor shall require the Subcontractor to: (a) coordinate its Work with the dependent Work; (b) provide necessary dependent data and requirements; (c) supply and/or install items to built into the dependent Work of others; (d) make appropriate provisions for dependent Work of others; (e) carefully examine and understand the portions of the Contract Documents (including Drawings, Specifications and Field Clarifications) and Submittals relating to the dependent Work; and (f) examine the existing dependent Work and verify that the dependent Work is in proper condition for the Subcontractor's Work. If the dependent Work is not in a proper condition, the Subcontractor shall notify the Contractor in writing and not proceed with the Subcontractor's Work until the dependent Work has been corrected or replaced and is in a proper condition for the Subcontractor's Work.

ARTICLE 6: INSURANCE; INDEMNITY; BONDS

6.1 Not Applicable
6.2 Not Applicable
6.3 Not Applicable
6.4 Not Applicable
6.12 **Insurance Provided by Contractor / Subcontractors.** The Contractor shall, for the duration of the Contract, provide and maintain insurance and shall require each Subcontractor and Sub-Subcontractor (except Excluded Parties covered under Article 6.18) to provide and maintain insurance of the type and in the limits as set forth below and in the Supplemental Conditions (“Non-OCIP Insurance”). Except as otherwise provided in Article 6.2.4, the Non-OCIP Insurance is intended to cover employee injury, personal injury, bodily injury and property damage liability for work performed away from the Project Site and for Work of the Project performed after Final Acceptance. Such insurance shall name the parties required to secure same as insureds and shall be in a form and through issuing companies acceptable to the District. Such insurance may be provided in single policy or multiple policies (primary and excess), including an umbrella form. Such insurance shall contain a defense of suits provision and shall provide the coverages set forth in this Article 6.12 under the following conditions:

(a) Notwithstanding any inconsistent statement in the policies obtained by Contractor, Subcontractors or Sub-Subcontractors, or any endorsement or certificate attached thereto, it is agreed that the District, its officers, agents, employees and representatives, the Construction Manager, the Architect, the IOR and the OCIP Administrator, and their respective officers, agents, employees and representatives, are additional insureds (for all coverages except Workers’ Compensation / Employer’s Liability), and that coverage is provided for all operations, uses, occupation, acts and activities of such insureds under the Contract Documents, as may be amended or adjusted, regardless of whether liability is attributable to the insured or a combination of the insured and one or more additional insureds. Upon District’s request, the Contractor, Subcontractors and Sub-Subcontractors shall provide endorsements evidencing such coverage for such additional insureds.

(b) The coverage provided by the policies obtained by Contractor, Subcontractors or Sub-Subcontractors is primary coverage and non-contributing with other insurance, if any, carried by the District, its officers, agents, employees and representatives, the Construction Manager, Architect, IOR or OCIP Administrator, and their respective officers, agents, employees and representatives, as to operations or work away from the Project Site or after Final Acceptance, except for automobile liability which is primary and non-contributing with other insurance carried by the District, Construction Manager, Architect, IOR or OCIP Administrator. All such additional insured endorsements issued thereon shall be so endorsed.
(c) In the event one of the insureds incurs liability to any other of the insureds, these policies shall provide protection for each insured against whom claim is or may be made, including claims by other insureds in the same manner as if separate policies had been issued to each insured.

(d) Notice of occurrences or claims under the policies shall be made to the District's Representative.

6.12.1 Workers’ Compensation/Employer's Liability Insurance. The Contractor shall provide and shall require each Subcontractor and Sub-Subcontractor (except Excluded Parties covered under Article 6.18) to provide Workers’ Compensation/Employer’s Liability insurance in the statutory limits of the workers’ compensation laws of the State of California, including Coverage B – Employers Liability, in an amount not less than that specified in the Supplemental Conditions, for Project-related operations occurring away from the Project Site and for Work of the Project after Final Acceptance.

6.12.2 Commercial General Liability Insurance. The Contractor shall provide and shall require each Subcontractor and Sub-Subcontractor (except Excluded Parties covered under Article 6.18) to provide Commercial General Liability insurance (including products liability for any product manufactured, assembled or otherwise worked upon away from the Project Site) in a form providing coverage not less than that of a Standard Commercial General Liability insurance policy (occurrence form) for all operations of the party required to furnish same, including hazards of operations (including explosion, collapse and underground coverage), elevators, independent contractors, employees as additional insureds, completed operations, with contractual liability coverage (for contracts related to the Work), personal injury liability and excess Employer's Liability, for personal injury, bodily injury and property damage arising out of the Work, for operations away from the Project Site and after Final Acceptance in policies of insurance with limits in an amount not less than that specified in the Supplemental Conditions.

6.12.3 Automobile Liability Insurance. The Contractor shall provide and shall require each Subcontractor and Sub-Subcontractor (except Excluded Parties covered under Article 6.18) to provide Automobile Liability insurance covering all owned, non-owned and hired automobiles, trucks, and trailers of the Contractor, Subcontractors and Sub-Subcontractors. Such insurance shall provide coverage not less than that of the Standard Comprehensive Automobile Liability policy with limits not less than that specified in the Supplemental Conditions for occurrences both at and away from the Project Site.

6.12.4 Aircraft Liability Insurance. If aircraft are used by the Contractor, Subcontractors, Sub-Subcontractors or anyone else on their behalf, such Contractor, Subcontractor, Sub-Subcontractor or other entity shall maintain or cause the operator of the aircraft to maintain aircraft public liability insurance insuring passengers and the general public against personal injury, bodily injury or property damage arising from aircraft owned, used, operated or hired in connection with the work of the Contractor, Subcontractor, Sub-Subcontractor or anyone else, with limits in an amount not less than that specified in the Supplemental Conditions.

6.13 Evidence of Contractor's Non-OCIP Insurance. Concurrently with delivery of the executed Contract, Contractor shall deliver to the District Certificates of Insurance evidencing the
Contractor’s Non-OCIP Insurance coverage required by Article 6.12. Failure or refusal of the Contractor to so deliver Certificates of Insurance may be deemed by the District to be a default of a material obligation of the Contractor under the Contract Documents, and thereupon the District may proceed to exercise any right or remedy provided for under the Contract Documents or at law. Under no circumstances shall Contractor commence Work at the Site without having submitted to the District Certificates of Insurance for all Non-OCIP Insurance provided by the Contractor. Contractor’s failure to timely provide the District with all Non-OCIP Certificates of Insurance shall not result in any adjustment of the Contract Price or Contract Time. The Certificates of Insurance and the insurance policies required by Article 6.12 shall contain a provision that coverage afforded under such policies will not be canceled or allowed to expire without at least sixty (60) days’ prior written notice by registered mail addressed to: Rio Hondo Community College District, 3600 Workman Mill Road, Whittier, California 90601, attention Timothy Connell, Director, Contract Management and Vendor Services. Should any policy of insurance required under Article 6.12 be canceled and the Contractor fails to immediately procure replacement insurance as required, the District reserves the right to procure such insurance and to deduct the premium cost thereof and other costs incurred by the District in connection therewith from any sum then or thereafter due the Contractor under the Contract Documents. Upon District’s request, the Contractor shall furnish satisfactory proof of coverage of each type of Non-OCIP Insurance required by the Contract Documents, including copies of the insurance policies or renewals or replacements in form and content acceptable to the District; failure of the Contractor to comply with the District’s request may be deemed to be a default of a material obligation of the Contract Documents.

6.14 Evidence of Subcontractors’ Non-OCIP Insurance. Contractor shall require that every Subcontractor or Sub-Subcontractor (except Excluded Parties covered under Article 6.18) obtain and maintain the policies of insurance set forth in Articles 6.12.1 through 6.12.4 herein. The limits of liability of such policies shall be as set forth in the Supplemental Conditions. Each of the policies of insurance obtained and maintained by a Subcontractor or Sub-Subcontractor hereunder shall conform to the requirements of Article 6.12. Upon request of the District, Contractor shall promptly deliver Certificates of Insurance evidencing that the Subcontractors and Sub-Subcontractors have obtained and maintained policies of insurance in conformity with the requirements of Article 6.12. Failure or refusal of the Contractor to provide the District with such Certificates of Insurance may be deemed to be a material default of Contractor under the Contract Documents.

6.15 No Work at the Site Without Non-OCIP Insurance. Under no circumstances shall any Contractor, Subcontractor or Sub-Subcontractor (except Excluded Parties) commence Work at the Site without having all Non-OCIP Insurance issued and in effect in accordance with the provisions of Article 6.12. Contractor’s failure or refusal concerning Contractor’s obligations in this regard may be deemed by the District to be a default of a material obligation. Under no circumstances shall Contractor’s failure or refusal in this regard result in any adjustment of the Contract Price or Contract Time.

6.16 Additional Insurance. Pursuant to the provisions of Government Code §4420(b)(5), nothing contained in the Contract Documents or otherwise shall prohibit the Contractor, its Subcontractors, any Sub-Subcontractor or any other entity providing or performing Work of the Project from purchasing any additional insurance or coverage which he, she or it believes is necessary to protect such person or entity from any liability arising under the Contract Documents,
the Project or the Work. Any such additional insurance procured by such person or entity shall be at
the procuring party’s sole expense.

6.17 Waivers of Subrogation. Contractor hereby waives, and shall require all Subcontractors
and Sub-Subcontractors to waive, all rights against the District, its officers, agents, employees,
representatives and consultants, Construction Manager, Architect, IOR and OCIP Administrator, and
their respective agents, officers, employees and representatives, for recovery of damages to the
extent those damages are covered by policies of insurance obtained pursuant to Articles 6.12.2
through 6.12.4, inclusive.

6.18 Insurance Provided by Excluded Parties: The Contractor shall require all Excluded
Parties to provide and maintain insurance of the type and limits set forth below and in the
Supplemental Conditions. Such insurance shall name the parties required to secure same as insureds
and shall be in a form and through issuing companies acceptable to the District. Such insurance may
be provided in single policy or multiple policies (primary and excess), including an umbrella form.
Such insurance shall contain a defense of suits provision and shall provide the coverages set forth in
Article 6.18 under the following conditions:

(a) Notwithstanding any inconsistent statement in the policies obtained by Contractor
and/or Excluded Parties, or any endorsement or certificate attached thereto, it is
agreed that the District, its officers, agents, employees and representatives,
Construction Manager, Architect, IOR and OCIP Administrator, and their respective
officers, agents, employees and representatives, are additional insureds (for all
coverages except Workers’ Compensation/Employer’s Liability), and that coverage
is provided for all operations, uses, occupation, acts and activities of such insureds
under the Contract Documents, as may be amended or adjusted, regardless of
whether liability is attributable to the insured or a combination of the insured and one
or more additional insureds. The Contractor shall name, and shall require the
Excluded Parties to name, the District, its officers, agents, employees and
representatives, the Construction Manager, Architect, IOR and OCIP Administrator,
and their respective officers, agents, employees and representatives, as additional
insureds under the policies required pursuant to Articles 6.18.2 through 6.18.4,
inclusive. As to the insurance required by Article 6.18.2, such additional insured
status shall be provided and maintained using ISO additional insured endorsement
CG 20 10 (11/85 edition), or a substitute providing equivalent coverage. The
additional insured status required herein as to Article 6.18.2 shall be maintained on
behalf of all specified parties for a period of ten (10) years after Final Acceptance of
the Work. Upon the District’s request, the Contractor and/or Excluded Party shall
provide copies of all additional insured endorsements procured pursuant to this
Article 6.18.

(b) The coverage provided by the policies obtained by Contractor and/or Excluded
Parties is primary coverage and non-contributing with insurance, if any, carried by
the District, its officers, agents, employees and representatives, the Construction
Manager, Architect, IOR or OCIP Administrator, and their respective officers,
agents, employees and representatives. All such additional insured endorsements
issued thereon shall be so endorsed.
(c) In the event one of the insureds incurs liability to any other of the insureds, these policies shall provide protection for each insured against whom claim is or may be made, including claims by other insureds in the same manner as if separate policies had been issued to each insured.

(d) Notice of occurrences or claims under the policies shall be made to the District's Representative.

6.18.1 Workers’ Compensation/Employer's Liability Insurance. The Contractor shall require all Excluded Parties to provide Workers’ Compensation/Employer’s Liability insurance in the statutory limits of the workers’ compensation laws of the State of California, including Coverage B – Employer’s Liability, in an amount not less than that specified in the Supplemental Conditions, covering operations of the party in connection with the work both at and away from the Project Site.

6.18.2 Commercial General Liability Insurance. The Contractor shall require all Excluded Parties to provide Commercial General Liability Insurance in a form providing coverage not less than that of a Standard Commercial General Liability insurance policy (occurrence form) for all operations of the party required to furnish same, including hazards of operations (including explosion, collapse and underground coverage), elevators, independent contractors, employees as additional insureds, products and completed operations (for five (5) years after Final Acceptance of the Work), with contractual liability coverage (for contracts related to the Work), personal injury liability and excess Employer’s Liability, for personal injury, bodily injury and property damage arising out of the Work in policies of insurance with limits in an amount not less than that specified in the Supplemental Conditions.

6.18.3 Automobile Liability Insurance. The Contractor shall require all Excluded Parties to provide Automobile Liability Insurance covering all owned, non-owned and hired automobiles, trucks and trailers of the Excluded Parties. Such insurance shall provide coverage not less than that of the Standard Comprehensive Automobile Liability policy with limits in an amount not less than that specified in the Supplemental Conditions for occurrences both at and away from the Project Site.

6.18.4 Aircraft Liability Insurance. If aircraft are used by an Excluded Party or anyone else on their behalf, such Excluded Party or other entity shall maintain or cause the operator of the aircraft to maintain aircraft public liability insurance insuring passengers and the general public against personal injury, bodily injury or property damage arising from aircraft owned, used, operated or hired in connection with the work of the Excluded Party or anyone else, with limits in an amount not less than that specified in the Supplemental Conditions.

6.19 Evidence of Excluded Parties’ Insurance. Contractor shall require that every Excluded Party obtain and maintain the policies of insurance set forth in Articles 6.18.1 through 6.18.4 herein. The limits of liability of such policies shall be as set forth in the Supplemental Conditions. Each of the policies of insurance obtained and maintained by an Excluded Party hereunder shall conform to the requirements of Article 6.18. Upon request of the District, Contractor shall promptly deliver Certificates of Insurance evidencing that the Excluded Parties have obtained and maintained policies of insurance in conformity with the requirements of Article 6.18. Failure or refusal of the Contractor
to provide the District with such Certificates of Insurance may be deemed to be a material default of Contractor under the Contract Documents.

6.20 **No Work at the Site Without Excluded Parties’ Insurance.** Under no circumstances shall any Excluded Party commence Work at the Site without having all insurance issued and in effect in accordance with the provisions of Article 6.18. Contractor’s failure or refusal concerning Contractor’s obligations in this regard may be deemed by the District to be a default of a material obligation. Under no circumstances shall Contractor’s failure or refusal in this regard result in any adjustment of the Contract Price or Contract Time.

6.21 **Pollution Legal Liability Insurance.** Contractor (if performing or providing any hazardous waste services, abatement or otherwise, of any type or description for the Project) shall provide and maintain, and shall require any other person or entity performing such services to provide and maintain (hereinafter collectively referred to as “Hazardous Waste Contractor”), insurance covering losses caused by pollution conditions that arise from the operations, including the completed operations, of such Hazardous Waste Contractor. Such insurance shall apply to bodily injury and property damage, including loss of use of damaged property or of property that has not been physically injured, cleanup costs and defense, including costs and expenses incurred in the investigation, defense or settlement of claims. The policies of insurance affording these coverages shall be written with limits in an amount not less than that set forth in the Supplemental Conditions. Coverage shall apply to sudden and non-sudden pollution conditions resulting from the escape or release of smoke, vapors, fumes, acids, alkalis, toxic chemicals, liquids or gases, waste materials or other irritants, contaminants or pollutants. The policies of insurance issued hereunder shall be written by an insurer acceptable to the District and shall be endorsed to include as insureds the District, its officers, agents, employees and representatives, Construction Manager, Architect, IOR and OCIP Administrator, and their respective officers, agents, employees and representatives. If coverage is written on a claims-made basis, the Hazardous Waste Contractor shall warrant that any retroactive date applicable to coverage under the policy precedes the effective date of this Contract and that continuous coverage will be maintained, or an extended discovery period will be exercised, for a period of ten (10) years from Final Acceptance of the Work. If coverage is written on an occurrence basis, the District, its officers, agents, employees and representatives, Construction Manager, Architect, IOR and OCIP Administrator, and their respective officers, agents, employees and representatives, shall be named as insureds on the Hazardous Waste Contractor’s pollution legal liability policies for operations, including completed operations, relating to, or arising out of, work for the Project for a period of ten (10) years after Final Acceptance of the Work. At least five (5) working days prior to any Hazardous Waste Contractor’s commencing Work on the Site, Contractor shall provide the District with Certificates of Insurance evidencing the coverage required hereunder.

6.22 **Contractor Obligations.** Contractor agrees to comply with any and all terms and conditions of the policies of insurance provided by District and to comply with any and all claims handling procedures, loss prevention programs and other programs required by or related to the District’s OCIP as set forth herein. Contractor shall require Subcontractors, Sub-Subcontractors and all others covered by the District’s OCIP insurance policies to so comply. Contractor, its Subcontractors and Sub-Subcontractors shall furnish to the District, its OCIP Administrator, its designee or the insurers under the OCIP policies all information and documentation that such entity may require from time to time in connection with the issuance of policies under this Contract or the administration of the
OCIP in such form and substance as such entity may prescribe and promptly comply with the recommendations of the OCIP insurers. Contractor shall not violate, or knowingly permit to be violated, any conditions of the policies of insurance provided by the District hereunder and shall at all times satisfy the requirements of the insurers issuing them. Contractor shall assure that all OCIP requirements imposed upon and to be performed by the Contractor shall likewise be imposed upon, assumed and performed by each Subcontractor and Sub-Subcontractor. If the Contractor, Subcontractors, Sub-Subcontractors or Excluded Parties should fail to comply with the requirements of this Article 6, the District may withhold payment due to the Contractor or suspend the work at the Contractor's sole expense and without adjustment of the Contract Price or Contract Time until such time as the Contractor, its Subcontractors, Sub-Subcontractors and/or Excluded Parties have performed such obligations to the reasonable satisfaction of the District.

6.23 Indemnity. Unless arising solely out of the active negligence, gross negligence or willful misconduct of the District, the Architect or the Construction Manager, the Contractor shall indemnify, defend and hold harmless: (i) the District and its Board of Trustees, officers, employees, agents and representatives (including the District’s Inspector); (ii) the Architect and its consultants for the Work and their respective agents and employees; and (iii) the Construction Manager and its agents and employees from and against any and all damages, losses, claims, demands or liabilities whether for damages, losses or other relief, including, without limitation attorneys fees and costs which arise, in whole or in part, from the Work, the Contract Documents or the acts, omissions or other conduct of the Contractor or any Subcontractor or any person or entity engaged by them for the Work. The Contractor’s obligations under the foregoing include without limitation: (i) injuries to or death of persons; (ii) damage to property; or (iii) theft or loss of property; and (iv) other losses, liabilities, damages or costs resulting from, in whole or part, any acts, omissions or other conduct of Contractor, any of Contractor's Subcontractors, of any tier, or any other person or entity employed directly or indirectly by Contractor in connection with the Work and their respective agents, officers or employees. If any action or proceeding, whether judicial, administrative, arbitration or otherwise, shall be commenced on account of any claim, demand or liability subject to Contractor's obligations hereunder, and such action or proceeding names the District as a party thereto, the Contractor shall, at its sole cost and expense, defend the District in such action or proceeding with counsel reasonably satisfactory to District. In the event that there shall be any judgment, award, ruling, settlement, or other relief arising out of any such action or proceeding to which the District is bound by, Contractor shall pay, satisfy or otherwise discharge any such judgment, award, ruling, settlement or relief; Contractor shall indemnify and hold harmless the District from any and all liability or responsibility arising out of any such judgment, award, ruling, settlement or relief. The Contractor's obligations hereunder are binding upon Contractor's Performance Bond Surety and these obligations shall survive notwithstanding Contractor's completion of the Work or the termination of the Contract.

6.24 Payment Bond; Performance Bond. Prior to commencement of the Work, the Contractor shall furnish a Performance Bond as security for Contractor's faithful performance of the Contract and a Labor and Material Payment Bond as security for payment of persons or entities performing work, labor or furnishing materials in connection with Contractor's performance of the Work under the Contract Documents. The amounts of the Performance Bond and the Payment Bond required hereunder shall be one hundred percent (100%) of the Contract Price. Said Labor and Material Payment Bond and Performance Bond shall be in the form and content set forth in the Contract Documents. The failure or refusal of the Contractor to furnish either the Performance Bond or the
Labor and Material Payment Bond in strict conformity with this Article 6.24 may be deemed by the District as a default by the Contractor of a material obligation hereunder. Upon request of the Contractor, the District may consider and accept, but is not obligated to do so, multiple sureties on such bonds. The Surety on any bond required under the Contract Documents shall be an Admitted Surety Insurer as that term is defined in California Code of Civil Procedure §995.120.

ARTICLE 7: CONTRACT TIME

7.1 Substantial Completion of the Work Within Contract Time. Unless otherwise expressly provided in the Contract Documents, the Contract Time is the period of time, including authorized adjustments thereto, allotted in the Contract Documents for achieving Substantial Completion of the Work. The date for commencement of the Work is the date established by the Notice to Proceed issued by the District, which shall not be postponed by the failure to act of the Contractor or of persons or entities for whom the Contractor is responsible. The date of Substantial Completion is the date certified by the Architect, the Construction Manager and the District’s Inspector as such in accordance with the Contract Documents. The Contract Time is as indicated in the Special Conditions.

7.2 Progress and Completion of the Work.

7.2.1 Time of Essence. Time limits stated in the Contract Documents are of the essence. By executing the Agreement, the Contractor confirms that the Contract Time is a reasonable period for performing and achieving Substantial Completion of the Work. The Contractor shall employ and supply a sufficient force of workers, material and equipment, and prosecute the Work with diligence so as to maintain progress, to prevent Work stoppage and to achieve Substantial Completion of the Work within the Contract Time.

7.2.2 Substantial Completion. Substantial Completion is that stage in the progress of the Work when the Work is complete in accordance with the Contract Documents, including but not limited to start-up and testing, so the District can occupy or use the Work for its intended purpose. Substantial Completion shall be determined by the Architect and the District's Inspector upon request by the Contractor in accordance with the Contract Documents. The good faith and reasonable determination of Substantial Completion by the District's Inspector and the Architect shall be controlling and final.

7.2.3 Correction or Completion of the Work After Substantial Completion. Upon achieving Substantial Completion of the Work, the District, the District's Inspector, the Construction Manager, the Architect and the Contractor shall jointly inspect the Work and prepare a comprehensive list of items of the Work (punch list) to be corrected or completed by the Contractor. The exclusion of, or failure to include, any item on such list shall not alter or limit the obligation of the Contractor to complete or correct any portion of the Work in accordance with the Contract Documents. In the event that the Contractor shall fail or refuse, for any reason, to complete all punch list items within the Contract Time, Contractor shall be subject to assessment of Liquidated Damages in accordance with Article 7.4 hereof. If the Contractor fails or refuses to complete all items of the Work within the Contract Time, the District may, in its sole and exclusive discretion and without further notice to Contractor, elect to cause the completion of such items of the Work, provided, however, that such
election by the District is in addition to, and not in lieu of, any other right or remedy of the
District under the Contract Documents or at law. If the District elects to complete items of
the Work, Contractor shall be responsible for all costs incurred by the District in connection
therewith and the District may deduct such costs from the Contract Price then or thereafter
due the Contractor; if these costs exceed the remaining Contract Price due to the Contractor,
the Contractor and the Performance Bond Surety are liable to District for any such excess
costs.

7.2.4 Final Completion. Final Completion is that stage of the Work when all Work has
been completed in accordance with the Contract Documents, including without limitation,
the performance of all punch list items noted upon Substantial Completion, and the Contract
has been otherwise fully performed by the Contractor. Final Completion shall be determined
by the Architect and the District's Inspector upon request of the Contractor. The good faith
and reasonable determination of Final Completion by the District's Inspector and the
Architect shall be controlling and final.

7.2.5 Contractor Responsibility for Multiple Inspections. In the event the Contractor
shall request determination of Substantial or Final Completion and it is determined by the
District that the Work does not then justify certification of Substantial or Final Completion,
as applicable, and re-inspection is required at a subsequent time to make such determination,
the Contractor shall be responsible for all costs of such re-inspection, including without
limitation, the fees of the Architect and the salary of the District's Inspector. The District
may deduct such costs from the Contract Price then due or thereafter due to the Contractor.

7.2.6 Final Acceptance. Final Acceptance of the Work shall occur upon approval of the
Work by the District's Board of Trustees. Such approval shall be submitted for adoption at
the next regularly scheduled meeting of the District's Board of Trustees after the
determination of Final Completion. The commencement of any warranty or guarantee
period under the Contract Documents shall be deemed to be the date upon the District’s
Board of Trustees approves of the Final Acceptance of the Work.

7.3 Progress Schedule; Contractor Responsibility for Construction Schedule. The
Contractor shall be responsible for the preparation, submittal and maintenance of the Construction
Schedules required by the Contract Documents (including but not limited to Section 01360 of the
Contract Specifications), and any failure of the Contractor to do so may be deemed by the District
as the Contractor's default in the performance of a material obligation under Contract Documents.
Any and all costs or expenses required or incurred to prepare, submit, maintain, and update the
Construction Schedules shall be solely that of the Contractor and no such cost or expense shall be
charged to the District. The Contract Price shall not be subject to adjustment on account of costs,
fees or expenses incurred or associated with the Contractor's preparation, submittal, maintenance or
updating of the Construction Schedules. All schedule submittals shall include electronic diskettes
for use by the District in its analysis and approval of the schedule submittal. The District may, from
time to time, and in the District's sole and exclusive discretion, transmit to the Contractor's
Performance Bond Surety the Approved Construction Schedule, any updates thereof and the
narrative statement described hereinabove. The District's election to transmit, or not to transmit such
information, to the Contractor's Performance Bond Surety shall not limit the Contractor's obligations
under the Contract Documents. Review of any Construction Schedules required under the Contract
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Documents and any comments thereto by the District, the Construction Manager and/or the Architect shall not be deemed to be the assumption of construction means, methods or sequences by the District, the Construction Manager or the Architect, all of which remain the Contractor’s obligations under the Contract Documents.

7.4 Adjustment of Contract Time. If Substantial Completion or completion of an Interim Milestone is delayed, adjustment, if any, to the Contract Time on account of such delay shall be in accordance with this Article 7.4.

7.4.1 Excusable Delays. If Substantial Completion of the Work or completion of an Interim Milestone is delayed by Excusable Delays, the Contract Time shall be subject to adjustment for such reasonable period of time as determined by the District. Excusable Delays shall not result in any increase in the Contract Price. Excusable Delays refer to unforeseeable and unavoidable casualties or other unforeseen causes beyond the control, and without fault or neglect, of the Contractor, any Subcontractor, Material Supplier or other person directly or indirectly engaged by the Contractor in performance of any portion of the Work. Excusable Delays include unanticipated and unavoidable labor disputes, unusual and unanticipated delays in transportation of equipment, materials or Construction Equipment reasonably necessary for completion and proper execution of the Work, and unanticipated unusually severe weather conditions. Neither the financial resources of the Contractor or any person or entity directly or indirectly engaged by the Contractor in performance of any portion of the Work shall be deemed conditions beyond the control of the Contractor. If an event of Excusable Delay occurs, the Contract Time shall be subject to adjustment hereunder only if the Contractor establishes: (i) full compliance with all applicable provisions of the Contract Documents relative to the method, manner and time for Contractor’s notice and request for adjustment of the Contract Time; (ii) that the event(s) forming the basis for Contractor’s request to adjust the Contract Time are outside the reasonable control and without any fault or neglect of the Contractor or any person or entity directly or indirectly engaged by Contractor in performance of any portion of the Work; and (iii) that the event(s) forming the basis for Contractor’s request to adjust the Contract Time directly and adversely impacted the progress of the Work as indicated in the Approved Construction Schedule or the most recent updated Approved Construction Schedule relative to the date(s) of the claimed event(s) of Excusable Delay. The foregoing provisions notwithstanding, if the Special Conditions set forth a number of “Rain Days” to be anticipated during performance of the Work, the Contract Time shall not be adjusted for rain related unusually severe weather conditions until and unless the actual number of Rain Days during performance of the Work shall exceed those noted in the Special Conditions and such additional Rain Days shall have directly and adversely impacted the progress of the Work as depicted in the Approved Construction Schedule or the most recent updated Approved Construction Schedule relative to the date(s) of such additional Rain Days.

7.4.2 Compensable Delays. If Substantial Completion of the Work or completion of an Interim Milestone is delayed and such delay is caused by the acts or omissions of the District, the Architect, the Construction Manager or separate contractor employed by the District (collectively “Compensable Delays”), upon Contractor’s request and notice, in strict conformity with Articles 7 and 9 of these General Conditions, the Contract Time will be
adjusted by Change Order for such reasonable period of time as determined by the Architect, Construction Manager and the District. In accordance with California Public Contract Code § 7102, if the Contractor’s progress is delayed by any of the events described in the preceding sentence, Contractor shall not be precluded from the recovery of damages directly and proximately resulting therefrom, provided that the District is liable for the delay, the delay is unreasonable under the circumstances involved and the delay was not within the reasonable contemplation of the District and the Contractor at the time of execution of the Agreement. In such event, Contractor’s damages, if any, shall be limited to direct, actual and unavoidable additional costs of labor, materials or Construction Equipment directly resulting from such delay, and shall exclude indirect or other consequential damages. Except as expressly provided for herein, Contractor shall not have any other claim, demand or right to adjustment of the Contract Price arising out of delay, interruption, hindrance or disruption to the progress of the Work. Adjustments to the Contract Price and the Contract Time, if any, on account of Changes to the Work or Suspension of the Work shall be governed by the applicable provisions of the Contract Documents, including without limitation, Articles 9 and 14 of these General Conditions.

7.4.3 Unexcusable Delays. Unexcusable Delays refer to any delay to the progress of the Work caused by events or factors other than those specifically identified in Articles 7.4.1 and 7.4.2 above. Neither the Contract Price nor the Contract Time shall be adjusted on account of Unexcusable Delays.

7.4.4 Adjustment of Contract Time.

7.4.4.1 Procedure for Adjustment of Contract Time. The Contract Time shall be subject to adjustment only in strict conformity with applicable provisions of the Contract Documents. Failure of Contractor to request adjustment(s) of the Contract Time in strict conformity with applicable provisions of the Contract Documents shall be deemed Contractor’s waiver of the same.

7.4.4.2 Limitations Upon Adjustment of Contract Time on Account of Delays. Any adjustment of the Contract Time on account of an Excusable Delay or a Compensable Delay shall be limited as set forth herein. If an Excusable Delay and a Compensable Delay 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. If an Unexcusable Delay occurs concurrently with either an Excusable Delay or a Compensable Delay, the maximum extension of the Contract Time shall be the number of days, if any, which the Excusable Delay or the Compensable Delay exceeds the period of time of the Unexcusable Delay. No adjustment of the Contract Time shall be made on account of any Excusable Delays or Compensable Delays unless such delay(s) actually and directly impact Work or Work activities on the critical path of the then current and updated Approved Construction Schedule as of the date on which such delay first occurs. The District shall not be deemed in breach of, or otherwise in default of any obligation hereunder, if the District shall deny any request by the Contractor for an adjustment of the Contract Time for any delay which does not actually and directly impact Work on the then current and updated Approved Construction Schedule.
7.5 **Liquidated Damages.** Should the Contractor neglect, fail or refuse to achieve Substantial Completion of the Work within the Contract Time, as adjusted, or to complete an Interim Milestone or Final Completion in accordance with the times specified or provided for in the Contract Documents, the Contractor agrees to pay to the District the amount of per diem Liquidated Damages set forth in the Special Conditions, not as a penalty but as Liquidated Damages, for every day beyond the Contract Time, as adjusted, Interim Milestone or Final Completion, the Work is achieved. The Liquidated Damages amounts set forth in the Special Conditions are agreed upon by and between the Contractor and the District because of the difficulty of fixing the District's actual damages in the event of delayed completion of the Work. The Contractor and the District specifically agree that said amounts are reasonable estimates of the District's damages in such event, and that such amounts do not constitute a penalty. Liquidated Damages may be deducted from the Contract Price then or thereafter due the Contractor. The Contractor and the Surety shall be liable to the District for any Liquidated Damages exceeding any amount of the Contract Price then held or retained by the District. In the event that the Contractor shall fail or refuse to correct or complete items of the Work noted upon Substantial Completion and the District elects to exercise its right to cause completion or correction of such items pursuant to Article 7.2.3.2 hereof, the District's assessment of Liquidated Damages pursuant to the foregoing shall be in addition, and not in lieu of, the District's right to charge Contractor with the cost of completing or correcting such items of the Work, as provided for under Article 7.2.3.2. The Contractor and the District acknowledge and agree that the provisions of this Article 7.5 are reasonable under the circumstances existing at the time of the Contractor's execution of the Agreement.

ARTICLE 8: CONTRACT PRICE

8.1 **Contract Price.** The Contract Price is the amount stated in the Agreement as such, and subject to any authorized adjustments thereto in accordance with the Contract Documents, is the total amount payable by the District to the Contractor for performance of the Work under the Contract Documents. The District's payment of the Contract Price to the Contractor shall be in accordance with the Contract Documents.

8.2 **Cost Breakdown (Schedule of Values).** Contractor shall furnish a detailed tabular Cost Breakdown (Schedule of Values) of the Contract Price consistent with the cost-loaded work activities included in the Approved Construction Schedule in accordance with Section 01050 of the Contract Specifications.

8.3 **Progress Payments.**

8.3.1 **Applications for Progress Payments.** During the Contractor's performance of the Work, the Contractor shall submit monthly, on the first working day of each month, to the Construction Manager, Applications for Progress Payments, on forms approved by the District, setting forth an itemized estimate of Work completed in the preceding month. Values utilized in the Applications for Progress Payments shall be based upon the proper updating of the Approved Construction Schedule. The Cost Breakdown and/or Approved Cost Loaded Construction Schedule, pursuant to Article 8.2 above, and such values shall be only for determining the basis of Progress payments to the Contractor, and shall not be considered as fixing a basis for adjustments, whether additive or deductive, to the Contract
Price.

8.3.2 District's Review of Applications for Progress Payments. In accordance with Public Contract Code §20104.50, upon receipt of an Application for Progress Payment, the Construction Manager, the District’s Inspector, and the Architect shall review the Application. Such review shall be for the purpose of determining that the Application for Progress Payment is a proper Progress Payment request. For purposes of this Article 8.3.2, an Application for Progress Payment shall be deemed "proper" only if it is submitted on the properly completed form approved by the District, and accompanied by:

(i) the Application submitted by the Contractor shall be consistent with and accompanied by the updated Approved Construction Schedule;

(ii) complete and accurate weekly Certified Payrolls of the Contractor and all Subcontractors, of any tier, for laborers performing any portion of the Work for which a Progress Payment is included (if requested);

(iii) duly completed and executed forms of Conditional Waiver and Release of Rights Upon Progress Payment in accordance with California Civil Code § 3262 of the Contractor, all Subcontractors of any tier, and Material Suppliers covering the Progress Payment requested;

(iv) duly completed and executed forms of Unconditional Waiver and Release of Rights upon Progress Payment in accordance with California Civil Code § 3262 of the Contractor, all Subcontractors of any tier, and Material Suppliers covering the Progress Payment received by the Contractor under the prior Application for Progress Payment;

(v) a current union statement reflecting that the Contractor and any Subcontractor of any tier, are current in the payment of any supplemental fringe benefits required pursuant to any collective bargaining agreement to which the Contractor or any such Subcontractor is a party to or is otherwise bound by (if requested); and

(vi) a certification by the Contractor that it has maintained the Record Documents reflecting the actual as-built conditions of the Work performed (such certification is subject to verification by the District's Inspector prior to approval of the Progress Payment).

In accordance with Public Contract Code §20104.50, an Application for Progress Payment determined by the District not to be a proper Application for Progress Payment shall be returned by the District to the Contractor as soon as is practicable after receipt of the same from the Contractor, but in no event not more than seven (7) days after the District's receipt thereof. The District's return of any Application for Progress Payment pursuant to the preceding sentence shall be accompanied by a written document setting forth the reason(s) why the Application for Progress Payment is not proper.

8.3.3 Architect and District's Inspector Review of Applications for Progress Payments. Upon receipt of an Application for Progress Payment, the Architect and the District's Inspector shall meet with the Contractor to inspect the completed work and verify the portion of the work completed during the month using the approved Construction
Schedule update and the Cost Breakdown. The Application for Progress Payment shall reflect the agreed percentages of work complete that is properly due to the Contractor under the terms of the Contract Documents. The Application submitted by the Contractor shall be consistent with and accompanied by the updated Approved Construction Schedule.

8.3.4 District's Disbursement of Progress Payments.

8.3.4.1 Timely Disbursement of Progress Payments. In accordance with Public Contract Code §20104.50, within thirty (30) days after the District's receipt of a proper Application for Progress Payment, there shall be paid, by District, to Contractor a sum equal to ninety five percent (95%) of the value of the Work indicated in the Application for Progress Payment as verified and approved by the District's Inspector and the Architect. If an Application for Progress payment is determined not to be proper due to the failure or refusal of the contractor to submit the required documents with the Application for progress payment, or if it is reasonably determined that the Record Documents have not been continuously maintained to reflect the actual as-built conditions of the Work completed in the period for which the Progress Payment is requested, the thirty (30) day period hereunder for the District's timely disbursement of a Progress payment shall be deemed to commence on the date that the District is actually in receipt of a complete and proper Application for Progress payment or verifies the proper updating of the as-built conditions.

8.3.4.2 Untimely Disbursement of Progress Payments. In accordance with Public Contract Code §20104.50, in the event that the District shall fail to make any Progress Payment within thirty (30) days after receipt of an undisputed and properly submitted Application for Progress Payment, the District shall pay the Contractor interest on the undisputed amount of such Application for Progress Payment equal to the legal rate of interest set forth in California Code of Civil Procedure § 685.010(a).

8.3.4.3 District's Right to Disburse Progress or Final Payments by Joint Checks. The District may, in its sole discretion, issue joint checks to the Contractor and any Subcontractor or Material Supplier providing work, labor, materials, equipment or services for the Project in satisfaction of its obligation to make Progress Payments or the Final Payment due hereunder. District may require Contractor to provide copies of applicable Subcontracts, purchase orders, rental invoices or materials invoices.

8.3.4.4 No Waiver of Defective or Non-Conforming Work. The approval of any Application for Progress Payment or the disbursement of any Progress Payment to the Contractor shall not be deemed nor constitute acceptance of defective Work or Work not in conformity with the Contract Documents.

8.3.5 Progress Payments for Changed Work. The Contractor's Applications for Progress Payment may include requests for payment on account of Changes in the Work which have been properly authorized and approved by the District's Inspector, the Architect and the Board. Except as provided for herein, no other payment shall be made by the District for Changes in the Work.

8.3.6 Materials or Equipment Not Incorporated Into the Work.
8.3.6.1 **Limitations Upon Payment.** Except as expressly provided for herein, no payments shall be made by the District on account of any item of the Work, including without limitation, materials or equipment which has/have not been incorporated into and made a part of the Work.

8.3.6.2 **Materials or Equipment Delivered and Stored at the Site.** The District may, in its sole and exclusive discretion, make payment for materials or equipment not yet incorporated into the Work if, a request for payment of such materials or equipment is made and if all of the following are complied with: (a) the materials or equipment have been delivered to the Site; (b) adequate arrangements, reasonably satisfactory to the District, have been made by the Contractor to store and protect such materials or equipment at the Site including without limitation, insurance reasonably satisfactory to the District, covering and protecting against the risk of loss, destruction, theft or other damage to such materials or equipment while in storage; and (c) the establishment of procedures reasonably satisfactory to the District by which title to such materials or equipment will be vested in the District upon the District's payment therefor. The Contractor acknowledges that the discretion to make, or not to make, payment for materials or equipment delivered or stored at the site of the Work pursuant to the preceding sentence shall be exercised exclusively by the District; the District's exercise of discretion not to make payment for materials or equipment delivered or stored at the Site, but not yet incorporated into the Work shall not be deemed the District's default hereunder. In the event that the District shall elect to make payment for materials or equipment delivered and stored at the Site, the costs and expenses incurred to comply with the requirements of (b) and (c) of this Article 8.3.6.2 shall be borne solely and exclusively by the Contractor and no payment shall be made by the District on account of such costs and expenses.

8.3.7 **Exclusions From Progress Payments.** No payments shall be made by the District for materials or equipment to be incorporated into the Work where such materials or equipment have not been delivered or stored at the Site. The District shall not make any payment on account of any materials or equipment which are in the process of being fabricated or which are in transit to the Site or other storage location. In addition to the District's right to withhold disbursement of any Progress Payment provided for in the Contract Documents, neither the Contractor's Application for Progress Payment shall include, nor shall the District be obligated to disburse any portion of the Contract Price for amounts which the Contractor does not intend to pay any Subcontractor, of any tier, or Material Supplier because of a dispute or any other reason.

8.3.8 **Title to Work.** The Contractor warrants that title to all Work covered by an Application for Progress Payment will pass to the District no later than the time of payment. The Contractor further warrants that upon submittal of an Application for Progress Payment, all Work for which a Progress Payment has been previously issued and the Contractor has received payment from the District therefor shall, to the best of the Contractor's knowledge, information and belief, be free and clear of liens, claims, stop notices, security interests or encumbrances in favor of the Contractor, Subcontractors, Material Suppliers or other persons or entities making a claim by reason of having provided labor, materials and equipment.
relating to the Work.

8.4 Final Payment.

8.4.1 Application for Final Payment. When the Contractor has achieved Final Completion of the Work and has otherwise fully performed its obligations under the Contract Documents, the Contractor shall submit an Application for Final Payment on such form as approved by the District. Thereupon, the Architect and the District's Inspector will promptly make a final inspection of the Work and when the Architect and the District's Inspector find the Work acceptable under the Contract Documents and that the Contract has been fully performed by the Contractor, the Architect and the District's Inspector will thereupon promptly approve the Application for Final Payment, stating that to the best their knowledge, information and belief, the Work has been completed in accordance with the terms of the Contract Documents. The Final Payment shall include the remaining balance of the Contract Price and any retention from Progress Payments previously withheld by the District.

8.4.2 Conditions Precedent to Disbursement of Final Payment. Neither Final Payment nor any remaining Contract Price shall become due until the Contractor submits to the District each and all of the following, the submittal of which are conditions precedent to the District's obligation to disburse the Final Payment: (i) an affidavit or certification by the Contractor that payrolls, bills for materials and other indebtedness incurred in connection with the Work for which the District or the District's property may or might be responsible or encumbered have been paid or otherwise satisfied; (ii) a certificate evidencing that insurance required by the Contract Documents to remain in force after the Contractor's receipt of Final Payment is currently in effect; (iii) a written statement that the Contractor knows of no substantial reason that the insurance will not be renewable to cover any period following Final Payment as required by the Contract Documents; if required (iv) consent of the Surety on the Labor and Material Payment Bond and Performance Bond, to Final Payments if required; (v) duly completed and executed forms of Conditional or Unconditional Waivers and Releases of rights upon Final Payment of the Contractor, Subcontractors of any tier and Material Suppliers in accordance with California Civil Code §3262, with each of the same stating that there are, or will be, no claims for additional compensation after disbursement of the Final Payment; (vi) Operations and Maintenance manuals and separate warranties provided by any manufacturer or distributor of any materials or equipment incorporated into the Work; (vii) the Record Drawings; (viii) the form of Guarantee included in the Contract Documents duly executed by an authorized representative of the Contractor; (ix) any and all other items or documents required by the Contract Documents to be delivered to the District upon completion of the Work; and (x) if required by the District, such other data establishing payment or satisfaction of obligations such as receipts, releases and waivers of liens, stop notices, claims, security interest or encumbrances arising out of the Contract to the extent and in such form as may be required by the District.

8.4.3 Disbursement of Final Payment. Provided that the District is then in receipt of all documents and other items in Article 8.4.2 above as conditions precedent to the District’s obligation to disburse Final Payment, not later than sixty (60) days following Final Acceptance the District shall disburse the Final Payment to the Contractor. Pursuant to California Public Contract Code §7107, if there is any dispute between the District and the
Contractor at the time that disbursement of the Final Payment is due, the District may withhold from disbursement of the Final Payment an amount not to exceed one hundred fifty percent (150%) of the amount in dispute.

8.4.4 Waiver of Claims. The Contractor's acceptance of the Final Payment is a waiver and release by the Contractor of any and all claims against the District for compensation or otherwise in connection with the Contractor's performance of the Contract.

8.4.5 Claims Asserted After Final Payment. Any lien, stop notice or other claim filed or asserted after the Contractor's acceptance of the Final Payment by any Subcontractor, of any tier, laborer, Material Supplier or others in connection with or for Work performed under the Contract Documents shall be the sole and exclusive responsibility of the Contractor who further agrees to indemnify, defend and hold harmless the District and its officers, agents, representatives and employees from and against any claims, demands or judgments arising or associated therewith, including without limitation attorneys fees incurred by the District in connection therewith. In the event any lien, stop notice or other claim of any Subcontractor, Laborer, Material Supplier or others performing Work under the Contract Documents remain unsatisfied after Final Payment is made, Contractor shall refund to District all monies that the District may pay or be compelled to pay in discharging any lien, stop notice or other claim, including, without limitation all costs and reasonable attorneys fees incurred by District in connection therewith.

8.5 Withholding of Payments. The District may withhold any Progress Payment or the Final Payment, in whole or in part, or backcharge the Contractor to the extent it may deem advisable to protect the District on account of: (i) defective Work or Work not in conformity with the requirements of the Contract Documents which is not remedied; (ii) failure of the Contractor to make payments when due Subcontractors or Material Suppliers for materials or labor; (iii) claims filed or reasonable evidence of the probable filing of claims by Subcontractors, laborers, Material Suppliers, or others performing any portion of the Work under the Contract Documents for which the District may be liable or responsible including, without limitation, Stop Notice Claims filed with the District pursuant to California Civil Code §3179 et seq.; (iv) a reasonable doubt that the Contract can be completed for the then unpaid balance of the Contract Price; (v) tax demands filed in accordance with California Government Code §12419.4; (vi) inadequate or delinquent payroll records, or violations of requirements to pay prevailing wages, or employment of apprentices; (vii) other claims, penalties and/or forfeitures for which the District is required or authorized to retain funds otherwise due the Contractor; (viii) any amounts due from the Contractor to the District under the terms of the Contract Documents; (ix) the Contractor’s failure to perform any of its obligations under the Contract Documents (including the District’s Labor Compliance Program) or its default under the Contract Documents or its failure to maintain adequate progress of the Work; or (x) the Contractor’s failure to timely provide Certified Payrolls of the Contractor and all Subcontractors, of any tier, in accordance with Articles 8.3.2., 8.4.2. or applicable law. In addition to the foregoing, the District shall not be obligated to process any Application for Progress Payment or Final Payment, nor shall Contractor be entitled to any Progress Payment or Final Payment so long as any lawful or proper direction concerning the Work or the performance thereof or any portion thereof, given by the District, the District’s Inspector, the Architect or any public authority having jurisdiction over the Work, or any portion thereof, shall not be fully and completely complied with by the Contractor.
When the District is reasonably satisfied that the Contractor has remedied any such deficiency, payment shall be made of the amount withheld.

8.6 Payments to Subcontractors. The Contractor shall pay all Subcontractors for and on account of Work of the Contract performed by such Subcontractors in accordance with the terms of their respective subcontracts and as provided for pursuant to California Public Contract Code §10262, the provisions of which are deemed incorporated herein by this reference. In the event of the Contractor's failure to make payment to Subcontractors in conformity with California Public Contract Code §10262, the provisions of California Public Contract Code §10253 shall apply; by this reference, the provisions of California Public Contract Code §10253 are incorporated herein in its entirety, except that the references in said Section 10253 to "the director" shall be deemed to refer to the District.

8.7 Computerized Job Cost Reporting System.

8.7.1 Job Cost Reporting. The Contractor shall maintain a computerized job cost reporting system conforming to the requirements set forth herein. The computer program(s) utilized by the Contractor shall be subject to the review and acceptance by the District. The job cost reporting systems for the Work shall be updated in regular intervals of not more than one (1) calendar month.

8.7.2 Job Cost Reporting System Requirements. The computerized job cost programs utilized by the Contractor shall conform and comply with generally accepted accounting principles applied in a consistent manner and with recognized and generally accepted construction industry accounting standards, guidelines and procedures. The job cost reporting system format and configuration shall follow the general format of the District approved Cost Breakdown and budgets established for each line item shall be traceable to a bid estimate of costs. The job cost reporting systems utilized by the Contractor and applicable Subcontractors shall be capable of: (a) providing overall cost status on a monthly and cumulative basis; (b) providing comparative analysis of the original budgeted costs, actual costs, remaining budget, and projected cost of completion; the job cost reporting system shall be capable of providing comparative analysis for individual line items and the totality of the Work reflected in the job cost report and; (c) tracking adjustments to original budget amounts for Changes to the Work (including, without limitation, issued, pending and potential Change Orders).

8.7.3 Job Cost System Information. Upon request of the District, the Contractor and applicable Subcontractors shall make available written job cost reports and/or provide the District with the electronic files of the then current or requested job cost report. The Contractor's obligations hereunder are material.

ARTICLE 9: CHANGES

9.1 Changes in the Work. The District, at any time, by written order, may make Changes within the general scope of the Work under the Contract Documents or issue additional instructions, require additional Work or direct deletion of Work. The Contractor shall not proceed with any Change involving an increase or decrease in the Contract Price or the Contract Time without prior
written authorization from the District. The foregoing notwithstanding, the Contractor shall promptly commence and diligently complete any Change to the Work subject to the District's written authorized issued pursuant to the preceding sentence; the Contractor shall not be relieved or excused from its prompt commencement and diligent completion of any Change subject to the District's written authorization by virtue of the absence or inability of the Contractor and the District to agree upon the extent of any adjustment to the Contract Time or the Contract Price on account of such Change. The issuance of a Change Order pursuant to this Article 9 in connection with any Change authorized by the District under this Article 9.1 shall not be deemed a condition precedent to Contractor's obligation to promptly commence and diligently complete any such Change authorized by the District hereunder. The District's right to make Changes shall not invalidate the Contract nor relieve the Contractor of any liability or other obligations under the Contract Documents. Any requirement of notice of Changes in the scope of Work to the Surety shall be the responsibility of the Contractor. Changes to the Work depicted or described in the Drawings or the Specifications shall be subject to approval by the DSA. The District may make Changes to bring the Work or the Project into compliance with environmental requirements or standards established by state or federal statutes and regulations enacted after award of the Contract.

9.2 Oral Order of Change in the Work. Any oral order, direction, instruction, interpretation, or determination from the District, the District's Inspector or the Architect which in the opinion of the Contractor causes any change to the scope of the Work, or otherwise requires an adjustment to the Contract Price or the Contract Time, shall be treated as a Change only if the Contractor gives the Architect and the District's Inspector written notice within ten (10) days of the order, directions, instructions, interpretation or determination and prior to acting in accordance therewith. Time is of the essence in Contractor's written notice pursuant to the preceding sentence so that the District can promptly investigate and consider alternative measures to address the order, direction, instruction, interpretation or determination giving rise to Contractor's notice. Accordingly, Contractor acknowledges that its failure, for any reason, to give written notice within ten (10) days of such order, direction, instruction, interpretation or determination shall be deemed Contractor's waiver of any right to assert or claim any entitlement to an adjustment of the Contract Time or the Contract Price on account of such order, direction, instruction, interpretation or determination. The written notice shall state the date, circumstances, extent of adjustment to the Contract Price or the Contract Time, if any, requested, and the source of the order, directions, instructions, interpretation or determination that the Contractor regards as a Change. Unless the Contractor acts in strict accordance with this procedure, any such order, direction, instruction, interpretation or determination shall not be treated as a Change and the Contractor hereby waives any claim for any adjustment to the Contract Price or the Contract Time on account thereof.

9.3 Contractor Submittal of Data. Within fifteen (15) days after receipt of a written order directing a Change in the Work or furnishing the written notice regarding any oral order directing a Change in the Work, the Contractor shall submit to the District a detailed written statement setting forth the amount of any adjustment to the Contract Price on account thereof, properly itemized and supported by sufficient substantiating data to permit evaluation of the same, and the extent of adjustment of the Contract Time, if any, required by such Change. No claim or adjustment to the Contract Price or the Contract Time shall be allowed if not asserted by the Contractor in strict conformity herewith or if asserted after Final Payment is made under the Contract Documents.
9.4 Adjustment to Contract Price and Contract Time on Account of Changes to the Work.

9.4.1 Adjustment to Contract Price. Adjustments to the Contract Price due to Changes in the Work shall be determined by application of one of the following methods, in the following order of priority:

9.4.1.1 Mutual Agreement. By negotiation and mutual agreement, on a lump sum basis, between the District and the Contractor on the basis of the estimate of the actual and direct increase or decrease in costs on account of the Change. Upon request of the District, the Contractor shall provide a detailed estimate of increase or decrease in costs directly associated with performance of the Change along with cost breakdowns of the components of the Change and supporting data and documentation. The Contractor shall be solely responsible for any additional costs or additional time arising out of, or related in any manner to, its failure to provide the estimate of costs within fifteen (15) days after the receipt of the written request of the District for such estimate.

9.4.1.2 Determination by the District. By the District, whether or not negotiations are initiated pursuant to Article 9.4.1.1 above, based upon actual and necessary costs incurred by the Contractor as determined by the District on the basis of the Contractor's records. In the event that the procedure set forth in this Article 9.4.1.2 is utilized to determine the extent of adjustment to the Contract Price on account of Changes to the Work, promptly upon determining the extent of adjustment to the Contract Price, the District shall notify the Contractor in writing of the same; the Contractor shall be deemed to have accepted the District's determination of the amount of adjustment to the Contract Price on account of a Change to the Work unless Contractor shall notify the District, the Architect and the District's Inspector, in writing, not more than fifteen (15) days from the date of the District's written notice, of any objection to the District's determination. Failure of the Contractor to timely notify the District, the Architect and the District's Inspector of Contractor's objections to the District's determination of the extent of adjustment to the Contract Price shall be deemed Contractor's acceptance of the District's determination and a waiver of any right or basis of the Contractor to thereafter protest or otherwise object to the District's determination. Notwithstanding any objection of the Contractor to the District's determination of the extent of any adjustment to the Contract Price pursuant to this Article 9.4.1.2, Contractor shall, pursuant to Article 9.7 below, diligently proceed to perform and complete any such Change.

9.4.1.3 Basis for Adjustment of Contract Price. If Changes in the Work require an adjustment of the Contract Price pursuant to Articles 9.4.1.1 or 9.4.1.2 above, the basis for adjustment of the Contract Price shall be as follows:

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

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

9.4.1.3.3 Construction Equipment. Contractor shall be compensated for the actual cost of the necessary and direct use of Construction Equipment in the performance of Changes to the Work. Use of such Construction Equipment in the performance of Changes to the Work shall be compensated in increments of hourly, weekly or monthly rates, whichever shall be the most economical to the District when applied to the scope of the specific change. Rental time for Construction Equipment moved by its own power shall include time required to move such Construction Equipment to the site of the Work from the nearest available rental source of the same. If Construction Equipment is not moved to the Site by its own power, Contractor will be compensated for the loading and transportation costs in lieu of rental time. The foregoing notwithstanding, neither moving time or loading and transportation time shall be allowed if the Construction Equipment is used for performance of any portion of the Work other than Changes to the Work. Unless prior approval in writing is obtained by the Contractor from the Architect, the District's Inspector and the District, no costs or compensation shall be allowed for time while Construction Equipment is inoperative, idle or on standby, for any reason. The Contractor shall not be entitled to an allowance or any other compensation for Construction Equipment or tools used in the performance of Changes to the Work where such Construction Equipment or tools have a replacement value of $1,000.00 or less. Construction Equipment costs claimed by the Contractor in connection with
the performance of any Change to the Work shall not exceed rental rates (Blue Book) established by distributors or construction equipment rental agencies in the locality of the Site; any costs asserted which exceed such rental rates shall not be allowed or paid. Unless otherwise specifically approved in writing by the Architect, the District's Inspector and the District, the allowable rate for the use of Construction Equipment in connection with Changes to the Work shall constitute full compensation to the Contractor for the cost of rental, fuel, power, oil, lubrication, supplies, necessary attachments, repairs or maintenance of any kind, depreciation, storage, insurance, labor (exclusive of labor costs of the Construction Equipment operator), and any all other costs incurred by the Contractor incidental to the use of such Construction Equipment.

9.4.1.3.4 Mark-up on Costs of Changes to the Work. In determining the cost to the District and the extent of increase to the Contract Price resulting from a Change adding to the Work, the allowance for mark-ups on the costs of the Change for all overhead (including home office and field overhead), general conditions costs and profit associated with the Change shall not exceed the percentage set forth in the Special Conditions, regardless of the number of Subcontractors, of any tier, performing any portion of any Change to the Work. If a Change to the Work reduces the Contract Price, the maximum adjustment to the Contract Price shall be the actual cost reduction realized by the reduced or deleted Work multiplied by the percentage set forth in the Special Conditions.

9.4.1.4 Contractor Maintenance of Records. In the event that Contractor shall be directed to perform any Changes to the Work pursuant to Article 9.1 or 9.2, or should the Contractor encounter conditions which the Contractor, pursuant to Article 9.6, believes would obligate the District to adjust the Contract Price and/or the Contract Time, Contractor shall maintain detailed records on a daily basis. Such records shall include without limitation hourly records for labor and Construction Equipment and itemized records of materials and equipment used that day in connection with the performance of any Change to the Work. In the event that more than one Change to the Work is performed by the Contractor in a calendar day, Contractor shall maintain separate records of labor, Construction Equipment, materials and equipment for each such Change. In the event that any Subcontractor, of any tier, shall provide or perform any portion of any Change to the Work, Contractor shall require that each such Subcontractor maintain records in accordance with this Article. Each daily record maintained hereunder shall be signed by Contractor's Superintendent or Contractor's authorized representative; such signature shall be deemed Contractor's representation and warranty that all information contained therein is true, accurate, complete and relate only to the Change referenced therein. All records maintained by a Subcontractor, of any tier, relating to the costs of a Change to the Work shall be signed by such Subcontractor's authorized representative or Superintendent. All records maintained hereunder shall be subject to inspection, review and/or reproduction by the District, the Architect or the District's Inspector upon request. In the event that Contractor shall fail or refuse, for any reason, to maintain or make available for inspection, review and/or reproduction such records and the adjustment to the Contract Price on account of any Change to the Work
is determined pursuant to this Article, the District's reasonable good faith determination of the extent of adjustment to the Contract Price on account of such Change shall be final, conclusive, dispositive and binding upon Contractor. Contractor's obligation to maintain records hereunder is in addition to, and not in lieu of, any other Contractor obligation under the Contract Documents with respect to Changes to the Work.

9.4.2 Adjustment to Contract Time. In the event of any Change(s) to the Work pursuant to this Article 9, the Contract Time shall be extended or reduced by Change Order for a period of time commensurate with the time reasonably necessary to perform such Change. Such time shall be requested in writing by the Contractor with the Contract price Adjustment Proposal. The time extension request shall be justified by the Contractor by submittal of a CPM analysis accurately portraying the impact of the change on the critical path of the project schedule. Changes performed within available float as indicated in the updated Approved Construction Schedule shall not justify a time extension to the Contract. When agreement is reached between the District and Contractor that a Change shall require an extension of the contract time, the Contractor shall not be subject to Liquidated Damages for such period of time. If completion of the Work is delayed by causes for which the District is responsible and the delay is unreasonable under the circumstances involved, and not within the contemplation of the Contractor and the District at the time of execution of the Agreement, the Contractor shall not be precluded from the recovery of damages arising therefrom.

9.4.3 Addition or Deletion of Alternate Bid Item(s). If the Bid for the Work includes proposal(s) for Alternate Bid Item(s), during Contractor's performance of the Work, the District may elect, pursuant to this Article to add any such Alternate Bid Item(s) if the same did not form a basis for award of the Contract or delete any such Alternate Bid Item(s) if the same formed a basis for award of the Contract. If the District elects to add or delete any such Alternate Bid Item(s) pursuant to the foregoing, the cost or credit for such Alternate Bid Item(s) shall be as set forth in the Contractor's Bid.

9.5 Change Orders. If the District approves of a Change, a written Change Order prepared on behalf of the District shall be forwarded to the Contractor describing the Change and setting forth the adjustment to the Contract Time and the Contract Price, if any, on account of such Change. All Change Orders shall be in full payment and final settlement of all claims for direct, indirect and consequential costs, including without limitation, costs of delays or impacts related to, or arising out of, items covered and affected by the Change Order, as well as any adjustments to the Contract Time. Any claim or item relating to any Change incorporated into a Change Order not presented by the Contractor for inclusion in the Change Order shall be deemed waived. The Contractor shall execute the Change Order prepared pursuant to the foregoing; once the Change Order has been prepared and forwarded to the Contractor for execution, without the prior approval of the District which may be granted or withheld in the sole and exclusive discretion of the District, the Contractor shall not modify or amend the form or content of such Change Order, or any portion thereof. The Contractor's attempted or purported modification or amendment of any such Change Order, without the prior approval of the District, shall not be binding upon the District; any such unapproved modification or amendment to such Change Order shall be null, void and unenforceable. Unless otherwise expressly provided for in the Contract Documents or in the Change Order, any Change
Order issued hereunder shall be binding upon the District only upon action of the District's Board of Trustees approving and ratifying such Change Order. In the event of any amendment or modification made by the Contractor to a Change Order for which there is no prior approval by the District, in accordance with the provisions of this Article 9.5, unless otherwise expressly stated in its approval and ratification of such Change Order, any action of the Board of Trustees to approve and ratify such Change Order shall be deemed to be limited to the Change Order as prepared by the Architect or Construction Manager; such approval and ratification of such Change Order shall not be deemed the District's approval and ratification of any unapproved amendment or modification by the Contractor to such Change Order.

9.6 Contractor Notice of Changes. If the Contractor should claim that any instruction, request, the Drawings, the Specifications, action, condition, omission, default, or other situation obligates the District to increase the Contract Price or to extend the Contract Time, the Contractor shall notify the District's Construction Manager and the Architect, in writing, of such claim within ten (10) days from the date of its actual or constructive notice of the factual basis supporting the same. The District shall consider any such claim of the Contractor only if sufficient supporting documentation is submitted with the Contractor's notice to the District's Construction Manager and the Architect. Time is of the essence in Contractor's written notice pursuant to the preceding sentence so that the District can promptly investigate and consider alternative measures to the address such instruction, request, Drawings, Specifications, action, condition, omission, default or other situation. Accordingly, Contractor acknowledges that its failure, for any reason, to give written notice (with sufficient supporting documentation to permit the District's review and evaluation) within ten (10) days of its actual or constructive knowledge of any instruction, request, Drawings, Specifications, action, condition, omission, default or other situation for which the Contractor believes there should an adjustment of the Contract Time or the Contract Price shall be deemed Contractor's waiver, release, discharge and relinquishment of any right to assert or claim any entitlement to an adjustment of the Contract Time or the Contract Price on account of any such instruction, request, Drawings, Specifications, action, condition, omission, default or other situation. In the event that the District determines that the Contract Price or the Contract Time are subject to adjustment based upon the events, circumstances and supporting documentation submitted with the Contractor's written notice under this Article 9.6, any such adjustment shall be determined in accordance with the provisions of Articles 9.4.1 and 9.4.2.

9.7 Disputed Changes. In the event of any dispute or disagreement between the Contractor and the District or the Architect regarding the characterization of any item as a Change to the Work or as to the appropriate adjustment of the Contract Price or the Contract Time on account thereof, the Contractor shall promptly proceed with the performance of such item of the Work, subject to a subsequent resolution of such dispute or disagreement in accordance with the terms of the Contract Documents. The Contractor's failure or refusal to so proceed with such Work may be deemed to be Contractor's default of a material obligation of the Contractor under the Contract Documents.

9.8 Emergencies. In an emergency affecting the safety of life, or of the Work, or of property, the Contractor, without special instruction or prior authorization from the District or the Architect, is permitted to act at its discretion to prevent such threatened loss or injury. Any compensation claimed by the Contractor on account of such emergency work shall be submitted and determined in accordance with this Article 9.
9.9 **Minor Changes in the Work.** The Architect may order minor Changes in the Work not involving an adjustment in the Contract Price or the Contract Time and not inconsistent with the intent of the Contract Documents. Such Changes shall be effected by written order and shall be binding on the District and the Contractor. The Construction Manager or the District's Inspector may direct the Contractor to perform Changes provided that each such Change does not result in an increase of more than $500.00 to the Contract Price and no adjustment of the Contract Time. The Contractor shall carry out such orders promptly.

9.10 **Unauthorized Changes.** Any Work beyond the lines and grades shown on the Contract Documents, or any extra Work performed or provided by the Contractor without notice to the Architect and the District's Inspector in the manner and within the time set forth in Articles 9.2 or 9.6 shall be considered unauthorized and at the sole expense of the Contractor. Work so done will not be measured or paid for, no extension to the Contract Time will be granted on account thereof and any such Work may be ordered removed at the Contractor's sole cost and expense. The failure of the District to direct or order removal of such Work shall not constitute acceptance or approval of such Work nor relieve the Contractor from any liability on account thereof.

**ARTICLE 10: SEPARATE CONTRACTORS**

10.1 **District's Right to Award Separate Contracts.** The District reserves the right to perform construction or operations related to the Project with the District's own forces or to award separate contracts in connection with other portions of the Project or other construction or operations at or about the Site. If the Contractor claims that delay or additional cost is involved because of such action by the District, the Contractor shall seek an adjustment to the Contract Price or the Contract Time as provided for in the Contract Documents. Failure of the Contractor to request such an adjustment of the Contract Time or the Contract Price in strict conformity with the provisions of the Contract Documents applicable thereto shall be deemed a waiver of the same.

10.2 **District's Coordination of Separate Contractors.** The District shall provide for coordination of the activities of the District's own forces and of each separate contractor with the Work of the Contractor, who shall cooperate with them. The Contractor shall participate with other separate contractors and the District in reviewing their respective Construction Schedules when directed to do so. The Contractor shall make any revisions to the Approved Construction Schedule for the Work hereunder deemed necessary after a joint review and mutual agreement. The Construction Schedules shall then constitute the Construction Schedules to be used by the Contractor, separate contractors and the District until subsequently revised.

10.3 **Mutual Responsibility.** The Contractor shall afford the District and separate contractors reasonable opportunity for storage of their materials and equipment and performance of their activities at the Site and shall connect and coordinate the Contractor's Work, construction and operations with theirs as required by the Contract Documents.

10.4 **Discrepancies or Defects.** If part of the Contractor's Work depends for proper execution or results upon construction or operations by the District or a separate contractor, the Contractor shall, prior to proceeding with that portion of the Work, promptly report to the Construction Manager any apparent discrepancies or defects in such other construction that would render it unsuitable for such proper execution and results. Failure of the Contractor to so report shall constitute an
acknowledgment that the District's or separate contractors' completed or partially completed construction is fit and proper to receive the Contractor's Work, except as to defects not then discoverable by the Contractor's reasonable diligence.

ARTICLE 11: TESTS AND INSPECTIONS

11.1 Tests; Inspections; Observations.

11.1.1 Contractor's Notice. If the Contract Documents, laws, ordinances or any public authority with jurisdiction over the Work requires the Work, or any portion thereof, to be specially tested, inspected or approved, the Contractor shall give the Construction Manager written notice of the readiness of such Work for observation, testing or inspection at least two (2) working days prior to the time for the conducting of such test, inspection or observation. If inspection, testing or observation is by authority other than the District, the Contractor shall inform the District's Inspector and the Construction Manager not less than two (2) working days prior to the date fixed for such inspection, test or observation. The Contractor shall not cover up any portion of the Work subject to tests, inspections or observations prior to the completion and satisfaction of the requirements of such test, inspection or observation. In the event that any portion of the Work subject to tests, inspection or approval shall be covered up by Contractor prior to completion and satisfaction of the requirements of such tests, inspection or approval, Contractor shall be responsible for the uncovering of such portion of the Work as is necessary for performing such tests, inspection or approval without adjustment of the Contract Price or the Contract Time on account thereof.

11.1.2 Cost of Tests and Inspections. Costs for tests and inspection of materials shall be paid by the District as provided for herein. Should any act, omission or other conduct of the Contractor, any of its Subcontractors, of any tier, or Material Suppliers cause the number of hours or the costs of such tests or inspections to be excessive, the Contractor shall be solely responsible for all such excess costs and the District may deduct such amount from any portion of the Contract Price then or thereafter due the Contractor. The District will pay for all tests and inspections provided that, in addition to the cost to be paid by the Contractor previously set forth in this Article, the Contractor shall pay for all tests and inspections under any of the following conditions: (i) when such costs are stipulated in the provisions of the Contract Documents to be borne by the Contractor; (ii) when a material is tested or inspected and fails to meet the requirements of the Specifications and/or Drawings; or (iii) when the source of the material is changed after the original test or inspection has been made or approved.

11.1.3 Testing/Inspection Laboratory. The District shall select duly qualified person(s) or testing laboratory(ies) to conduct the tests and inspections to be paid for by the District and required by the Contract Documents. All such tests and inspections shall be in conformity with the latest adopted Title 24 of the California Code of Regulations. Where inspection or testing is to be conducted by an independent laboratory or testing agency, materials or samples thereof shall be selected by the laboratory, testing agency, the District's Inspector, the Construction Manager or the Architect and not by the Contractor.
11.1.4 Additional Tests, Inspections and Approvals. If the Architect, the Construction Manager, the District's Inspector or public authorities having jurisdiction over the Work determine that portions of the Work require additional testing, inspection or approval, the Construction Manager shall instruct the Contractor to make arrangements for such additional testing, inspection or approval by an entity acceptable to the District, and the Contractor shall give timely notice to the Construction Manager of when and where tests and inspections are to be made so the District's Inspector and the Architect may observe such procedures. The District shall bear the costs of such additional tests, inspections or approvals, except to the extent that such additional tests, inspections or approvals reveal any failure of the Work to comply with the requirements of the Contract Documents, in which case the Contractor shall bear all costs made necessary by such failures, including without limitation, the costs of corrections, repeat tests, inspections or approvals and the costs of the Architect's services or its consultants in connection therewith. Where required DSA testing of the work identifies a failure rate of ten percent (10%) or greater for any system, scope of work, installation or subtrade that has been specifically targeted, District may, at its sole discretion, order that all such similar systems, installations, scopes of work or subtrade work used in connection with the Project be tested, and the cost to test all such work shall be paid by the Contractor.

11.2 Delivery of Certificates. Required certificates of testing, inspection or approval shall, unless otherwise required by the Contract Documents, be secured by the Contractor and promptly delivered to the Architect. If a material is not required to be tested, the Architect, Inspector or the District may require Contractor to furnish a certificate bearing the official and legal signature of the supplier with each delivery of such material, which certificate shall state that the material complies with the Specifications.

11.3 Timeliness of Tests, Inspections and Approvals. Tests or inspections required and conducted pursuant to the Contract Documents shall be made or arranged by Contractor to avoid delay in the progress of the Work.

ARTICLE 12: UNCOVERING AND CORRECTION OF WORK

12.1 Inspection of the Work.

12.1.1 Access to the Work. All Work and all materials and equipment forming a part of the Work or incorporated into the Work are subject to inspection by the District, the Construction Manager, the Architect and the District's Inspector for conformity with the Contract Documents. The Contractor shall, at its cost and without adjustment to the Contract Price or the Contract Time, furnish any facilities necessary for sufficient and safe access to the Work for purposes of inspection by the District, the Construction Manager, the Architect, the District's Inspector, DSA or any other public or quasi-public authority with jurisdiction over the Work or any portion thereof.

12.1.2 Limitations Upon Inspections. Inspections, tests, measurements, or other acts of the Architect and the District's Inspector hereunder are for the sole purpose of assisting them in determining that the Work, materials, equipment, progress of the Work, and quantities generally comply and conform with the requirements of the Contract Documents. These acts
or functions shall not relieve the Contractor from performing the Work in full compliance with the Contract Documents. No inspection by the Architect or the District's Inspector shall constitute or imply acceptance of Work inspected. Inspection of the Work hereunder is in addition to, and not in lieu of, any other testing, inspections or approvals of the Work required under the Contract Documents.

12.2 Uncovering of Work. If any portion of the Work is covered contrary to the request of the Architect, the District's Inspector, the Construction Manager or the requirements of the Contract Documents, it must be uncovered by the Contractor for observation by such District representative and be replaced by the Contractor without adjustment of the Contract Time or the Contract Price.

12.3 Rejection of Work. Prior to the District's Final Acceptance of the Work, any Work or materials or equipment forming a part of the Work or incorporated into the Work which is defective or not in conformity with the Contract Documents may be rejected by the District, the Construction Manager, the Architect or the District's Inspector and the Contractor shall correct such rejected Work without any adjustment to the Contract Price or the Contract Time, even if the Work, materials or equipment have been previously inspected by the Architect or the District's Inspector or even if they failed to observe the defective or non-conforming Work, materials or equipment.

12.4 Correction of Work. The Contractor shall promptly correct any portion of the Work rejected by the District, the Construction Manager, the Architect or the District's Inspector for failing to conform to the requirements of the Contract Documents, or which is determined by them to be defective, whether observed before or after Substantial Completion and whether or not fabricated, installed or completed. The Contractor shall bear all costs of correcting such rejected Work, including additional testing and inspections and compensation for the Architect's or Inspector’s services and expenses made necessary thereby. The Contractor shall bear all costs of correcting destroyed or damaged construction, whether completed or partially completed, of the District or separate contractors, caused by the Contractor's correction or removal of Work which is not in accordance with the requirements of the Contract Documents, or which is defective.

12.5 Removal of Non-Conforming or Defective Work. The Contractor shall, at its sole cost and expense, remove from the Site all portions of the Work which are defective or are not in accordance with the requirements of the Contract Documents which are neither corrected by the Contractor nor accepted by the District.

12.6 Failure of Contractor to Correct Work. If the Contractor fails to commence to correct defective or non-conforming Work within three (3) days of notice of such condition and promptly thereafter complete the same within a reasonable time, the District may correct it in accordance with the Contract Documents. If the Contractor does not so proceed, the District may remove it and store the salvable materials or equipment at the Contractor's expense. If the Contractor does not pay costs of such removal and storage after written notice, the District may sell such materials or equipment at auction or at private sale and shall account for the proceeds thereof, after deducting costs and damages that should have been borne by the Contractor, including without limitation compensation for the Architect's and Inspector’s services, attorneys fees and other expenses made necessary thereby. If such proceeds of sale do not cover costs which the Contractor should have borne, the Contract Price shall be reduced by the deficiency. If payments of the Contract Price then or thereafter due the Contractor are not sufficient to cover such amount, the Contractor and the Surety
shall promptly pay the difference to the District.

12.7 Acceptance of Defective or Non-Conforming Work. The District may, in its sole and exclusive discretion, elect to accept Work which is defective or which is not in accordance with the requirements of the Contract Documents, instead of requiring its removal and correction, in which case the Contract Price shall be reduced as appropriate and equitable.

ARTICLE 13: WARRANTIES

13.1 Workmanship and Materials. The Contractor warrants to the District that all materials and equipment furnished under the Contract Documents shall be new, of good quality and of the most suitable grade and quality for the purpose intended, unless otherwise specified in the Contract Documents. All Work shall be of good quality, free from faults and defects and in conformity with the requirements of the Contract Documents. If required by the District, the Contractor shall furnish satisfactory evidence as to the kind and quality of materials and equipment incorporated into the Work. Any Work, or portion thereof not conforming to these requirements, including substitutions or alternatives not properly approved in accordance with the Contract Documents may be deemed defective. Where there is an approved substitution of, or alternative to, material or equipment specified in the Contract Documents, the Contractor warrants to the District that such installation, construction, material, or equipment will equally perform the function and have the quality of the originally specified material or equipment. The Contractor expressly warrants the merchantability, the fitness for use, and quality of all substitute or alternative items in addition to any warranty given by the manufacturer or supplier of such item.

13.2 Warranty Work. If, within one year after the date of Final Acceptance, or such other time frame set forth elsewhere in the Contract Documents, any of the Work is found to be defective or not in accordance with the requirements of the Contract Documents, or otherwise contrary to the warranties contained in the Contract Documents, the Contractor shall commence all necessary corrective action not more than seven (7) days after receipt of a written notice from the District to do so, and to thereafter diligently complete the same. In the event that Contractor shall fail or refuse to commence correction of any such item within said seven (7) day period or to diligently prosecute such corrective actions to completion, the District may, without further notice to Contractor, cause such corrective Work to be performed and completed. In such event, Contractor and Contractor's Performance Bond Surety shall be responsible for all costs in connection with such corrective Work, including without limitation, general administrative overhead costs of the District in securing and overseeing such corrective Work. Nothing contained herein shall be construed to establish a period of limitation with respect to any obligation of the Contractor under the Contract Documents. The obligations of the Contractor hereunder shall be in addition to, and not in lieu of, any other obligations imposed by any special guarantee or warranty required by the Contract Documents, guarantees or warranties provided by any manufacturer of any item or equipment forming a part of, or incorporated into the Work, or otherwise recognized, prescribed or imposed by law. Neither the District's Final Acceptance, the making of Final Payment, any provision in Contract Documents, nor the use or occupancy of the Work, in whole or in part, by District shall constitute acceptance of Work not in accordance with the Contract Documents nor relieve the Contractor or the Contractor's Performance Bond Surety from liability with respect to any warranties or responsibility for faulty or defective Work or materials, equipment and workmanship incorporated therein.
13.3 **Guarantee.** Upon completion of the Work, Contractor shall execute and deliver to the District the form of Guarantee included within the Contract Documents. The Contractor's execution and delivery of the form of Guarantee is an express condition precedent to any obligation of the District to disburse the Final Payment to the Contractor.

13.4 **Survival of Warranties.** The provisions of this Article 13 shall survive the Contractor's completion of Work under the Contract Documents, the District's Final Acceptance or the termination of the Contract.

**ARTICLE 14: SUSPENSION OF WORK**

14.1 **District's Right to Suspend Work.** The District may, without cause and without invalidating or terminating the Contract, order the Contractor, in writing, to suspend, delay or interrupt the Work in whole or in part for such period of time as the District may determine. The Contractor shall resume and complete the Work suspended by the District in accordance with the District's directive, whether issued at the time of the directive suspending the Work or subsequent thereto.

14.2 **Adjustments to Contract Price and Contract Time.** If the District orders a suspension of the Work, an adjustment shall be made to the Contract Price for increases in the direct cost of performance of the Work of the Contract Documents actually caused by suspension, delay or interruption ordered by the District; provided however that no adjustment of the Contract Price shall be made to the extent: (i) that performance is, was or would have been so suspended, delayed or interrupted by another cause for which the Contractor is responsible under the Contract Documents; or (ii) that an equitable adjustment is made or denied under another provision of the Contract Documents. Any such adjustment of the Contract Price shall not include any adjustment to increase the Contractor's overhead, general administrative costs or profit, all of which will remain as reflected in the Cost Breakdown submitted by the Contractor pursuant to the Contract Documents. In the event of the District's suspension of the Work, the Contract Time shall be equitably adjusted.

**ARTICLE 15: TERMINATION**

15.1 **Termination for Cause.**

15.1.1 **District's Right to Terminate.** The District may terminate the Contract upon the occurrence of any one or more of the following events of the Contractor's default: (i) if the Contractor refuses or fails to prosecute the Work with diligence as will ensure Substantial Completion of the Work within the Contract Time, or if the Contractor fails to substantially Complete the Work within the Contract Time; (ii) if the Contractor becomes bankrupt or insolvent, or makes a general assignment for the benefit of creditors, or if the Contractor or a third party files a petition to reorganize or for protection under any bankruptcy or similar laws, or if a trustee or receiver is appointed for the Contractor or for any of the Contractor's property on account of the Contractor's insolvency, and the Contractor or its successor in interest does not provide adequate assurance of future performance in accordance with the Contract Documents within 10 days of receipt of a request for such assurance from the District; (iii) if the Contractor repeatedly fails to supply sufficient skilled workmen or suitable materials or equipment; (iv) if the Contractor repeatedly fails to make prompt
payments to any Subcontractor, of any tier, or Material Suppliers or others for labor, materials or equipment; (v) if the Contractor disregards laws, ordinances, rules, codes, regulations, orders applicable to the Work or similar requirements of any public entity having jurisdiction over the Work; (iv) if the Contractor disregards proper directives of the Architect, the District's Inspector or District under the Contract Documents; (vii) if the Contractor performs Work which deviates from the Contract Documents and neglects or refuses to correct such Work; or (viii) if the Contractor otherwise violates in any material way any provisions or requirements of the Contract Documents. Once the District determines that sufficient cause exists to justify the action, the District may terminate the Contract without prejudice to any other right or remedy the District may have, after giving the Contractor and the Surety at least seven (7) days advance written notice of the effective date of termination. The District shall have the sole discretion to permit the Contractor to remedy the cause for the termination without waiving the District's right to terminate the Contract, or otherwise waiving, restricting or limiting any other right or remedy of the District under the Contract Documents or at law.

15.1.2 District's Rights Upon Termination. In the event that the Contract is terminated pursuant to this Article 15.1, the District may take over the Work and prosecute it to completion, by contract or otherwise, and may exclude the Contractor from the site. The District may take possession of the Work and of all of the Contractor's tools, appliances, construction equipment, machinery, materials, and plant which may be on the site of the Work, and use the same to the full extent they could be used by the Contractor without liability to the Contractor. In exercising the District's right to prosecute the completion of the Work, the District may also take possession of all materials and equipment stored at the site of the Work or for which the District has paid the Contractor but which are stored elsewhere, and finish the Work as the District deems expedient. In exercising the District's right to prosecute the completion of the Work, the District shall have the right to exercise its sole discretion as to the manner, methods, and reasonableness of the costs of completing the Work and the District shall not be required to obtain the lowest figure for completion of the Work. In the event that the District takes bids for remedial Work or completion of the Work, the Contractor shall not be eligible for the award of such contract(s).

15.1.3 Completion by the Surety. In the event that the Contract is terminated pursuant to this Article 15.1, the District may demand that the Surety take over and complete the Work. The District may require that in so doing, the Surety not utilize the Contractor in performing and completing the Work. Upon the failure or refusal of the Surety to take over and begin completion of the Work within fifteen (15) days after demand therefor, the District may take over the Work and prosecute it to completion as provided for above. Such remedy is in addition to, and not lieu of, other remedies available to District as provided by law or in equity.

15.1.4 Assignment and Assumption of Subcontracts. The District shall, in its sole and exclusive discretion, have the option of requiring any Subcontractor or Material Supplier to perform in accordance with its Subcontract or Purchase Order with the Contractor and assign the Subcontract or Purchase Order to the District or such other person or entity selected by the District to complete the Work.
15.1.5 Costs of Completion. In the event of termination under this Article 15.1, the Contractor shall not be entitled to receive any further payment of the Contract Price until the Work is completed. If the unpaid balance of the Contract Price as of the date of termination exceeds the District's direct and indirect costs and expenses for completing the Work, including without limitation, attorneys' fees and compensation for additional professional and consultant services, such excess shall be used to pay the Contractor for the cost of the Work performed prior to the effective date of termination with a reasonable allowance for overhead and profit. If the District's costs and expenses to complete the Work exceed the unpaid Contract Price, the Contractor and/or the Surety shall pay the difference to the District.

15.1.6 Contractor Responsibility for Damages. The Contractor and the Surety shall be liable for all damage sustained by the District resulting from, in any manner, the termination of Contract under this Article 15.1, including without limitation, attorneys' fees, and for all costs necessary for repair and completion of the Work over and beyond the Contract Price.

15.1.7 Conversion to Termination for Convenience. In the event the Contract is terminated under this Article 15.1, and it is determined, for any reason, that the Contractor was not in default under the provisions hereof, the termination shall be deemed a Termination for Convenience of the District and thereupon, the rights and obligations of the District and the Contractor shall be determined in accordance with Article 15.2 hereof.

15.1.8 District's Rights Cumulative. In the event the Contract is terminated pursuant to this Article 15.1, the termination shall not affect or limit any rights or remedies of the District against the Contractor or the Surety. The rights and remedies of the District under this Article 15.1 are in addition to, and not in lieu of, any other rights and remedies provided by law or otherwise under the Contract Documents. Any retention or payment of monies to the Contractor by the District shall not be deemed to release the Contractor or the Surety from any liability hereunder.

15.2 Termination for Convenience of the District. The District may at any time, in its sole and exclusive discretion, by written notice to the Contractor, terminate the Contract in whole or in part when it is in the interest of, or for the convenience of, the District. In such case, the Contractor shall be entitled to payment for: (i) Work actually performed and in place as of the effective date of such termination for convenience of the District, with a reasonable allowance for profit and overhead on such Work, and (ii) reasonable termination expenses for reasonable protection of Work in place and suitable storage and protection of materials and equipment delivered to the site of the Work but not yet incorporated into the Work, provided that such payments exclusive of termination expenses shall not exceed the total Contract Price as reduced by payments previously made to the Contractor and as further reduced by the value of the Work as not yet completed. The Contractor shall not be entitled to profit and overhead on Work which was not performed as of the effective date of the termination for convenience of the District. The District may, in its sole discretion, elect to have subcontracts assigned pursuant to Article 15.1.4 above after exercising the right hereunder to terminate for the District’s convenience.

ARTICLE 16: MISCELLANEOUS
16.1 **Governing Law.** This Contract shall be governed by and interpreted in accordance with the laws of the State of California.

16.2 **Successors and Assigns.** Except as otherwise expressly provided in the Contract Documents, all terms, conditions and covenants of the Contract Documents shall be binding upon, and shall inure to the benefit of the District and the Contractor and their respective heirs, representatives, successors-in-interest and assigns.

16.3 **Cumulative Rights and Remedies; No Waiver.** Duties and obligations imposed by the Contract Documents and rights and remedies available thereunder shall be in addition to and not in lieu of or otherwise a limitation or restriction of duties, obligations, rights and remedies otherwise imposed or available by law. No action or failure to act by the District shall constitute a waiver of a right or remedy afforded it under the Contract Documents or at law nor shall such an action or failure to act constitute approval of or acquiescence in a breach hereunder, except as may be specifically agreed in writing.

16.4 **Severability.** In the event any provision of the Contract Documents shall be deemed illegal, invalid, unenforceable and/or void, by a court or any other governmental agency of competent jurisdiction, such provision shall be deemed to be severed and deleted from the Contract Documents, but all remaining provisions hereof, shall in all other respects, continue in full force and effect.

16.5 **No Assignment by Contractor.** The Contractor shall not sublet or assign the Contract, or any portion thereof, or any monies due thereunder, without the express prior written consent and approval of the District, which approval may be withheld in the sole and exclusive discretion of the District. The District's approval to such assignment shall be upon such terms and conditions as determined by the District in its sole and exclusive discretion.

16.6 **Independent Contractor Status.** In performing its obligations under the Contract Documents, the Contractor is an independent contractor to the District and not an agent or employee of the District.

16.7 **Notices.** Except as otherwise expressly provided for in the Contract Documents, all notices which the District or the Contractor may be required, or may desire, to serve on the other, shall be effective only if delivered by personal delivery or by postage prepaid, First Class Certified Return Receipt Requested United States Mail, addressed to the District or the Contractor at their respective address set forth in the Contract Documents, or such other address(es) as either the District or the Contractor may designate from time to time by written notice to the other in conformity with the provisions hereof. In the event of personal delivery, such notices shall be deemed effective upon delivery, provided that such personal delivery requires a signed receipt by the recipient acknowledging delivery of the same. In the event of mailed notices, such notice shall be deemed effective on the third working day after deposit in the mail.

16.8 **Disputes; Continuation of Work.** Notwithstanding any claim, dispute or other disagreement between the District and the Contractor regarding performance under the Contract Documents, the scope of Work thereunder, or any other matter arising out of or related to, in any manner, the Contract Documents, the Contractor shall proceed diligently with performance of the Work in accordance with the District's written direction, pending any final determination or decision regarding any such claim, dispute or disagreement.
16.9 Dispute Resolution; Claims Under $375,000.00. Claims between the District and the Contractor of $375,000.00 or less shall be resolved in accordance with the procedures established in Part 3, Chapter 1, Article 1.5 of the California Public Contract Code, §§20104 et seq.; provided however that California Public Contract Code §20104.2(a) shall not supersede the requirements of the Contract Documents with respect to the Contractor's notification to the District of such claim or extend the time for the giving of such notice as provided in the Contract Documents. The term "claims" as used herein shall be as defined in California Public Contract Code §20104(b)(2).

16.10 Attorneys Fees. Except as expressly provided for in the Contract Documents, or authorized by law, neither the District nor the Contractor shall recover from the other any attorneys fees or other costs associated with or arising out of any legal, administrative or other proceedings filed or instituted in connection with or arising out of the Contract Documents or the performance of either the District or the Contractor thereunder.

16.11 Marginal Headings; Interpretation. The titles of the various Articles of these General Conditions and elsewhere in the Contract Documents are used for convenience of reference only and are not intended to, and shall in no way, enlarge or diminish the rights or obligations of the District or the Contractor and shall have no effect upon the construction or interpretation of the Contract Documents. The Contract Documents shall be construed as a whole in accordance with their fair meaning and not strictly for or against the District or the Contractor.

16.12 Provisions Required by Law Deemed Inserted. Each and every provision of law and clause required by law to be inserted in the Contract Documents is deemed to be inserted herein and the Contract Documents shall be read and enforced as though such provision or clause are included herein, and if through mistake, or otherwise, any such provision or clause is not inserted or if not correctly inserted, then upon application of either party, the Contract Documents shall forthwith be physically amended to make such insertion or correction.

16.13 Entire Agreement. The Contract Documents contain the entire agreement and understanding between the District and the Contractor concerning the subject matter hereof, and supersedes and replaces all prior negotiations, proposed agreements or amendments, whether written or oral. No amendment or modification to any provision of the Contract Documents shall be effective or enforceable except by an agreement in writing executed by the District and the Contractor.
SECTION 00800
SPECIAL CONDITIONS

PART 1

1.01 Contract Time.

A. **Substantial Completion of the Work.** The Work shall be commenced on the date stated in the Notice to Proceed issued by the District to the Contractor and shall be completed (Substantial Completion) within 250 consecutive calendar days from and after the date stated in the Notice to Proceed (Reference Article 7 of the General Conditions). Total contract time is 280 consecutive calendar days.

B. **Interim Milestone Completion Dates.** Notwithstanding any provision of the Contract Documents to the contrary, Contractor shall sequence and coordinate the work so that portions of the work are completed as required by the Work Segment Plan in accordance with start and completion dates.

1.02 Liquidated Damages.

A. **Delayed Completion of the Work.** Pursuant to Article 7 of the General Conditions, the Contractor shall be subject to the assessment and withholding of Liquidated Damages for failure to achieve Substantial Completion of the Work within the Contract Time as indicated in item 1.01.A, above. Liquidated Damages shall be at the rate of $2,000 per day until Work of Construction Segments IA and IB as defined on Section 01010 is achieved.

B. **Delayed Final Completion of the Work.** Pursuant to Article 7 of the General Conditions, the Contractor shall be subject to the assessment and withholding of Liquidated Damages for failure to achieve Final Completion of the Work in accordance with the Contract Documents. Liquidated Damages shall be at the rate of $2,000 per day until Final Completion of the Work is achieved.

C. **Delayed Submittals.** The per day assessment of Liquidated Damages for Contractor’s delayed submission of Submittals pursuant to Article 4.8.2.1 of the General Conditions is $2,000 per day per Submittal until the required Submittal is submitted.

D. **Other Milestone Delays.** Refer to Appendix A for project milestones and associated liquidated damages

E. **Cumulative Assessment of Liquidated Damages.** If the Contractor fails to timely delivery of the Submittals, fails to achieve Final Completion of the Work Segments as set forth herein, or fails to achieve Substantial or Final Completion of the Work, the Contractor shall be subject to assessment and withholding of Liquidated Damages in the amounts set forth above for each such portion of the Work which is not timely delivered or completed within the time allocated for each portion of the Work.
1.03 Insurance

Insurance Provided By District.
Not Applicable.

B. Insurance Provided by Contractors/Subcontractors.
Pursuant to Article 6.12 of the General Conditions, the Contractor, all Subcontractors and Sub-Subcontractors (except Excluded Parties covered under Article 6.18) shall provide and maintain the following insurance coverage’s, with minimum coverage amounts as set forth below:

1. **Workers Compensation Insurance**
   In accordance with limits established by law.

2. **Employers Liability Insurance**
   $2,000,000

3. **Commercial General Liability Insurance**
   Per Occurrence $1,000,000
   Aggregate $2,000,000

4. **Automobile Liability**
   Bodily Injury/Property Damage per Occurrence $1,000,000

5. **Aircraft Liability Insurance (if applicable)**
   Per Occurrence $5,000,000
   Aggregate $5,000,000

C. Insurance Provided by Excluded Parties.
Pursuant to Article 6.18 of the General Conditions, the Excluded Parties shall provide and maintain the following insurance coverage’s, with minimum coverage amounts as set forth below:

1. **Workers Compensation Insurance**
   In accordance with limits established by law.

2. **Employers Liability Insurance**
   $1,000,000

3. **Commercial General Liability Insurance**
   Per Occurrence $1,000,000
   Aggregate $3,000,000

4. **Automobile Liability**
   Bodily Injury/Property Damage Per Occurrence $1,000,000

5. **Aircraft Liability Insurance (if applicable)**
   Per Occurrence $5,000,000
   Aggregate $5,000,000
D. **Pollution Legal Liability Insurance.**

Pursuant to Article 6.21 of the General Conditions, the Excluded Parties shall provide and maintain the following insurance coverage's, with minimum coverage amounts as set forth below:

<table>
<thead>
<tr>
<th>Coverage</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Per Occurrence</td>
<td>$5,000,000</td>
</tr>
<tr>
<td>Aggregate</td>
<td>$5,000,000</td>
</tr>
</tbody>
</table>

1.04 **Drawings and Specifications.**

The number of sets of the Drawings and Specifications which the District will provide to the Contractor pursuant to Article 2.1.2 of the General Conditions is one (1) set of reproducible specifications with plans which can be downloaded from the website at

http://www.riohondo.edu/facilities/RFQ/index.htm

Website above is the official record of the bid documents. Contractor is responsible for downloading all drawings, specifications, addendum etc from the above mentioned website.

1.05 **Mark-ups on Changes to the Work.**

A. In the event of Changes to the Work, pursuant to Article 9 of the General Conditions, the mark-up for all overhead (including home and field office overhead), general conditions costs and profit, shall not exceed five percent (5%) of the direct actual costs if the General Contractor performed the work, five percent (5%) if the sub-contractor performed the work, as determined in accordance with Article 9.4 of the General conditions. Sub-contractor overhead and profit shall / will not exceed Five percent (5%) for self performed work and Five percent (5%) for work preformed by others. The foregoing limitation on mark-ups shall apply regardless of the number of Subcontractors, of any tier, performing any portion of such Change to the Work. In addition to the foregoing, Contractor may add a bond premium fee of the actual direct cost of the bond for such Change, not to exceed two percent (2%), of the actual direct costs for performance of the Change and the maximum allowable mark-up for overhead, general conditions and profit.

B. **Deleted Work:** All deductive change order(s) must be prepared pursuant to Contract Documents. Deductive Change Orders must be at a fair cost value to the district and shall credit back all mark-ups to the district along with the actual scope of work. General contractor and all subcontractors shall not be entitled to any profit and overhead on the deducted work.

1.06 **Inclement Weather Days.**

Pursuant to Article 7.4.1 of the General Conditions, the number of Rain Days (including inclement weather) for this Contract is **20-days.** Include a critical path activity entitled “Remaining Inclement Weather Days” on the initial Contract schedule. This activity shall have an initial duration of seven (7) work days and shall be the last activity in the schedule prior to the activity entitled “Completion”. All predecessor activities must pass through the
Inclement Weather day’s activity. The Contractor shall request use of the Inclement Weather Day when a critical path activity has been delayed due to inclement weather. This request must occur in the same month as the inclement weather delay and must be approved by a Change Order. Inclement Weather Delays to non-critical activities will not be considered. If, at completion, there are inclement weather days still remaining, the Completion date shall not be adjusted. If at or near completion, additional inclement weather days are required, the completion date shall be adjusted accordingly by processing a Change Order for a non-compensable time extension.

1.07 District’s Construction Manager.

Del Terra
13181 Crossroads Prkwy, N., Ste 540
City of Industry, CA 91746

PART 2

2.0 Construction operations, phasing, execution and Special Provisions

This Section supersedes other general conditions where applicable.

2.1 Project Limits.

The Contractor will limit its operations to the area included in the Contract Documents. All contractor lay-down, construction work and operations will be limited to the area as directed by the Construction Manager, Approved by Rio Hondo Program Management Team.

2.2 Hours of Operation

Work will be coordinated with Construction Manager & College for minimum disruption to College operations and shall be performed during normal business working hours; Monday to Friday from 6:00 AM to 6:00 PM. All off-hour work or weekend work must be approved by the College through the Construction Manager at least two days in advance.

2.3 Construction Traffic Route

Contractor to use pre-determined construction traffic routes as approved by the College.

2.4 Progress Schedule; Contractor Responsibility for Construction Schedule

CONTRACTOR shall be responsible for the preparation, submittal and maintenance of Construction Schedules required by the Contract Documents according but not limited to Section 01320, CONSTRUCTION PROGRESS DOCUMENTATION as included in Division 01 of the Bid Documents. All pertinent provisions of the General Conditions apply.
2.5 Phasing

A Work will be performed in such a manner as to minimize impact to normal college operations. Any phase/segment shall be required to be completed according to the approved Milestones Schedule.

B Contractor shall submit a “work to complete” list to the Construction Manager 5 calendar days before the scheduled end of any phase. The Construction Manager and the Architect will comment and add items to the list as necessary. The contractor shall complete the “work to complete” list within 3 days after having received the list from the Construction Manager. The contractor shall request a punch list walk 5 days prior to the scheduled end of any phase/segment.

C During the performance of this contract, the college and facilities operations will be ongoing and will remain under normal operations. Work will be permitted during school hours, provided that safe access to and exits from buildings are maintained while facilities remain in use. Temporary fencing with green windscreen shall be erected by the contractor to segregate work areas from all other campus areas.

D Contractor shall commence performance of the Contract upon the date specified in the Notice to Proceed and shall furnish sufficient labor, equipment, material, extra shifts and overtime to achieve the required milestones as indicated on Section 01010.

2.6 Allowances

The bidders shall include within the base bid the following allowances. The allowances shall be identified as separate line items in the Contractor’s schedule of values. The allowances are to be used at the College’s sole discretion for work not otherwise shown and/or specified in the construction documents. Work performed under the allowances shall be performed only as directed in writing by Program Management Team, through the Construction Manager. Any and all unused allowance amounts shall be credited to the College by change order and reflected in the Contractor’s final application for payment without any compensation for overhead and profit.

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<tr>
<td></td>
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2.7 Ancillary Project Conditions

Contractor shall provide an itemized scope and work plan to include field notes and shop
drawings to accomplish each of the ancillary projects listed on Exhibit I above. Estimates of costs must be provided prior to commencement of work. The work will be tracked on a time and materials basis.

Owner reserves the option to assign work to others with a Not to Exceed amount of 1% of contract value and at no more than 5% overhead and profit markup on assigned subcontractor. Any allowances not used can be assigned to other allowances or deleted in this contract at no penalty to the College.

2.8 Coordination with other Onsite contractors/trades

A. Contractor shall coordinate operations included in various sections of the Contract Documents to help ensure efficient and orderly completion of the work.

B. Coordinate scheduling and timing of required administrative procedures with other construction activities to avoid conflicts and help ensure orderly progress of the work. Such administrative activities include, but are not limited to, the following:
   1. Preparation of schedules.
   2. Installation, relocation and removal of temporary facilities.
   3. Progress meetings.
   4. Project coordination activities.

C. Coordinate all work with other onsite contractors.

2.9 Security

Contractor is responsible for Work and Site security from start of construction, date of NTP, to Substantial Completion, whichever comes later. Contractor’s responsibility includes assessment of security needs within and around Site Boundaries and employment of qualified personnel as may be necessary at no additional costs to the College. In case the security personnel is not used all such costs will be credited back to the college at prevailing wages.

2.10 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 Contract and shall take all necessary measures and be responsible for the proper care and protection of all materials delivered to and from the site and work performed until completion and final acceptance by the College. 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)(2).

B. Contractor shall take, and require all subcontractors to take, all necessary precautions for the safety of workers on the site and shall comply with all applicable federal, state, local and other safety laws, standards, orders, rules, regulations, and building codes to prevent accidents or injury to persons on, about, or adjacent to premises where Work is being performed and to provide a safe and healthful place of employment. In addition to meeting all requirements of OSHA, Cal-OSHA, state, and local codes. Contractor shall furnish, erect and
properly maintain at all times, as directed by the College or Program Manager 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.

C. The Contractor shall erect and maintain, as required by existing conditions and performance of the Contract, reasonable safeguards for safety and protection, including posting danger signs and other warnings against hazards, promulgating safety regulations, and notifying owners and users of adjacent sites and utilities.

D. Requirements for Existing Sites.

Contractor shall (unless waived by the College in writing):

(a) When performing construction on existing sites, become informed and take into specific account the maturity of the students on the site. Contractor shall perform Work which may interfere with school routine before or after school hours, enclose working area with a substantial barricade, and arrange Work to cause a minimum amount of inconvenience and danger to students and faculty in their regular school activities. The Contractor shall comply with specifications and directives of the College regarding the timing of certain construction activities in order to avoid unnecessary interference with school functioning.

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

(c) Deliver materials to building area over route designated by the College through the Construction Manager.

(d) Take preventive measures to minimize objectionable dust, noise, or other disturbances.

(e) Take preventive measures 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 land surveyor or civil engineer and all maps and records required therefrom shall be filed with the County and local authorities, at no cost to the College. All filing and plan check fees shall be paid by Contractor.

(f) Provide to the College on request, the Contractor's written safety program and safety plan for each site.

E. Covering and Cleaning: Cover and protect the College's property within the project limits, as required to prevent soiling or damage by dust, dirt, water, fumes, or otherwise as deemed necessary by the College or Program Manager.

F. Repair or replace any damage to existing structures, improvements and equipment caused by Contractor's operations, at Contractor's expense.

G. Repair or replace damaged work with new materials, to restore the damaged areas and surfaces equal to and matching, the conditions which existed prior to damage, or at start of the work of this Contract, at no cost to the College.
H. Prior to start of work, Contractor, College and Construction Manager shall conduct an on-site inspection of existing conditions and the Contractor shall clearly document and report damaged conditions to the College. Items not reported to the College at time of inspection will be assumed to be result of Contractor’s work, whose responsibility it will be to repair or replace those items. Contractors shall include, along with his report to the College, digital, dated photographs.

2.11 Landscape Repair and Additional Scope

A. Patch all grass areas damaged by construction vehicles and equipment. Re-sod or hydro-seed the area to its previous condition or better under the direction of the Construction Manager or College Maintenance Department. Do not use grass seeds. Replace any sprinklers or irrigation material damaged by construction activities. Upon completion of Work, Contractor shall restore grass areas to its previous conditions before start of construction operations. Prior to commencement of work, Contractor is to identify damaged and non-operational irrigation and landscape elements and report to the Construction Manager.

B. Fire-Hydrant Protection: Contractor shall protect all Fire Hydrants in the site vicinity from any kind of damage due to construction activity.

C. Contractor shall provide Construction traffic control including flagmen as necessary during deliveries. Contractor to provide flagmen and other traffic control personnel at any other location as may be deemed necessary by the construction manager-for safety of all students, staff and visitors. Contractor will follow pre-determined route for access and exit to the campus and shall direct/park all haul vehicles as directed by the Rio Hondo Program Management Team.

Other Exhibits

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END OF SECTION
RIO HONDO COMMUNITY COLLEGE DISTRICT

RIO HONDO COMMUNITY COLLEGE

SOCcer FIELD

PROJECT MANUAL

100% CONSTRUCTION DOCUMENTS

AUGUST 2014

PMSM
ARCHITECTS

SCANNED
PROJECT MANUAL
FOR
RIO HONDO COMMUNITY COLLEGE
SOCCER FIELD
RIO HONDO COMMUNITY COLLEGE DISTRICT
WHITTIER, CALIFORNIA

SPECIFICATIONS

PMSM Architects
1266 Monterey Street
San Luis Obispo, CA 93401

3035
EXP. 8-30-16

Structural Engineer
KPFF Consulting Engineers
6080 Center Drive, Ste. 300
Los Angeles, CA 90045

Electrical Engineer
P2S Engineering
5000 East Spring Street, 8th Floor
Long Beach, CA 90815

Landscape Architect
Wilson Associates
11262 Warminster St.
Riverside, CA 92503

PMSM ARCHITECTS
## DOCUMENT 00005

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1.01 SECTION INCLUDES

A. List of abbreviations, symbols, and acronyms of societies, institutes, and associations generally appearing in the Contract Documents.

1.02 RELATED SECTIONS

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PART 2 - PRODUCTS (Not applicable)

PART 3 - EXECUTION

3.01 ABBREVIATIONS

ac Alternating current
amp ampere
BTU British thermal unit
cfh Cubic feet per hour
cfm Cubic feet per minute
cm Centimeter
Co. Company
COP Coefficient of performance
Corp. Corporation
d Penny
db. Decibel
DB Dry bulb
dc Direct current
EER Energy efficiency ratio
F Degrees Fahrenheit
fpm Feet per minute
ft Foot or feet
gph Gallons per hour
gpm Gallons per minute
HP Horsepower
HVAC Heating, ventilating and air conditioning
Hz Hertz
Inc. Incorporated
KHz Kilohertz
Kip thousand pounds
Ksf Thousand pounds per square foot
Ksi Thousand pounds per square inch
Kv Kilovolt
KVA Kilovolt amperes
KW Kilowatt
KWH Kilowatt hour
LF Linear foot
lb Pound
LED Light emitting diode
MBH 1000 BTUs per hour
<table>
<thead>
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<td>MHz</td>
<td>Mega hertz</td>
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<tr>
<td>mil</td>
<td>Thousandth of an inch</td>
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<td>mm</td>
<td>Millimeter</td>
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<td>mph</td>
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<td>Ounce</td>
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<td>Pounds per square inch</td>
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<td>Pounds per square inch, gage</td>
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<td>RF</td>
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<td>PEI</td>
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<td>PS</td>
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END OF SECTION
SECTION 01027
APPLICATION FOR PAYMENT

PART 1 - GENERAL

1.1 SUMMARY

A. This section specifies administrative and procedural requirements governing the Contractor’s Application for Payment.

B. Submit applications for payment to Architect in accordance with the schedule established by the conditions of the Contract and Agreement between Owner and Contractor.

C. The Contractor’s Construction Schedule and Submittal Schedule are included in Section “submittals”.

1.2 SCHEDULE OF VALUES

A. Coordinate preparation of the Schedule of Values with preparation of the Contractor’s Construction Schedule.

1. Submit the schedule of Values to the Architect at the earliest feasible date, but in no case later than 7 days before the date scheduled for submittal of the initial Application for Payment.

B. Format and Content: Use the Project Manual Table of Contents as a guide to establish the format for the Schedule of Values:

1. Identification: Include the following Project Identification on the Schedule of Values:
   a. Project name and location.
   b. Name of the Architect.
   c. Project Number.
   d. Contractor’s name and address.
   e. Date of submittal.

2. Arrange the Schedule of Values in a tabular form with separate columns to indicate the following for each item listed:
   a. Generic Name.
   b. Related Specification Section.
   c. Name of subcontractor.
   d. Dollar value.
   e. Percentage of Contract Sum to the nearest one-hundredth percent, adjusted to total 100 percent.

3. Provide a breakdown of the Contract Sum in sufficient detail to facilitate continued evaluation of Applications for Payment and progress reports. Break principal subcontract amounts down into specific line items.

4. Round amounts off to the nearest whole dollar; the total shall equal the Contract Sum.
SECTION 01027
APPLICATION FOR PAYMENT

5. For each part of the Work where an Application for Payment may include materials or equipment, purchased or fabricated and stored, but not yet installed, provide separate line items on the Schedule of Values for initial cost of the materials, for each subsequent stage of completion, and for total installed value of that part of the Work.

6. Schedule Updating: Update and resubmit the Schedule of Values when Change Orders or Construction Change Directives result in a change in the Contract Sum.

1.3 APPLICATIONS FOR PAYMENT

A. Each Application for Payment shall be consistent with previous applications and payments as certified by the Architect and paid for by the College.

B. Payment Application Times: Each progress payment date is as indicated in the Agreement. The period of construction Work covered by each Application or Payment is the period indicated in the Agreement.

C. Payment Application Forms: Use AIA Document G702 and Continuation Sheets G 703 as the form for Application for Payment.

D. Application Preparation: Complete every entry on the form, including notarization and execution by person authorized to sign legal documents on behalf of the College. Incomplete applications will be returned without action.

1. Entries shall match data on the Schedule of Values and Contractor's Construction Schedule. Use updated schedules if revisions have been made.

2. Include amounts of Change Orders and Construction Change Directives issued prior to the last day of the construction period covered by the application.

3. Transmit each copy with a transmittal form listing attachments, and recording appropriate information related to the application in a manner acceptable to the Architect.

4. When Architect finds the application completed and correct will transmit a certificate for payment to Owner with a copy to the Contractor.

E. Lien Release: With each Application for Payment submit lien releases from subcontractors or sub-contractors and suppliers for the construction period covered by the previous application.

1. Submit partial releases on each item for the amount requested, prior to deduction for retainage, on each item.

2. When an application shows completion of an item, submit final or full releases.
3. Submit final Application for Payment with or preceded by final releases from every entity involved with performance of Work covered by the application who could lawfully be entitled to payments.

4. Release forms: Submit on release forms provided by the College and execute in a manner, acceptable to the College.

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

1. List of subcontractors.

2. Schedule of Values.

3. Contractor’s Construction Schedule (preliminary if not final).


5. Certificates of insurance and insurance policies.

6. Performance and payment bonds (if required).

G. Application for payment at Substantial Completion: Following issuance of the Certificate of Substantial Completion, submit an Application for Payment; this application shall reflect any Certificates of Partial Substantial Completion issued previously for College occupancy of designated portions of the Work.

1. Administrative actions and submittals that shall proceed or coincide with this application include:

   a. Project inspector’s status of completion.
   b. Warranties (guarantees) and maintenance agreements.
   c. Test / adjust / balance records.
   d. Maintenance instructions.
   e. Meter readings.
   f. Start-up performance reports.
   g. Change-over information related to Owner’s occupancy, use, operation and maintenance.
   h. Final cleaning.
   i. Application for reduction of retainage, and consent of surety.
   j. List of incomplete Work, recognized as exceptions to Architect’s Certificate of Substantial Completion.

H. Final Payment Application: Administrative actions and submittals which must precede or coincide with submittal of the final payment Application for Payment include the following:

1. Completion of Project closeout requirement.

2. Completion of items specified for completion after Substantial Completion.
3. Assurance that unsettled claims will be settled.

4. Assurance that Work not complete and accepted will be completed without undue delay.

5. Transmittal of required Project construction records to Owner.

6. Removal of temporary facilities and services.

7. Removal of surplus materials, rubbish and similar elements.

8. Change of door locks to Owner’s access.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION
PART 1 - GENERAL

1.1 SUMMARY

A. This section specifies administrative and procedural requirements for project coordination between Contractor, Subcontractors, Owner and Architect.

1.2 COORDINATION

A. General Contractor to coordinate the work of the subcontractors for the project.

B. Coordinate construction activities included under various Sections of these Specifications to assure efficient and orderly installation of each part of the work. Coordinate construction operations included under different Sections of the Specifications that are dependent upon each other for proper installation, connection, and operation.

1. Where installation of one part of the Work is dependent on installation of other components, either before or after its own installation, schedule construction activities in the sequence required to obtain the best results.

2. Where availability of space is limited, coordinate installation of different components to assure maximum accessibility for required maintenance, service and repair.

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

C. Where necessary, prepare memorandum for distribution to each party involved outlining special procedures required for coordination. Include such items as required notices, reports, and attendance at meetings.

1. Prepare similar memorandum for the Owner and separate Contractors where coordination of their Work is required.

D. Administrative Procedures: Coordinate scheduling and timing of required administrative procedures with other construction activities to avoid conflicts and ensure orderly progress of the work. Such administrative activities include, but are not limited to, the following:

1. Attend preconstruction meetings.
2. Preparation of schedules.
4. Delivery and processing of submittals.
5. Progress meetings.
6. Project Close-out activities.
7. Establish procedures fro intra-project communications.

E. Submittals

1. CONTRACTOR shall prepare coordination drawings to coordinate the installation of products and materials fabricated, furnished and installed by separate entities, under different parts of the Contract. CONTRACTOR shall notify CONSTRUCTION MANAGER and ARCHITECT of all major conflicts in writing in a timely manner so...
that the design team can respond without construction delays. Coordination drawings shall address the following at a minimum.

2. Limitations in available space for installation or service. CONTRACTOR shall overlay plans of each trade and verify space requirements and conflicts between trades. Minor changes and adjustments that do not affect design intent shall be made by CONTRACTOR and shall be highlighted for ARCHITECT’S review.

3. Incompatibility between items provided under different trades (such as difference in voltage between equipment specified under Division 15 and electrical power provided under Division 16.)

4. Inconsistencies between drawings, specifications and codes (between trades and within each trade)

5. Additional items required for existing facilities construction projects shall be Designed and prepared from available as-built drawings that are verified through non-invasive and non-destructive, visual observation only. CONTRACTOR shall field verify actual existing conditions during and upon completion of demolition work and incorporate findings into preparation of co-ordination drawings. Minor changes and adjustments that do not affect design intent shall be made by Sub-Contractor and shall be highlighted for CONSTRUCTION MANAGER and ARCHITECT’S reviews.

6. Prepare coordination drawings in CAD with each trade on a separate layer, in specified color and scale. CONTRACTOR and each Subcontractor shall provide and forward reproducible copies and CAD drawing files in the order described here:

7. Structural shop drawings shall indicate location and sizes of columns, beams and other structural members, as well as wall, roof and slab penetrations, and will be provided to mechanical, electrical, low voltage and plumbing Sub-contractors for co-ordination. Structural items shall be indicated using black lines.

8. HVAC Subcontractor will indicate all ductwork, piping and equipment complete with installation and dimensioned service clearances, duct and pipe sizes, fitting types and sizes, top or bottom of duct and pipe elevations, distances of ducts, pipes and equipment from building reference points and hanger and support locations. Minor changes and adjustments that do not affect design intent shall be made by Subcontractor and shall be highlighted for CONSTRUCTION MANAGER and ARCHITECT’S reviews. Forward drawings to plumbing Subcontractor for further co-ordination. HVAC items shall be indicated using orange lines.

9. Plumbing Subcontractor will indicate all plumbing lines, and equipment complete with installation and dimensioned service clearances, pipe sizes, fitting types and sizes, top or bottom of pipe elevations, distances of pipes and equipment from building reference points and hanger/support locations Co-ordinate with HVAC Subcontractor. Minor changes and adjustments that do not affect design intent shall be made by Sub-contractor and shall be highlighted for CONSTRUCTION MANAGER and ARCHITECT’S reviews Upon completion drawings shall be forwarded to Fire Sprinkler Subcontractor for further co-ordination. All Plumbing items shall be indicated using blue lines.

10. Fire sprinkler Subcontractor will indicate fire sprinkler piping and equipment complete with installation and dimensioned service clearances, pipe sizes, fitting types and sizes; top or bottom of pipe elevations, distances of pipes and equipment from building reference points and hanger or support locations. Co-ordinate with
Plumbing and HVAC Subcontractors. Minor changes and adjustments that do not affect design intent shall be made by sub-contractors and shall be highlighted for CONSTRUCTION MANAGER and ARCHITECT'S reviews. Upon completion drawings shall be forwarded to Electrical CONTRACTOR for further co-ordination. Fire sprinkler equipment shall be indicated using red lines.

11. Electrical and Low Voltage Subcontractors will indicate service and feeder conduit runs and other electrical equipment complete, including low voltage with installation and dimensioned service clearances, sizes, top or bottom of conduit and rack elevations, distances of conduits and equipment from building reference points and hanger and support locations. Co-ordinate with Fire Sprinkler, Plumbing and HVAC Subcontractors. Minor changes and adjustments that do not affect design intent shall be made by sub-contractors and shall be highlighted for CONSTRUCTION MANAGER and ARCHITECT’S reviews. Upon completion drawings shall be forwarded to CONTRACTOR for further co-ordination. Electrical work shall be indicated in dark green lines. Low voltage work shall be indicated in light green lines.

12. CONTRACTOR will be responsible for the overall coordination review. As each coordination drawing is completed, CONTRACTOR will meet with CONSTRUCTION MANAGER to review and resolve all conflicts on coordination drawings.

1.3 PROJECT MEETINGS

F. The Construction Manager shall schedule and administer preconstruction meetings, periodic progress meetings, and specifically called meetings throughout the progress of the work.

1. Prepare agenda for meetings.

2. Distribute written notice of each meeting four days in advance of meeting date.

3. Make physical arrangements for meetings. (To be provided by Contractor for field meetings)

4. Preside at meetings.

5. Record the minutes; Include all significant proceedings and decisions.

6. Reproduce and distribute copies of minutes to General Contractor. General Contractor is required to supply copies of minutes to his Suppliers and Subcontractors.

   a. General Contractor is required to supply copies of minutes to his Suppliers and Subcontractors and all parties affected by decisions made at meeting.

G. Representatives of contractors, subcontractors and suppliers attending the meetings shall be qualified and authorized to act on behalf of the entity each represents.

H. Architect shall attend meetings to ascertain that work is expedited consistent with Contract Documents and the construction schedules.

Suggested Agenda: Pre-Construction Meeting
   a. Distribution and discussion of:
      1) List of major subcontractors schedules.
SECTION 01040
PROJECT COORDINATION

2) Projected construction schedules.
3) Critical work sequencing.
4) Major equipment deliveries and personnel.
5) Project Coordination.
6) Designation of responsible personnel.
7) Procedures and processing of:
   a) Field decisions.
   b) Proposal requests.
   c) Submittals.
   d) Change Orders.
   e) Applications for Payments.
9) Procedures for maintaining Record Documents.
10) Use of premise:
    a) Office, work, and storage areas.
    b) Owner's requirement.
11) Construction facilities, controls, and construction aids.
12) Temporary utilities.
13) Safety and first-aid procedures.
14) Security procedures.
15) Housekeeping procedures.

I. Suggested Agenda Progress Meetings:

1. Review, approval of minutes of previous meeting.
2. Review of work progress since previous meeting.
3. Field observations, problems and conflicts.
4. Problems which impede Construction Schedule.
5. Review of off-site fabrication, delivery schedules.
6. Corrective measures and procedures to regain projected schedule.
7. Revisions to Construction Schedule.
8. Plan progress schedule, during succeeding work period.
9. Coordination of schedules.
10. Review submittal schedules; expedite as required.
12. Review proposed changes for:
   a. Effect on Construction Schedule and on completion date.
   b. Effect on other contracts of the project.
13. Other business.

END OF SECTION
SECTION 01050
SCHEDULE OF VALUES

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Procedure for submission of a certified Schedule of Values for review and approval by the Construction Manager.

1.02 RELATED SECTIONS

A. Section 01020: Project Forms
B. Section 01027: Application for Payment
C. Section 01040: Project Coordination
D. Section 01330: Submittal Procedures
E. Section 01320: Construction Progress Documentation

PART 2 - PRODUCTS (Not used)

PART 3 - EXECUTION

3.01 PREPARATION

A. Upon receipt of the Notice of Intent to Award, CONTRACTOR shall commence preparation of a Schedule of Values in accordance with the form included in Section 01020.

B. CONTRACTOR shall coordinate the preparation of a Schedule of Values with preparation of the Construction Schedule as set forth in Section 01320. The corresponding values from the specification division totals on cost loaded schedule shall match with the approved Schedule of Values.

C. Include the following Project identification on a certified Schedule of Values:

1. Project name and location
2. Project Number
3. Contract #
4. CONTRACTOR name
5. Date of Submittal
D. The Schedule of Values shall be in tabular form with separate columns and shall include the following items:

1. Related Specification Section and Division
2. Description of Work
3. Name of Subcontractor, manufacturer or supplier.
4. Dollar value, quantity and unit of measure of each line item
5. Percentage of Contract amount to nearest one-hundredth percent, adjusted to total 100%

E. Round amounts to the nearest whole dollar; the total shall equal the Contract Amount.

F. Provide a breakdown of the Contract Amount in enough detail acceptable to Construction Manager to facilitate continued evaluation of Application for Payment and progress reports. Coordinate with the Project Manual table of content. Provide line items for subcontract amounts, where appropriate.

G. Provide separate line items for items in the Schedule of Values for total installed value of that part of the Work.

H. Provide separate line item for labor and material when required by the Construction Manager.

I. Each item in the Schedule of Values and Applications for Payment shall be complete. Include total cost and proportionate share of general overhead and profit for each item except the amounts shown as separate line items as indicated under Schedule of Values form under Section 01020.

J. Temporary facilities and other cost items that are not direct cost of actual work-in-place shall be shown as separate line items as indicated under Schedule of Values form under Section 01020.

K. An approved certified Schedule of Values shall serve as the basis for the monthly certified Application for Payment.

L. If at any time, OWNER determines, in its reasonable discretion, that the schedule of Values does not approximate the actual cost being incurred by CONTRACTOR to perform the Work, CONTRACTOR shall prepare, for Construction Manager approval, a revised Schedule of Values, which then shall be used as the basis for future progress payments. Without changing the Contract Amount, OWNER reserves the right to require CONTRACTOR:

1. To increase or decrease amounts within the line items in the Schedule of Values; and,
2. To conform the price breakdown to OWNER accounting practice.

3.02 SUBMITTAL

A. CONTRACTOR shall submit five (5) certified copies of a Schedule of Values for review and approval by the Construction manager at least 14 days before the first Application for Payment.

B. Construction Manager will review and if necessary, return the submitted Schedule of Values with summary comments noting items not in compliance with the requirements of the Contract.
Documents. CONTRACTOR shall revise the submitted Schedule of Values and return five (5) copies within three (3) days of receipt of summary comments.

C. Signature by Construction Manager shall constitute acceptance of the submitted Schedule of Values.

D. An approved copy of the Schedule of Values by Construction Manager will be transmitted to CONTRACTOR, and IOR.

END OF SECTION
PART 1 - GENERAL

1.0 RELATED DOCUMENTS

A. Drawings and provisions of the Contract, including Contract General Conditions and Special Conditions.

B. Section 01000 and other Specification Sections, apply to this Section.

2.0 SUMMARY

A. This Section includes the following:
   1. Summary of Work covered by the Contract Documents
   2. Contract Type
   3. Work under other contracts
   4. Use of premises.
   5. Owner's occupancy requirements.
   6. Work restrictions.
   7. Compliance with campus regulations
   8. Utility shutdowns
   9. Dust Control
   10. Noise Control
   11. Pollution Control

B. Related Sections include the following:
   1. Division 1 Section "Temporary Facilities and Controls" for limitations and procedures governing temporary use of College's facilities.

3.0 WORK COVERED BY CONTRACT DOCUMENTS

A. Project Identification:

B. Project Location: Rio Hondo Community College, 3600 Workman Road-Whittier, CA.

C. Owner: Rio Hondo Community College District

   1. Owner's Representative:

D. Architect:

E. Furnishing of all labor, materials, equipment, services, and incidentals necessary for Rio Hondo Community College Former Replacement Retaining Wall Project, located in the City of Whittier, California, as indicated on the contract documents. Work will include but not be limited to:

   The scope of work for this project at the Rio Hondo College is defined as below

   1. All labor, materials and equipment needed to perform the contract Work as outlined in the Drawings and Specifications and any incidental not specifically illustrated but needed for a complete work scope as intended.
2. Contractor shall secure all work areas, entrances and exits with locking devices or as required by the Construction Manager and Program Management Team.

3. Contractor shall maintain safe entrances and exits to all areas on site pertaining to the project.

4.0 CONTRACT REQUIREMENTS

A. Project will be constructed under a single prime contract.

B. Obtain all permits required for work under this contract, including but not necessarily limited to the following:

2. Shoring, trenching and grading permits.
3. Permits required for connection to public services and utilities.
4. Fire Department or related agency plan check and permits for temporary material handling, storage and or dispensing facilities of flammable products.
5. Grading or site related development permits as required.
6. Industrial waste plan check and permits for temporary facilities.
7. AQMD permits as required.
8. City business license.
10. Traffic control plan check and permits as required.
11. OSHA permits.
12. Temporary utility plan check and permits as required.
13. Sewer, storm and water connection permits.
15. Patent fees, licenses and royalties.
16. Signage plan check fees and permits.
17. Plan check and permit fees for temporary gas systems.
18. Storm Water Pollution Prevention Plan (SWPPP).
19. Operating permits for temporary material handling.
20. Other plan check, permits and fees as required.

C. Contractor and Subcontractors to be approved and in compliance with all associated labor requirements prior and during project.

D. Contractor and Subcontractors to comply fully with requirements of College drug testing program.
SECTION 01100
SUMMARY OF WORK

5.0 WORK UNDER OTHER CONTRACTS

A. The College reserves the right to let other contracts in accordance with Article 10 of the General Conditions of the Contract.

B. Cooperate fully with separate contractors so work on those contracts may be carried out smoothly, without interfering with or delaying work under this Contract. Coordinate the Work of this Contract with work performed under separate contracts.

6.0 USE OF PREMISES

A. General: Contractor shall limit use of premises for construction operations as indicated on Drawings within the Contract limits.

1. Limits: Confine construction operations to areas indicated on Drawings.
   a. There may be isolated items that are outside the limits indicated; the scope of items beyond the general limit indicated has been specifically indicated and is to be performed within the scope of the Project. For all utility connections outside of site area, contractor to obtain all necessary permits from agencies and perform work as indicated on the following drawings or as per specifications of the agency.
   b. Work directed and accounted as Allowance items shall be in various locations on the Property and shall be conducted and coordinated per these Specifications.
   c. As may be required for each construction segment contractor shall install temporary fencing to separate work areas from campus area not in scope of work.

2. Driveways, Entrances and Roads: Keep driveways and entrances and roads serving the campus and the Project site clear and available to College, College’s employees, and emergency vehicles at all times. Do not use these areas for parking or storage of materials. Provide access and a clear pathway to a “Safe Dispersal area” during emergencies. Contractor is directed to not block traffic crosswalks, disabled access routes, fire lanes, building entrances, fire hydrants, and walkways, and is required to:
   a. Schedule and coordinate deliveries to minimize use of driveways and entrances.
   b. Schedule and coordinate deliveries to minimize space and time requirements for storage of materials and equipment on-site.
   c. Direct vendors, subcontractors, and material suppliers to use smallest delivery truck possible for the job.

3. Use of Site:
   a. Allow College access to maintain and operate other existing facilities.
   b. Maintain and permit unimpeded access by fire fighting or rescue equipment.
   c. Permit exiting from existing facilities for life safety.
   d. Access to and egress from construction site shall be in strict conformance to prearranged routes approved by College, with the understanding that curtailment of traffic or revision of access routes may be required on short notice if College operations mandate such changes because of excessive noise, or problems with safety, service, or supply.
4. Contractor is required to observe all College driving and access restrictions. Each driver must have a valid California driver’s license and vehicle insurance. Contractor must avoid driving on inner campus. Contractor shall access campus interiors for specific service-related needs (i.e., unloading or emergency response only). Obtain inner campus permit from campus security. Contractor must never exceed posted speed limits and must use discretion when a slower speed may be more appropriate due to congestion. Contractor must use caution at pedestrian crossings (i.e., intersections, crosswalks, and other unmarked areas where frequent crossing occurs). Contractor must remember that the pedestrian has the right of way. Driving on lawns and landscaped areas is prohibited. Contractor must stage deliveries, equipment, and temporarily standing vehicles so as to not block traffic crosswalks, disabled access routes, fire lanes, building entrances, fire hydrants, and walkways. All vehicular traffic is prohibited on brick surfaces, lawns and landscaped areas.

5. At no time shall the Contractor block any disabled access route, store materials, transport materials or equipment, perform work, park or drive through campus in a manner that could endanger the campus population.

6. Parking:
   a. Unless specifically stated in the Contract Documents, No construction parking will be permitted on the College property. Contractor’s employees, subcontractors, and material suppliers shall observe all College traffic regulations.
   b. Contractor shall stage all delivery vehicles so as to not block traffic crosswalks, disable access routes, fire lanes, building entrances, fire hydrants, and walkways.

B. Contractor shall be sensitive to and recognize the possibility of encountering cultural artifacts when performing excavations and site work. Contractor shall exercise extreme discretion and caution when performing excavation and site work activities. The Contractor is required to notify the College in writing a minimum of 10 working days prior to any activities which include, but are not limited to, digging, trenching, or excavation work.

C. College will review and approve all proposed spaces and routes for the storage of materials and the ingress and egress of workers and equipment to the project site. Materials and equipment shall be kept strictly within these limits. Coordinate with College and Construction Manager on location and limits of exposure.

D. Contractor shall be responsible for all damage to on-campus roads, sidewalks, landscape, hardscape, etc., caused by construction vehicles and trucks coming to the job.

E. Contractor shall provide sufficient signage at each building and area under construction, notifying occupants and pedestrians of scope, sequence, duration of work, and point of contact for questions, comments and concerns.

F. Contractor shall provide and post pedestrian and vehicular detour signs and disabled accessible route signs as necessary to provide clear direction around any obstruction caused by construction. Obtain approval of any detour from the College at least 5 working days in advance.

G. Contractor(s) shall assume full responsibility for protection and safekeeping of products stored on the site under this contract.
7.0 OWNER’S OCCUPANCY REQUIREMENTS

A. Owner Occupancy of Completed Areas of Construction: College reserves the right to occupy and to place and install equipment in completed areas of structure before Final Completion, provided such occupancy does not interfere with completion of the Work. Such placement of equipment and partial “beneficial” occupancy shall not constitute acceptance of the total Work.

B. Contractor shall not use or allow anyone other than OWNER employees to use facility telephones and/or other equipment, except in an emergency. Contractor shall reimburse College for telephone toll charges originating from the facility except those arising from emergencies or use by College employees.

8.0 WORK RESTRICTIONS

A. On-Site Work Hours: Work shall be performed during normal business working hours of 6:00 a.m. to 6:00 p.m., Monday through Friday. Extended and weekend hours may be granted with a written request at a minimum of two (2) working days in advance and written approval by College.

1. Coordinate work hours with College’s activities so as not to conflict with the Campus daily activities. Always maintain access for students, faculty and staff when directed by Construction Manager. The College’s academic calendar is available on the College website. Schedule and coordinate all construction operations with College.

   a. Always maintain access for students, faculty and staff to all areas of the campus.

   b. Maintain all building exits during construction. Do not obstruct exists at any time.

2. Construction operations, such as material deliveries, debris removal, and crane operations, shall not occur when students, staff or visitors are present at construction site. Schedule such operations around school schedule. Where, in the sole opinion of the College, the construction site is sufficiently remote or isolated that students, staff or visitors are not exposed to such operations, construction operations may proceed as scheduled by Contractor in conformance with the Project Manual. All deliveries to be scheduled with or as directed by construction Manager.

3. Owner reserves the right to modify such scheduled operations to accommodate school operations or classroom programs. Contractor shall be entitled to contract time extension per contract modification procedures.

4. Contractor shall commence and complete all mobilization activities at the Site and obtain all jurisdictional authorities approval under this contract, within Fifteen (15) days of site availability and date of NTP.

B. Existing Utility Intermittions. Do not interrupt utilities serving facilities occupied by college or others.

1. Contractor must maintain all utilities affected by the construction of this project in an operable and functioning condition (including irrigation systems) to sustain normal operations at all buildings, facilities, and services on the campus. All costs for providing temporary utilities shall be included in the base bid. Provide temporary utility services according to requirements indicated as necessary to avoid interruption.
2. Extreme attention and all necessary provisions must be exercised to maintain in full capacity at all times the telecommunication networks serving this project buildings, and other adjacent buildings which may be connected, when scheduled for occupancy by academic or other College activities.

C. Campus utility shutdowns in support of this construction Project shall be coordinated with and approved by the Campus. At least 15 working days written notice prior to the desired shutdown is necessary due to the complexity of scheduling. Notice includes submission of a detailed plan describing work activity associated with all utility advanced of any utility interruption to the College for approval identifying the sequence of events, responsible people, and shutdowns, including College form. The contents of the plan will be prepared in conjunction with the Construction Manager. Contractor shall not interrupt Campus utilities without prior notification or authorization by the Campus. Unavoidable disruptions shall be repaired immediately.

D. Shutdowns shall be arranged for Saturdays, holidays, and off hours. Contractor shall pay all costs of his crews, including superintendents, for this work and bear reasonable Campus employee overtime costs and pay other associated with working other than normal work hours. Major outages shall be planned to occur during semester breaks or at other periods as approved by the College.

E. If any utility is interrupter which affects any occupied facility, Contractor shall provide a temporary connection to the affected utility/facility/area with the noted time frame with due diligence within the noted time frames, the College will enforce the terms and conditions of the Contract General Conditions for Contractor's failure to perform work in a timely manner.

1. Fire Alarm System: Within 4 hours of occurrence
   (Provide immediate fire watch)
2. Security Alarm System: Within 4 hours of occurrence
3. Radio Communication System: Within 4 hours of occurrence
4. Telephone / Data Communications System: (Including payphones, fiber backbone, copper, etc.) Within 4 hours of occurrence
5. Energy Management Control System: Within 4 hours of occurrence
6. College Master Clock System: Within 4 hours of occurrence
7. Exterior Lighting / Street Lighting: Within 4 hours of occurrence
8. Building Power: Within 6 hours of occurrence depending on impact of loss of water
9. Potable Water: Within 4 hours of occurrence
10. Gas: Within 4 hours of occurrence
11. Sewer: Within 24 hours of occurrence
12. Storm Drain: Within 48 hours of occurrence
13. Irrigation (including reclaimed water) Within 48 hours of occurrence
   - provide alternate methods of irrigation if needed during outages to prevent damages to landscape
14. 

9.0 DUST CONTROL

A. Execute Work by methods to eliminate or minimize dust creation from construction operations. Contractor shall be responsible for complying with all applicable regulations regarding dust control.
B. Contractor shall protect adjoining property and nearby buildings, roads and other facilities and improvements from dust, dirt, debris and other nuisances arising out of Contractor's operations or storing practices and clean as necessary.

C. Provide positive means to prevent air-borne dust from dispersing into atmosphere. Use water mist, temporary enclosures and other suitable methods to limit the spread of dust. If necessary, a regular watering program shall be initiated to adequately control the amount of fugitive dust in accordance with applicable AQMD rules. All positive dust control measures shall hold airborne dust to a factor not greater than Step 1 on the Ringleman Scale (re. AQMD Reg. 403). Any exposed soil surfaces shall be sprayed with water at least daily as needed to mitigate dust.

D. Trucks hauling dirt to and from the site shall be covered in accordance with applicable state and local requirements. To reduce exhaust emissions, unnecessary idling of construction vehicles and equipment shall be avoided and vehicles and equipment shall be equipped with exhaust and noise mitigating devices and be kept in good working order.

10.0 NOISE CONTROL

A. The campus will remain occupied and operational during construction. As such, the contractor shall carry on all work in a manner that will produce the least amount of noise during times that the building is occupied. Contractor shall instruct all workers in noise control procedures.

B. The College reserves the right to determine if work being performed by the Contractor is creating disruptions to the operations of the College and if so, to arrange with the Contractor alternate times or methods for completing the work at no additional cost to the College.

C. Construction operations generating excessive noise, such as use of pneumatic tools and powder actuated fastener equipment, shall be scheduled with the College. Provide the College with 24 hours notice prior to commencing such operations.

D. Equip jackhammers with exhaust mufflers and steel muffling sleeves. Use quiet type air compressors such as "whispered" compressor. Close compressor hoods while equipment is in operations. Use electrically powered rather than gasoline or diesel powered forklifts. Provide portable barriers around jack hammering. Barriers are to be constructed of ¾ inch plywood lined with 1-inch thick fiberglass on work side at minimum.

E. Locate all noise generating equipment in a remote location away from occupied areas. Keep noisy equipment as far as possible from noise-sensitive sites boundaries. Do not leave machines idling. Use electric power in lieu of internal combustion engine or pneumatic power wherever possible. Maintain equipment properly to reduce noise from excessive vibration, faulty mufflers or other sources. Provide all engines with properly functioning mufflers.

F. Schedule noise generating operations so as to minimize their duration at any given location and to minimize disruption to the adjoining users. Notify the College a minimum of 72 hours in advance of performing work creating unusual noise and schedule such work at times mutually agreeable.

G. Do not play radio, tape recorders, televisions or other similar items at the job site.
11.0 POLLUTION CONTROL

A. Provide methods, means, and facilities to prevent contamination of water and atmosphere from discharge of noxious, toxic substances, and pollutants produced by construction operations. Contractor shall be responsible for all costs associated with clean-up resulting from discharge of noxious, toxic substances, and pollutants produced by contractor's Work.

12.0 SPECIFICATION FORMAT AND CONVENTION

A. Specification Format: The Specifications are organized into Divisions and Sections using the 16-division format and CSI/CSC's "Master Format" numbering system.

1. Section Identification: The Specifications use Section numbers and titles to help cross-referencing in the Contract Documents. Sections in the Project Manual are in numeric sequence; however, the sequence is incomplete because all available Section numbers are not used. Consult the table of contents at the beginning of the Project Manual to determine numbers and names of Sections in the Contract Documents.

2. Division 1: Sections in Division 1 govern the execution of the Work of all Sections in the Specifications.

B. Specification Content: 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. Abbreviated Language: Language used in the Specifications and other Contract Documents is abbreviated. Words and meanings shall be interpreted as appropriate. 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. 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.

13.0 COMPLIANCE WITH CAMPUS REGULATIONS

A. College has adopted the policy of prohibiting sexual or racial harassment of any kind on the campus. All employees of the Contractor, subcontractors, materials suppliers, etc., shall treat the students, faculty, and staff of the College with respect and act in a professional manner at all times. Any employee who is demeaning or treats students, staff, and faculty with disrespect shall be immediately removed from the project and barred from future project employment.
B. College has adopted the policy of a Smoke-Free environment. Contractor shall not allow employees or subcontractors, visitors, manufacturer's representatives, etc., to smoke in non-designated areas, including but not limited to any indoor area.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION
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, that apply to this Section.

1.2 SUMMARY

A. This Section specifies administrative and procedural requirements for handling and processing Contract modifications.

B. Related Sections include the following:

1. Division 1 Section "Product Requirements" for administrative procedures for handling requests for substitutions made after Contract award.

1.3 REFERENCES

A. Change Order Requirements per Title 24 Part 1 CCR.

1. Changes in the plans and specifications are to be made by addenda or change orders approved by the Division of the State Architect, Title 24 Part 1 Section 4-338.

2. Change Orders: Changes or alterations of the approved plans or specifications after a contract for the work has been awarded are to be made by means of Change Orders. State the reason for the change and provide supplementary drawings where necessary. Change orders must be manually signed by the Architect or Engineer in general responsible charge of observation of the work or by the Architect or Engineer delegated responsibility for observation of the portion of the work affected by the change order.

3. Change orders are required to bear the approval of the College or the Program Management Team.

4. One original signed copy by all parties of each change order is required for the files of the Division of the State Architect.

1.4 MINOR CHANGES IN THE WORK

A. Architect will issue through Construction Management Company supplemental instructions authorizing Minor Changes in the Work, not involving adjustment to the Contract Sum or the Contract Time, on in the form of a Bulletin.

1.5 PROPOSAL REQUESTS

A. Owner-Initiated Proposal Requests: Construction Management Company will issue a detailed description of proposed changes in the Work that may require adjustment to the Contract Sum or the Contract Time. If necessary, the description will include supplemental or revised Drawings and Specifications.
1. Proposal Requests issued by Construction Management Company are for information only. Do not consider them instructions either to stop work in progress or to execute the proposed change.

2. Within time specified in Proposal Request after receipt of Proposal Request, submit a quotation estimating cost 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 an updated Contractor's Construction Schedule that indicates the effect of the change, 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.

B. Contractor-Initiated Proposals: If latent or unforeseen conditions require modifications to the Contract, Contractor may propose changes by submitting a request for a change to Construction Manager.

1. Include a statement outlining reasons for the change and the effect of the change on the Work. Provide a complete description of the proposed change. Indicate the effect of the proposed change on the Contract Sum and the Contract Time.

2. 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.

3. Indicate applicable taxes, delivery charges, equipment rental, and amounts of trade discounts.

4. Include an updated Contractor's Construction Schedule that indicates the effect of the change, 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.

5. Comply with requirements in Division 1 Section "Product Requirements" if the proposed change requires substitution of one product or system for product or system specified.

C. Proposal Request Form: For Change Order proposals use forms provided by College.

1.6 CHANGE ORDER PROCEDURES

A. On College's approval of a Proposal Request, Construction Management Company or Architect will issue six (6) Change Orders for signatures of College and Contractor on form approved by the College.
B. All changes shall become effective when executed and approved by the District’s governing Board, Architect, Contractor & Program Management Team.

1.7 CONSTRUCTION CHANGE DIRECTIVE


1. Construction Change Directive contains a complete description of change in the Work. It also designates method to be followed to determine change in the Contract Sum or the Contract Time.

B. Documentation: Maintain detailed records on a time and material basis of work required by the Construction Change Directive.

C. 1. After completion of change, submit an itemized account and supporting data necessary to substantiate cost and time adjustments to the Contract.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION
PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. This Section includes administrative provisions for coordinating construction operations on Project including, but not limited to, the following:

1. General project coordination procedures.
2. Conservation.
3. Coordination Drawings.
4. Administrative and supervisory personnel.
5. Project meetings.

B. Related Sections: The following Sections contain requirements that relate to this Section:

1. Division 1 Section "Interpretations and Clarifications" for procedures for making a request for interpretation or clarification of the Contract Documents.
2. Division 1 Section "Execution Requirements" for procedures for coordinating general installation and field-engineering services, including establishment of benchmarks and control points.
3. Division 1 Section "Closeout Procedures" for coordinating Contract closeout.

1.3 COORDINATION

A. Coordination: Coordinate construction operations required by the Contract Documents 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.

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, including, but not limited to, coordination of furnishing and placing embedded items, sleeves, and block-outs with formwork and reinforcing steel for cast-in-place concrete.
4. Resolve conflicts and coordinate access to, and utilization of, spaces available for construction activities on the site and within structures, and delivery, storage, and installation of materials and equipment.

5. Implement a quality assurance program designed to ensure completion of the Work in accordance with requirements of the Contract Documents.

B. If necessary, 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.

1. Prepare similar memoranda for the Construction Manager and separate contractors if coordination of their Work is required.

C. Administrative Procedures: Coordinate scheduling and timing of required administrative procedures with other construction activities and activities of other contractors to avoid conflicts and to ensure orderly progress of the Work. Such administrative activities include, but are not limited to, the following:

1. Preparation of Contractor's 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 conferences.
7. Project closeout activities.
8. Obtaining required permits and approvals from authorities having jurisdiction.

D. Conservation: Coordinate construction activities to ensure that operations are carried out with consideration given to conservation of energy, water, and materials.

1. Salvage materials and equipment involved in performance of, but not actually incorporated into, the Work.

1.4 SUBMITTALS

A. Coordination Drawings: Prepare Coordination Drawings if limited space availability necessitates maximum utilization of space for efficient installation of different components or if coordination is required for installation of products and materials fabricated by separate entities.

1. Indicate relationship of components shown on separate Shop Drawings.
2. Indicate required installation sequences.
3. Refer to Division 15 Section "Basic Mechanical Materials and Methods" for specific Coordination Drawing requirements for mechanical installations.

B. Staff Names: Within 15 days of starting construction operations, submit a list of principal staff assignments, including superintendent and other personnel in attendance at Project site. Identify individuals and their duties and responsibilities; list addresses and telephone numbers, including home and office telephone numbers. Provide names, addresses, and telephone numbers of individuals assigned as standbys in the absence of individuals assigned to Project.

1. Post copies of list in Project meeting room, in temporary field office, and by each temporary telephone.

1.5 PROJECT MEETINGS

A. General: Contractor shall attend and participate in meetings related to the Project and, as determined necessary by the Contractor, shall schedule and conduct meetings not designated to be scheduled and conducted by another entity.

B. Preconstruction Conference (Job Start Meeting): The Construction Manager will schedule a preconstruction conference before starting construction, at a time convenient to Contractor, Construction Manager, Construction Administrator, and Architect, but no later than 15 days after execution of the Agreement. The conference will be held at Project site or another convenient location.

1. Attendees: College Representative, Program Management Team, Construction Manager, Inspector of Record, Architect of Record and its consultants as applicable; Contractor and its superintendent; major subcontractors; manufacturers; suppliers; Contractor's designated safety manager; and other concerned parties shall attend the conference. All participants at the conference shall be familiar with Project and authorized to conclude matters relating to the Work.

2. Agenda: Discussion will focus on, but not necessarily be limited to, the following items:

   a. Tentative construction schedule.
   b. Phasing.
   c. Critical work sequencing.
   d. Approved forms.
   e. Designation of responsible personnel.
   f. Procedures for processing field decisions and Change Orders.
   g. Procedures for processing Applications for Payment.
   h. Distribution of the Contract Documents.
   i. Submittal procedures.
   j. Preparation of Record Documents.
   k. Use of the premises.
   l. Responsibility for temporary facilities and controls.
   m. Parking availability.
   n. Office, work, and storage areas.
   o. Equipment deliveries and priorities.
p. First aid.
q. Security.
r. Progress cleaning.
s. Working hours.

C. Pre-installation Conferences: Contractor shall conduct a pre-installation conference at Project site before each construction activity that requires coordination with other construction.

1. Distribute written notice of agenda, meeting time, and location a minimum of 4 calendar days in advance.

2. Attendees: 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 Program Management Team, College Representative, Inspector of Record, Architect of Record, Contractor’s Superintendent, and major Subcontractors as requested by Contractor and/or Program Management Team, of scheduled meeting dates.

3. Agenda: Review progress of other construction activities and preparations for the particular activity under consideration, including requirements for the following:
   b. Options.
   c. Related Change Orders.
   d. Purchases.
   e. Deliveries.
   f. Submittals.
   g. Review of mockups.
   h. Possible conflicts.
   i. Compatibility problems.
   j. Time schedules.
   k. Weather limitations.
   l. Manufacturer’s written recommendations.
   m. Warranty requirements.
   n. Compatibility of materials.
   o. Acceptability of substrates.
   p. Temporary facilities and controls.
   q. Space and access limitations.
   r. Regulations of authorities having jurisdiction.
   s. Testing and inspecting requirements.
   t. Required performance results.
   u. Protection of construction and personnel.

4. Record significant conference discussions, agreements, and disagreements in meeting minutes and distribute to attendees.

5. Do not proceed with installation if the conference 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.
D. Progress Meetings: Construction Manager will conduct progress meetings at bi-weekly intervals, as a minimum.

1. Construction Manager will prepare and distribute agenda.

2. Attendees: In addition to representatives of the College, Construction Administrator, 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 conference shall be familiar with Project and authorized to conclude matters relating to the Work.

3. Agenda: Review and correct or approve minutes of previous progress meeting. Review other items of significance that could affect progress. Notify Architect in advance about topics for discussion as appropriate to status of Project.

   a. Contractor's Construction Schedule: Review progress since the last meeting. Report whether each activity is on time, ahead of schedule, or behind schedule, in relation to Contractor's Construction Schedule. Report 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.

   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) Site utilization.
      8) Temporary facilities and controls.
      9) Work hours.
      10) Hazards and risks.
      11) Progress cleaning.
      12) Quality and work standards.
      13) Change Orders.
      14) Documentation of information for payment requests.

4. Reporting: Construction Manager will distribute minutes of the meeting to the Contractor, Architect, Construction Administrator and other parties as requested by the University. Upon receipt of minutes from the Architect, Contractor shall distribute copies of the minutes to other entities on the Contractor's team as applicable.

   a. Schedule Updating: Contractor shall revise Contractor's Construction Schedule after each progress meeting where revisions to the schedule have been made or recognized. Issue revised schedule concurrently with the report of each meeting.

E. Contractor-Subcontractor Coordination Meetings: Contractor shall conduct Project coordination meetings weekly. Project coordination meetings are in addition to specific
meetings held for other purposes, such as progress meetings and pre-installation conferences.

1. Provide notice of meeting agenda, time, and location as far in advance as possible.
2. Attendees: In addition to representatives of the Program Management Team and Construction Administrator that may attend on occasion, 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 conference shall be familiar with Project and authorized to conclude matters relating to the Work.

3. Agenda: Review and correct or approve minutes of the previous coordination meeting. Review other items of significance that could affect progress. Include topics for discussion as appropriate to status of Project.

   a. Combined Contractor’s Construction Schedule: Review progress since the last coordination meeting. Determine whether each contract is on time, ahead of schedule, or behind schedule, in relation to Combined Contractor’s 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.

   b. Schedule Updating: Revise Combined Contractor’s Construction Schedule after each coordination meeting where revisions to the schedule have been made or recognized. Issue revised schedule concurrently with report of each meeting.

   c. Review present and future needs of each contractor present, including the following:
      1) Interface requirements.
      2) Sequence of operations.
      3) Status of submittals.
      4) Deliveries.
      5) Off-site fabrication.
      6) Access.
      7) Site utilization.
      8) Temporary facilities and controls.
      9) Work hours.
     10) Hazards and risks.
     11) Progress cleaning.
     12) Quality and work standards.
     13) Change Orders.

4. Reporting: Record meeting results and distribute copies to the Construction Manager, Program Management Team, Architect and Construction Administrator, plus everyone in attendance and to others affected by decisions or actions resulting from each meeting.
SECTION 01310
PROJECT MANAGEMENT AND COORDINATION

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION
SECTION 01311
INTERPRETATIONS AND CLARIFICATIONS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. This Section includes administrative provisions for requesting information:

B. Related Sections: The following Sections contain requirements that relate to this Section:

1. Contract General Conditions for administrative and procedural requirements for handling and processing Contract modifications.

2. Division 1 Section "Project Management and Coordination" for general project coordination procedures.

3. Division 1 Section "Submittal Procedures" for administrative and procedural requirements for submitting Shop Drawings, Product Data, Samples, and other miscellaneous submittals.

4. Division 1 Section "Product Requirements" for administrative and procedural requirements for selection of products for use in the Project, product substitutions, and comparable products.

1.3 DEFINITIONS

A. Request For Information (RFI): A written document submitted by the Contractor requesting interpretation or clarification of a portion of the Contract Documents.

1.4 RFI PROCEDURE

A. Coordinate preparation and submittal of each RFI to avoid conflicts and to ensure orderly progress of the Work. Submit each RFI immediately upon discovery of the need for interpretation or clarification and within a time frame that will allow for appropriate review and response without causing a delay in construction progress and the need for revision of the construction schedule.

1. Time for Response to RFI: The amount of time necessary for appropriate review and response to a RFI will vary. Typically, a response will be issued within 7 days. Complex issues may require additional time. Contractor will be notified in writing if a response will take more than 7 calendar days.

B. Requests for Information (RFI): Make requests for information in writing to the Construction Manager immediately after the Contract Documents have been thoroughly reviewed with regard to a specific issue and an interpretation or clarification of the Contract Documents regarding that issue is required.
1. Requests for interpretation or clarification submitted to the Construction Manager will be logged in Expedition. The Construction Manager or Architect will only review Requests for Interpretation or Clarification received directly in the required written form provided.

2. Assign a RFI number to each RFI. Assign numbers sequentially, in three digits, starting with 001. Add an alphabetical suffix to the RFI number for each resubmission of that RFI. For example, number the first RFI as "001." Number the second RFI "002." Identify the first re-submittal of RFI "002" as "002a" and subsequent re-submittals in alphabetical sequence.

3. Submit a RFI only if one of the following conditions occur:
   a. Discovery, after thorough review, of an unforeseen condition or circumstance that is not addressed in the Contract Documents.
   b. Discovery, after thorough review, of an apparent conflict or discrepancy between portions of the Contract Documents that appears to be inconsistent with, or is not reasonably inferred from, the intent of the Contract Documents.
   c. Discovery, after thorough review, of an apparent omission from the Contract Documents that can not be reasonably inferred from the intent of the Contract Documents.

4. Do not submit a RFI in place of any of the following:
   a. A request for substitution of material, product, or method of construction.
   b. A Product Data, Shop Drawing, or other submittal required by the Contract Documents.
   c. A Change Order Request.
   d. Coordination required of the Contractor by the Contract Documents.

5. A Request for Information and the Construction Manager's or Architect's response does not alter or change the requirements of the Contract Documents, does not serve and will not be considered as a product data or shop drawing submittal, substitution request, Cost Request Bulletin or Change Order Request, and is not an authorization to proceed in a manner resulting in Work that does not comply with the Contract Documents or results in increased time or extra cost to the College.
   a. Comply with the Contract General Conditions for issues related to Change Orders.

6. When the Contract Documents clearly identify the information requested by the Contractor in a RFI, the Contractor shall reimburse the College for costs, including, but not limited to, labor costs at Architect's normal hourly billing rates and reimbursable expenses at cost plus 15 percent incurred by the Architect in reviewing the unnecessary RFI.
C. RFI Log: A log for recording information about RFI status and responses will be provided by the Construction Manager, who will maintain and continuously update the RFI Log.

1. Make corrections to Log entries as directed by the Construction Manager.

1.5 FORM OF RFI

A. Submit a legible written request on the required RFI form, including the following information:

1. Project name, as listed on the Contract Documents, and Architect’s and Specifications.
2. Date.
3. Name, address, telephone and FAX numbers of the Contractor.
4. Name of individual making the request.
5. Number and title of appropriate Specification Section or Sections.
6. Drawing numbers and detail references, as appropriate.
7. RFI Number.
8. Clear, concise, explanation of information or clarification requested.
9. Clear, concise explanation of Contractor’s assumed interpretation or clarification of the issue. Include written description of proposed solution and submit graphic description of proposed solution, as applicable.
10. Submit photograph of area in question when requesting clarification or interpretation of an issue relating to a portion of Work in place or Work to be adjoined or installed to Work in place.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION
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, that apply to this Section.

1.2 SUMMARY

A. This Section includes administrative and procedural requirements for documenting the progress of construction during performance of the Work, including the following:

1. Initial Construction Schedule.
2. Contractor's Construction Schedule.
4. Daily construction reports.
5. Material location reports.
6. Field condition reports.
7. Special reports.

B. Related Sections include the following:

1. Division 1 Section "Phasing of the Work" for application of construction Work sequence recommended and calendar constrains identified by Owner.
2. Division 1 Section "Applications for Payment" for submitting the Schedule of Values.
3. Division 1 Section "Project Management and Coordination" for submitting and distributing meeting and conference minutes.
4. Division 1 Section "Submittal Procedures" for submitting schedules and reports.
5. Division 1 Section "Quality Requirements" for submitting a schedule of tests and inspections.
6. Division 1 Section "Closeout Procedures" for submitting photographic negatives as Project Record Documents at Project closeout.

1.3 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.

1. Critical activities are activities on the critical path. They must start and finish on the planned early start and finish times.
2. Predecessor activity is an activity that must be completed before a given activity can be started.

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 continuous chain of activities through the network schedule that establishes the minimum overall Project duration and contains no float.

D. Event: The starting or ending point of an activity.

E. Float: The measure of leeway in starting and completing an activity.

1. Float time is not for the exclusive use or benefit of either College or Contractor, but is a jointly owned, expiring Project resource available to both parties as needed to meet schedule milestones and Contract completion date.

2. Free float is the amount of time an activity can be delayed without adversely affecting the early start of the following activity.

3. Total float is the measure of leeway in starting or completing an activity without adversely affecting the planned Project completion date.

F. Fragnet: A partial or fragmentary network that breaks down activities into smaller activities for greater detail.

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

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

I. Network Diagram: A graphic diagram of a network schedule, showing activities and activity relationships.

1.4 SUBMITTALS

A. Qualification Data: For firms and persons specified in "Quality Assurance" Article and in-house scheduling personnel to demonstrate their capabilities and experience. Include lists of completed projects with project names and addresses, names and addresses of architects and owners, and other information specified.

B. Submittals Schedule: Submit three copies of schedule. Arrange the following information in a tabular format:

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 and Construction Administrator's final release or approval.

C. Initial Construction Schedule: Also referred as Preliminary Construction schedule - Submit two printed copies and one electronic copy in Primavera Format.
D. Initial Network Diagram: Also refereed to as the Preliminary network diagram. Submit one electronic copy in Reproducible media format and two printed copies large enough to show entire network for entire construction period to each recipient.

E. Contractor's Construction Schedule: Also referred to as Baseline Construction Schedule. Submit one electronic copy in Primavera Format, two printed copies of schedule and one reproducible copy in media format. Additionally submit reports as required in Section 1.4 F.

F. CPM Reports: Concurrent with CPM schedule, submit three printed copies of each of the following computer-generated reports. Format for each activity in reports shall contain activity number, activity description, original duration, remaining duration, early start date, early finish date, late start date, late finish date, and total float.

1. Activity Report: List of all activities sorted by activity number and then early start date, or actual start date if known.
2. Logic Report: List of preceding and succeeding activities for all activities, sorted in ascending order by activity number and then early start date, or actual start date if known.
3. Total Float Report: List of all activities sorted in ascending order of total float.
4. Earnings Report: Compilation of Contractor's total earnings from the Notice to Proceed until most recent Application for Payment.

G. Daily Construction Reports: Submit two copies at weekly intervals.

H. Material Location Reports: Submit two copies at weekly intervals.

I. Field Condition Reports: Submit two copies at time of discovery of differing conditions.

J. Special Reports: Submit two copies at time of unusual event.

1.5 QUALITY ASSURANCE

A. Scheduling Consultant Qualifications: An experienced specialist in CPM scheduling and reporting.

B. Pre-scheduling Conference: Conduct conference at Project site 7 days after the established Notice to Proceed to comply with requirements in Division 1 Section "Project Management and Coordination." Review methods and procedures related to the Preliminary Construction Schedule and Contractor's Construction Schedule, including, but not limited to, the following:

1. Review software limitations and content and format for reports.
2. Verify availability of qualified personnel needed to develop and update schedule.
3. Discuss constraints, including work stages, interim milestones, and partial Owner occupancy.
4. Review delivery dates for Owner-furnished products.
5. Review schedule for work of Owner's separate contracts.
6. Review time required for review of submittals and re-submittals.
7. Review requirements for tests and inspections by independent testing and inspecting agencies.
8. Review time required for completion and startup procedures.
9. Review and finalize list of construction activities to be included in schedule.
10. Review submittal requirements and procedures.
11. Review procedures for updating schedule.

1.6 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 Contractor's Construction Schedule with the Schedule of Values, list of subcontracts, Submittals Schedule, progress reports, payment requests, and other required schedules and reports:
   1. Secure time commitments for performing critical elements of the Work from parties involved
   2. Coordinate each construction activity in the network with other activities and schedule them in proper sequence.

C. Auxiliary Services: Cooperate with photographer and provide auxiliary services requested, including access to Project site and use of temporary facilities including temporary lighting.

PART 2 - PRODUCTS

2.1 SUBMITTALS SCHEDULE

A. Preparation: Submit a schedule of submittals, arranged in chronological order by dates required by construction schedule. Include time required for review of minimum 14 to maximum 30 calendar days, re-submittal, ordering, manufacturing, fabrication, and delivery when establishing dates.

   1. Coordinate Submittals Schedule with list of subcontracts, the Schedule of Values, and Contractor's Construction Schedule.
   2. Initial Submittal: Submit concurrently with preliminary network diagram. Include submittals required during the first 21 days of construction. List those required to maintain orderly progress of the Work and those required early because of long lead time for manufacture or fabrication.
   3. Final Submittal: Submit concurrently with the first complete submittal of Contractor's Construction Schedule.

2.2 CONTRACTOR'S CONSTRUCTION SCHEDULE, GENERAL

A. Procedures: Comply with procedures contained in the Associated General Contractors of America's (AGC) "Construction Planning & Scheduling."
B. Time Frame: Extend schedule from date established for the Notice to Proceed to date of Final Completion.

1. Contract completion date shall not be changed by submission of a schedule that shows an early completion date, unless specifically authorized by Change Order.

C. Activities: Treat each story or separate area as a separate numbered activity for each principal element of the Work. Comply with the following:

1. Activity Duration: Define activities so no activity is longer than 30 days, unless specifically allowed by Construction Administrator.

2. Procurement Activities: Include procurement process activities for long lead items and major items, requiring a cycle of more than 60 days, as separate activities in schedule. Procurement cycle activities include, but are not limited to, submittals, approvals, purchasing, fabrication, and delivery.

3. Submittal Review Time: Include review and re-submittal times indicated in Division 1 Section "Submittal Procedures" in schedule. Coordinate submittal review times in Contractor's Construction Schedule with Submittals Schedule.

4. Startup and Testing Time: Include not less than 15 days for startup and testing.

5. Final Completion: Indicate completion in advance of date established for Final Completion, and allow time for Construction Administrator's administrative procedures necessary for certification of Final Completion.

D. Constraints: 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. Phasing: Arrange list of activities on schedule by phase.

2. Work by Owner: Include a separate activity for each portion of the Work performed by College.

3. Work Restrictions: 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 Final Completion.
   e. Use of premises restrictions.
   g. Seasonal variations.
   h. Environmental control.
4. Work Stages: Indicate important stages of construction for each major portion of the Work, including, but not limited to, the following:

   a. Subcontract awards.
   b. Submittals.
   c. Purchases.
   d. Mockups.
   e. Fabrication.
   f. Sample testing.
   g. Deliveries.
   h. Installation.
   i. Tests and inspections.
   j. Adjusting.
   k. Curing.
   l. Startup and placement into final use and operation.

E. Milestones: Include milestones indicated in the Contract Documents in schedule, including, but not limited to, the Notice to Proceed, and Final Completion.

F. Cost Correlation: The activities in the schedule shall be cost loaded. The total cost loading of all activities in the schedule shall equal the contract sum. At the head of schedule, provide a cost correlation line, indicating planned and actual costs. On the line, show dollar volume of the Work performed as of dates used for preparation of payment requests.

   1. Refer to Division 1 Section "Payment Procedures" for cost reporting and payment procedures.

G. Contract Modifications: For each proposed contract modification and concurrent with its submission, prepare a time-impact analysis using fragnets to demonstrate the effect of the proposed change on the overall project schedule.

H. Computer Software: Prepare schedules using a program that has been developed specifically to manage construction schedules.

   1. Primavera software as indicated the General Conditions and compatible with P3 e/ and Expedition.

2.3 CONTRACTOR'S CONSTRUCTION SCHEDULE (CPM SCHEDULE)

A. General: Prepare network diagrams using AON (activity-on-node) format.

B. Initial Construction Schedule/Initial CPM Network Diagram: Submit diagram within 21 days of date established for the Notice to Proceed to the College with copy to the Architect and the Construction Administrator. Outline significant construction activities for the first 60 days of construction. Include skeleton diagram for the remainder of the Work and a cash requirement prediction based on indicated activities.

C. Contractor's construction Schedule: Prepare Contractor's Construction Schedule using a CPM network analysis diagram.
1. The Contractors Construction schedule and baseline schedule shall be submitted 15 days after receiving comments from the CM and RHPMT on the initial construction schedule.

2. Conduct educational workshops to train and inform key Project personnel, including subcontractors' personnel, in proper methods of providing data and using CPM schedule information.

3. Establish procedures for monitoring and updating CPM schedule and for reporting progress. Coordinate procedures with progress meeting and payment request dates.

4. Use "one workday" as the unit of time.

D. CPM Schedule Preparation: Prepare a list of all activities required to complete the Work. Using the preliminary network diagram, prepare a skeleton network to identify probable critical paths.

1. Activities: Indicate the estimated time duration, sequence requirements, and relationship of each activity in relation to other activities. Include estimated time frames for the following activities:
   a. Preparation and processing of submittals.
   b. Purchase of materials.
   c. Delivery.
   d. Fabrication.
   e. Installation.

2. Processing: Process data to produce output data or a computer-drawn, time-scaled network. Revise data, reorganize activity sequences, and reproduce as often as necessary to produce the CPM schedule within the limitations of the Contract Time.

3. Format: Mark the critical path. Locate the critical path near center of network; locate paths with most float near the edges.
   a. Sub-networks on separate sheets are permissible for activities clearly off the critical path.

E. Initial Issue of Schedule: Prepare initial network diagram from a list of straight "early start-total float" sort. Identify critical activities. Prepare tabulated reports showing the following:

1. Contractor or subcontractor and the Work or activity.
2. Description of activity.
3. Principal events of activity.
4. Immediate preceding and succeeding activities.
5. Early and late start dates.
6. Early and late finish dates.
7. Activity duration in workdays.
8. Total float or slack time.
10. Dollar value of activity (coordinated with the Schedule of Values).
F. Schedule Updating: Concurrent with making revisions to schedule, prepare tabulated reports showing the following:

1. Identification of activities that have changed.
2. Changes in early and late start dates.
3. Changes in early and late finish dates.
5. Changes in the critical path.
6. Changes in total float or slack time.
8. Submit updated schedule printouts 5 days before each regularly submitted monthly pay request.

2.4 REPORTS

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

1. List of subcontractors at Project site.
2. List of separate contractors at Project site.
3. Approximate count of personnel at Project site.
4. High and low temperatures and general weather conditions.
5. Accidents.
6. Meetings and significant decisions.
7. Unusual events (refer to special reports).
8. Stoppages, delays, shortages, and losses.
9. Meter readings and similar recordings.
10. Emergency procedures.
11. Orders and requests of authorities having jurisdiction.
12. Change Orders received and implemented.
13. Services connected and disconnected.
14. Equipment or system tests and startups.
15. Partial Completions and occupancies.
16. Final Completions authorized.

B. Material Location Reports: At weekly intervals, prepare a comprehensive list of materials delivered to and stored at Project site. List shall be cumulative, showing materials previously reported plus items recently delivered. Include with list a statement of progress on and delivery dates for materials or items of equipment fabricated or stored away from Project site.

C. Field Condition Reports: Immediately on discovery of a difference between field conditions and the Contract Documents, prepare a detailed report. Submit with a request for information as indicated in Division 1 Section "Project Management and Coordination." Include a detailed description of the differing conditions, together with recommendations for changing the Contract Documents.

2.5 SPECIAL REPORTS

A. General: Submit special reports directly to the Construction Manager within one day of an occurrence. Distribute copies of report to parties affected by the occurrence.
B. Reporting Unusual Events: When an event of an unusual and significant nature occurs at Project site, whether or not related directly to the Work, prepare and submit a special report. List chain of events, persons participating, response by Contractor's personnel, evaluation of results or effects, and similar pertinent information. Advise the Construction Manager in advance when these events are known or predictable.

PART 3 - EXECUTION

3.1 CONTRACTOR'S CONSTRUCTION SCHEDULE

A. Scheduling Consultant: Engage a consultant to provide planning, evaluation, and reporting using CPM scheduling.

1. In-House Option: College may waive the requirement to retain a consultant if Contractor employs skilled personnel with experience in CPM scheduling and reporting techniques. Submit qualifications.

2. Meetings: Scheduling consultant shall attend all meetings related to Project progress, alleged delays, and time impact.

B. Contractor's Construction Schedule Updating: At monthly intervals, update schedule to reflect actual construction progress and activities. Issue schedule 5 days before each regularly submitted monthly pay request.

1. Revise schedule immediately after each meeting or other activity where revisions have been recognized or made. Issue updated schedule concurrently with the report of each such meeting.

2. Include a report with updated schedule that indicates every change, including, but not limited to, changes in logic, durations, actual starts and finishes, and activity durations.

3. As the Work progresses, indicate Actual Completion percentage for each activity.

C. Distribution: Distribute copies of approved schedule to the Program Management Team, Construction Manager, Architect, 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.

END OF SECTION
PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. This Section includes administrative and procedural requirements for submitting Shop Drawings, Product Data, Samples, and other miscellaneous submittals.

1. Product Data.
2. Shop Drawings.
3. Samples.
4. Product Schedule or List
5. Delegated-Design Submittal.
6. Preliminary construction schedule.
7. Contractor's construction schedule.
8. Submittals schedule.
10. Schedule of Values.
11. Subcontract List.
12. Informational Submittals (including a listing of extra stock materials and the Contractor's Punch List).
13. Contractor's Daily Reports.

B. Related Sections include the following:

1. Specification Section 01330 of the Contract General Conditions for additional requirements, especially those regarding requests for Alternatives or Equals and for Substitutions.
2. General Contract Conditions for submitting Applications for Payment.
3. Division 1 Section "Project Management and Coordination" for submitting Coordination Drawings.
4. Division 1 Section "Quality Requirements" for submitting test and inspection reports and Delegated-Design Submittals and for erecting mockups.
5. Division 1 Section "Closeout Procedures" for submitting warranties.
6. Division 1 Section "Project Record Documents" for submitting Record Drawings, and Record Specifications.
7. Division 1 Section "Operation and Maintenance Data" for operation and maintenance manual requirements.
1.3 CONTRACTOR RESPONSIBILITIES

A. Review shop drawings, and product data prior to submission. Provide review stamp on submittals. See Example “A” form at the end of this section.

B. Determine and Verify:

1. Field Measurements.
2. Field construction criteria.
3. Catalog numbers and similar data.

C. Coordinate each submittal with requirements of the work and of the Contract documents.

D. Notify the Architect in writing, at the time of submission, of any deviations in the submittals from requirements of the Contract Documents.

1.4 SUBMITTAL PROCEDURES

A. General: Electronic copies of CAD Drawings of the Contract Drawings will not be provided by Architect for Contractor’s use in preparing submittals.

B. Coordination: Coordinate preparation and processing of submittals with performance of construction activities.

1. Assign a “Submittal Number” to each submittal. Assign numbers sequentially, in three digits, starting with 001. Add an alphabetical suffix to the submittal number for each resubmission of that submittal. For example, number the first submittal as "001." Number the second submittal "002." Identify the first re-submittal of submittal "002" as "002a" and subsequent re-submittals in alphabetical sequence.

2. Coordinate each submittal with fabrication, purchasing, testing, delivery, other submittals, and related activities that require sequential activity.

3. 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.
   a. Architect reserves the right to withhold action on a submittal requiring coordination with other submittals until related submittals are received.

C. Submittals Schedule: Comply with requirements in Contract General Conditions for list of submittals and time requirements for scheduled performance of related construction activities. Submittal schedule shall be submitted within twenty-one (21) calendar days after Notice to Proceed.
D. Spare and Extra Materials List: Prepare and submit a list of all spare parts and extra stock of materials required by the Contract Documents. Include quantities and volumes, as applicable, of each spare part and material. Include this list with the Submittals Schedule.

E. Processing Time: Allow enough time for submittal review, including time for re-submittals, as follows. "Sufficient time," as used in this Section means a minimum of 15 calendar days. The maximum number of calendar days required to adequately review a submittal can not be established due to such intangibles as the completeness and legibility of information provided in the submittal, and the type and complexity of material, equipment, system or work delineated. The Architect's review time will not commence until a submittal meeting all pertinent requirements of this Section and of other applicable Sections of these Specifications is received in the Architect's office.

1. Initial Review: Allow a minimum of 15 calendar days for initial review of each submittal. Allow additional time if processing must be delayed to permit coordination with subsequent submittals. Architect will advise Contractor when a submittal being processed must be delayed for coordination. Allow a minimum of 45 calendar days for initial review of submittals for the following:
   a. Structural steel.
   b. Steel stairs.
   c. Cold-formed metal framing.
   d. Composite wall system.
   e. Interior architectural woodwork.
   f. Curtain wall and storefront.
   g. Doors and door hardware.
   h. Mechanical and electrical equipment supports.
   i. Ductwork.
   j. Fire alarm system.
   k. Fire sprinkler system.
   l. Building automation control system.
   m. Elevators.
   n. Rooftop air handling units.
   o. Electrical switchgear.
   p. Lighting, both interior and exterior.
   q. Lighting controls.
   r. HVAC equipment and accessories.
   s. Any item of work that the Contractor believes that, due to the nature or complexity of the submittal, may require additional time for review by the Architect.

2. If intermediate submittal is necessary, process it in same manner as initial submittal.

3. Allow a minimum of 15 calendar days for processing each re-submittal.

4. No extension of the Contract Time will be authorized because of failure to transmit submittals sufficiently in advance of the Work to permit processing.

5. Except where the Specifications specifically call for more than one submittal of the same item, or in the event an initial submittal results in substantial clarification of the Contract Documents by the Architect or Program Management Team, the Architect has allowed time for review of initial submittal and 1 re-submittal. If after 1 re-
submittal beyond the number of submittals required by the Specifications or by
clarification, the Architect determines the submittal fails to address comments and
corrections previously indicated by the Architect and requires additional re-submittal,
the Contractor shall be responsible for costs, including, but not limited to, labor costs
at Architect’s normal hourly billing rates and reimbursable expenses at cost plus 15
percent incurred by the Architect in reviewing the additional re-submittals.

F. Contractor Review and Approval: Thoroughly review each submittal for compliance with
the Contract Documents prior to transmitting to the Architect. Do not transmit a submittal to
the Architect until that submittal is approved by the Contractor and marked “APPROVED”
as indicated under “Submittal Preparation” Paragraph and signed by a member of the
Contractor’s full-time staff assigned and stationed at the Project site. Failure to comply with
this requirement will result in return of the submittal with no action taken by the Architect.

G. Re-submittals: Promptly make required corrections and resubmit to the Architect only those
submittals which the Architect has specifically requested be resubmitted by placing the
mark “Revise and Resubmit” on the original submittal or transmittal.

1. Clearly identify revisions made to a submittal which were not specifically requested
by the Architect on previous submissions.

2. Do not resubmit Shop Drawings or other submittals that have not been requested as
re-submittals by the Architect.

3. If an error is discovered or a change is made for any reason to a submittal previously
marked “Reviewed” by the Architect, resubmit the submittal with all changes made
since the prior review clearly marked and noted. Provide written explanation of each
change and the reason the change is required.

4. When resubmitting a Sample, clearly mark the Sample with the words “Resubmitted
Sample” in addition to other information required.

H. Identification: 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 5 by 8 inches on label or beside title block to record
Contractor’s review and approval markings and action taken by Architect. On
Samples, physically attach label (paper, plastic, or cardboard form) to the sample.
On Product Data, attach a separate sheet if there is not adequate space on the
Product Data.

3. Include the following information on label for processing and recording action taken:
   a. Project name, as listed on the Contract Documents. DSA # and other related
      identifying number, if any, on the drawings and specifications.
   b. Date of current submission and dates of all previous submissions of the same
      submittal, if applicable.
   c. Name and address of Contractor.
   d. Submittal Number, including alphabetic revision indicator, if applicable.
   e. Number and title of appropriate Specification Section.
SECTION 01330
SUBMITTAL PROCEDURES

f. Drawing number and detail references, as appropriate.
g. Contractor's review certification indicating submittal is "Approved" by the Contractor.
h. The Construction Schedule activity number to which the submittal pertains.
i. Other necessary identification.

4. In addition to space provided on label or title block for Contractor's information, provide a separate blank space approximately 4 by 5 inches on the label or beside the title block on Shop Drawings to record the Architect's review markings and the action taken.

I. Deviations: Highlight, encircle, or otherwise identify deviations from the Contract Documents on submittals.

J. Additional Copies:

1. As requested by the Construction Manager, submit one copy of submittal to concurrent reviewer in addition to specified number of copies to the Architect.

2. Additional copies submitted for maintenance manuals will not be marked with action taken and will be returned.

K. Transmittal: Package each submittal individually and appropriately for transmittal and handling. Transmit each submittal using a transmittal form. Architect will return submittals, without review, received from sources other than Contractor.

1. On an attached separate sheet, prepared on Contractor's letterhead, record relevant information, requests for data, revisions other than those requested by Architect on previous submittals, and deviations from requirements of the Contract Documents, including minor variations and limitations and reasons for deviations. Include the same label information as the related submittal.

2. Include Contractor's certification stating that information submitted complies with requirements of the Contract Documents.

3. Transmittal Form: Upon approval by the Construction Administrator and Architect, use Contractor's standard transmittal form indicating all required information for transmittal of submittals. Note that the submittal will also be tracked electronically using a transmittal form generated by the Construction Manager's electronic system. Provide locations on form for the following information:

a. Project name and Architect's project number, DSA A#, and related other identifying number, if any.
b. Date.
c. Name, address, telephone and FAX numbers of the Contractor.
d. Name and address of the subcontractor.
e. Name and address of the supplier.
f. Name and address of the manufacturer.
g. Number and title of appropriate Specification Section.
h. Drawing number and detail references, as appropriate.
i. Submittal Number.
j. Signature of transmitter.

L. Method of Transmittal: Transmit submittals by first class mail, over-nite mail, messenger, or personal delivery to the office of the Architect. Use method necessary to maintain schedule.

M. Distribution: Furnish copies of final submittals to manufacturers, subcontractors, suppliers, fabricators, installers, authorities having jurisdiction, and others as necessary for performance of construction activities. Show distribution on transmittal forms.

N. Use for Construction: Use only final submittals with mark indicating action taken by Architect in connection with construction.

O. Submittal Log: A log for recording information about submittal status and responses will be provided in the Construction Manager’s electronic system. Maintain and continuously update the Submittal Log in the Construction Manager’s system.

1. Cross reference to the first activity of the Construction Schedule, which will be dependent on the approved submittal.

2. Make corrections to Log entries as directed by the Construction Manager.

1.5 CONTRACTOR’S CONSTRUCTION SCHEDULE

A. Critical Path Schedule: Prepare a fully developed, Critical Path Type Contractor’s construction schedule. Submit Schedule prior to first payment request, but no later than 30 days from the date of the District’s Notice to Proceed.

1. Provide a separate time for each significant construction activity. Provide a continuous vertical line to identify the first working day of each week. Use the same breakdown of units of the work as indicated in the “Schedule of Values”.

2. Within each time indicate estimated completion percentage in 5 percent increments. As Work progresses, place a contrasting mark in each bar to indicate Actual Completion.

3. Prepare the schedule on a sheet, or series of sheets, of stable transparency, or other reproducible media, or sufficient width to show data for the entire construction period.

4. Coordinate the Contractor’s construction schedule with the schedule of values, list of subcontracts, submittal schedule, progress reports, payment requests and other schedules.

5. Indicate completion in advance of the date established for Substantial Completion. Indicate Substantial Completion on the schedule to allow time for the Architect’s procedures necessary for certification of Substantial Completion.
PART 2 - PRODUCTS

2.1 ACTION SUBMITTALS

A. General: Prepare and submit Action Submittals required by individual Specification Sections.

1. Number of Copies:
   a. Submit at least eight (8) copies of each 8-1/2 x 11-inch submittal, including any additional copies as required by Architect. Architect will return 3 copies. Mark up and retain one returned copy as a Project Record Document.
   b. Submit at least one (1) reproducible sepia or photocopy vellum of each Shop Drawing and 5 sets of black or blue-line prints, or photocopy bond prints, including any additional copies as required by Architect. Architect will return the reproducible drawings and 2 sets of prints. Mark up and retain one returned copy as a Project Record Document.

B. Product Data: Collect information into a single submittal for each element of construction and type of product or equipment.

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. Standard color charts.
   e. Manufacturer's catalog cuts.
   f. Wiring diagrams showing factory-installed wiring.
   g. Printed performance curves.
   h. Operational range diagrams.
   i. Mill reports.
   j. Standard product operating and maintenance manuals.
   k. Compliance with recognized trade association standards.
   l. Compliance with recognized testing agency standards.
   m. Application of testing agency labels and seals.
   n. Notation of coordination requirements.

4. Where manufacturer's printed literature is required to be submitted, submit an original printed form of the literature. Reproductions which will fade with time or exposure, cut off portions of text or graphics, or are not clear enough to allow further accurate reproduction are not acceptable.
C. Shop Drawings: Prepare Project-specific information, drawn accurately to scale. Highlight, encircle, or otherwise clearly indicate deviations from the Contract Documents, if any, along with a notation which reads "VARIATION FROM CONTRACT DOCUMENTS. Do not base Shop Drawings on reproductions of the Contract Documents or standard printed data.

1. Preparation: 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. Design calculations.
   j. Compliance with specified standards.
   k. Notation of coordination requirements.
   l. Notation of dimensions established by field measurement.
   m. Drawing title, number of each drawing (number drawings consecutively), total number of drawings contained in set, date and scale.
   n. Arrangements and plan, elevation, sectional views, and details as necessary to fully describe the work, including complete information for making connections with other work.
   o. List of all subcontractors involved.
   p. Identification of finishes on all materials.
   q. Show descriptive names of materials and equipment, and locations at which materials and equipment are to be installed in the Work. Use same reference identification as shown on the Contract Drawings.

2. Wiring Diagrams: Differentiate between manufacturer-installed and field-installed wiring.

3. Sheet Size: Except for templates, patterns, and similar full-size drawings, submit Shop Drawings on sheets of size sufficient to show information clearly at a proper scale, and at least 8-1/2 by 11 inches but no larger than 30 by 42 inches.

4. Number of Copies: Submit copies of each submittal, as follows:
   a. Submittal: Submit 6 blue- or black-line prints. Architect will require a minimum of four (4) prints.

D. Samples: Prepare physical units of materials or products, including the following:

1. Comply with requirements in Division 1 Section "Quality Requirements" for mockups.

2. Samples for Initial Selection: Where colors and other characteristics are not pre-selected, submit manufacturer's color charts consisting of units or sections of units showing the full range of colors, textures, and patterns available.
3. Samples for Verification: Submit full-size units or Samples of size indicated, prepared from the same material to be used for the Work, cured and finished in manner specified, and physically identical with the product proposed for use, and that show full range of color and texture variations expected. Samples include, but are not limited to, the following: partial sections of manufactured or fabricated components; small cuts or containers of materials; complete units of repetitively used materials; swatches showing color, texture, and pattern; color range sets; and components used for independent testing and inspection.

4. Preparation: Mount, display, or package Samples in manner specified to facilitate review of qualities indicated. Prepare Samples to match Architect's sample where so indicated. In addition to information required elsewhere in this Section for label, include the following on the permanent label attached to the unexposed side of the Sample:
   a. Specification Section number and reference.
   b. Generic description of Sample.
   c. Product name and name of manufacturer.
   d. Sample source.
   e. Model or catalog number, finish numbers and designations and other identifying information.

5. Additional Information: On an attached separate sheet, prepared on Contractor's letterhead, provide the following:
   a. Size limitations.
   b. Compliance with recognized standards.
   c. Availability.
   d. Delivery time.

6. Submit Samples for review of kind, color, pattern, and texture for a final check of these characteristics with other elements and for a comparison of these characteristics between final submittal and actual component as delivered and installed.
   a. If variation in color, pattern, texture, or other characteristic is inherent in the product represented by a Sample, submit at least three (3) sets of paired units that show approximate limits of the variations.
   b. Refer to individual Specification Sections for requirements for Samples that illustrate workmanship, fabrication techniques, and details of assembly, connections, operation, and similar construction characteristics.

7. Number of Samples for Initial Selection: Submit one (1) full set of available choices where color, pattern, texture, or similar characteristics are required to be selected from manufacturer's product line. Architect will return submittal with options selected.

8. Number of Samples for Verification: Submit three (3) sets of Samples. Architect will retain one (1) Sample set; remainder will be returned. Mark up and retain one (1) returned Sample set as a Project Record Sample.
9. Disposition: 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.
   a. Samples that may be incorporated into the Work are indicated in individual Specification Sections. Such Samples must be in an undamaged condition at time of use.
   b. Samples not incorporated into the Work, or otherwise designated as University’s property, are the property of Contractor.

10. The Architect reserves the right to require submission of samples of any materials, whether or not required in the Specifications.

11. The Architect will not issue the final Color Schedule for the Project until all required Samples have been submitted and favorably reviewed by the Architect.

12. Provide materials and installation in the Work that match in every respect Samples favorably reviewed by the Architect. After a Sample has been favorably reviewed by the Architect, no change in make, model, finish or other characteristics will be permitted in materials and installation incorporated in the Work.

13. Architect’s favorable review of Samples will not preclude rejection of Work discovered to have defects or that is otherwise not in compliance with the Contract Documents and which defects or noncompliance reviewed Samples failed to represent.

14. Ensure Samples of materials requiring laboratory tests are tested sufficiently in advance of the time they are required for submittal to the Architect so as to cause no delay.

E. Product Schedule or List: Prepare a written summary indicating types of products required for the Work and their intended location. Include the following information in tabular form:

1. Type of product. Include unique identifier for each product.

2. Number and name of room or space.

3. Location within room or space.

F. Delegated-Design Submittal: Comply with requirements in Division 1 Section “Quality Requirements.”

G. Preliminary Construction Schedule: Comply with requirements in Division 1 Section “Construction Progress Documentation.”

H. Submittals Schedule: Comply with requirements in the Contract General Conditions.
I. Application for Payment and Schedule of Values: Comply with requirements in the Contract General Conditions.

J. Subcontract List: Prepare a written summary identifying individuals or firms proposed for each portion of the Work, including those who are to furnish products or equipment fabricated to a special design. Include the following information in tabular form:

1. Name, address, and telephone number of entity performing subcontract or supplying products.

2. Number and title of related Specification Section(s) covered by subcontract.

3. Drawing number and detail references, as appropriate, covered by subcontract.

2.2 INFORMATIONAL SUBMITTALS

A. General: Prepare and submit Informational Submittals required by other Specification Sections.

1. Number of Copies: Submit two (2) copies of each submittal, unless otherwise indicated. Architect will not return copies.

2. Certificates and Certifications: Provide a notarized statement that includes signature of Contractor, testing agency, or design professional responsible for preparing certification. Certificates and certifications shall be signed by an officer or other individual authorized to sign documents on behalf of the company.

3. Test and Inspection Reports: Comply with requirements in Division 1 Section "Quality Requirements."

B. Contractor's Construction Schedule: Comply with requirements in the Contract General Conditions.

C. Qualification Data: 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.

D. Product Certificates: Prepare written statements on manufacturer's letterhead certifying that product complies with requirements.

E. Welding Certificates: Prepare written certification that welding procedures and personnel comply with requirements. Submit record of Welding Procedure Specification (WPS) and Procedure Qualification Record (PQR) on American Welding Society (AWS) forms. Include names of firms and personnel certified.

F. Installer Certificates: Prepare written statements on manufacturer's letterhead certifying that Installer complies with requirements and, where required, is authorized for this specific Project.
G. Manufacturer Certificates: Prepare written statements on manufacturer's letterhead certifying that manufacturer complies with requirements. Include evidence of manufacturing experience where required.

H. Material Certificates: Prepare written statements on manufacturer's letterhead certifying that material complies with requirements.

I. Material Test Reports: Prepare reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting test results of material for compliance with requirements.

J. Preconstruction Test Reports: 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.

K. Compatibility Test Reports: 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.

L. Field Test Reports: Prepare reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of field tests performed either during installation of product or after product is installed in its final location, for compliance with requirements.

M. Product Test Reports: Prepare written reports indicating current product produced by manufacturer complies with requirements. Base reports on evaluation of tests performed by manufacturer and witnessed by a qualified testing agency, or on comprehensive tests performed by a qualified testing agency.

N. Research/Evaluation Reports: Prepare written evidence, from a model code organization acceptable to authorities having jurisdiction, that product complies with building code in effect for Project. Include the following information:

1. Name of evaluation organization.
2. Date of evaluation.
3. Time period when report is in effect.
4. Product and manufacturers' names.
5. Description of product.
6. Test procedures and results.
7. Limitations of use.

O. Maintenance Data: Prepare written and graphic instructions and procedures for operation and normal maintenance of products and equipment. Comply with requirements in Division 1 Section "Operation and Maintenance Data."

P. Design Data: 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.
Q. Manufacturer's Instructions: Prepare written or published information that documents manufacturer's recommendations, guidelines, and procedures for installing or operating a product or equipment. Include name of product and name, address, and telephone number of manufacturer. Include the following, as applicable:

1. Preparation of substrates.
2. Required substrate tolerances.
3. Sequence of installation or erection.
4. Required installation tolerances.
5. Required adjustments.
6. Recommendations for cleaning and protection.
7. Identify, in writing, discrepancies between Manufacturer's Instructions and requirements of the Contract Documents.

R. Manufacturer's Field Reports: Prepare written information documenting factory-authorized service representative's tests and inspections. Include the following, as applicable:

1. Name, address, and telephone number of factory-authorized service representative making report.
2. Statement on condition of substrates and their acceptability for installation of product.
3. Statement that products at Project site comply with requirements.
4. Summary of installation procedures being followed, whether they comply with requirements and, if not, what corrective action was taken.
5. Results of operational and other tests and a statement of whether observed performance complies with requirements.
6. Statement whether conditions, products, and installation will affect warranty.
7. Other required items indicated in individual Specification Sections.

S. Insurance Certificates and Bonds: 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.

2.3 COLOR SCHEDULE

A. Within thirty (30) calendar days of Notice to Proceed, submit a complete list of all materials for which colors are to be selected by the Architect.

1. Include manufacturer's name and all other pertinent data which will facilitate completion of color selections by the Architect.
2. Submit samples for color selection in full range of applicable manufacturer's full line of standard colors.

PART 3 - EXECUTION

3.1 CONTRACTOR'S REVIEW

A. Review each submittal and check for compliance with the Contract Documents, including, but not limited to, dimensions, products, connections, coordination with other work in
sequence, schedule and fit. Note corrections and field dimensions. Mark with approval stamp before submitting to Construction Administrator.

B. Approval Stamp: 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. General: Architect will not review submittals that do not bear Contractor's approval stamp and will return them without action.

B. Action Submittals: Architect will review each 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 taken, as follows:

1. Final Unrestricted Release: When the Architect marks a submittal "Reviewed," the Work covered by the submittal may proceed provided it complies with requirements of the Contract Documents. Final payment depends on that compliance.

2. Final-But-Restricted Release: When the Architect marks a submittal "Furnish as Corrected," the Work covered by the submittal may proceed provided it complies with notations or corrections on the submittal and requirements of the Contract Documents. Final payment depends on that compliance.

3. Returned for Re-submittal: When the Architect marks a submittal "Revise and Resubmit," do not proceed with Work covered by the submittal, including purchasing, fabrication, delivery, or other activity. Revise or prepare a new submittal according to the notations; resubmit without delay. Repeat if necessary to obtain different action mark.
   a. Do not use, or allow others to use, submittals marked "Revise and Resubmit" at the Project Site or elsewhere where Work is in progress.

4. Other Action: Where a submittal is for information or record purposes or special processing or other activity, the Architect will return the submittal marked "Action Not Required."

C. Informational Submittals: Architect will review each submittal and will not return it, or will reject and return it if it does not comply with requirements. Construction Administrator will forward each submittal to appropriate party.

D. Submittals not required by the Contract Documents will not be reviewed and will be returned to the sender without action.

END OF SECTION
SECTION 01332
STORM WATER POLLUTION PREVENTION PLAN

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Preparation, implementation, and monitoring of Storm Water Pollution Prevention Plan (SWPPP) for the purpose of preventing the discharge of pollutants from the Project site into receiving waters. This includes the elimination of pollution discharges such as improper dumping, storm water that has been in contact with pollutants, erosions, spills or leakage from storage tanks or transfer areas.

B. Compliance with local, state, and federal regulations.

C. Payment of application and annual fees required by the State Water Resources Control Board (SWRCB) up until the date of Substantial Completion.

D. Certification the Project has met all of the conditions of the General Construction Activity Storm Water Permit (GCASP).

1.02 RELATED SECTIONS

A. Section 01330: Submittal Procedures

B. Section 01500: Construction Facilities and Temporary Controls

C. Section 01770: Closeout Procedures

1.03 SUBMITTALS

A. Provide documentation in accordance with specific requirements of approved SWPPP.

B. Retain the following documents on site until Substantial Completion.
   1. Copy of NOI and supporting documents
   2. SWPPP and Monitoring Program

C. Retain the following documents on site until Substantial Completion. Upon Substantial Completion, CONTRACTOR to forward all required documentation to CM. Copy of required documentation shall be forward to District for retention period of three years
   1. Inspection Records.
   2. Annual Compliance Certification.
   4. Training Records.
PART 2 – PRODUCTS

2.01 MATERIALS

A. Provide the quality, grade and type of materials as specified in Best Management Practice, BMP, Handbook

PART 3 – EXECUTION

3.01 QUALITY ASSURANCE


3.02 PREPARATION AND SUBMITTAL

A. Prepare and submit to the CM, within ten (10) days after the date established in the Notice to Proceed, four (4) copies of the Storm Water Pollution Prevention Plan (SWPPP) and fee as required to comply with storm water pollution regulations for Project site.

B. For new or existing Project sites with land disturbance of less than one (1) acre a Notice of Intent (NOI) is not required, however any BMP indicated in BMP Handbook required to prevent or minimize storm water pollution shall be implemented at no cost to OWNER. CONTRACTOR shall prepare and submit to CM a SWPPP for review and approval by OWNER.

C. Submit, along with NOI if applicable, the appropriate application fee made payable to: State Water Resources Control Board.

D. In addition to the above requirements, new or existing Project sites with land disturbance of one (1) or more acres, submit to CM a Notice of Intent (NOI) with the appropriate filing fee. Pay annual renewal fees until Substantial Completion of the Work. No progress payment will be made to CONTRACTOR until CONTRACTOR has prepared and obtained CM and Program Engineer approval of the plan in addition to, if required, a properly prepared Notice of Intent with the appropriate filing fee to OWNER.

E. Prepare SWPPP by following the format in Chapter 2 of the BMP Handbook. The publication is available from www.cabmpandbooks.com:

Blue Print Service Los Angeles County Department of Public Works,
1700 Jefferson Street Cashier’s Office
Oakland, CA 94612 900 S. Fremont Avenue
Alhambra, CA 91803
3.03 IMPLEMENTATION
   A. Install perimeter controls prior to starting Work at the Project site.
   B. Contain on-site storm water on the Project site. Do not drain on-site water directly into
      the storm drain.
   C. Designate trained personnel for the proper implementation of the SWPPP.
   D. Revise SWPPP to suit changing Project site conditions and also when properly installed
      systems are ineffective.
   E. Upon Substantial Completion:
      1. Leave storm water pollution prevention controls in place when required for post-
         construction storm water management and remove those that are not needed as
         determined by CM. OWNER will maintain prevention controls left in place.
      2. Provide Site Monitoring Reports, SWPPP revisions, Compliance Certifications
         and related documents to CM. Post-construction storm water operation and the
         management plan as mentioned in the compliance certifications are considered to
         be in place at Substantial Completion.
      3. Notice of Termination (NOT)

3.04 MONITORING
   A. Conduct examination of pollution prevention controls and provide Site Monitoring Reports
      on a monthly basis, as well as before and after each storm and each day during storm
      events. Prepare and maintain, at the Project site, a log of each inspection using Site
      Monitoring Report forms. Notify to RWQCB within 30 days if there is any noncompliance.
   B. CONTRACTOR shall provide proof annually (no later than July 1) that construction
      activities are in compliance with SWPPP. Non-compliance shall be reported to CM
      immediately.

3.05 SPECIAL MONITORING OF RUNOFF
   A. CONTRACTOR is responsible for providing proper storage of tools and materials. If rain
      or storm water run off comes in contact with pollutants (such as soil stabilizers, paint or
      fluid from vehicles) report to CM immediately. CONTRACTOR will be required to sample
      and remediate contaminated water.

3.06 LIABILITIES AND PENALTIES
   A. Review of the SWPPP and inspection log by CM shall not relieve CONTRACTOR from
      liabilities arising from non-compliance of storm water pollution regulations.
B. Payment of penalties for non-compliance by CONTRACTOR shall be the sole responsibility of CONTRACTOR.

C. Compliance with the Clean Water Act pertaining is the sole responsibility of CONTRACTOR. Any fine against OWNER due to non-compliance by CONTRACTOR, OWNER shall recover all costs of the fine by appropriate OWNER Assessment.

3.07 CHANGE OF INFORMATION

A. Submit to CM completed NOI Form for change of information (Construction Site Information and Material Handling/Management Practices).

3.08 NOTICE OF TERMINATION

A. Upon Substantial Completion CONTRACTOR shall submit a Notice of Termination (NOT) to Construction Manager.

3.09 ATTACHMENTS

A. Attachment A - Site Monitoring Report.

B. Attachment B - Compliance Certification.
I. **Type of Examination**: (Use one form for each type of examination):

- [ ] Prior to Anticipated Storm Event
- [ ] After Actual Storm Event

**Date Examined:**

II. **Check the response for each SWPPP question below**:

1. Do you have an approved Storm Water Pollution Prevention Plan (SWPPP) and a BMP Handbook on the Project site?  
   - [ ] Yes
   - [ ] No

2. Does your SWPPP incorporate an up-to-date erosion control plan?  
   - [ ] Yes
   - [ ] No

3. Is the erosion control installed per plan?  
   - [ ] Yes
   - [ ] No

4. Is the Work at a stage where the erosion control plan can not be constructed, is the erosion control at the Maximum Extent Practicable for the stage you are in?  
   - [ ] Yes
   - [ ] No

5. Did you observe the presence of any floating materials such as oil, grease, pieces of wood, paper, etc., odor, toxics, and/or sediments?  
   - [ ] Yes
   - [ ] No

6. If yes, what is it that you observed?

III. **Check the status of the following items as observed**:

<table>
<thead>
<tr>
<th>SWPPP Items</th>
<th>Acceptable</th>
<th>Not Acceptable</th>
<th>Repairs Required</th>
<th>Date Repairs Completed</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. De-silting Basins (Cleaned)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Water Quality Basin</td>
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<tr>
<td>3. Silt Fences</td>
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</tr>
<tr>
<td>4. Hay bales/ Check dams/ Sandbags</td>
<td></td>
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</tr>
<tr>
<td>5. Berms and Dikes</td>
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</tr>
<tr>
<td>6. Sand/Gravel Inlet</td>
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<td>7. Slope Protection - Polymer and Mulch</td>
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<td>8. Vegetation / Re-vegetation</td>
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<td>9. Dust Control</td>
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<td>10. Surface Erosion</td>
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<td>11. Slope Instability</td>
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IV. Describe any problems or required repairs checked above and the necessary actions needed:

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<tr>
<th>Item</th>
<th>Description of Problem or Required Repair</th>
<th>Action Needed</th>
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Examination Performed by CONTRACTOR: __________________________

By (Print Name, Title and Sign) __________________________ Date __________

Verified by IOR: __________________________

Print Name, Title and Sign __________________________ Date __________
ANNUAL CERTIFICATION

I certify the Project has met the following conditions: All elements of the Storm Water Pollution Prevention Plan are in place; construction materials and equipment maintenance waste have been disposed of properly; and the Project site is in compliance with all local storm water management requirements including erosion/sediment control requirements, and the appropriate use permits have been obtained.

CONTRACT
OR:

Print Name: ____________________________ Title: ____________________________

Signature: ____________________________ Date: ____________________________

SUBSTANTIAL COMPLETION CERTIFICATION

I certify the Project has been completed and the following conditions have been met: All elements of the Storm Water Pollution Prevention Plan have been completed; construction materials and equipment maintenance waste have been disposed of properly; the Project site is in compliance with all local storm water management requirements including erosion/sediment control requirements and the appropriate use permits have been obtained; and a post-construction storm water operation, and management plan is in place.

CONTRACT
OR:

Print Name: ____________________________ Title: ____________________________

Signature: ____________________________ Date: ____________________________
PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. This Section includes administrative and procedural requirements for quality assurance and quality control.

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. Specific quality-control requirements for individual construction activities are specified in the Sections that specify those activities. Requirements in those Sections may also cover production of standard products.

2. Specified tests, inspections, and related actions do not limit Contractor's quality-control procedures that facilitate compliance with the Contract Document requirements.

3. Requirements for Contractor to provide quality-control services required by College, Construction Administrator, Architect, or authorities having jurisdiction are not limited by provisions of this Section.

C. Related Sections include the following:

1. Division 1 Section "Construction Progress Documentation" for developing a schedule of required tests and inspections.

2. Division 1 Section "Cutting and Patching" for repair and restoration of construction disturbed by testing and inspecting activities.

3. Divisions 2 through 16 Sections for specific test and inspection requirements.

1.3 DEFINITIONS

A. Quality-Assurance Services: Activities, actions, and procedures performed before and during execution of the Work to guard against defects and deficiencies and ensure that proposed construction complies with requirements.

B. Quality-Control Services: Tests, inspections, procedures, and related actions during and after execution of the Work to evaluate that completed construction complies with requirements. Services do not include contract enforcement activities performed by Architect or Construction Administrator.
C. Mockups: Full-size, physical example assemblies to illustrate finishes and materials. 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. Mockups establish the standard by which the Work will be judged.

1. Install Field samples or mock-ups at the site as required by individual specifications Sections for review.

2. Acceptable samples represent a quality level for the work.

3. Remove field sample or mock up when specified in individual Sections.

D. Testing Agency: An entity engaged to perform specific tests, inspections, or both. Testing laboratory shall mean the same as testing agency.

1.4 REGULATORY REQUIREMENTS

A. Copies of Regulations: Obtain copies of the following regulations and retain at Project site to be available for reference by parties who have a reasonable need:


1.5 SUBMITTALS

A. Qualification Data: For testing agencies specified in "Quality Assurance" Article 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. Qualifications for Continuous Inspection: When required by the Contract Documents or authorities having jurisdiction, engage inspectors registered and approved for "continuous inspection" by authorities having jurisdiction.

C. Schedule of Tests and Inspections: Prepare in tabular form and include the following:

1. Specification Section number and title.
2. Description of test and inspection.
3. Identification of applicable standards.
4. Identification of test and inspection methods.
5. Number of tests and inspections required.
6. Time schedule or time span for tests and inspections.
7. Entity responsible for performing tests and inspections.
8. Requirements for obtaining samples.
9. Unique characteristics of each quality-control service.

D. Reports: Prepare and submit certified written reports that include the following:

1. Date of issue.
2. Project title and Architect's project number (indicated as "W.O. No." or "Job No." on the Drawings and Specifications; and DSA application number or other identifying number, if any.

3. Name, address, and telephone number of testing or inspecting agency.

4. Dates, times 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.


8. Complete test or inspection data.

9. Test and inspection results and an interpretation of test results.

10. Ambient conditions at time of sample taking and testing and inspecting.

11. Comments or professional opinion on whether tested or inspected Work complies with the Contract Document requirements.

12. Name and signature of laboratory inspector.

13. Recommendations on retesting and re-inspecting.

14. In addition to items "1" through "5" above, include the following information in reports of continuous inspection:
   a. All information required by authorities having jurisdiction.
   b. Number of hours of inspection
   c. Summary of progress and condition of the Work.
   d. Observations of noncompliance with requirements of the Contract Documents, if any.
   e. Description of the Work observed.

E. Permits, Licenses, and Certificates: For Construction Manager’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.

1.6 QUALITY ASSURANCE

A. Fabricator Qualifications: A firm experienced in producing 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. Any metal fabrication or welding procedures shall be performed by a certified fabrication shop.

B. Factory-Authorized Service Representative Qualifications: An authorized representative of manufacturer who is trained and approved by manufacturer to inspect installation of manu-
facturer's products that are similar in material, design, and extent to those indicated for this Project.

C. Certified welders: Welders, who have been tested to the stringent standards that the City of Los Angeles requires (City of Los Angeles, Department of Building and Safety. Structured Steel Certification, AWS, D 1.1 code book).

D. Installer Qualifications: A firm or individual 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.

E. Manufacturer Qualifications: A firm experienced in manufacturing products or systems similar to those indicated for this Project and with a record of successful in-service performance.

F. Professional Engineer Qualifications: A professional engineer who is legally qualified to practice in jurisdiction where Project is located and who is experienced in providing engineering services of the kind indicated. Engineering services are defined as those performed for installations of the system, assembly, or product that are similar to those indicated for this Project in material, design, and extent. This individual will be maintained on laboratory staff, full-time.

G. Specialists: 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.

1. 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.

H. Testing Agency Qualifications: An agency with the experience and capability to conduct testing and inspecting indicated, currently approved by DSA, and that specializes in types of tests and inspections to be performed.

I. Preconstruction Testing: Testing agency shall perform preconstruction testing for compliance with specified requirements for performance and test methods.

1. Contractor responsibilities include the following:

   a. Provide test specimens and assemblies representative of proposed materials and construction. Provide sizes and configurations of assemblies to adequately demonstrate capability of product to comply with performance requirements.
   b. Submit specimens in a timely manner with sufficient time for testing and analyzing results to prevent delaying the Work.
   c. Fabricate and install test assemblies using installers who will perform the same tasks for Project.
   d. When testing is complete, remove assemblies; do not reuse materials on Project.
2. Testing Agency Responsibilities: Submit a certified written report of each test, inspection, and similar quality-assurance service to Architect, through Construction Administrator with copy to Contractor. Interpret tests and inspections and state in each report whether tested and inspected work complies with or deviates from the Contract Documents.

J. Mockups: 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 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, unless otherwise indicated.

1.7 QUALITY CONTROL

A. Owner’s Responsibilities: Where quality-control services are indicated as Owner’s responsibility, Owner will engage a qualified testing agency to perform these services through the Program Management Team.

1. Owner will furnish Contractor with names, addresses, and telephone numbers of testing agencies engaged and a description of the types of testing and inspecting they are engaged to perform.

2. Costs for retesting and re-inspecting construction that replaces or is necessitated by work that failed to comply with the Contract Documents will be charged to Contractor, and the Contract price will be adjusted by Change Order.

3. Reimburse Owner for costs of additional inspections and tests required due to any of the following:

   a. Contractor’s failure to complete the entire Work within the contract time stated in the Agreement between Owner and Contractor, including properly authorized time extensions.
   b. Claims between separate contractors.
   c. Covering of Work before required inspections and tests are performed.
   d. Tests and inspections of Contractor’s correction of defective Work.
   e. Inspecting and testing agency overtime costs due to acceleration of the Work for Contractor’s convenience.
   f. Tests and inspections required because of a change in materials provided or a change in source of supply.
g. Tests and inspections required solely for the convenience of the Contractor in scheduling and performing the Work.

h. Inefficient inspection and testing caused by the Contractor's inefficient and sporadic manufacturing, purchasing or installation processes.

4. Regardless of the status or result of tests and inspections, promptly notify the Architect of observed irregularities or deficiencies in the Work or in products scheduled to be used in the Work.

B. Special Tests and Inspections: Owner will engage a testing agency to conduct special tests and inspections required by authorities having jurisdiction as the responsibility of Owner.

1. Testing agency will notify Construction Inspector, Architect and Contractor promptly of irregularities and deficiencies observed in the Work during performance of its services.

2. Testing agency will submit a certified written report of each test, inspection, and similar quality-control service to Construction Inspector and Architect with copy to Contractor and to authorities having jurisdiction.

3. Testing agency will submit a final report of special tests and inspections at completion, which includes a list of unresolved deficiencies.

4. Testing agency will interpret tests and inspections and state in each report whether tested and inspected work complies with or deviates from the Contract Documents.

5. Testing agency will retest and re-inspect corrected work.

C. Manufacturer's Field Services: Where indicated, engage a factory-authorized service representative to inspect field-assembled components and equipment installation, including service connections. Report results in writing.

D. Retesting/Re-inspecting: Regardless of whether original tests or inspections were Contractor's responsibility, provide quality-control services, including retesting and re-inspecting, for construction that revised or replaced Work that failed to comply with requirements established by the Contract Documents.


1. Notify Construction Inspector Architect and Contractor promptly of irregularities or deficiencies observed in the Work during performance of its services.

2. Interpret tests and inspections and state in each report whether tested and inspected work complies with or deviates from requirements.

3. Submit a certified written report, in duplicate, of each test, inspection, and similar quality-control service through Contractor.

4. Do not release, revoke, alter, or increase requirements of the Contract Documents or approve or accept any portion of the Work.
5. Do not perform any duties of Contractor.

6. The agency is not authorized to stop the Work.

7. Select material samples for testing. Place a label, tag, or other permanent marker on samples for identification. Include the following information on the label as a minimum:
   a. Project name and address.
   b. Location in the Work from which the sample was removed or is scheduled to be placed.
   c. Date sample was taken.
   d. Nature of scheduled test or tests to be performed.

8. Perform testing and inspection services in compliance with requirements of authorities having jurisdiction.

F. Associated Services: 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. Furnish copies of mill test reports.

G. Coordination by Contractor: Coordinate sequence of activities to accommodate required quality-assurance and quality-control services with a minimum of delay and to avoid necessity of removing and replacing construction to accommodate testing and inspecting.

1. Schedule times for tests, inspections, obtaining samples, notification, and similar activities.

2. Notification: The Architect and Construction Manager may elect to attend some or all of the field tests and inspections. Notify the Architect and Program Management
Team not less than 48 hours in advance of each field test and inspection, except notify the Architect and Construction Manager not less than 72 hours in advance of scheduled start-up of HVAC and electrical equipment, and when College facilities services department presence is required.

H. Architect and College reserve the right to require testing and inspection of any material or product used in the Work, including materials and products already installed.

I. Inspector of Record:

1. The College shall supply a DSA IOR, reporting to the Architect and the Division of the State Architect (DSA), who shall observe construction in progress. Inspectors shall have the following responsibilities and limitations on authority:

a. IOR performs duties as required in Title 24, Part 1 CCR.

b. Observe installations and work in progress as a basis for determining conformance of the work, materials, and equipment with the Construction Documents. Inspector of Record will report any discrepancies observed to the Architect's assigned Construction Administrator and the Contractor.

c. Only the Architect of Record shall interpret the requirements of the Construction Documents. If any item is ambiguous, Architect of Record shall make a written interpretation. If Contractor requests changes or modifications to the Construction Documents, Architect of Record shall make a written determination on the requested changes or modifications.

d. Prepare and submit an inspection report of all special inspections performed by the Contractor.

e. Review the monthly progress payment request before Contractor submits it to the Architect and Construction Manager.

f. Assist Architect of Record in reviewing the test and inspection results of testing laboratories.

g. The Inspector of Record is not authorized to permit deviations from the requirements of the Contract Documents unless such deviations have been approved by Architect of Record, in writing.

h. The Inspector of Record is not authorized to advise on or issue directions to Contractor about any aspect of construction means, methods, techniques, sequences, or procedures, or relating to safety programs in connection with the project.

2. Failure of the Construction Manager or Inspector of Record to observe or inspect the Work, or to detect deficiencies in the Work, or to inform Contractor of any deficiencies which may be discovered, shall not relieve Contractor, their subcontractors regardless of tier, or suppliers from their responsibility for construction means, methods, techniques, sequences and procedures, construction safety, nor from their responsibilities to carry out the work in accordance with the Contract Documents and to detect and correct defective work. The term "defective work" means work that is unsatisfactory, faulty, omitted, incomplete, deficient, or does not conform to the requirements of the Contract Documents, project directives, or the requirements of any inspection, reference standard, test, or approval specified in the Contract Documents, or has been damaged prior to final completion, unless responsibility for the protection of such work has been assumed by the College through occupancy in accordance with Article 2.3 of the Contract General Conditions.

J. Inspection Requests:
1. Contractor shall request inspection of completed portions of the Work through the Construction Manager at least 2 working days in advance of the inspection to be performed. Contractor shall submit said request for inspection in writing using a form acceptable to the Construction Manager. The Contractor is responsible for reviewing all of the Contract Documents for inspection requirements.

2. Inspections which are to occur more than 50 miles from the project site (i.e., factory inspections) require a minimum advance notice to the Construction Manager of 14 calendar days. All such inspections requiring the Inspector of Record to travel shall be reimbursed by the Contractor.

K. Inspection Coordination:

1. Contractor shall provide, on a weekly basis, an anticipated Inspection Requirements Schedule, coordinated with the two-week, look-ahead schedule, showing the anticipated inspection needs for the upcoming three (3) weeks to facilitate appropriate campus coordination and interface as well as mobilization of required inspection staffing. The Contractor shall be solely responsible for any delays due to improper or untimely inspection requests.

2. Work shall not be done beyond the point indicated in each successive inspection without first obtaining the approval of the Inspector of Record. The Inspector of Record, upon notification, shall make the requested inspections and shall either indicate in writing that that portion of the construction is satisfactory as completed or shall notify the Contractor that same fails to comply with plans and specifications. Any portions which do not comply shall be corrected by the Contractor and such portions shall not be covered or concealed until authorized by the Inspector of Record.

   a. There shall be a final inspection and approval of all buildings, structures, and equipment when completed and ready for occupancy and use.

L. Schedule of Tests and Inspections: Prepare a schedule of tests, inspections, and similar quality-control services required by the Contract Documents. Submit schedule within thirty (30) days of date established for the Notice to Proceed.

1. Distribution: Distribute schedule to Construction Manager, Construction Inspector, Architect testing agencies, and each party involved in performance of portions of the Work where tests and inspections are required.

1.8 TESTING AND INSPECTION REQUIREMENTS

A. The College will select an independent testing laboratory to conduct the tests. Selection of the material required to be tested shall be by the laboratory or the College's representative and not by the Contractor.

B. The Contractor shall notify the College's representative a sufficient time in advance of the manufacture of material to be supplied by him under the Contract. Documents, which test by terms of the Contract be tested, in order that the College may arrange for the testing of same at the source of supply.
C. Any material shipped by the Contractor from the source of supply prior to having satisfactorily passed such testing and inspection or prior to the receipt of notice from said representative that such testing and inspection will not be required shall not be incorporated in the job.

1.9 TESTS REPORTS

A. One copy of all test reports shall be forwarded to the Division of the State Architect by the testing agency. Such reports shall include all the 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 reported. The reports shall show that the material or materials were sampled and tested in accordance with the requirements of Title 24 and with the approved specifications. Test reports shall show the specified design strength. They shall also state definitely whether or not the material or materials tested comply with requirements.

1.10 VERIFICATION OF TEST REPORTS

A. Each testing agency shall submit to the Division of the State Architect a verified report in duplicate covering all the tests which are required to be made by that agency during the progress of the project. Such report shall be furnished each time that work on the project is suspended, covering the tests up to that time, and at the completion of the project, covering all tests.

1.11 INSPECTION BY THE OWNER

A. The College and his representatives shall at all times have access for the purpose of inspection to all parts of the work and to the shops wherein the work is in preparation, and the Contractor shall at all times maintain proper facilities and provide safe access for such inspection.

1.12 TESTING AND INSPECTION

A. The College shall have the right to reject materials and workmanship which are defective, or to require their correction. Rejected workmanship shall be satisfactorily corrected and rejected materials shall be removed from the premises without charge to the College. If the Contractor does not correct such rejected work within a reasonable time, fixed by written notice, the College may correct same and charge the expense to the Contractor.

B. Should it be considered necessary or advisable by the College at any time before final acceptance of the entire work to make an examination of the work already completed by removing or tearing out the same, the Contractor shall on request promptly furnish all necessary facilities, labor and materials. If such work is found to be defective in any respect due to the fault of the Contractor or his subcontractor, he shall defray all expenses of such examinations and of satisfactory reconstruction. If, however, such work is found to meet the requirements of the Contract, the additional cost of labor and material necessarily involved in the examination and replacement shall be allowed the Contractor.

1.13 INSPECTOR - OWNER'S

A. An Inspector employed by the College in accordance with the requirements of the California Code of Regulations, Title 24, will be assigned to the work. His duties are specifically defined in Title 24, Part 1, Sec. 4-342.
B. The work of construction in all stages of progress shall be subject to the personal continuous observation of the Inspector. He shall have free access to any or all parts of the work at any time. The Contractor shall furnish the Inspector reasonable facilities for obtaining such information as may be necessary to keep him fully informed respecting the progress and manner of the work and the character of the materials. Inspection of the work shall not relieve the Contractor from any obligation to fulfill this Contract.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 REPAIR AND PROTECTION

A. General: On completion of testing, inspecting, sample taking, and similar services, repair damaged construction and restore substrates and finishes.

1. Comply with the Contract Document requirements for Division 1 Section "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.

3.2 TESTS AND INSPECTION REQUIREMENTS

A. Concrete - CBC, Chapter 19A:
   1. Materials:
      a. Portland Cement 1903 A.2, 1929 A.1
      b. Concrete Aggregates 1903 A.3
      c. Reinforcing Bars 1903 A.5, 1929 A.2
   2. Quality:
      a. Proportions of Concrete 1904 A, 1905 A.1, A.2, A.3, A.4
      b. Strength Tests of Concrete 1905 A.6
   3. Inspection:
      a. Job Site 1905 A.7
      b. Batch Plant 1929 A.4
      c. Waiver of Batch Plant 1929 A.5, A.6
      d. Reinforcing Bar Welding 1929 A.12

B. Steel - CBC, Chapter 22A:
   1. Materials:
      a. Structural Steel, Cold Formed Steel 2202 A.1, 2231 A.1
      b. Identification 2203 A
   2. Quality:
      a. Tests of Structural and Cold Formed Steel 2231 A.1
      b. Tests of High Strength Bolts, Nuts, Washers 2231 A.2
      c. Tests of End Welded Studs 2231 A.3
      d. Non Destructive Weld Tests 1703 A
   3. Inspection:
SECTION 01400
QUALITY REQUIREMENTS

a. Shop Fabrication 2231 A.4
b. Welding 2231 A.5
c. Nelson Stud Welding 2231 A.5
d. High Strength Bolt Installation 2231 A.6

C. Wood - CBC, Chapter 23A
1. Materials
   a. Lumber and Plywood Grading 2305
   b. Glued - Laminated Members 2312
2. Wood Inspection
   a. Glue - Laminated Fabrication 2312.6
   b. Timber Connectors 2311

D. Site Work. Demolition & Construction - CBC, Chapter 33:
1. Inspection:
   a. Excavations and Fills 3301.1

END OF SECTION
PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 DEFINITIONS

A. General: Basic Contract definitions are included in the Conditions of the Contract.

B. "No Exception Taken": When used to convey Architect's action on Contractor's submittals, applications, and requests, such an approval is limited to Architect's duties and responsibilities as stated in the Conditions of the Contract.

C. "Directed": A command or instruction by Architect or Construction Manager. Other terms including "requested," "authorized," "selected," "approved," "required," and "permitted" have the same meaning as "directed."

D. "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," "detailed," and "specified" have the same meaning as "indicated."


F. "Furnish": Supply and deliver to Project site, ready for unloading, unpacking, assembly, installation, and similar operations.

G. "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.

H. "Provide": Furnish and install, complete in place, operating, tested, approved, and ready for the intended use.

I. "Installer": 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.

J. "Experienced": Unless specified otherwise in other Sections, when used with an entity, "experienced" means having successfully completed a minimum of five previous projects similar in size and scope to this Project; being familiar with special requirements indicated; and having complied with requirements of authorities having jurisdiction.
K. "Project Site": Space available for performing construction activities. The extent of Project site is shown on Drawings and may or may not be identical with the description of the land on which Project is to be built.

L. "Similar": In the general sense and not necessarily identical.

1.3 INDUSTRY STANDARDS

A. Applicability of Standards: Unless the Contract Documents include more stringent requirements, applicable construction industry 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.

1. Requirements for packaging, packing, marking, and preparation for shipment or delivery included in referenced federal specifications are not mandatory for products provided for this Work.

B. Publication Dates: Comply with standards in effect as of date of the Contract Documents, unless otherwise indicated.

1. When a named or proposed product complies with a referenced standard of different publication date or issue than required by these Specifications, submit the product as a substitute under provisions of Division 1 Section "Substitutes." Provide a detailed written summary of changes in product or workmanship quality and performance as a result of the product complying with a different version of a standard from the version referenced.

C. Conflicting Requirements: If compliance with two or more standards is specified and the standards establish different or conflicting requirements for minimum quantities or quality levels, comply with the most stringent requirement. Refer uncertainties and requirements that are different, but apparently equal, to Architect for a decision before proceeding.

1. Minimum Quantity or Quality Levels: 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. Where requirements conflict, provide the greater quantity and higher quality indicated. Refer uncertainties to Architect for a decision before proceeding.

2. Where a product is specified by both brand name and reference to 1 or more standards, provide that product only if it actually complies with the required standards. Listing of a product by brand or trade name in these Specifications is not a warranty that the product complies with the standards which may also be listed. If a named product does not comply with 1 or more of the required standards and no alternative product is listed which does comply, submit a substitute product under provisions of Division 1 Section "Substitutes" which complies with the required standards.
D. Copies of Standards: Each entity engaged in construction on Project must be familiar with industry standards applicable to its construction activity. Copies of applicable standards are not bound with the Contract Documents.

1. Where copies of standards are needed to perform a required construction activity, obtain copies directly from publication source and make them available on request.

E. Abbreviations and Acronyms for Standards and Regulations: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the standards and regulations in the following list. Names, telephone numbers, and Web site addresses are subject to change and are believed to be accurate and up-to-date as of the date of the Contract Documents.

- **ADAAG**
  - Americans with Disabilities Act (ADA)
  - Accessibility Guidelines for Buildings and Facilities
  - Available from Access Board
  - [www.access-board.gov](http://www.access-board.gov)
  - Contact: (800) 872-2253, (202) 272-0080

- **CFR**
  - Code of Federal Regulations
  - Available from Government Printing Office
  - [www.access.gpo.gov/nara/cfr](http://www.access.gpo.gov/nara/cfr)
  - Contact: (888) 283-6498, (202) 512-1530

- **CRD**
  - Handbook for Concrete and Cement
  - Available from Army Corps of Engineers
  - Waterways Experiment Station
  - [www.wes.army.mil](http://www.wes.army.mil)
  - Contact: (601) 634-2355

- **FED-STD**
  - Federal Standard
  - (See FS)

- **FS**
  - Federal Specification
  - Available from Department of Defense Single Stock Point
  - [www.dodssp.daps.mil](http://www.dodssp.daps.mil)
  - Available from General Services Administration
  - [www.fss.gsa.gov](http://www.fss.gsa.gov)
  - Available from National Institute of Building Sciences
  - [www.nibs.org](http://www.nibs.org)
  - Contact: (215) 697-6257, (202) 501-1021, (202) 289-7800

- **FTMS**
  - Federal Test Method Standard
  - (See FS)

- **UFAS**
  - Uniform Federal Accessibility Standards
  - Available from Access Board
  - [www.access-board.gov](http://www.access-board.gov)
  - Contact: (800) 872-2253, (202) 272-0080

1.4 ABBREVIATIONS AND ACRONYMS

A. Industry Organizations: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the entities in the
following list. Names, telephone numbers, and Web site addresses are subject to change and are believed to be accurate and up-to-date as of the date of the Contract Documents.

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Name</th>
<th>Phone</th>
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<tr>
<td>AA</td>
<td>Aluminum Association, Inc. (The)</td>
<td>(202) 862-5100</td>
</tr>
<tr>
<td>AAADM</td>
<td>American Association of Automatic Door Manufacturers</td>
<td>(216) 241-7333</td>
</tr>
<tr>
<td>AABC</td>
<td>Associated Air Balance Council</td>
<td>(202) 737-0202</td>
</tr>
<tr>
<td>AAMA</td>
<td>American Architectural Manufacturers Association</td>
<td>(847) 303-5664</td>
</tr>
<tr>
<td>AASHTO</td>
<td>American Association of State Highway and Transportation Officials</td>
<td>(202) 624-5800</td>
</tr>
<tr>
<td>AATCC</td>
<td>American Association of Textile Chemists and Colorists (The)</td>
<td>(919) 549-8141</td>
</tr>
<tr>
<td>ABMA</td>
<td>American Bearing Manufacturers Association</td>
<td>(202) 367-1155</td>
</tr>
<tr>
<td>ACI</td>
<td>ACI International (American Concrete Institute)</td>
<td>(248) 848-3700</td>
</tr>
<tr>
<td>ACPA</td>
<td>American Concrete Pipe Association</td>
<td>(972) 506-7216</td>
</tr>
<tr>
<td>AEIC</td>
<td>Association of Edison Illuminating Companies, Inc. (The)</td>
<td>(205) 257-2530</td>
</tr>
<tr>
<td>AFPA</td>
<td>American Forest &amp; Paper Association</td>
<td></td>
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<tr>
<td>AF&amp;PA</td>
<td>American Forest &amp; Paper Association</td>
<td>(800) 878-8878</td>
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<tr>
<td>AGA</td>
<td>American Gas Association</td>
<td>(202) 824-7000</td>
</tr>
<tr>
<td>AGC</td>
<td>Associated General Contractors of America (The)</td>
<td>(703) 548-3118</td>
</tr>
<tr>
<td>AHA</td>
<td>American Hardboard Association</td>
<td>(202) 872-5955</td>
</tr>
<tr>
<td>AHAM</td>
<td>Association of Home Appliance Manufacturers</td>
<td></td>
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</table>
AI Asphalt Institute  
www.asphaltinstitute.org  
(859) 288-4960

AIA American Institute of Architects (The)  
www.aia.org  
(800) 242-3837  
(202) 626-7300

AISC American Institute of Steel Construction  
www.aisc.org  
(800) 644-2400  
(312) 670-2400

AISI American Iron and Steel Institute  
www.steel.org  
(202) 452-7100

AITC American Institute of Timber Construction  
www.aitc-glulam.org  
(303) 792-9559

ALCA Associated Landscape Contractors of America  
www.alca.org  
(800) 395-2522  
(703) 736-9666

ALSC American Lumber Standard Committee, Incorporated  
www.alsc.org  
(301) 972-1700

AMCA Air Movement and Control Association International, Inc.  
www.amca.org  
(847) 394-0150

ANSI American National Standards Institute  
www.ansi.org  
(202) 293-8020

AOSA Association of Official Seed Analysts  
www.aosaseed.com  
(505) 522-1437

APA APA - The Engineered Wood Association  
www.apawood.org  
(253) 555-6600

APA Architectural Precast Association  
www.archprecast.org  
(239) 454-6989

API American Petroleum Institute  
www.api.org  
(202) 682-8000

ARI Air-Conditioning & Refrigeration Institute  
www.ari.org  
(703) 524-8800

ARMA Asphalt Roofing Manufacturers Association  
www.asphaltroofing.org  
(202) 207-0917

ASCE American Society of Civil Engineers  
www.asce.org  
(800) 548-2723  
(703) 295-6300

ASHRAE American Society of Heating, Refrigerating and Air-Conditioning Engineers  
www.ashrae.org  
(800) 527-4723  
(404) 636-8400

ASME ASME International  
(The American Society of Mechanical Engineers International)  
(800) 843-2763  
(212) 591-7722
www.asme.org

ASSE American Society of Sanitary Engineering
www.asse-plumbing.org (440) 835-3040

ASTM ASTM International
(American Society for Testing and Materials International)
www.astm.org (610) 832-9585

AWCI AWCI International
(Association of the Wall and Ceiling Industries International)
www.awci.org (703) 534-8300

AWCMA American Window Covering Manufacturers Association
(See WCSC)

AWI Architectural Woodwork Institute
www.awinet.org (800) 449-8811 (703) 733-0600

AWPA American Wood-Preservers’ Association
www.awpa.com (334) 874-9800

AWS American Welding Society
www.aws.org (800) 443-9353 (305) 443-9353

AWWA American Water Works Association
www.awwa.org (800) 926-7337 (303) 794-7711

BHMA Builders Hardware Manufacturers Association
www.buildershardware.com (212) 297-2122

BIA Brick Industry Association (The)
www.bia.org (703) 620-0010

BICSI BICSI
www.bicsi.org (813) 979-1991

BIFMA BIFMA International
(Business and Institutional Furniture Manufacturer’s Association International)
www.bifma.com (616) 285-3963

CCC Carpet Cushion Council
www.carpetcushion.org (203) 637-1312

CCFSS Center for Cold-Formed Steel Structures
www.umr.edu/~ccfss (573) 341-4471

CDA Copper Development Association Inc.
www.copper.org (800) 232-3282 (212) 251-7200

CEA Canadian Electricity Association
(613) 230-9263
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<tr>
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<th>Website/Contact Information</th>
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<tr>
<td>CFFA</td>
<td>Chemical Fabrics &amp; Film Association, Inc.</td>
<td><a href="http://www.chemicalfabricsandfilm.com">www.chemicalfabricsandfilm.com</a> (216) 241-7333</td>
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<tr>
<td>CGA</td>
<td>Compressed Gas Association</td>
<td><a href="http://www.cganet.com">www.cganet.com</a> (703) 788-2700</td>
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<tr>
<td>CGSB</td>
<td>Canadian General Standards Board</td>
<td><a href="http://www.pwgsc.gc.ca/cgsb">www.pwgsc.gc.ca/cgsb</a> (800) 665-2472 (819) 955-0425</td>
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<td>CIMA</td>
<td>Cellulose Insulation Manufacturers Association</td>
<td><a href="http://www.cellulose.org">www.cellulose.org</a> (888) 881-2462 (937) 222-2462</td>
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<tr>
<td>CISCA</td>
<td>Ceilings &amp; Interior Systems Construction Association</td>
<td><a href="http://www.cisca.org">www.cisca.org</a> (630) 584-1919</td>
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<tr>
<td>CISPI</td>
<td>Cast Iron Soil Pipe Institute</td>
<td><a href="http://www.cispi.org">www.cispi.org</a> (423) 892-0137</td>
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<tr>
<td>CLFMI</td>
<td>Chain Link Fence Manufacturers Institute</td>
<td><a href="http://www.chainlinkyinfo.org">www.chainlinkyinfo.org</a> (301) 596-2583</td>
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<td>CPA</td>
<td>Composite Panel Association</td>
<td><a href="http://www.pbmdf.com">www.pbmdf.com</a> (301) 670-0604</td>
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<tr>
<td>CPPA</td>
<td>Corrugated Polyethylene Pipe Association</td>
<td><a href="http://www.cppa-info.org">www.cppa-info.org</a> (800) 510-2772 (202) 462-9607</td>
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<tr>
<td>CRI</td>
<td>Carpet &amp; Rug Institute (The)</td>
<td><a href="http://www.carpet-rug.com">www.carpet-rug.com</a> (800) 882-8846 (706) 278-3176</td>
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<tr>
<td>CRSI</td>
<td>Concrete Reinforcing Steel Institute</td>
<td><a href="http://www.crsi.org">www.crsi.org</a> (847) 517-1200</td>
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<td>CSA</td>
<td>CSA International (Formerly: IAS - International Approval Services)</td>
<td><a href="http://www.csa-international.org">www.csa-international.org</a> (800) 463-6727 (416) 747-4000</td>
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<tr>
<td>CSI</td>
<td>Cast Stone Institute</td>
<td>10 West Kimball St. Winder, GA 30680-2535 (770) 868-5909</td>
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<td>CSI</td>
<td>Construction Specifications Institute (The)</td>
<td><a href="http://www.csinet.org">www.csinet.org</a> (800) 689-2900 (703) 684-0300</td>
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<td>CSSB</td>
<td>Cedar Shake &amp; Shingle Bureau</td>
<td><a href="http://www.cedarbureau.org">www.cedarbureau.org</a> (604) 820-7700</td>
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<td>CTI</td>
<td>Cooling Technology Institute (Formerly: Cooling Tower Institute)</td>
<td><a href="http://www.cti.org">www.cti.org</a> (281) 583-4087</td>
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<td>DHI</td>
<td>Door and Hardware Institute</td>
<td><a href="http://www.dhi.org">www.dhi.org</a></td>
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<td>DSA</td>
<td>Division of the State Architect</td>
<td><a href="http://www.dsa.dgs.ca.gov">www.dsa.dgs.ca.gov</a></td>
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<td>EIA</td>
<td>Electronic Industries Alliance</td>
<td><a href="http://www.eia.org">www.eia.org</a></td>
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<td>EIMA</td>
<td>EIFS Industry Members Association</td>
<td><a href="http://www.eima.com">www.eima.com</a></td>
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<td>EJCDC</td>
<td>Engineers Joint Contract Documents Committee</td>
<td><a href="http://www.asce.org">www.asce.org</a></td>
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<td>EJMA</td>
<td>Expansion Joint Manufacturers Association, Inc.</td>
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<td>ESD</td>
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<td>FCI</td>
<td>Fluid Controls Institute</td>
<td><a href="http://www.fluidcontrolsinstitute.org">www.fluidcontrolsinstitute.org</a></td>
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<td>FIBA</td>
<td>Federation Internationale de Basketball Amateur (The International Basketball Federation)</td>
<td><a href="http://www.fiba.com">www.fiba.com</a></td>
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<td>FIVB</td>
<td>Federation Internationale de Volleyball (The International Volleyball Federation)</td>
<td><a href="http://www.fivb.ch">www.fivb.ch</a></td>
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<td>FM</td>
<td>Factory Mutual System (See FMG)</td>
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<td>FMG</td>
<td>FM Global (Formerly: FM - Factory Mutual System)</td>
<td><a href="http://www.fmglobal.com">www.fmglobal.com</a></td>
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<td>FRSA</td>
<td>Florida Roofing, Sheet Metal &amp; Air Conditioning Contractors Association, Inc.</td>
<td><a href="http://www.floridaroof.com">www.floridaroof.com</a></td>
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<td>FSA</td>
<td>Fluid Sealing Association</td>
<td><a href="http://www.fluidsealing.com">www.fluidsealing.com</a></td>
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<td>FSC</td>
<td>Forest Stewardship Council</td>
<td><a href="http://www.fscoax.org">www.fscoax.org</a></td>
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<td>GA</td>
<td>Gypsum Association</td>
<td><a href="http://www.gypsum.org">www.gypsum.org</a></td>
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<td>GANA</td>
<td>Glass Association of North America</td>
<td><a href="http://www.glasswebsite.com">www.glasswebsite.com</a></td>
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GRI  Geosynthetic Research Institute
        (See GSI)

        (202) 872-6400

GS    Green Seal
        www.greenseal.org

        (610) 522-8440

GSI   Geosynthetic Institute
        www.geosynthetic-institute.org

HI    Hydraulic Institute
        www.pumps.org

        (888) 786-7744
        (973) 267-9700

HI    Hydronics Institute
        www.gamanet.org

        (908) 464-8200

HMMA  Hollow Metal Manufacturers Association
        (See NAAMM)

HPVA  Hardwood Plywood & Veneer Association
        www.hpva.org

        (703) 435-2900

HPW   H. P. White Laboratory, Inc.
        www.hpwhite.com

        (410) 838-6550

IAS   International Approval Services
        (See CSA)

        (441-24) 223-4904

IBF   International Badminton Federation
        www.intbadfed.org

ICEA  Insulated Cable Engineers Association, Inc.
        www.icea.net

        (770) 830-0369

ICRI  International Concrete Repair Institute, Inc.
        www.icri.org

        (847) 827-0830

IEC   International Electrotechnical Commission
        www.iec.ch

        41 22 919 02 11

IEEE  Institute of Electrical and Electronics Engineers, Inc. (The)
        www.ieee.org

        (212) 419-7900

IESNA Illuminating Engineering Society of North America
        www.iesna.org

        (212) 248-5000

IGCC  Insulating Glass Certification Council
        www.igcc.org

        (315) 646-2234

IGMA  Insulating Glass Manufacturers Alliance (The)
        www.igmaonline.org

        (613) 233-1510

ILI   Indiana Limestone Institute of America, Inc.

        (812) 275-4426
<table>
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<td>ISO</td>
<td><a href="http://www.iso.ch">www.iso.ch</a></td>
<td>41 22 749 01 11</td>
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<td>ISSFA</td>
<td><a href="http://www.issfa.net">www.issfa.net</a></td>
<td>(702) 567-8150</td>
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<td>ITS</td>
<td>Intertek</td>
<td>(800) 345-3851</td>
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<td>ITU</td>
<td><a href="http://www.itu.int/home">www.itu.int/home</a></td>
<td>41 22 730 51 11</td>
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<td>KCMA</td>
<td>Kitchen Cabinet Manufacturers Association</td>
<td>(703) 264-1690</td>
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<td>LMA</td>
<td><a href="http://www.lma.org">www.lma.org</a></td>
<td>(201) 664-2700</td>
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<td>LPI</td>
<td>Lightning Protection Institute</td>
<td>(800) 488-6864</td>
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<td><a href="http://www.lightning.org">www.lightning.org</a></td>
<td>(847) 577-7200</td>
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<td>MBMA</td>
<td>Metal Building Manufacturers Association</td>
<td>(216) 241-7333</td>
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<td>MFMA</td>
<td><a href="http://www.mfma.com">www.mfma.com</a></td>
<td>(847) 480-9138</td>
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<td>MFMA</td>
<td>Metal Framing Manufacturers Association</td>
<td>(312) 644-6610</td>
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<tr>
<td>MH</td>
<td>Material Handling Industry of America</td>
<td>(See MHIA)</td>
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<td>MHIA</td>
<td><a href="http://www.mhia.org">www.mhia.org</a></td>
<td>(800) 345-1815</td>
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<td>MIA</td>
<td>Marble Institute of America</td>
<td>(704) 676-1190</td>
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<td>MPI</td>
<td>Master Painters Institute</td>
<td>(888) 674-8937</td>
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<tr>
<td>MSS</td>
<td>Manufacturers Standardization Society of The Valve and Fittings Industry Inc.</td>
<td>(703) 281-6613</td>
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<td>NAAMM</td>
<td><a href="http://www.naamm.org">www.naamm.org</a></td>
<td>(312) 332-0405</td>
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<td>NACE</td>
<td>NACE International</td>
<td>(281) 228-6200</td>
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<td>NADCA</td>
<td>National Air Duct Cleaners Association</td>
<td>(202) 737-2926</td>
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<tr>
<td>NAGWS</td>
<td>National Association for Girls and Women in Sport</td>
<td>(800) 213-7193, x453</td>
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<td>NAIMA</td>
<td>North American Insulation Manufacturers Association (The)</td>
<td>(703) 684-0084</td>
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<td>NBGQA</td>
<td>National Building Granite Quarries Association, Inc.</td>
<td>(800) 557-2848</td>
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<td>NCAA</td>
<td>National Collegiate Athletic Association (The)</td>
<td>(317) 917-6222</td>
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<td>NCMA</td>
<td>National Concrete Masonry Association</td>
<td>(703) 713-1900</td>
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<td>NCPI</td>
<td>National Clay Pipe Institute</td>
<td>(262) 248-9094</td>
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<td>NCTA</td>
<td>National Cable &amp; Telecommunications Association</td>
<td>(202) 775-3550</td>
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<td>NEBB</td>
<td>National Environmental Balancing Bureau</td>
<td>(301) 977-3698</td>
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<td>NECA</td>
<td>National Electrical Contractors Association</td>
<td>(301) 657-3110</td>
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<td>NeLMA</td>
<td>Northeastern Lumber Manufacturers' Association</td>
<td>(207) 829-6901</td>
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<td>NEMA</td>
<td>National Electrical Manufacturers Association</td>
<td>(703) 841-3200</td>
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<td>NETA</td>
<td>InterNational Electrical Testing Association</td>
<td>(303) 697-8441</td>
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<tr>
<td>NFHS</td>
<td>National Federation of State High School Associations</td>
<td>(317) 972-6900</td>
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<tr>
<td>NFPA</td>
<td>NFPA</td>
<td>(800) 344-3555, (617) 770-3000</td>
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<tr>
<td>NFRC</td>
<td>National Fenestration Rating Council</td>
<td>(301) 589-1776</td>
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<td>NGA</td>
<td>National Glass Association</td>
<td>(703) 442-4890</td>
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www.glass.org

NHLA National Hardwood Lumber Association
www.nationalhardwood.org
(800) 933-0318
(901) 377-1818

NLGA National Lumber Grades Authority
www.nlga.org
(604) 524-2393

NOFMA National Oak Flooring Manufacturers Association
www.nofma.org
(901) 526-5016

NRCA National Roofing Contractors Association
www.nrca.net
(800) 323-9545
(847) 299-9070

NRMCA National Ready Mixed Concrete Association
www.nrmca.org
(888) 846-7622
(301) 587-1400

NSF NSF International
(National Sanitation Foundation International)
www.nsf.org
(800) 673-6275
(734) 769-8010

NSSGA National Stone, Sand & Gravel Association
www.nssga.org
(800) 342-1415
(703) 525-8788

NTMA National Terrazzo & Mosaic Association, Inc.
www.ntma.com
(800) 323-9736
(540) 751-0930

NTRMA National Tile Roofing Manufacturers Association
(See RTI)

NWWDA National Wood Window and Door Association
(See WDMA)

OPL Omega Point Laboratories, Inc.
www.o.pl.com
(800) 966-5253
(210) 635-8100

PCI Precast/Prestressed Concrete Institute
www pci.org
(312) 786-0300

PDCA Painting & Decorating Contractors of America
www.pdca.com
(800) 332-7322
(314) 514-7322

PDI Plumbing & Drainage Institute
www.pdionline.org
(800) 589-8956
(978) 557-0720

PGI PVC Geomembrane Institute
www.pgi-tp.ce.uiuc.edu
(217) 333-3929

PTI Post-Tensioning Institute
www.post-tensioning.org
(602) 670-7540

RCSC Research Council on Structural Connections
www.boltcouncil.org
(800) 644-2400
(312) 670-2400

RIO HONDO COMMUNITY COLLEGE
SOCcer FIELD RENOVATIONS
BID #
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<th>Code</th>
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<th>Phone</th>
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<tr>
<td>RFCI</td>
<td>Resilient Floor Covering Institute</td>
<td>(301) 340-8580</td>
<td><a href="http://www.rfci.com">www.rfci.com</a></td>
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<tr>
<td>RIS</td>
<td>Redwood Inspection Service</td>
<td>(888) 225-7339</td>
<td><a href="http://www.calredwood.org">www.calredwood.org</a></td>
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<td>RTI</td>
<td>Roof Tile Institute (Formerly: NTRMA - National Tile Roofing Manufacturers Association)</td>
<td>(312) 670-4177</td>
<td><a href="http://www.ntrma.org">www.ntrma.org</a></td>
</tr>
<tr>
<td>SAE</td>
<td>SAE International</td>
<td>(724) 776-4841</td>
<td><a href="http://www.sae.org">www.sae.org</a></td>
</tr>
<tr>
<td>SDI</td>
<td>Steel Deck Institute</td>
<td>(847) 462-1930</td>
<td><a href="http://www.sdi.org">www.sdi.org</a></td>
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<td>SDI</td>
<td>Steel Door Institute</td>
<td>(440) 899-0010</td>
<td><a href="http://www.steeldoorg">www.steeldoorg</a></td>
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<tr>
<td>SEFA</td>
<td>Scientific Equipment and Furniture Association</td>
<td>(516) 294-5424</td>
<td><a href="http://www.sefalabs.com">www.sefalabs.com</a></td>
</tr>
<tr>
<td>SGCC</td>
<td>Safety Glazing Certification Council</td>
<td>(315) 646-2234</td>
<td><a href="http://www.sgccc.org">www.sgccc.org</a></td>
</tr>
<tr>
<td>SIA</td>
<td>Security Industry Association</td>
<td>(703) 683-2075</td>
<td><a href="http://www.siaonline.org">www.siaonline.org</a></td>
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<tr>
<td>SIGMA</td>
<td>Sealed Insulating Glass Manufacturers Association (See IGMA)</td>
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<tr>
<td>SJI</td>
<td>Steel Joist Institute</td>
<td>(843) 626-1995</td>
<td><a href="http://www.steejoist.org">www.steejoist.org</a></td>
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<tr>
<td>SMA</td>
<td>Screen Manufacturers Association</td>
<td>(561) 533-0991</td>
<td><a href="http://www.smacentral.org">www.smacentral.org</a></td>
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<tr>
<td>SMACNA</td>
<td>Sheet Metal and Air Conditioning Contractors' National Association</td>
<td>(703) 803-2980</td>
<td><a href="http://www.smacna.org">www.smacna.org</a></td>
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<tr>
<td>SMPTE</td>
<td>Society of Motion Picture and Television Engineers</td>
<td>(914) 761-1100</td>
<td><a href="http://www.smpte.org">www.smpte.org</a></td>
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<tr>
<td>SPFA</td>
<td>Spray Polyurethane Foam Alliance (Formerly: SPI/SPFD - The Society of the Plastics Industry, Inc.; Spray Polyurethane Foam Division)</td>
<td>(800) 523-6154</td>
<td><a href="http://www.sprayfoam.org">www.sprayfoam.org</a></td>
</tr>
<tr>
<td>SPIB</td>
<td>Southern Pine Inspection Bureau (The)</td>
<td>(850) 434-2611</td>
<td><a href="http://www.spib.org">www.spib.org</a></td>
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<tr>
<td>SPI/SPFD</td>
<td>Society of the Plastics Industry, Inc. (The)</td>
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</tbody>
</table>
Spray Polyurethane Foam Division
(See SPFA)

SPRI  SPRI  (Single Ply Roofing Institute)
www.spri.org  (781) 647-7026

SSINA  Specialty Steel Industry of North America
www.ssina.com  (800) 982-0355
(202) 342-8630

SSPC  SSPC: The Society for Protective Coatings
www.sspc.org  (877) 281-7772
(412) 281-2331

STI  Steel Tank Institute
www.steeltank.com  (847) 438-8265

SWI  Steel Window Institute
www.steelwindows.com  (216) 241-7333

SWRI  Sealant, Waterproofing, & Restoration Institute
www.swrionline.org  (816) 472-7974

TCA  Tile Council of America, Inc.
www.tileusa.com  (864) 646-8453

TIA/EIA  Telecommunications Industry Association/Electronic
Industries Alliance
www.tiaonline.org  (703) 907-7700

TMS  The Masonry Society
www.masonrysociety.org  (303) 939-9700

TPI  Truss Plate Institute, Inc.
www.tpinst.org  (608) 833-5900

TPI  Turfgrass Producers International
www.turfgrassod.org  (800) 405-8873
(847) 705-9898

UL  Underwriters Laboratories Inc.
www.ul.com  (800) 285-4476
(847) 272-8800

UNI  Uni-Bell PVC Pipe Association
www.uni-bell.org  (972) 243-3902

USA V  USA Volleyball
www.usavolleyball.org  (888) 786-5539
(719) 228-6800

USGBC  U.S. Green Building Council
www.usgbc.org  (202) 828-7422

USITT  United States Institute for Theatre Technology, Inc.
www.usitt.org  (800) 938-7488
(315) 463-6463
WASTEC  Waste Equipment Technology Association  (800) 424-2869
www.wastec.org  (202) 244-4700

WCLIB  West Coast Lumber Inspection Bureau  (800) 283-1486
www.wclib.org  (503) 639-0651

WCMA  Window Covering Manufacturers Association
(See WCSC)

WCSC  Window Covering Safety Council  (800) 506-4636
(Formerly: WCMA - Window Covering Manufacturers Association)  (212) 661-4261
www.windowcoverings.org

WDMA  Window & Door Manufacturers Association  (800) 223-2301
(Formerly: NWWDA - National Wood Window and Door Association)  (947) 299-5200
www.wdma.com

WH  Warnock – Hersey, International, Inc. Testing Labs

WI  Woodwork Institute (Formerly: WIC - Woodwork Institute of California)  (916) 372-9943
www.wicnet.org

WIC  Woodwork Institute of California
(See WI)

WMMPA  Wood Moulding & Millwork Producers Association  (800) 550-7889
www.wmmpa.com  (530) 661-9591

WSRCA  Western States Roofing Contractors Association  (800) 725-0333
www.wsrca.com  (650) 548-0112

WWPA  Western Wood Products Association  (503) 224-3930
www.wwpa.org

B. Code Agencies: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the entities in the following list. Names, telephone numbers, and Web site addresses are subject to change and are believed to be accurate and up-to-date as of the date of the Contract Documents.

BOCA  BOCA International, Inc.
(See ICC)

CABO  Council of American Building Officials
(See ICC)

CBC  California Building Code
C. Federal Government Agencies: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the entities in the following list. Names, telephone numbers, and Web site addresses are subject to change and are believed to be accurate and up-to-date as of the date of the Contract Documents.
D. State Government Agencies: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the entities in the following list. Names, telephone numbers, and Web site addresses are subject to change and are believed to be accurate and up-to-date as of the date of the Contract Documents.

CBHF State of California, Department of Consumer Affairs (800) 952-5210
Bureau of Home Furnishings and Thermal Insulation (916) 574-2041
www.dca.ca.gov/bhti

CPUC California Public Utilities Commission (415) 703-2782
www.cpuc.ca.gov

TFS Texas Forest Service (936) 639-8180
Forest Products Laboratory

RIO HONDO COMMUNITY COLLEGE
SOCcer field renOvATIONS
BID #
1.5 MISCELLANEOUS ABBREVIATIONS

A. The following are commonly used abbreviations which may appear in the Project Manual. Refer to Construction Specifications Institute Document TD-2-4 "Abbreviations" for explanation of other abbreviations.

- C: degree Centigrade
- Co.: Company
- Corp.: Corporation
- F: degree Fahrenheit
- ft.: foot (feet)
- ga.: gage or gauge
- gal.: gallon(s)
- in.: inch(es)
- Inc.: Incorporated
- HVAC: Heating, Ventilating, and Air Conditioning
- lb(s.): pound(s)
- o.c.: on center
- psi: pounds per square inch
- psf: pounds per square foot
- sq.: square
- yd.: yard(s)

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION
SECTION 01430
TESTING AND INSPECTION

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Testing and inspection services to meet requirements of the California Building Code (CBC), Title 24, Parts 1 and 2, as indicated on the Drawings.

B. One or more DSA certified inspectors employed by the OWNER in accordance with the requirements of California Building Standards Administrative Code will be assigned to the Work with their duties as specifically defined in Section 4-333(b).

C. Tests of materials are required by a DSA certified testing agency as set forth in Section 4-335 of the California Building Standards Administrative Code.

1.02 RELATED SECTIONS

A. Section 01320: Construction Progress Documentation
B. Section 01330: Submittal Procedures
C. Section 01500: Construction Facilities and Temporary Controls
D. Section 01800: Product Requirements
E. Section 01731: Cutting and Patching
F. Section 01770: Contract Closeout

PART 2 – PRODUCTS (Not applicable)

PART 3 – EXECUTION

3.01 TESTS

A. OWNER will select an independent testing agency to conduct tests, sampling, and testing of materials. Selection of material to be tested shall be by the agency and not by CONTRACTOR.

B. Any material shipped from the source of supply prior to having satisfactorily passed such testing and inspection or prior to the receipt of notice from IOR such testing and inspection is not required shall not be incorporated into the Work.

C. OWNER will select and directly reimburse testing agency the costs for all DSA and/or DSA required tests and inspections, but may be reimbursed by CONTRACTOR for such costs as noted in related sections of the Contract Documents.

D. The 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. The agency shall not perform any duties of CONTRACTOR.

E. CONTRACTOR shall provide an insulated curing box with the capacity for twenty (20) concrete cylinders and will relocate said box and cylinders as rapidly as required in order to provide for progress of the Work.
SECTION 01430
TESTING AND INSPECTION

3.02 TEST REPORTS

A. Test reports shall include all tests performed, regardless of whether such tests indicate 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 reported. Reports shall indicate the material or materials were sampled and tested in accordance with requirements of CBC, Title 24, Parts 1 and 2, as indicated on the Drawings. Test reports shall indicate specified design strength. They shall also definitely state whether or not material or materials tested comply with the specified requirements.

3.03 VERIFICATION OF TEST REPORTS

A. Each testing agency shall submit to the College through the Program Management Team a verified report in duplicate covering tests which are required to be performed by that agency during progress of the Work. 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.

3.04 INSPECTION BY OWNER

A. OWNER and its representatives shall at all times have access, for purpose of inspection, to all parts of the Work and to shops wherein the Work is in preparation, and CONTRACTOR shall at all times maintain proper facilities and provide safe access for such inspection.

B. OWNER shall have the right to reject materials and/or workmanship deemed defective Work, and to require correction. Defective workmanship shall be corrected in a satisfactory manner and defective materials shall be removed from the premises and legally disposed of, all without charge to OWNER. If CONTRACTOR does not correct such defective Work within a reasonable time, fixed by written notice and in accordance with the terms and conditions of the Contract Documents, OWNER may correct such defective Work and proceed in accordance with related Articles of the Contract Documents.

C. CONTRACTOR is responsible for compliance to all applicable local, state, and federal regulations regarding codes, regulations, ordinances, restrictions, and requirements.

3.05 INSPECTOR OF RECORD

A. Inspector of Record is employed by OWNER in accordance with requirements of Title 24 of the California Code of Regulations with their duties specifically defined therein.

B. Inspection of Work shall not relieve CONTRACTOR from any obligation to fulfill all of the terms and conditions of the Contract Documents.

C. CONTRACTOR shall be responsible for scheduling times of inspection, tests, sample taking, and similar activities of the Work.
3.06 TESTS AND INSPECTIONS

A. The following tests and inspections do not limit inspection of the Work but are required by other agencies, or are required in related Sections of the Contract Documents.

B. Excavations, Foundations and Retaining Walls - CBC, Chapter 18A:
   1. Inspection:
      a. Inspection of Caissons 1809A.7

C. Concrete - CBC, Chapter 19A:
   1. Materials:
      a. Test of Materials 1903A.1
      b. Portland Cement Tests 1903A.2
      c. Concrete Aggregate 1903A.3
      d. Shotcrete Aggregate 1903A.3, 1924A.3
      e. Reinforcing Bars 1903A.5.1; 1903A.5.2; 1903A.5.3; 1903A.5.4;
      f. Structural Steel, Steel Pipe or tubing 1903A.5.6
      g. Admixtures 1903A.6
   2. Quality:
      a. Proportions of Concrete 1905A.1; 1905A.2; 1905A.3; 1905A.4; 1905A.5; 1905A.6,
      b. Mixing and Placing 1905A.1.1; 1905A.1.2; 1905A.1.3
      c. Concrete Testing 1905A.6;
      d. Test of Shotcrete 1905A.6, 1924A.10
   3. Inspection:
      a. Project Site Inspection 1905A.7.1
      b. Batch Plant or Weigh-master Inspection 1929A.4, 1929A.5, 1929A.6
      c. Pre-stressed Concrete Inspection 1929A.9
SECTION 01430

TESTING AND INSPECTION

d. Shotcrete Inspection 1929A.10

e. Reinforcing Bar Welding Inspection 1929A.12, 1903A.10

D. Lightweight Metal - CBC, Chapter 20A:

1. Materials:

   a. Alloys 2001A.2
   b. Identification 2001A.4

2. Inspection:

   a. Welding 2004A.8

E. Masonry - CBC, Chapter 21A:

1. Materials:

   a. Masonry Units 2102A.2,4,5,6
   b. Portland Cement 2102A.2.2
   c. Mortar & Grout Aggregates 2102A.2.1; 2103A.4.3
   d. Reinforcing Bars 2102A.2.10; 1903A5, 2102A.2.10

2. Quality:

   a. Portland Cement Tests 1903A.2
   b. Mortar & Grout Tests 2105A.3.4.2
   c. Masonry Prism Tests 2105A.3.2, 2105A3.5
   d. Masonry Core Tests 2105A.3.1
   e. Reinforcing Bars 2102A.2.10

3. Inspection:

   a. Reinforced Masonry 2105A
   b. Reinforcing Bar Welding Inspection 1903A.10
SECTION 01430
TESTING AND INSPECTION

F. Steel - CBC, Chapters 17A & 22A:
   1. Materials:
      a. Structural Steel 2202A.1
      b. Material Identification 2203.A4
   2. Inspection and Tests:
      a. Test of Structural Steel 2231.A
      b. Tests of High Strength Bolts, Nuts, and Washers 2231.A.2
      c. Tests of End Welded Studs 2231.A.3
      d. Shop Fabrication Inspection 2231.A.4
      e. Welding Inspection 2231.A.5
      f. High Strength Bolt Inspection 2231A.6
      g. Steel Joist Load Tests 2231A.7
      h. Spray applied fire resistance materials 1701

G. Exterior Wall Coverings -CBC, Chapter 14A, 25A:
   1. Materials:
      a. Portland Cement Plaster 2508A, 2509A, 2510A
   2. Inspection:
      a. Veneer Inspection 1405A

END OF SECTION
PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. This Section includes requirements for temporary facilities and controls, including temporary utilities, support facilities, security and protection facilities, and traffic control.

B. Temporary utilities include, but are not limited to, the following:

1. Sewers and drainage.
2. Water service and distribution.
3. Sanitary facilities, including toilets, wash facilities, and drinking-water facilities.
4. Heating and cooling facilities.
5. Ventilation.
6. Electric power service.
7. Lighting.
8. Telephone service.

C. Support facilities include, but are not limited to, the following:

1. Temporary roads and paving.
2. Dewatering facilities and drains.
3. Project identification and temporary signs.
5. Field offices.
7. Storage and fabrication sheds.
8. Lifts and hoists.
10. Temporary stairs.
11. Construction aids and miscellaneous services and facilities.

D. Security and protection facilities include, but are not limited to, the following:

1. Environmental protection.
2. Stormwater control.
3. Tree and plant protection.
4. Pest control.
5. Site enclosure fence.
7. Barricades, warning signs, and lights.
8. Covered walkways.
10. Temporary partitions.
11. Fire protection.

E. All equipment furnished by subcontractors shall comply with all requirements of pertinent safety regulations. The ladders, planks, hoists, and similar items normally furnished by the individual trades in execution of their own portions of the work are not part of this section.

F. Related Sections include the following:

1. Division 1 Section "Submittal Procedures" for procedures for submitting copies of implementation and termination schedule and utility reports.
2. Division 1 Section "Execution Requirements" for progress cleaning requirements.
3. Division 2 Sections "Bituminous Surfacing" and "Pavement Repair" for construction and maintenance of asphalt paving for temporary roads and paved areas.
4. Divisions 2 through 16 for temporary heat, ventilation, and humidity requirements for products in those Sections.

1.3 DEFINITIONS

A. Permanent Enclosure: As determined by Architect, permanent or temporary roofing is complete, insulated, and weather-tight; exterior walls are insulated and weather-tight; and all openings are closed with permanent construction or substantial weather-tight temporary closures.

1.4 USE CHARGES

A. General: Cost or use charges for temporary facilities are not chargeable to College or Architect and shall be included in the Contract price. Allow other entities to use temporary services and facilities without cost, including, but not limited to, the following:

1. College's construction forces.
2. Occupants of Project.
3. Architect.
4. Construction Manager
5. Inspector of Record.
6. Testing agencies.
7. Personnel of authorities having jurisdiction.

B. Sewer Service: Pay sewer service use charges for sewer usage, by all parties engaged in construction, at Project site.

C. Water Service: Pay water service use charges, whether metered or otherwise, for water used by all entities engaged in construction activities at Project site.

D. Electric Power Service: Pay electric power service use charges, whether metered or otherwise, for electricity used by all entities engaged in construction activities at Project site.
1.5 SUBMITTALS

A. Temporary Utility Reports: Submit reports of tests, inspections, meter readings, and similar procedures performed on temporary utilities.

B. Implementation and Termination Schedule: Within 15 days of date established for submittal of Contractor's Construction Schedule, submit a schedule indicating implementation and termination of each temporary utility.

C. Graphic Design: Submit drawings indicating graphic design for temporary project identification signs designed by the Contractor.

D. Contractor's Site Plan: Showing locations of temporary fencing, all proposed trailers and other temporary facilities (including trash dumpsters, for example) and temporary utility connections, for approval by College prior to installation.

1.6 QUALITY ASSURANCE


1. Trade Jurisdictions: Assigned responsibilities for installation and operation of temporary utilities are not intended to interfere with trade regulations and union jurisdictions.

2. Electric Service: Comply with NECA, NEMA, and UL standards and regulations for temporary electric service. Install service to comply with California Electrical Code.

B. Tests and Inspections: Arrange for College to test and inspect each temporary utility before use. Obtain required certifications and permits from Construction Manager.

1.7 PROJECT CONDITIONS

A. Temporary Utilities: At earliest feasible time, when acceptable to Owner, through Construction Manager and Program Management Team, change over from use of temporary service to use of permanent service.

1. Temporary Use of Permanent Facilities: 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. Conditions of Use: The following conditions apply to use of temporary services and facilities by all parties engaged in the Work:

1. Keep temporary services and facilities clean and neat.

2. Relocate temporary services and facilities as required by progress of the Work.
C. Security: Employ all measures necessary to ensure the security of the Project site. Security measures, if any, provided by the College do not relieve the Contractor from responsibility for site security as required by the Contract Documents.

PART 2 - PRODUCTS

2.1 MATERIALS

A. General: Provide new materials. Undamaged, previously used materials in serviceable condition may be used if approved by Architect. Provide materials suitable for use intended.

B. Pavement: Comply with Division 2 Sections "Bituminous Surfacing" And "Pavement Repairs".

C. Chain-Link Fencing: Minimum 2-inch, 0.148-inch-thick, galvanized steel, chain-link fabric fencing; minimum 8 feet high with galvanized steel pipe posts; minimum 2-3/8-inch-OD line posts at a maximum of 9 feet on center and 2-7/8-inch-OD corner and pull posts, with 1-5/8-inch-OD top rails.

1. Provide green screen vision/wind block on all site perimeter fencing.

2. Provide gates affording access as required by the fire department having jurisdictional authority.

D. Portable Chain-Link Fencing: Minimum 2-inch 9-gage 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 1-5/8-inch-OD top and bottom rails. Provide galvanized steel bases for supporting posts. Do not use portable chain-link fencing for construction limit or security fencing.


F. Gypsum Board: Minimum 1/2 inch thick by 48 inches wide by maximum available lengths; regular-type panels with tapered edges. Comply with ASTM C 36.

G. Insulation: Unfaced mineral-fiber blanket, manufactured from glass, slag wool, or rock wool; with maximum flame-spread and smoke-developed indices of 25 and 50, respectively.

H. Paint: Comply with requirements in Division 9 Section "Painting."

I. Tarpaulins: Fire-resistive labeled with flame-spread rating of 15 or less.

J. Water: Potable.

2.2 EQUIPMENT

A. General: Provide equipment suitable for use intended.
B. Field Offices: Mobile units or Job-built construction with lockable entrances with security lockable cross flat bars, security screened operable windows, and serviceable finishes; heated and air conditioned; on foundations adequate for normal loading. Provide the following for job-built construction:

1. Exposed Lumber and Plywood: Paint with exterior-grade, acrylic-latex emulsion over exterior primer.
2. Interior Walls: Paint with two coats of interior latex-flat wall paint.
3. Roofs: Asphalt shingles or roll roofing.

C. Fire Extinguishers: Hand carried, portable, UL rated. Provide class and extinguishing agent as indicated or a combination of extinguishers of NFPA-recommended classes for exposures.

1. Comply with NFPA 10 and NFPA 241 for classification, extinguishing agent, and size required by location and class of fire exposure.
2. Comply with requirements of authorities having jurisdiction.

D. Self-Contained Toilet Units: Single-occupant units of chemical, aerated recirculation or combustion type; vented; fully enclosed with a glass-fiber-reinforced polyester shell or similar nonabsorbent material.

E. Drinking-Water Fixtures: Drinking-water fountains, including paper cup supply.

1. Where power is accessible, provide electric water coolers to maintain dispensed water temperature at 45 to 55 deg F.

F. Heating Equipment: Unless Owner authorizes use of permanent heating system, provide vented, self-contained, liquid-propane-gas or fuel-oil heaters with individual space thermostatic control.

1. Use of gasoline-burning space heaters, open-flame heaters, or salamander-type heating units is prohibited.
2. Heating Units: Listed and labeled, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use for type of fuel being consumed.

G. Electrical Outlets: Properly configured, NEMA-polarized outlets to prevent insertion of 110- to 120-V plugs into higher-voltage outlets; equipped with ground-fault circuit interrupters, reset button, and pilot light.

H. Power Distribution System Circuits: Where permitted and overhead and exposed for surveillance, wiring circuits, not exceeding 125-V ac, 20-A rating, and lighting circuits may be nonmetallic sheathed cable.
I. First Aid Supplies: Provide types and quantities required by referenced standards, authorities having jurisdiction, and as prudent for the conditions existing for the Work.

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

A. Locate facilities where they will serve Project adequately and result in minimum interference with performance of the Work. Relocate and modify facilities as required.

B. Provide each facility ready for use when needed to avoid delay. Maintain and modify as required. Do not remove until facilities are no longer needed or are replaced by authorized use of completed permanent facilities.

C. Contractor provided facilities are to be in place and available for Construction Manager use and occupancy within (14) calendar days following the date of issue of the Notice to Proceed and shall remain in place and available for OWNER use and occupancy throughout the full term of the Contract.

3.2 TEMPORARY UTILITY INSTALLATION

A. General: Install temporary service or connect to existing service as approved by the College’s Facilities Services Department. Provide matching, compatible materials and equipment.

1. Arrange with Construction Manager for time when service can be interrupted, if necessary, to make connections for temporary services.

2. Provide adequate capacity at each stage of construction. Before temporary utility is available, provide trucked-in services.

B. Sewers and Drainage: If sewers are available, provide temporary connections to remove effluent that can be discharged lawfully. If sewers are not available or cannot be used, provide drainage ditches, dry wells, stabilization ponds, and similar facilities. If neither sewers nor drainage facilities can be lawfully used for discharge of effluent, provide containers to remove and dispose of effluent off-site in a lawful manner.

1. Filter out excessive soil, construction debris, chemicals, oils, and similar contaminants that might clog sewers or pollute waterways before discharge.

2. Connect temporary sewers to private system indicated as directed by sewer department officials.

3. Maintain temporary sewers and drainage facilities in a clean, sanitary condition. After heavy use, restore normal conditions promptly.

4. For the CM/DSA IOR's and Contractor's trailers, where restrooms are included, provide a temporary holding tank under the trailer that shall be pumped/serviced a minimum of at least once per week.
SECTION 01500
TEMPORARY FACILITIES AND CONTROLS

C. Water Service: Install water service and distribution piping in sizes and pressures adequate for construction until permanent water service is in use. Sterilize temporary water piping before use.

1. Provide rubber hoses as necessary to serve Project site.

2. As soon as water is required at each level, extend service to form a temporary water- and fire-protection standpipe. Provide distribution piping. Space outlets so water can be reached with a 100-foot hose. Provide one hose at each outlet.

3. Provide pumps to supply a minimum of 30-psi static pressure at highest point. Equip pumps with surge and storage tanks and automatic controls to supply water uniformly at reasonable pressures.

4. Provide all connections and extensions required.

5. Maintain connections and extensions in a safe manner and utilize so as to not constitute a hazard to persons or property.

6. Connections and extensions will be subject to approval of College's Facilities Services Department. Immediately remove or remedy connections and extensions that represent safety hazards or cause undue interruption of College's normal operations.

7. Provide all drinking water.

D. Sanitary Facilities: Provide temporary toilets, wash facilities, and drinking-water fixtures. Comply with regulations and health codes for type, number, location, operation, and maintenance of fixtures and facilities.

1. Disposable Supplies: Provide toilet tissue, paper towels, paper cups, and similar disposable materials for each facility. Maintain adequate supply. Provide covered waste containers for disposal of used material.

2. Toilets: Install self-contained toilet units. Shield toilets to ensure privacy. Provide separate facilities for male and female personnel.

3. Contractor employees shall not use school toilet facilities.

4. At Contractor's expense and without limitation remove and/or relocate portable chemical toilet facilities as rapidly as required in order to provide for progress of the Work.

5. Wash Facilities: Install wash facilities supplied with potable water at convenient locations for personnel who handle materials that require wash up. Dispose of drainage properly. Supply cleaning compounds appropriate for each type of material handled.

a. Where required by authorities having jurisdiction or deemed necessary by the Contractor for health or safety reasons, provide safety showers, eyewash
fountains, and similar facilities for convenience, safety, and sanitation of personnel.

6. Drinking-Water Fixtures: Install drinking-water fountains where indicated.
   a. Where power is accessible, provide electric water coolers to maintain dispensed water temperature at 45 to 55 deg F.

7. Locate toilets and drinking-water fixtures so personnel need not walk more than two stories vertically or 200 feet horizontally to facilities.

E. Heating and Cooling: Provide temporary heating and cooling required by construction activities for curing or drying of completed installations or for protecting installed construction from adverse effects of low temperatures or high humidity. Select equipment from that specified that will not have a harmful effect on completed installations or elements being installed.

   1. Maintain temperature as required in other Sections of these Specifications, but maintain a minimum temperature of 60 deg F in permanently enclosed portions of building for normal construction activities, and 65 deg F for finishing activities and areas where finished Work has been installed.

   2. Provide temporary cooling for all electrical rooms and telephone/data rooms from the time power-up occurs until permanent cooling to each of these spaces is operational in compliance with the Contract Documents.

F. Ventilation and Humidity Control: Provide temporary ventilation required by construction activities for curing or drying of completed installations or for protecting installed construction from adverse effects of high humidity. Select equipment from that specified that will not have a harmful effect on completed installations or elements being installed. Coordinate ventilation requirements to produce ambient condition required and minimize energy consumption.

G. Electric Power Service: Unless use of current electrical power is authorized by College, provide weatherproof, grounded electric power service and distribution system of sufficient size, capacity, and power characteristics during construction period. Include meters, transformers, overload-protected disconnecting means, automatic ground-fault interrupters, and main distribution switchgear.

   1. Install electric power service underground, unless overhead service must be used.

   2. Install power distribution wiring overhead and rise vertically where least exposed to damage.
      a. Provide distribution of temporary electric power service so that adequate power is available in a safe manner at any position within the Work without using an extension of more than 100 feet.

   3. Secure electrical power sources sufficient to support power needs for construction and College occupied parts of the project buildings at all times during construction.
H. Electric Distribution: Provide receptacle outlets adequate for connection of power tools and equipment.

1. Provide waterproof connectors to connect separate lengths of electrical power cords if single lengths will not reach areas where construction activities are in progress. Do not exceed safe length-voltage ratio.

2. Provide 4-gang outlets, spaced so 100-foot extension cord can reach each area for power hand tools and task lighting. Provide a separate 125-V ac, 20-A circuit for each outlet.

I. Lighting: Provide temporary lighting with local switching that provides adequate illumination for construction operations and traffic conditions.

1. Install and operate temporary lighting that fulfills security and protection requirements without operating entire system.

2. Provide illumination levels appropriate to task, but not less than 25 foot-candles (270 lux).

3. Install exterior-yard site lighting that will provide adequate illumination for construction operations, traffic conditions, and signage visibility when the Work is being performed.

J. Telephone Service: Provide temporary telephone service throughout construction period for common-use facilities used by all personnel engaged in construction activities. Install separate telephone line for each field office and first-aid station.

1. Provide additional telephone lines for the following:
   a. In field office with more than two occupants, install a telephone for each additional occupant or pair of occupants.
   b. Provide a dedicated telephone line for each facsimile machine and computer with modem in each field office for the Contractor and the Architect.
   c. Provide a dedicated telephone line at each first aid station.

2. At each telephone, post a list of important telephone numbers.
   a. Police and fire departments.
   b. Ambulance service.
   c. Contractor's home office.
   d. Architect's office.
   e. Engineers' offices.
   f. DSA's IOR office.
   g. Principal subcontractors' field and home offices.

3. Provide an answering machine on superintendent's telephone.

4. Contractor to provide own data lines through satellite vendor.
3.3 SUPPORT FACILITIES INSTALLATION

A. General: Comply with the following:

1. Within project boundary locate field offices, storage sheds, sanitary facilities, and other temporary construction and support facilities for easy access, and as approved by the Construction Manager, Architect, and College Building Official.

2. Provide incombustible construction for offices, shops, and sheds located within construction area or within 30 feet of building lines. Comply with NFPA 241.

3. Maintain support facilities until near Completion. Remove before Completion as directed by Construction Manager. Personnel remaining after Completion will be permitted to use permanent facilities, under conditions acceptable to College.

B. Traffic Controls: Provide temporary traffic controls at junction of temporary roads with College or public roads. Include warning signs for public traffic and "STOP" signs for entrance onto College or public roads. Comply with requirements of authorities having jurisdiction.

C. Dewatering Facilities and Drains: Comply with requirements in applicable Division 2 Sections for temporary drainage and dewatering facilities and operations not directly associated with construction activities included in individual Sections. Where feasible, use same facilities. Maintain Project site, excavations, and construction free of water.

1. Dispose of rainwater in a lawful manner that will not result in flooding Project or adjoining property nor endanger permanent Work or temporary facilities.

2. Before connection and operation of permanent drainage piping system, provide temporary drainage where roofing or similar waterproof deck construction is completed.

3. Remove ice as required to minimize accumulations.

D. Project Identification and Temporary Signs: Prepare Project identification and other signs in sizes and design indicated, or if not indicated, as appropriate so that information may be read from the far side of adjoining road. Install signs where indicated and appropriate to inform public and persons seeking entrance to Project. Do not permit installation of unauthorized signs.

1. Engage an experienced sign painter to apply graphics for Project identification signs. Comply with details indicated.

2. Prepare temporary signs to provide directional information to construction personnel and visitors.

3. Construct signs of 3/4 inch thick exterior-type Grade B-B high-density concrete form overlay plywood in sizes and thicknesses indicated. Support on posts or framing of preservative-treated wood or steel.
4. Paint sign panel and applied graphics with exterior-grade alkyd gloss enamel over exterior primer. Letters and corporate logos shall be self-adhered die cut vinyl, to the College’s design and colors.

5. Project sign shall be painted, multicolored plywood or metal, 8 feet wide x 6 feet high at a location designated by the College representative. Artwork shall be scanned or enlarged as necessary by the Contractor. Submit for approval by Architect.

6. Project sign shall list title of project, the name of the Board of Trustees, the College, the Architect of Record, Construction Management firm, and the Contractor.

7. Project sign shall be erected on the site at a location designated by the College. The Contractor shall install the project identification sign within 30 days after Notice-to-Proceed.

8. Appropriate signage shall be posted by the Contractor at all site entrances to restrict unauthorized access. Off-site signage shall be placed on designated access routes to direct deliveries and related construction traffic to the job site. Location of signage shall be approved by the College.

9. No other signs are allowed without the College’s permission except those required by law.

10. Contractor shall remove Project Signage at completion of work.

11. Contractor shall remove, as required, all graffiti from buildings, equipment, fences and all other temporary and/or permanent improvements on Project site.

E. Temporary Storage Units:

1. Contractor shall provide secure and waterproof upto 30 storage units for the temporary storage of furniture, equipment and other items requiring protection. Contractor will be required to provide these units within site Project boundaries or on approved location within the campus by the college.

2. Walls, roof and doors shall be a minimum of 16-gage steel with floors of 1” tongue and groove hardwood or 3/4” minimum exterior type plywood. The undercarriage shall be designed to accommodate forklift blades 42” to 50” long. There shall be doublewide swing out lockable doors at one end equipped with waterproof gaskets.

3. Contractor shall be responsible for all delivery charges and will install the storage unit in an appropriate area within the project boundary as approved by Construction Manager and the College.

4. Contractor shall remove the storage units from the Project site when the storage unit is no longer required for the Work or upon Substantial Completion of the Work.

5. Contractor shall at their expense and without limitation remove and/or relocate storage units as rapidly as required in order to provide for progress of the Work.
F. Waste Disposal Facilities:

Provide waste-collection containers in sizes adequate to handle waste from construction operations. Containerize and clearly label hazardous, dangerous, or unsanitary waste materials separately from other waste. Comply with Division 1 Sections "Construction & demolition Waste Management" and "Execution Requirements" for progress cleaning requirements.

1. If required by authorities having jurisdiction, provide separate containers, clearly labeled, for each type of waste material to be deposited.

2. Do not burn waste materials. Do not bury debris or excess materials on the College's property. Do not discharge volatile, harmful, or dangerous materials into drainage systems or streams. Remove waste materials from the site and dispose of lawfully.

3. Where extra materials of value remain after completion of associated Work, they become the College's property. Dispose of these materials as directed by the College.

4. Provide on-site containers for collection of waste materials, debris, and rubbish.

5. Handle waste materials in a controlled manner. Do not drop or throw materials from heights.

G. Field Offices/Facilities:

1. General: Erect and maintain, for duration of operations and in locations as approved, suitable temporary office facilities as required for Contractor's and College Representative's administration of the work. Provide necessary sheds and facilities for the storage of tools, materials, and equipment employed in the performance of the work. Temporary buildings shall be weather-tight with raised solid floors, solid sheathed and composition roofs, and adequately glazed and screened windows for light and ventilation. Temporary buildings shall be painted using colors as approved. Provide stairs and accessible ramps per code. The Contractor shall maintain the approach to field offices free from mud and water.

2. Provide two (2) entrance doors to the building, one (1) at each end and one (1) door into each office and toilet. Provide cylinder lock and dead bolt keyed alike on each exterior door, and provide one (1) cylinder lock and keyed differently on each interior door. Provide six (6) sets of keys for each door lock to the College Representative.

3. Provide thermostatic controlled refrigerated air conditioning and heating system to all spaces. HVAC system shall maintain a temperature indoors of 65deg F to 80 deg F, regardless of outdoor conditions at the site.

4. Provide hot water and cold water, electricity, and telephone service with three (3) lines. Provide at least one (1) telephone with speaker in each office and in Conference Room. Provide bottled drinking water service with hot and cold dispenser.
5. Provide telephone / data service consisting of a minimum of the following:

   a. One (1) dedicated fax line.
   b. Three (3) internet connections via one (1) full-time, high-speed DSL (or ISDN) internet line, one (1) at receptionist’s desk and one (1) each in the Construction Manager’s and DSA Inspector’s offices.
   c. Three (3) telephone lines, one (1) for each person, all going to the receptionist for screening, and four (4) phones, one (1) for each staff member plus conference room. All phones shall have speaker capability.

6. Provide 120/208V 100A electrical service consisting of a minimum of 12 circuit, 120 volt, 100-amp service hookup and distribution as follows:

   a. Provide warm white fluorescent light fixtures to evenly illuminate the rooms to a minimum of 50 foot-candles and an average of 70 foot-candles measured at desk height. Provide a minimum 60-watt light fixture in the lavatory facility. Provide light switch in each room.
   b. Provide two duplex 120-volt outlets in each office and clerical area, 3 duplex 120-volt outlets in meeting room, and one GFI outlet only in restroom.
   c. Contractor shall pay for an Internet Services Provider as selected and/or approved by the Construction Manager. This service shall be budgeted at $100.00 per month.

7. All trailers shall be equipped with working intrusion alarm systems with code pad by door and auto dialer to local security service or campus police.

8. Contractor shall pay the telephone and Internet service installation cost and monthly service charge for all lines and for all telephone calls, facsimile transmissions, electronic, and Internet communications.

9. Accessory Furnishings:

   a. For each Office:
      1) One (1) 2'6" x 5' desk with drawers and locks and key.
      2) One (1) cushioned ergonomic office swivel chair for each desk or workstation. Chairs to provide adequate back support for users.
      3) Two (2) cushioned chairs for visitors.
      4) Two (2) metal filing cabinets, 18"W x 30"D x 52"H, four drawers with locks and keys.
      5) One (1) bookcase, 12"D x 48"L x 30 "H, with one adjustable shelf.
      6) One (1) wastebasket.
      7) One (1) plan rack, with six (6) metal stick files.
      8) One (1) 48" x 36" wall-mounted dry marker board.
      9) One (1) 2' x 2' stand/table for printer.

   b. For the Clerical Workstation:
      1) Same as 3.3.G.9.a above (except items 1, 3, and 7).
      2) One (1) fax stand/table (approx. 2'x2').
      3) One (1) 30"x60" desk with secretarial return.
      4) Two (2) 2' x 2' stand/tables for printer and scanner.

   c. For the Workroom:
      1) Two (2) 3' x 6' plan check tables.
2) Two (2) 4' x 9' conference foldable tables with fourteen (14) cushioned stacking chairs.
3) Two (2) wastebaskets.
4) Four (4) metal filing cabinets, 18"W x 30"D x 52"H, four (4) drawers with locks and keys (or equivalent lateral file capacity).
5) Two (2) plan racks, with six (6) metal stick files.
6) Two (2) wall-mounted dry marker boards, 4' x 6' minimum, with three (3) markers each in colors red, green, blue, and black.
7) One (1) wall-mounted corkboard for thumbtacks, 4' x 4' minimum.
8) One (1) overhead shelf / rack for twelve (12) hard hats.
9) One (1) 12 inch diameter, wall-mounted, battery-operated clock.
10) One (1) twelve- (12) peg coat rack.

10. Accessory Equipment:
   a. Plain paper, fully programmable, high-speed fax. Contractor to provide paper, toner, maintenance service, and all required supplies to operate.
   b. Three (3) computers (MS Windows Vista based) with one (1) each min. 17-inch color monitors. One (1) Epson 1520 printer (wide carriage with network adaptor). One (1) HP 4050N laser printer with network adaptor. Surge protection and UPS for each computer. Installed software of Windows XP Professional, Microsoft Office XP Professional, or latest version, Microsoft Internet Explorer 6.0 and Adobe Acrobat 8 Professional. Computer specifications: At minimum, Pentium IV -- 2.80 GHz 512K full cache, 1 GB RAM, 80 GB ATA hard drive, 64MB video card, 1.44MB 3.5 floppy drive, 8/4/32 x CD RW/DVD, integrated 3 Com 10/100 network interface card, integrated sound card, and modem card. Computer support will be "next business day" onsite parts and labor. Miscellaneous accessories: Wireless adaptor (router), power cords, printer/network cables, zip disks, DSL accessories, paper, and toner / ink.
   c. Copy machine: Sharp Model AR-337 or approved equal, with double-sided copying feature, multiple paper sizes (up to 11" x 17") collating, enlarging and reduction features, scan to e-mail feature, paper, toner, and regular maintenance by qualified service.
   d. Phone instruments: Four (4) with speakerphones, radial, hold, call forwarding, auto transfer, and voicemail. AT & T [Lucent Technologies] or equal.
   e. Local telephone company voicemail/answering services function on at least one (1) line.
   f. Compact Digital camera, minimum 3.2 megapixel CCD or higher, fully automatic with auto data back and 110 mm zoom lens (10x), with min of 64MB Compact Flash Card capability (or other memory card or stick) as manufactured by Sony, Canon, Nikon, Konica, or other.
   g. Drinking water with hot and cold dispenser. Contractor to provide all required supplies to operate.
   h. At the end of the project, the College has the option to buy any or all accessories at the fair market price.

11. All equipment and flooring shall to be new, and all furnishings may be new or like new upon acceptance of College Representative. The Contractor shall maintain or replace failed or malfunctioning equipment within 48 hours as directed by the College or the College reserves the right to lease/purchase replacement equipment at the Contractor's expense.
12. Contractor shall provide for no less than four (4) parking spaces for the exclusive use of the College Representative, the Engineer of Record, and/or Construction Manager personnel adjacent to the Temporary Field Office.

13. Contractor shall provide one set of current California Code of Regulations, Title 24, for the Construction Manager on-site for the duration of the project and one current set (construction, mechanical, electrical) of Means estimating manuals. Provide the following Title 24 documents:
   b. Title 24, Part 3 - California Electrical Code.
   c. Title 24, Part 4 - California Mechanical Code.
   d. Title 24, Part 5 - California Plumbing Code.
   e. Title 24, Part 6 - California Energy Code.
   f. Title 24, Part 7 - California Elevator Safety Code.
   g. Title 24, Part 9 - California Fire Code.
   h. Title 24, Part 12 - California Referenced Standards Code.

14. Contractor shall provide one copy of the following Reference Materials:

   Upon request of the College Representative, the Contractor shall provide copies of codes, standards, and reference material not specifically mentioned above, but referenced in the contract documents.

H. Janitorial Services: Provide janitorial services on a weekly basis for temporary offices, first-aid stations, toilets, wash facilities, and similar areas.

I. Storage and Fabrication Sheds: Provide sheds sized, furnished, and equipped to accommodate materials and equipment involved, including temporary utility services. Sheds may be open shelters or fully enclosed spaces within building or elsewhere on-site.

1. Construct framing, sheathing, and siding using fire-retardant-treated lumber and plywood.

2. Paint exposed lumber and plywood with exterior-grade acrylic-latex emulsion over exterior primer.

3. Provide ventilation and maintain temperatures as required for the items stored by regulations of authorities having jurisdiction, Sections of these Specifications, and manufacturer’s instructions.

4. Maintain secure storage for tools (including personal tools of individual workers), equipment, and materials. The College will not be responsible for loss or damage to tools, equipment, or materials.
J. Temporary Elevator Usage: Refer to Division 14 Sections for protection requirements for temporary use of new elevators. (NOT USED)

1. Provide temporary access to and use of at least one elevator for the College when the College partially occupies completed areas to place and install equipment.

2. The Contractor is responsible for furnishing elevator service to the College, all separate contractors, subcontractors and others having interest in the construction of the building for passenger service and for the raising and lowering of materials and equipment (subject to load limitations of the elevator).

3. Provide for the College's use at no cost. This includes furnishing and paying for the services of competent elevator operators during the entire time that the elevator is used for transporting materials by any trade requiring elevator, or for the College's use, including the College's use after normal working hours.

4. The Contractor shall pay the cost of all work, repairs, cleaning and testing required to ensure that the elevator is turned over to the College in "like-new" condition. The warranty for the elevator will commence when the Notice of Completion is recorded.

K. Temporary Stairs: (NOT USED) until permanent stairs are available, provide temporary stairs where ladders are not adequate. Cover finished permanent stairs with protective covering of plywood or similar material so finishes will be undamaged at time of acceptance.

3.4 SECURITY AND PROTECTION FACILITIES INSTALLATION

A. Environmental Protection: 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. Avoid using tools and equipment that produce harmful noise. Restrict use of noisemaking tools and equipment to hours that will minimize complaints from persons or firms near Project site. Provide measures, including regular watering, necessary to minimize air-borne dust.

1. Comply with regulations of authorities having jurisdiction.

B. Stormwater Control: Provide earth embankments and similar barriers in and around excavations and sub-grade construction, sufficient to prevent flooding by runoff of stormwater from heavy rains. Refer to Division 1 Section "Storm Water Pollution Prevention Plan" for additional requirements.

C. Protection Against Inclement Weather: Brace, secure, and cover all parts of the Work to prevent damage by inclement weather.

D. Protect the Work from damage due to nuisance water such as rainwater, surface runoff, and irrigation water. Comply with requirements of authorities having jurisdiction regarding routing and disposal of nuisance water.
E. Tree and Plant Protection: Install temporary fencing located as indicated or outside the drip line of trees to protect vegetation from construction damage. Protect tree root systems from damage, flooding, and erosion.

F. Pest Control: Before deep foundation work has been completed, retain a local exterminator or pest-control company to recommend practices to minimize attraction and harboring of rodents, roaches, and other pests. Engage this pest-control service to perform extermination and control procedures at regular intervals so Project will be free of pests and their residues at Completion. Obtain extended warranty for College. Perform control operations lawfully, using environmentally safe materials.

G. Protection and security measures required by authorities having jurisdiction are considered minimum requirements. Provide additional measures as necessary and appropriate to the hazards of this Project.

1. Protect work, existing premises, and the College's operations from theft, vandalism, and unauthorized entry.

2. Initiate program in coordination with the College and the College Security at job mobilization.

3. Maintain program throughout construction period until the College accepts the Work as complete or the need for security is eliminated as determined by the College.

H. Site Enclosure Fence: Before construction operations begin, install 8-feet high chain-link enclosure fence with lockable entrance gates and green screen. Locate where indicated, or enclose entire Project site or portion determined sufficient to accommodate construction operations. Install in a manner that will prevent people, dogs, and other animals from easily entering site except by entrance gates. Comply with regulations of authorities having jurisdiction.

1. Set fence posts in compacted mixture of gravel and earth.

2. Provide gates in sizes and at locations necessary to accommodate emergency vehicles, delivery vehicles and other construction operations.

3. Maintain security by limiting number of keys and restricting distribution to authorized personnel. Provide College with one (1) set of keys.

4. Do not use portable fencing for Site Enclosure Fence.

5. Repair ground and landscape to original condition where fencing is removed.

I. Security Enclosure and Lockup: Install substantial temporary enclosure around partially completed areas of construction until finally approved for occupancy by College. Provide lockable entrances to prevent unauthorized entrance, vandalism, theft, and similar violations of security.

J. Entry Control:
1. Contractor shall be responsible for project security at all times. If Contractor elects to employ a private security guard, the guards shall first be cleared with the College Security Office and the College Police and shall be the employee of a recognized Security Agency. No firearms will be permitted.

2. Restrict entrance of unauthorized persons and vehicles into Project site and existing facilities, buildings and or rooms during construction activities.

3. Contractor shall at all times permit College, Construction Manager, Program Management Team, Engineer of Record, Architect of Record, Inspector of Record, and others as identified by the College, access to the construction site.

4. Contractor and his sub contractors shall be responsible for the care of all work until its completion and final acceptance; and they shall, at Contractor's expense, replace damaged or lost material and repair damaged parts of the work, or the same may be done by the College and the Contractor and their sureties shall be liable therefore. The Contractor shall make their own provisions for properly storing and protecting all material and equipment against theft, injury, or damage from any and all causes. Damaged material and equipment shall not be used in the work. The Contractor shall take all risks from floods and casualties or for delays from such causes. The Contractor shall remove from the vicinity of the completed work all plant, buildings, rubbish, unused material, concrete forms, sheeting, or equipment belonging to them or used under their discretion during construction; and in the event of their failure to do so, the same may be removed by the College at the expense of the Contractor, and the Contractor and their sureties shall be liable therefore.

5. Contractor shall adopt all practical means to minimize interference to traffic and inconvenience, discomfort, or damage. The Contractor shall protect against injury, structures crossing trenching or encountered in the Work and shall be responsible for any injury done to such structures, or damage there from. Contractor shall support or replace any such structures without delay and without any additional compensation, to the entire satisfaction of the Engineer of Record and / or the College.

6. Obstructions to traffic shall be guarded by flag-persons as required and by barriers and illuminated at night. The Contractor shall be responsible for all damage to persons and property directly or indirectly caused by their operations, and under all circumstances they shall comply with the laws and regulations of the State of California, relative to safety of persons and property and the interruption of traffic and the convenience of the public within the respective jurisdiction, and shall be solely responsible for any damages caused by failure to provide proper safety.

7. Contractor will be held responsible for and be required to make restitution, at their own expense, for all damage to persons or property caused by the Contractor or subcontractor, or the agents, or employees of either during the progress of the Work and until its final acceptance.

8. Contractor shall immediately notify the College Security Department and the College Director of Facilities Services through the Construction Manager of any such injuries or damages caused directly or indirectly by their operations.

K. Security and Pass Requirements:
1. Contractor is responsible to provide a Photo Identification badge for each of Contractor’s and subcontractor’s personnel working in this project.

2. Contractor shall submit to the Construction Manager a list of individuals, including sub-contractors, for whom identification badges have been issued. Any individual arriving at the project site without a proper identification badge will not be permitted to enter the site.

3. Identification badges shall be assigned to an individual for the period of the Contract and cannot be interchanged between employees.

L. Barricades, Warning Signs, Signals, and Lights: Comply with standards and code requirements for erecting structurally adequate barricades. Paint with appropriate colors, graphics, and warning signs to inform personnel and public of possible hazard. Where appropriate and needed, provide lighting, including flashing red or amber lights.

1. Enclose excavations and openings with proper barricades.

2. Clearly identify hazards on and adjacent to the Project site. Maintain clearly visible and, if applicable, audible identification on a continuous 24-hour-per-day basis.

3. Illuminate barricades, warning signs, obstructions, and other hazards at night. Provide adequate light for clear visibility from sunset to sunrise.

4. Where appropriate, provide audible warning signals.

5. For safety barriers, sidewalk bridges, and similar uses, provide minimum 5/8-inch-thick exterior plywood and as required by the College or Construction Manager.

M. Temporary Enclosures: Provide temporary enclosures for protection of construction in progress and completed, from exposure, foul weather, other construction operations, and similar activities. Provide temporary weather tight enclosure for building exterior.

1. Where heating or cooling is needed and permanent enclosure is not complete, provide insulated temporary enclosures. Coordinate enclosure with ventilating and material drying or curing requirements to avoid dangerous conditions and effects.

2. Vertical Openings: Close openings of 25 sq. ft. or less with plywood or similar materials.

3. Temporary partitions shall be installed at all openings where additions connect to existing buildings, and where to protect areas, spaces, property, personnel, students and faculty and to separate and control dust, debris, noise, access, sight, fire areas, safety and security. Temporary partitions shall be as designated on the Drawings or as specified by Architect at Contractor’s expense and without limitation remove and/or relocate enclosures, barriers and temporary partitions as rapidly as required in order to provide for progress of the Work.

5. Install tarpaulins securely using fire-retardant-treated wood framing and other materials.

6. Since the Work of this Project may be immediately adjacent to existing occupied structures and vehicular and pedestrian right of ways, Contractor shall, coordinate with the CM and in accordance with applicable safety standards, provide all temporary facilities, additional barricades, protection and care to protect existing structures, occupants, property, pedestrians and vehicular traffic. Contractor is responsible for any damage, which may occur to the property and occupants of the property of College or adjacent private or public properties which in any way results from the acts or neglect of Contractor.

7. Where temporary wood or plywood enclosure exceeds 100 sq. ft. in area, use fire-retardant-treated material for framing and main sheathing.

8. Contractor at no cost to the college is to remove and/or relocate fencing, fabric and barricades or other security and protection facilities as rapidly and as required in order to provide for progress of the Work.

N. Temporary Fire Protection: Until fire-protection needs are supplied by permanent facilities, install and maintain temporary fire-protection facilities of types needed to protect against reasonably predictable and controllable fire losses. Comply with NFPA 241 and requirements of authorities having jurisdiction.

1. Provide fire extinguishers, installed on walls on mounting brackets, visible and accessible from space being served, with sign mounted above.
   a. Field Offices: Class A stored-pressure water-type extinguishers.
   b. Other Locations: Class ABC dry-chemical extinguishers or a combination of extinguishers of NFPA-recommended classes for exposures.
   c. Locate fire extinguishers where convenient and effective for their intended purpose; provide not less than one extinguisher on each floor at or near each usable stairwell.

2. Store combustible materials in containers in fire-safe locations.

3. Maintain unobstructed access to fire extinguishers, fire hydrants, temporary fire-protection facilities, stairways, and other access routes for firefighting. Prohibit smoking in hazardous fire-exposure areas.

4. Supervise welding operations, combustion-type temporary heating units, and similar sources of fire ignition.

5. In the event of an emergency drill or an actual emergency, designated by the sounding of the fire alarm and/or other sounding device, all construction activities must cease. Contractor shall evacuate the Work area and remain outside the Work area until permitted to return. No Work shall be conducted during the evacuation of a building or during an emergency.

6. Permanent Fire Protection: At earliest feasible date in each area of Project, complete installation of permanent fire-protection facility, including connected
services, and place into operation and use. Instruct key personnel on use of facilities.

7. Develop and supervise an overall fire-prevention and first-aid fire-protection program for personnel at Project site. Review needs with local fire department and establish procedures to be followed. Instruct personnel in methods and procedures. Post warnings and information.

8. Provide hoses for fire protection of sufficient length to reach construction areas. Hang hoses with a warning sign stating that hoses are for fire-protection purposes only and are not to be removed. Match hose size with outlet size and equip with suitable nozzles.

3.5 TRAFFIC CONTROL

A. Prior to start of Work, determine the routing of construction vehicles and the measures necessary to control traffic during construction as instructed by Construction Manager and or the Program Management Team. Provide measures including, but not limited to, the following:

1. Be responsible for controlling construction traffic on and adjacent to the site per Exhibit 1-D in section 00800. Comply with requirements of authorities having jurisdiction for traffic controls in public right-of-ways.

   a. Provide necessary measures including, but not limited to, flag personnel, barricades, sufficient lights, reflectors, warning signals, warning signs indicating closures, directional, and detour instructions.

2. Route construction equipment, trucks, and similar vehicles via existing public streets to and from the site as approved by authorities having jurisdiction.

3. Obtain and pay for permits and inspections made necessary by use of public street, sidewalks, curbs, and paving. Post guarantees and bonds that may be required, and repair subsequent damage to public property in a manner acceptable to authorities having jurisdiction.

B. Parking: Parking for workers may be provided on the Project site to the extent that space for that purpose is available without interference with activities of College or activities related to performance of the Work. Arrange for additional employee parking off-site at no additional cost to College.

3.6 OPERATION, TERMINATION, AND REMOVAL

A. Supervision: Enforce strict discipline in use of temporary facilities. To minimize waste and abuse, limit availability of temporary facilities to essential and intended uses.

B. Maintenance: Maintain facilities in good operating condition until removal. Protect from damage caused by freezing temperatures and similar elements.
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TEMPORARY FACILITIES AND CONTROLS

1. 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.

2. Prevent water-filled piping from freezing. Maintain markers for underground lines. Protect from damage during excavation operations.

C. Temporary Facility Changeover: Except for using permanent fire protection as soon as available, do not change over from using temporary security and protection facilities to permanent facilities until Completion.

D. Termination and Removal: 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 Completion. 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 the property of Contractor. College reserves right to take possession of Project identification signs.

2. Remove temporary paving not intended for or acceptable for integration into permanent paving. Where area is intended for landscape development, remove soil and aggregate fill that do not comply with requirements for fill or subsoil. Remove materials contaminated with road oil, asphalt and other petrochemical compounds, and other substances that might impair growth of plant materials or lawns. Repair or replace street paving, curbs, and sidewalks at temporary entrances, as required by authorities having jurisdiction.

3. At Completion, clean and renovate permanent facilities used during construction period. Comply with final cleaning requirements in Division 1 Section “Closeout Procedures.”

4. After removal of temporary facilities which were placed on portions of the existing site not scheduled for new Work, restore those portions of the site occupied by the temporary facilities to at least the condition they existed prior to start of Work.

E. Permanent Systems Used as Temporary Facilities: When a permanent building or site system, or portion thereof, is in a condition allowing operation as intended by the manufacturer and as required by the Contract Documents, the permanent system or portion thereof may be used as a temporary facility unless indicated otherwise in the Contract Documents, provided the following conditions are satisfied by the Contractor:

1. Request and obtain written approval from the College to use a specific permanent system or designated portion thereof as a temporary facility.

2. Assume full responsibility for the permanent system or portion thereof and clean, repair, or replace systems, or parts, damaged or soiled as a result of use as a temporary facility.
3. Pay all costs associated with using the system or portion thereof as a temporary facility including, but not limited to, operating costs, maintenance, repair, or replacement.

4. Operate the system under supervision of a person or persons qualified and knowledgeable about the proper operation of the system in accordance with the manufacturer's instructions.

END OF SECTION
SECTION 01571 – STORMWATER POLLUTION CONTROL MEASURES FOR CONSTRUCTION ACTIVITIES

PART 1 - GENERAL

1.1 PERFORMANCE

A. Minimum Water Quality Protection Requirements

1. The Contractor is required to meet the following minimum standards of good housekeeping:

   a. Eroded sediments and other pollutants must be retained on site and may not be transported from the site via sheetflow, swales, area drains, natural drainage, or wind.
   b. Stockpiles of earth and other construction-related materials must be protected from being transported from the site by wind or water.
   c. Fuels, oils, solvents, and other toxic materials must be stored in accordance with their listing and are not to contaminate the soil nor the surface waters. All approved toxic storage containers are to be protected from the weather. Spills must be cleaned up immediately and disposed of in a proper manner. Spills may not be washed into the drainage system.
   d. Excess or waste concrete may not be washed into the public way or any drainage system. Provision shall be made to retain concrete wastes on-site until they can be appropriately disposed of or recycled.
   e. Trash and construction-related solid wastes must be deposited into a covered receptacle to prevent contamination of rainwater and dispersal by wind.
   f. Sediments and other materials may not be tracked from the site by vehicle traffic. The construction entrance roadways must be stabilized so as to inhibit sediments from being deposited into the public ways. Accidental depositions must be swept up immediately and may not be washed down by rain or by any other means.

B. Wet Weather Erosion Control Plan (WWECP)

1. The Contractor shall prepare a Wet Weather Erosion Control Plan (WWECP) and implement Best Management Practices (BMPs) necessary.

C. Stormwater Pollution Prevention Plan

1. The Contractor shall prepare applicable sections and comply with The Stormwater Pollution Prevention Plan (SWPPP). The Contractor shall complete and submit the Notice of Intent to construct under the California Construction General Permit (NPDES). The Contractor shall implement Best Management Practices (BMPs) necessary to control stormwater pollution from sediments, erosion, and construction materials leaving the construction site.

2. The BMPs contained in the Development Best Management Practices Handbook – Part A, Construction Activities cover the following categories of construction activities:
a. Site preparation/earth removal
b. Underground structures
c. Aboveground structures
d. Roadways, walkways and parking lots
e. Planting and landscaping

3. The SWPPP document shall include the following information:

a. The name, location, period of construction, and a brief description of the Project.
b. Contact information for the Contractor, including name, address, and telephone number.
c. Name, location, and description of any environmentally sensitive areas located on or adjoining the Project.
d. A list of major construction materials, waste, and activities.
e. A list of BMPs to be used to control pollutant discharges from major construction materials, wastes, and activities.
f. A site plan (a construction plan may be used) indicating the location of BMPs where appropriate.
g. A developer's certification statement that all required and selected BMPs will be effectively implemented.

4. Whenever the Contractor is required to get any type of permit from the Department of Building and Safety (DBAS), the Contractor shall submit the SWPPP document to the DBAS for review and approval before obtaining the permit. If the Contractor does not need any type of permit from the DBAS, the Contractor shall submit the SWPPP document to the Project Manager for review and approval. At least one copy of the approved SWPPP shall be kept at the construction site and accessible to DSA inspectors.

END OF SECTION 01571
PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. This Section includes the following administrative and procedural requirements: selection of products for use in Project; product delivery, storage, and handling; manufacturers' standard warranties on products; special warranties; product substitutions; and "equal" products.

B. Related Sections include the following:

1. Division 1 Section "References" for applicable industry standards for products specified.
2. Division 1 Section "Closeout Procedures" for submitting warranties for contract closeout.
3. Divisions 2 through 16 Sections for specific requirements for warranties on products and installations specified to be warranted.

1.3 DEFINITIONS

A. Products: Items purchased for incorporating into the Work, whether purchased for Project or taken from previously purchased stock. The term "product" includes the terms "material," "equipment," "system," and terms of similar intent.

1. Named Products: Items identified by manufacturer's product name, including make or model number or other designation, shown or listed in manufacturer's published product literature that is current as of date of the Contract Documents.

2. New Products: Items that have not previously been incorporated into another project or facility, except that products consisting of recycled-content materials are allowed, unless explicitly stated otherwise. Products salvaged or recycled from other projects are not considered new products.

3. Equal Product: Product that is demonstrated and approved through submittal process, or where indicated as a product substitution, to have the indicated qualities related to type, function, dimension, in-service performance, physical properties, appearance, and other characteristics that equal or exceed those of specified product. The Architect will be the sole judge of equality. Request for review by Architect of Equal Products will only be entertained during the bid period in accordance with the Supplementary General Conditions.

B. Substitutions: Changes in products, materials, equipment, and methods of construction from those required by the Contract Documents, as proposed by Contractor. The College is not obligated to entertain substitutions. Request for review by Architect of substitutions
will only be entertained during the bid period in accordance with the Supplementary General Conditions.

1. The College is not obligated to entertain substitution requests other than during the bid period in accordance with the Supplementary General Conditions. After the bid period, substitutions will be entertained only in the event that the Contractor can prove that the specified product is no longer available. Failure to order a product in time for delivery to meet the construction schedule does not constitute unavailability of the product.

C. Manufacturer’s Warranty: Preprinted written warranty published by individual manufacturer for a particular product and specifically endorsed by manufacturer to College.

D. Special Warranty: Written warranty required by or incorporated into the Contract Documents, either to extend time limit provided by manufacturer’s warranty or to provide more rights for College.

1.4 SUBMITTALS

A. Product List: Submit a list, in tabular form, showing specified products. Include generic names of products required. Include manufacturer’s name and proprietary product names for each product.

1. Coordinate product list with Contractor’s Construction Schedule and the Submittals Schedule.

2. Form: Tabulate information for each product under the following column headings:
   a. Specification Section number and title.
   b. Generic name used in the Contract Documents.
   c. Proprietary name, model number, and similar designations.
   d. Manufacturer’s name and address.
   e. Supplier’s name and address.
   f. Installer’s name and address.
   g. Projected delivery date or time span of delivery period.
   h. Identification of items that require early submittal approval for scheduled delivery date.

3. Completed List: Within 15 days after date of commencement of the Work, submit 3 copies of completed product list.

4. Architect’s Action: Architect will respond in writing to Contractor within 15 days of receipt of completed product list. Architect’s response will include a list of unacceptable product selections and a brief explanation of reasons for this action. Architect’s response, or lack of response, does not constitute a waiver of requirement that products comply with the Contract Documents.

B. When requested by the Architect, submit 2 original copies of manufacturer’s written specifications and instructions for each product proposed for the Work.

C. Substitution Requests and Requests for Equal Products: Submit four (4) copies of each request for consideration, no later than 10 calendar days before bid opening date. Identify
product or fabrication or installation method to be replaced. Include Specification Section number and title and Drawing numbers and titles. Include the name, address, and telephone number of the manufacturer of the proposed substitute product.

1. Substitution and Equal Request Form: Use the form provided at end of this Section.

2. Documentation: Show compliance with requirements for substitutions or equals, and the following, as applicable:

   a. Statement indicating why specified material or product cannot be provided.
   b. Coordination information, including a list of changes or modifications needed to other parts of the Work and to construction performed by College and separate contractors that will be necessary to accommodate proposed substitution.
   c. Detailed comparison of significant qualities of proposed substitution with those of the Work specified. Significant qualities may include attributes such as performance, weight, size, durability, visual effect, and specific features and requirements indicated.
   d. Product Data, including test data, performance and reference standards, drawings and descriptions of products and fabrication and installation procedures. Provide complete data substantiating compliance with requirements of the Contract Documents.
   e. Samples, where applicable or requested.
   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 evidencing compliance with building code in effect for Project, from a model code organization acceptable to authorities having jurisdiction.
   i. Detailed comparison of Contractor's Construction Schedule using proposed substitution with products specified for the Work, including effect on the overall Contract Time. If specified product or method of construction cannot be provided within the Contract Time, include letter from manufacturer, on manufacturer's letterhead, stating lack of availability or delays in delivery.
   j. Cost information, including a proposal of change, if any, in the Contract price.
   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.
   m. Name and address of similar projects in the general location of this Project on which the proposed substitute product was used. Provide approximate date product was installed.

3. Architect's Action: If necessary, Architect will request additional information or documentation for evaluation within one week of receipt of a request for substitution, or equal product. Prior to bid, Architect will notify bidders about accepted substitutions and equal products by means of Addendum. Substitutions and equal products not indicated in an Addendum are not valid and will not be allowed. After the bid period, and only in the event a product is proven to be no longer available,
SECTION 01600
PRODUCT REQUIREMENTS

Architect will notify Contractor through Construction Manager of acceptance or rejection of proposed substitution or equal product within 15 days of receipt of request, or 7 days of receipt of additional information or documentation, whichever is later.

a. Form of Acceptance: Change Order.

1.5 QUALITY ASSURANCE

A. Compatibility of Options: 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.

1.6 PRODUCT DELIVERY, STORAGE, AND HANDLING

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.

1. Schedule delivery to minimize long-term storage 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 an undamaged condition in manufacturer’s original sealed container or other packaging system, complete with labels and instructions for handling, storing, unpacking, protecting, and installing.

4. Inspect products on delivery to ensure compliance with the Contract Documents and to ensure that products are undamaged and properly protected.

5. Store products to allow for inspection and measurement of quantity or counting of units.

6. Store materials in a manner that will not endanger Project structure.

a. Concrete slabs on grade and suspended floors have not been designed for heavy loading. Design live loads are indicated on the Drawings.

b. Slabs on Grade: Do not subject slabs on grade to excessive loading by shoring, storage of materials, or operation of construction equipment unless adequately protected by planking designed to safely distribute loads. Maintain slabs and repair or replace damaged slabs at no additional cost to the College.

c. Suspended Floors: Do not subject suspended slabs to construction loads greater than 40 psf unless adequate shoring and protection is provided. Retain a civil or structural engineer experienced in shoring design and registered in the state in which the Project is located to design necessary temporary support systems.
7. Store products that are subject to damage by the elements, under cover in a weathertight enclosure above ground, with ventilation adequate to prevent condensation.

8. Comply with product manufacturer’s written instructions for temperature, humidity, ventilation, and weather-protection requirements for storage.

9. Protect stored products from damage.

10. Immediately remove from the site materials and equipment that are damaged or do not comply with requirements of the Contract Documents.

11. When handling and moving materials and equipment, protect all finished surfaces, including jambs and frames of openings, and soffits. Protect finished floor surfaces from damage while moving and storing materials and equipment.

B. Keep copies of manufacturer’s specifications and instructions on site and available for reference.

1.7 PRODUCT WARRANTIES

A. Warranties specified in other Sections shall be in addition to, and run concurrent with, other warranties required by the Contract Documents.

1. Related Damages and Losses: When correcting failed or damaged warranted construction, remove and replace construction that has been damaged as a result of such failure or must be removed and replaced to provide access for correction of warranted construction.

2. Reinstatement of Warranty: When Work covered by a warranty has failed and been corrected by replacement or rebuilding, reinstate the warranty by written endorsement. The reinstated warranty shall be equal to the original warranty with an equitable adjustment for depreciation.

3. Replacement Cost: Upon determination that Work covered by a warranty has failed, replace or rebuild the Work to an acceptable condition complying with requirements of the Contract Documents. The Contractor is responsible for the cost of replacing or rebuilding defective Work regardless of whether the College has benefited from use of the Work through a portion of its anticipated useful service life.

4. College Recourse: Expressed warranties made to the College are in addition to implied warranties and shall not limit the duties, obligations, rights, and remedies otherwise available under the law. Expressed warranty periods shall not be interpreted as limitations on the time in which the College can enforce such other duties, obligations, rights, or remedies.

a. Rejection of Warranties: The College reserves the right to reject warranties and to limit selection to products with warranties not in conflict with requirements of the Contract Documents.
5. Where the Contract Documents require a special warranty or similar commitment on
   the Work or part of the Work, the College reserves the right to refuse to accept the
   Work until the Contractor presents evidence that entities required to countersign
   such commitments are willing to do so.

6. Disclaimers and Limitations: Manufacturer's disclaimers and limitations on standard
   product warranties shall not relieve the Contractor of the Contractor's warranty on the
   Work that incorporates the products and shall also not relieve suppliers,
   manufacturers, and subcontractors required to countersign special warranties with
   the Contractor.

   a. Warranty period begins when the project has been accepted and the Notice of
      Completion has been filed.

B. Except when a special warranty is required by the provisions of a specific Section of these
   Specifications, or a standard warranty is not offered as a matter of record by the
   manufacturer of a specified product, submit the manufacturer's standard warranty for each
   product incorporated in the Work.

   1. When a manufacturer does not offer a standard warranty, provide a written form
      listing the product and indicating "Standard Product Warranty Not Available."

C. Special Warranties: Prepare a written document that contains appropriate terms and
   identification, ready for execution. Submit a draft for approval before final execution.

   1. Manufacturer's Standard Form: Modified to include Project-specific information and
      properly executed.

   2. Specified Form: Forms are provided at end of Section. Prepare a written document
      using appropriate form properly executed.

   3. Refer to Divisions 2 through 16 Sections for specific content requirements and
      particular requirements for submitting special warranties.

D. Submittal Time: Comply with requirements in Division 1 Section “Closeout Procedures.”

PART 2 - PRODUCTS

2.1 PRODUCT OPTIONS

A. General Product Requirements: Provide products that comply with the Contract
   Documents, that are undamaged, and unless otherwise indicated, that are 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.
SECTION 01600
PRODUCT REQUIREMENTS

2. Standard Products: If available, and unless custom products or nonstandard options are specified, provide standard products of types that have been produced and used successfully in similar situations on other projects.

3. College reserves the right to limit selection to products with warranties not in conflict with requirements of the Contract Documents.

4. Where products are accompanied by the term "as selected," Architect will make selection.

5. Where products are accompanied by the term "match sample," sample to be matched is Architect's.


7. Or Equal: Where products are specified by name and accompanied by the term "or equal" or "or approved equal" or "or approved," comply with provisions in "Equal Products" Article to obtain approval for use of an unnamed product.

B. Product Selection Procedures: Procedures for product selection include the following:

1. Available Products: Where Specification paragraphs or subparagraphs introduce a list of names of products, provide one of the products listed or another product that complies with requirements. Comply with provisions in "Equal Products" Article to obtain approval for use of an unnamed product.

2. Available Manufacturers: Where Specification paragraphs or subparagraphs introduce a list of manufacturers' names, provide a product by one of the manufacturers listed or another manufacturer that complies with requirements. Comply with provisions in "Equal Products" Article to obtain approval for use of an unnamed product.

3. Product Options: Where Specification paragraphs indicate that size, profiles, and dimensional requirements on Drawings are based on a specific product or system, provide either the specific product or system indicated or an equal product or system by another manufacturer. Comply with provisions in "Product Substitutions" or "Equal Products" Articles.

4. Visual Matching Specification: Where Specifications require matching an established Sample, select a product (and manufacturer) that complies with requirements and matches Architect's sample. Architect's decision will be final on whether a proposed product matches satisfactorily.

a. If no product available within specified category matches satisfactorily and complies with other specified requirements, comply with provisions of the Contract Documents on "substitutions" for selection of a matching product.
5. Visual Selection Specification: Where Specifications include the phrase "as selected from manufacturer's colors, patterns, and textures" or a similar phrase, select a product (and manufacturer) that complies with other specified requirements.

   a. Standard Range: Where Specifications include the phrase "standard range of colors, patterns, textures" or similar phrase, Architect will select color, pattern, or texture from manufacturer's product line that does not include premium items.

   b. Full Range: Where Specifications include the phrase "full range of colors, patterns, textures" or similar phrase, Architect will select color, pattern, or texture from manufacturer's product line that includes both standard and premium items.

   c. Custom Range: Where Specifications include the phrase "custom colors, patterns, textures" or similar phrase, Architect will select color, pattern, or texture from manufacturer's product line that includes custom items in addition to both standard and premium items.

2.2 PRODUCT SUBSTITUTIONS

A. Timing: College will consider requests for substitution only in accordance with the Supplementary General Conditions.

B. Conditions: Architect will consider Contractor's request for substitution when the following conditions are satisfied. If the following conditions are not satisfied, Architect will return requests without action, except to record noncompliance with these requirements:

1. Requested substitution offers the College a substantial advantage in cost, time, energy conservation, or other considerations, after deducting additional responsibilities College must assume. College's additional responsibilities may include compensation to Architect for redesign and evaluation services, increased cost of other construction by College, and similar considerations.

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 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 with other portions of the Work.

9. Requested substitution provides specified warranty.
10. If requested substitution involves more than one contractor, requested substitution has been coordinated with other portions of the Work, is uniform and consistent, is compatible with other products, and is acceptable to all contractors involved.

11. The specified product has been discontinued by the manufacturer or the manufacturer has ceased operations.
   a. The specified product is not available. Refer to the Supplementary General Conditions for requirements.

2.3 EQUAL PRODUCTS

A. Timing: College will consider requests for "equal" products only in accordance with the Supplementary General Conditions.

B. Where products or manufacturers are specified by name, submit the following, in addition to other required submittals, to obtain approval of an unnamed "equal" product:

1. Evidence that the proposed product does not require extensive revisions to the Contract Documents, that it is consistent with the Contract Documents and will produce the indicated results, and that it is compatible with other portions of the Work.

2. Detailed comparison of significant qualities of proposed product with those named in the Specifications. Significant qualities include attributes such as performance, weight, size, durability, visual effect, and specific features and requirements indicated.

3. Evidence that proposed product provides specified warranty.

4. List of similar installations for completed projects with project names and addresses and names and addresses of architects and owners, if requested.

5. Samples, if requested.

6. The specified product is not available. Refer to the Supplementary General Conditions for requirements.

PART 3 - EXECUTION (Not Used)

END OF SECTION
SECTION 01610
SPECIAL WARRANTY FORM

SPECIAL WARRANTY

When required in Sections of the Specifications, Special Warranties shall be in the following form and written on Contractor's own letterhead:

"Warrant ______________________ (portion of work warranted)"

Project: __________________________

Address: __________________________

Date: ____________________________

We, the undersigned hereby warrant that the ________ which we have installed in the _Project_ has been performed in accordance with the Contract Documents and that the work, as installed, will fulfill the requirements of the warranty included in this Specification. We agree to repair or replace any or all of our work, together with any other work which may be damaged or displaced by so doing, that may prove to be defective in its workmanship, materials, operation, or failure to conform to Contract provisions and requirements within a period of _______ year(s) from date of Final Completion of the above-named structure, without any expense whatever to the said College, ordinary wear and tear and unusual abuse or neglect excepted. In the event of our failure to comply with the above-mentioned conditions within thirty (30) calendar days after being notified in writing by the College, we collectively or separately do hereby authorize the College to proceed to have said defects repaired and made good at our expense, including all collection cost and reasonable attorney fees, and we will honor and pay the costs and charges therefore upon demand:"

WARRANTY PERIOD: ____________ STARTING: ____________ TERMINATING ____________

Name of General Contractor __________________________ Name of Subcontractor __________________________

Signature of General Contractor __________________________ Signature of Subcontractor __________________________

Address __________________________ Address __________________________

Phone Number __________________________ Phone Number __________________________

State License Number __________________________ State License Number __________________________

Name of Manufacturer __________________________ Manufacturer Phone Number __________________________

Signature of Manufacturer __________________________

END OF SPECIAL WARRANTY FORM
PART 1 - GENERAL

1.1 SUMMARY

A. This section establishes procedures for specified product options and the submittal of substitutions by Contractors.

B. The intent of this section is to insure that specified product options and proposed substitutions exceed or equal the quality of the specified products and are furnished and installed in accordance with the design intent.

1.2 RELATED SECTIONS

A. General and Supplementary Conditions

B. Section 01035 – Modification Procedures

C. Section 01330 – Submittal Procedures

1.3 PRODUCT OPTIONS

A. Where product options are included in the specifications sections and are specified by naming more than one, or several acceptable products or manufacturers, select any product or manufacturer listed.

B. For items specified only by Reference Standards, select any item meeting standards.

C. For items specified by performance requirements, select any item meeting performance standards specified.

D. Submit request, as required for substitution, for any item or manufacturer not specifically named not later than ten (10) days prior to date of bid opening.

1.4 SUBSTITUTIONS

A. Comply with provisions of Article 55. Substitutions For Specified Items in the General Conditions and modifications to this article provided in the Supplementary Conditions for compliance with AB 2084 amendments to Public Contract Code Sec. 2 Section 3400, effective January 1, 1999.

B. Should the Contractor wish to substitute an item he considers equal to the one specified, submit to Architect not later than ten (10) days prior to the date for bid opening, the name of the manufacturer, the model number, and other pertinent data and information regarding the "or equal" item which has been proposed and which the Contractor is seeking approval to incorporate in the work. If the "or equal" item is not found by the Architect to be, in fact, equal or superior in the opinion of the Architect, the Contractor shall furnish the item as set forth in the Specifications. Substitution requests submitted later than ten (10) days from the date of bid opening will not be considered and will be returned un-reviewed.
C. To aid in the review of substitution requests, submit two copies of the project Substitution form.

D. Tabulate products by specification section number and title.

E. Submit separate request for each substitution. Support each request with:

1. Complete data substantiating compliance of proposed substitution with requirements stated in Contract Documents:
   a. Product identification, including manufacturer's name and address.
   b. Manufacturer's literature; identify;
      1) Product description.
      2) Reference standards.
      3) Performance and test data.
   c. Samples, as applicable.
   d. Name and address of similar projects on which product has been used, and date of each installation.

2. Itemized comparison of the proposed substitution with product specified; list significant variations.

3. Any effect the substitution may have on other trade contracts.

4. List of changes required in other work or products.

5. Accurate cost data comparing proposed substitution with product specified.
   a. Amount of any change in cost.

6. Designation of required license fees or royalties.

7. Designation of availability of maintenance services, sources of replacement materials.

F. Substitutions will not be considered for acceptance when:

1. They are indicated or implied on shop drawings or product data submittals without a formal request from contractor and acceptance by Architect and Owner prior to bid.

2. They are requested after the project has bid.

3. They are requested after the Contract has been executed.

4. Acceptance will require structural changes or substantial revision of Contract Documents.

5. Substitution request procedures included in this Section and in the General and Supplementary Conditions are not complied with by the Contractor.
6. They require review and acceptance of the Substitution by The Division of the State Architect.

G. Substitute products shall not be bid without written acceptance of the Architect and College.

H. Architect and College will determine acceptability of proposed substitutions prior to bid.

1.5 CONTRACTOR'S SUBSTITUTION CERTIFICATION

A. In making formal request for substitution contractor certifies that:

1. He has investigated proposed product and has determined that it is equal to or superior in all respects to that specified.

2. He will provide same warranties or bonds for substitution as for product specified.

3. He will provide same warranties or bonds for substitution into the work, and will make such changes as may be required for the work to be complete in all respects.

4. He waives claims for additional costs caused by substitution which may subsequently become apparent.

1.6 ARCHITECT'S DUTIES

A. Review contractor's request for substitutions with reasonable promptness and issue a written response not later than 72 hours prior to bid.

B. Notify contractor, in writing, of decision to accept or reject requested substitution.

1.7 SEPARATE SUBSTITUTE BIDS

A. Bidders may, (ONLY IF PROVISIONS ARE INCLUDED ON THE BID FORM) submit separate substitute bids using materials other than those described in these Contract Documents, provided that all substitutions are clearly identified and described and that the bid is in all other respects in accordance with the provisions of the Contract Documents.

1.8 AVAILABILITY OF SPECIFIED ITEMS

A. Verify prior to bidding that all specified and substituted items will be available in time for installation during orderly and timely progress of the work.

B. In the event specified items will not be available, notify the Architect prior to receipt of bids.

C. Cost of delays because of non-availability of specified items, when such delays could have been avoided by the Contractor, will be back-charged as necessary and shall not be borne by the Architect or College.
1.9 SUBSTITUTION WARRANTY REQUIREMENTS

A. Submit with the substitution request an executed Substitution Warranty. The Form at the end of this Section. This form shall apply to substitutions submitted for review prior to bid.

B. The Contractor is to warrant, in writing, that the substituted items are to perform as specified, and assume complete responsibility for the same. This includes responsibility and costs required for modifications to building, other materials, or equipment, and any additional coordination with work of other trades. Testing, of Substitutions proposed, if required or requested by the Architect or College shall be paid for by the Contractor.

C. Sample test of SUBSTITUTION WARRANTY is provided at the end of this section, identified as Example "B".

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION
PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. This Section includes general procedural requirements governing execution of the Work including, but not limited to, the following:

2. Field engineering and surveying.
4. Progress cleaning.
5. Starting and adjusting.
6. Protection of installed construction.
7. Correction of the Work.

B. Related Sections include the following:

1. Division 1 Section "Project Management and Coordination" for procedures for coordinating field engineering with other construction activities.
2. Division 1 Section "Submittal Procedures" for submitting surveys.
3. Division 1 Section "Cutting and Patching" for procedural requirements for cutting and patching necessary for the installation or performance of other components of the Work.
4. Division 1 Section "Closeout Procedures" for submitting final property survey with Project Record Documents, recording of College-accepted deviations from indicated lines and levels, and final cleaning.

1.3 SUBMITTALS

A. Qualification Data: For land surveyor or civil engineer to demonstrate their capabilities and experience. Include lists of completed projects with project names and addresses, names and addresses of architects and owners, and other information specified.

B. Certificates: At completion of the Work, after all governmental agency approvals have been obtained, and prior to request for final payment, submit certificate signed by land surveyor
SECTION 01700
EXECUTION REQUIREMENTS

or civil engineer certifying that location and elevation of improvements comply with requirements.

C. Certificates: At completion of the Work, after all governmental agency approvals have been obtained, and prior to request for final payment, submit a certificate signed by the land surveyor or professional engineer and the Contractor certifying that location and elevation of improvements, quality and quantity of materials and installation are in compliance with requirements of the drawings and specifications approved by governmental agencies having jurisdiction over the Project.

1. If any changes from approved drawings and specifications were made in the Work, include a statement that changes to the Work were performed after such changes, including revised drawings and specifications, were approved by Architect, DSA and other governmental agencies having authority.

   a. Include a chronological list of changes with date each was approved by Architect and governmental agencies having authority.

D. Landfill Receipts: Submit copy of receipts issued by a landfill facility, licensed to accept hazardous materials, for hazardous waste disposal.

E. Certified Surveys: Submit two copies signed by land surveyor or civil engineer.

F. Final Property Survey: Submit two copies showing the Work performed and record survey data.

G. Damage Survey: Submit one (1) copy of key-plans, photographs, and DVD.

H. Site and Building Inspection Survey: Submit one (1) copy of DVD, showing internal inspection of site utility piping, building main supply, return and waste lines, and building main and branch ductwork.

1.4 QUALITY ASSURANCE

A. Land Surveyor or Civil Engineer Qualifications: A professional land surveyor or civil engineer who is registered in the State of California to perform survey work and who is experienced in providing land-surveying services of the kind indicated.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 EXAMINATION

A. Existing Conditions: 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 and location of mechanical and electrical systems and other construction affecting the Work.
1. Before construction, verify the location and invert elevation at points of connection of sanitary sewer, storm sewer, and water-service piping; and underground electrical services.

2. Furnish location data for work related to Project that must be performed by public utilities serving Project site.

3. Coordinate with, and obtain required approvals from authorities having jurisdiction.

B. Acceptance of Conditions: Examine substrates, areas, and conditions, with Installer or Applicator present where indicated, for compliance with requirements for installation tolerances and other conditions affecting performance. Record observations.

1. Verify compatibility with and suitability of substrates, including compatibility with existing finishes or primers.

2. Examine roughing-in for mechanical and electrical systems to verify actual locations of connections before equipment and fixture installation.

3. Examine walls, floors, and roofs for suitable conditions where products and systems are to be installed.

4. Proceed with installation only after unsatisfactory conditions have been corrected. Proceeding with the Work indicates acceptance of surfaces and conditions.

3.2 PREPARATION

A. Existing Utility Information: Furnish information to College 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, and obtain required approvals from authorities having jurisdiction.

B. Existing Utility Intermittents: Do not interrupt utilities serving facilities occupied by College faculty, staff, students or others unless permitted under the following conditions and then only after arranging to provide temporary utility services according to requirements indicated:

1. Notify Construction Administrator not less than 14 days in advance of proposed utility interruptions.

2. Do not proceed with utility interruptions without Construction Manager's written permission.

C. Field Measurements: 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 fabrication. Coordinate fabrication schedule with construction progress to avoid delaying the Work.
D. Space Requirements: Verify space requirements and dimensions of items shown diagrammatically on Drawings.


3.3 CONSTRUCTION LAYOUT

A. Verification: Before proceeding to lay out the Work, verify layout information shown on Drawings, in relation to the property survey and existing benchmarks. If discrepancies are discovered, notify Construction Administrator and Architect promptly.

B. General: Engage a land surveyor or civil engineer to lay out the Work using accepted surveying practices.

1. Establish benchmarks and control points to set lines and levels at each story of construction and elsewhere as needed to locate each element of Project.

2. Establish dimensions within tolerances indicated. Do not scale Drawings to obtain required dimensions.

3. Inform installers of lines and levels to which they must comply.

4. Check the location, level and plumb, of every major element as the Work progresses.

5. Notify Construction Administrator and Architect when deviations from required lines and levels exceed allowable tolerances.

6. Close site surveys with an error of closure equal to or less than the standard established by authorities having jurisdiction.

C. Site Improvements: Locate and lay out site improvements, including pavements, grading, fill and topsoil placement, utility slopes, and invert elevations.

D. Building Lines and Levels: Locate and lay out control lines and levels for structures, building foundations, column grids, and floor levels, including those required for mechanical and electrical work. Transfer survey markings and elevations for use with control lines and levels. Level foundations and piers from two or more locations.

E. Record Log: 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 Construction Manager and Architect.

3.4 FIELD ENGINEERING

A. Identification: College will identify existing benchmarks, control points, and property corners.
B. Reference Points: 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 without prior written approval of Construction Manager or Architect. Report lost or destroyed permanent benchmarks or control points promptly. Report the need to relocate permanent benchmarks or control points to Construction Manager or Architect before proceeding.

2. Replace lost or destroyed permanent benchmarks and control points promptly. Base replacements on the original survey control points.

C. Benchmarks: Establish and maintain a minimum of two permanent benchmarks on Project site, referenced to data established by survey control points.

1. Record benchmark locations, with horizontal and vertical data, on Project Record Documents.

2. Where the actual location or elevation of layout points cannot be marked, provide temporary reference points sufficient to locate the Work.

3. Remove temporary reference points when no longer needed. Restore marked construction to its original condition.

D. Certified Survey: 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 sitework.

E. Final Property Survey: Prepare a final topographic property survey showing significant features (real property) for Project. Include on the survey a certification, signed by land surveyor or civil engineer, that principal building and site elements of Project are accurately positioned as shown on the survey. As a minimum, include the following information:

1. Show boundary lines, monuments, streets, site improvements and utilities, existing improvements and significant vegetation, adjoining properties, acreage, grade contours, and the distance and bearing from a site corner to a legal point.

2. Finish floor elevations of all buildings at each doorway and entryway to the building.

3. Elevations of exterior walkways, curbs, curb and gutter combinations, gutter pavement, and ungraded area elevations, all at sufficient intervals to confirm drainage and slopes.

4. Invert elevations of all pipes in manholes and catch basins, and elevations of tops of manhole covers and catch basin grates (or gutter flow lines of side inlet basins).

5. Horizontal location, by measured dimension, of significant structures and site improvements, including buildings, curbs, gutters, drainage structures, and driveways.
6. Include on the survey a certification, signed by the surveyor, that principal metes, bounds, lines, and levels of the Project are accurately positioned as shown on the survey.

3.5 INSTALLATION

A. General: 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, and wiring in finished areas, unless otherwise indicated.
4. Maintain minimum headroom clearance of 8 feet in spaces without a suspended ceiling.

B. Comply with manufacturer's written instructions and recommendations for installing products in applications indicated.

C. Install products at the time and under conditions that will ensure the best possible results. Maintain conditions required for product performance until Final Completion.

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. Tools and Equipment: Do not use tools or equipment that produce harmful noise levels.

F. Anchors and Fasteners: Provide anchors and fasteners as required to anchor each component securely in place, accurately located and aligned with other portions of the Work.

1. Mounting Heights: Where mounting heights are not indicated, mount components at heights directed by Architect.
2. Allow for building movement, including thermal expansion and contraction.

G. Joints: Make joints of uniform width. Where joint locations in exposed work are not indicated, arrange joints for the best visual effect. Fit exposed connections together to form hairline joints.

H. Hazardous Materials: Use products, cleaners, and installation materials that are not considered hazardous.
3.6 PROGRESS CLEANING

A. General: Clean Project site and work areas daily, including common areas. Coordinate progress cleaning for joint-use areas where more than one installer has worked. Enforce requirements strictly. Dispose of materials lawfully.


2. Do not hold materials more than 7 days during normal weather or 3 days if the temperature is expected to rise above 80 deg F.

3. Containerize hazardous and unsanitary waste materials separately from other waste. Mark containers appropriately and dispose of legally, according to regulations.

B. Site: Maintain Project site free of waste materials and debris.

C. Work Areas: 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, broom-clean the entire work area, as appropriate.

3. Once finishes are installed in an area, continue vacuuming that area on a regular basis until College has accepted the area and is ready for occupancy.

4. Schedule cleaning operations so that dust and other contaminants resulting from cleaning operations will not settle on wet paint, or other coatings or finishes during their cure period.

5. Comply with manufacturer's instructions for cleaning the surfaces and parts of finishes and equipment. Use only those cleaning materials and procedures recommended by the manufacturer of the item to be cleaned.

6. Provide cleaning during construction as necessary to ensure operations can proceed on schedule and that finish materials can be installed properly and viewed for determination of aesthetic characteristics.

D. Installed Work: 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. Concealed Spaces: Remove debris from concealed spaces before enclosing the space.

F. Exposed Surfaces: Clean exposed surfaces and protect as necessary to ensure freedom from damage and deterioration at time of Final Completion.
G. Cutting and Patching: Clean areas and spaces where cutting and patching are performed. Completely remove paint, mortar, oils, putty, and similar materials.

1. Thoroughly clean piping, conduit, and similar features before applying paint or other finishing materials. Restore damaged pipe covering to its original condition.

H. Waste Disposal: Burying or burning waste materials on-site will not be permitted. Washing waste materials down sewers or into waterways will not be permitted.

I. 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 Final Completion.

J. 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.

K. Limiting Exposures: 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 STARTING AND ADJUSTING

A. Coordinate schedule for start-up of various equipment and systems.

B. Notify the College's Representative and the Engineer of Record seven (7) working days prior to start-up of each item.

C. Verify that each piece of equipment or system has been checked for proper installation, control sequence, or other conditions which may cause damage.

D. Verify that tests, meter readings, and specified electrical characteristics agree with those required by the equipment or system manufacturer.

E. Verify wiring and support components for equipment are complete and tested.

F. Execute start-up under supervision of responsible manufacturer's representative in accordance with manufacturer's' instructions.

G. Start equipment and operating components to confirm proper operation. Remove malfunctioning units, replace with new units, and retest.

H. Adjust operating components for proper operation without binding. Adjust equipment for proper operation.

I. Test each piece of equipment to verify proper operation. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.

J. Manufacturer's Field Service: If a factory-authorized service representative is required to inspect field-assembled components and equipment installation, comply with qualification requirements in Division 1 Section "Quality Requirements."
3.8 PROTECTION OF INSTALLED CONSTRUCTION

A. Provide final protection and maintain conditions that ensure installed Work is without damage or deterioration at time of Final Completion.

B. Comply with manufacturer's written instructions for temperature and relative humidity.

3.9 CORRECTION OF THE WORK

A. Repair or remove and replace defective construction. Restore damaged substrates and finishes. Comply with requirements in Division 1 Section "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 damaged surfaces that are exposed to view if surfaces cannot be repaired without visible evidence of repair.

D. Repair components that do not operate properly. Remove and replace operating components that cannot be repaired.

E. Remove and replace chipped, scratched, and broken glass or reflective surfaces.

END OF SECTION
SECTION 01731
CUTTING AND PATCHING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. This Section includes procedural requirements for cutting and patching.

B. Related Sections include the following:

1. Division 7 Section "Stops and Smoke Seals" for patching fire-rated construction.

2. Divisions 2 through 16 Sections for specific requirements and limitations applicable to cutting and patching individual parts of the Work.
   a. Requirements in this Section apply to mechanical and electrical installations. Refer to Divisions 15 and 16 Sections for other requirements and limitations applicable to cutting and patching mechanical and electrical installations.

1.3 DEFINITIONS

A. Cutting: In addition to requirements of the Contract General Conditions, includes removal of existing construction necessary to permit installation or performance of other Work as required to accomplish the following:

1. Make several parts fit properly.

2. Uncover work to provide for installation of ill-timed work.

3. Remove and replace defective work.

4. Remove samples of installed work as specified or requested by the Architect for testing.

B. Patching: Fitting and repair work required to restore surfaces to original conditions after installation of other Work.

1.4 SUBMITTALS

A. Cutting and Patching Proposal: Submit a proposal describing procedures at least 10 days before the time cutting and patching will be performed, requesting approval to proceed. Include the following information:

1. Extent: Describe cutting and patching, show how they will be performed, and indicate why they cannot be avoided.
2. Changes to Existing Construction: 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. Products: List products to be used and firms or entities that will perform the Work.

4. Dates: Indicate when cutting and patching will be performed.

5. Utilities: List utilities that cutting and patching procedures will disturb or affect. List utilities that will be relocated and those that will be temporarily out of service. Indicate how long service will be disrupted.

6. Architect's Approval: 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.

1.5 QUALITY ASSURANCE

A. Structural Elements:

1. Obtain approval of the cutting and patching proposal before cutting and patching structural elements including, but not limited to, the following:

   a. Foundation construction.
   b. Structural concrete.
   c. Stair systems.
   d. Miscellaneous structural metals.
   e. Equipment supports.
   f. Piping, ductwork, vessels, and equipment.

B. Operational Elements: 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 or decreased operational life or safety.

C. Miscellaneous Elements: Do not cut and patch the following elements or related components in a manner that could change their load-carrying capacity, that results in reducing their capacity to perform as intended, or that results in increased maintenance or decreased operational life or safety.

   1. Water, moisture, or vapor barriers.
   2. Membranes and flashings.
   3. Equipment supports.
   4. Piping, ductwork, vessels, and equipment.
   5. Noise- and vibration-control elements and systems.

D. Visual Requirements: 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 build-
ing's aesthetic qualities. Remove and replace construction that has been cut and patched in a visually unsatisfactory manner.

1. If possible, retain original Installer or fabricator to cut and patch exposed Work listed below. If it is impossible to engage original Installer or fabricator, engage another recognized, experienced, and specialized firm.
   a. Processed concrete finishes.
   b. Preformed metal panels.
   c. Glass wall system.
   d. HVAC enclosures, cabinets, or covers.

PART 2 - PRODUCTS

2.1 MATERIALS

A. General: Comply with requirements specified in other Sections of these Specifications.

B. Existing Materials: Use materials identical to existing materials. For exposed surfaces, use materials that visually match existing adjacent surfaces to the fullest extent possible.

1. If identical materials are unavailable or cannot be used, use materials that, when installed, will match the visual and functional performance of existing materials.

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.

1. Compatibility: Before patching, verify compatibility with and suitability of substrates, including compatibility with existing finishes or primers.

2. Proceed with installation only after unsafe or unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Temporary Support: Provide temporary support of Work to be cut.

B. Protection: Protect existing 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. Adjoining Areas: Avoid interference with use of adjoining areas or interruption of free passage to adjoining areas.

3.3 PERFORMANCE

A. General: Employ skilled workers to perform cutting and patching. Proceed with cutting and patching at the earliest feasible time, and complete without delay.

1. Cut existing 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. Cutting: Cut existing construction by sawing, drilling, breaking, chipping, grinding, and similar operations, including excavation, using methods least likely to damage elements retained or adjoining construction. If possible, review proposed procedures with original Installer; comply with original Installer's written recommendations.

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. Existing Finished Surfaces: Cut or drill from the exposed or finished side into concealed surfaces.

3. Concrete and Masonry: Cut using a cutting machine, such as an abrasive saw or a diamond-core drill.

4. Excavating and Backfilling: Comply with requirements in applicable Division 2 Sections where required by cutting and patching operations.

5. Mechanical and Electrical Services: Cut off pipe or conduit in walls or partitions to be removed. Cap, valve, or plug and seal remaining portion of pipe or conduit to prevent entrance of moisture or other foreign matter after cutting.

6. Proceed with patching after construction operations requiring cutting are complete.

C. Patching: 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 of these Specifications.

1. Inspection: Where feasible, test and inspect patched areas after completion to demonstrate integrity of installation.

2. Exposed Finishes: 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. Concrete: maintain cut edges in a moist condition for twenty four (24) hours prior to the placement of new concrete. In lieu of this, an epoxy adhesive may be provided. Finish placed concrete to match existing unless noted otherwise. Concrete shall have a compressive strength of 3,000 psi where installed to repair and/or match existing improvements, unless noted otherwise.

4. Metal Fabrications: Items to remain exposed shall have their edges cut and ground smooth and rounded.

5. Sheet Metal: Replace removed or damaged sheet metal items as required or new work.


7. Lath and Plaster: Install new lath materials to match existing and fasten to support per drawings. Provide a 6" lap where new lath to adjoins existing lath. Fasten new lath as required for new work. Restore paper backing as required. Apply a bonding agent on cut edges of existing plaster. Apply three coat plaster of the type, thickness, finish, texture, and color to match existing.

8. Gypsum Wallboard: Fasten cut edges of wallboard. Install patches with at least two opposite edges centered on supports and secure at spacing specified on drawings. Tape and finish joint and fasteners heads. Patching shall be non-apparent when painted or finished.

9. Acoustical Ceilings: Comply with the requirements for new work specified in related sections of the contract documents.

10. Resilient Flooring: Completely remove flooring and prep substrate for new material.

11. Where patching occurs in a painted surface, apply primer and intermediate paint coats over the patch and apply final paint coat over entire unbroken surface containing the patch. Provide additional coats until patch blends with adjacent surfaces.

3.4 CLEANING

A. Thoroughly clean areas and spaces where cutting and patching is performed or used as access. Remove completely paint, mortar, oils, putty and items of similar nature. Thoroughly clean piping, conduit and similar features before painting or other finishing is applied. Restore damaged areas to their original condition.

END OF SECTION
PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. This Section includes administrative and procedural requirements for contract closeout, including, but not limited to, the following:

1. Inspection procedures.
2. Warranties.
3. Final cleaning.

B. Related Sections include the following:

1. Contract General Conditions for requirements for Applications for Payment for Final Completion.
2. Division 1 Section "Execution Requirements" for progress cleaning of Project site.
3. Division 1 Section "Project Record Documents" for submitting Record Drawings, Record Specifications, and Record Product Data.
4. Division 1 Section "Operation and Maintenance Data" for operation and maintenance manual requirements.
5. Division 1 Section "Demonstration and Training" for requirements for instructing College's personnel.
6. Divisions 2 through 16 Sections for specific closeout and special cleaning requirements for products of those Sections.

1.3 FINAL COMPLETION

A. Preliminary Procedures: Before requesting final inspection for determining date of Final Completion, complete the following:

1. Prepare a list of items to be completed and corrected (punch list), the value of items on the list, and reasons why the Work is not complete. Include in the list a complete listing of items the Contractor determined to be deficient and has already corrected.

2. Advise College of pending insurance changeover requirements.
3. Submit specific warranties, workmanship bonds, maintenance and service agreements, final certifications, and similar documents.

4. Obtain and submit releases permitting College 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, damage or settlement surveys, property surveys, and similar final record information.

6. Deliver tools, spare parts, extra materials, and similar items to College Representative. Label with manufacturer's name and model number where applicable.

7. College will make the final change-over to permanent locks at a back-charge cost of $6,000 to be assessed by deductive change order.

8. Complete startup testing of systems.


10. Terminate and remove temporary facilities from Project site, along with mockups, construction tools, and similar elements.

11. Advise College of changeover in heat and other utilities.

12. Submit changeover information related to College's occupancy, use, operation, and maintenance.

13. Adjust and balance all systems and adjust all valves.

14. Check fluid and gas carrying pipe systems, roofs, flashings, gutters, and downspouts for leaks. Repair or replace as necessary.

15. Lubricate all moving parts of machinery and equipment as recommended by the manufacturers of the machinery and equipment.

16. Remove broken and scratched glass and replace with new glass complying with requirements of the Contract Documents.

17. Submit a final Application for Payment according to the General Contract Conditions.

18. Submit certified copy of Architect's final inspection list of items to be completed or corrected (punch list), endorsed and dated by Architect. The certified copy of the list shall state that each item has been completed or otherwise resolved for acceptance.

19. Submit evidence of final, continuing insurance coverage complying with insurance requirements.

20. Submit pest-control final inspection report and warranty.
21. Instruct College's personnel in operation, adjustment, and maintenance of products, equipment, and systems.

B. Inspection: Submit a written request for final inspection for acceptance. On receipt of request, Architect and Construction Manager will either proceed with inspection or notify Contractor of unfilled requirements. Construction Manager will process final payment minus retention after receiving certified payment request from Architect and Construction Inspector.

1. DSA IOR will submit copies of incomplete items (Punch List) using approved form.

2. Re-inspection: Request re-inspection when the Work identified in previous inspections as incomplete is completed or corrected.

1.4 WARRANTIES

A. Submittal Time: Submit written warranties on request of Architect for designated portions of the Work where commencement of warranties other than date of Notice of Completion is indicated.

B. Organize warranty documents into an orderly sequence based on the table of contents of the Project Manual.

1. Bind warranties and bonds in heavy-duty, 3-ring, vinyl-covered, loose-leaf view binders, thickness as necessary to accommodate contents, and sized to receive 8-1/2-by-11-inch paper.

2. Provide heavy paper dividers with plastic-covered 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, DSA Application number or other identification as applicable, and name, address and telephone number of Contractor.

C. Provide additional copies of each warranty to include in operation and maintenance manuals.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Cleaning Agents: 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.
3.1 FINAL CLEANING

A. General: Provide final cleaning. Conduct cleaning and waste-removal operations to comply with local laws and ordinances and Federal and local environmental and antipollution regulations.

B. Cleaning: 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 Completion 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.
   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 and interior hard-surfac ed finishes to a dirt-free condition, free of stains, grease, films, stains, fingerprints and similar foreign substances. Avoid disturbing natural weathering of exterior surfaces. Restore reflective surfaces to their original condition. Polish bright surfaces to shine finish.
   f. Remove debris and surface dust from limited access spaces, including roofs, plenums, shafts, trenches, equipment vaults, manholes, attics, and similar spaces.
   g. Sweep concrete floors broom clean.
   h. Clean transparent materials, including mirrors and glass in doors and windows. Remove glazing compounds and other noticeable, vision-obscuring materials. Replace chipped or broken glass and other damaged transparent materials. Polish glass, taking care not to scratch surfaces.
   i. Remove labels that are not permanent.
   j. Touch up and otherwise repair and restore slightly 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.
   1) Do not paint over "UL" and similar labels, including mechanical and electrical nameplates.
   k. Wipe surfaces of mechanical and electrical equipment, elevator equipment, and similar equipment. Remove excess lubrication, paint and mortar droppings, and other foreign substances.
   l. Replace parts subject to unusual operating conditions.
   m. Clean plumbing fixtures to a sanitary condition, free of stains, including stains resulting from water exposure.
   n. Replace disposable air filters and clean permanent air filters. Clean exposed surfaces of diffusers, registers, and grills.
o. Clean ducts, blowers, and coils if units were operated without filters during construction.
p. Clean light fixtures, lamps, globes, and reflectors to function with full efficiency. Replace burned-out bulbs, and those noticeably dimmed by hours of use, and defective and noisy starters in fluorescent and mercury vapor fixtures to comply with requirements for new fixtures.
q. Leave Project clean and ready for occupancy.

C. **Pest Control**: Engage an experienced, licensed exterminator to make a final inspection and rid Project of rodents, insects, and other pests. Prepare a report.

D. **Comply with safety standards for cleaning**: Do not burn waste materials. Do not bury debris or excess materials on College’s property. Do not discharge volatile, harmful, or dangerous materials into drainage systems or streams. Remove waste materials from Project site and dispose of lawfully.

**END OF SECTION**
PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. This Section includes administrative and procedural requirements for Project Record Documents, including the following:

1. Record Drawings.
2. Record Specifications.

B. Related Sections include the following:

1. Division 1 Section "Closeout Procedures" for general closeout procedures.
2. Division 1 Section "Operation and Maintenance Data" for operation and maintenance manual requirements.
3. Divisions 2 through 16 Sections for specific requirements for Project Record Documents of products in those Sections.

1.3 SUBMITTALS

A. Record Drawings: Comply with the following:

1. Number of Copies: Submit copies of Record Drawings as follows:
   a. Submit one set of marked-up Record Prints.

B. Record Specifications: Submit one copy of marked-up Project Specifications, including addenda and contract modifications.

PART 2 - PRODUCTS

2.1 RECORD DRAWINGS

A. Record Prints: Maintain one clean, undamaged set of black-line white prints of the Contract Drawings and Shop Drawings.

1. Preparation: Mark Record Prints to show the actual installation where installation varies from that shown originally. Require individual or entity who obtained record
data, whether individual or entity is installer, subcontractor, or similar entity, to prepare the marked-up Record Prints.

a. Give particular attention to information on concealed elements that would be difficult to identify or measure and record later.

b. Accurately record information in an understandable drawing technique.

c. Record data as soon as possible after obtaining it, but within 24 hours maximum. Record and check the markup before enclosing concealed installations.

d. At time of final Completion, submit record drawings to the Architect for the further processing. Organize into sets and bind and label sets for the Architect’s use.

2. Content: Types of items requiring marking include, but are not limited to, the following:

a. Dimensional changes to Drawings.

b. Revisions to details shown on Drawings.

c. Depths of foundations below first floor. Indicate foundation elevations relative to first floor elevation.

d. Horizontal locations and vertical depths of underground utilities and appurtenances, including both site utilities and those under buildings and structures, referenced to permanent surface improvements.

e. Horizontal and vertical locations of internal utilities and appurtenances concealed in construction, referenced to visible, accessible, permanent features of the buildings or structures.

f. Revisions to routing of piping and conduits.

g. Revisions to electrical circuitry.

h. Actual equipment locations.

i. Duct size and routing.

j. Horizontal and vertical locations of concealed internal utilities and appurtenances referenced to visible, accessible, permanent features of the buildings or structures in which they are concealed.

k. Changes made by Change Order or Construction Change Directive.

l. Changes made following Architect’s written orders and pertinent graphic and written responses to requests for information (RFI).

m. Details not on the original Contract Drawings.

n. Field records for variable and concealed conditions.

o. Record information on the Work that is shown only schematically.

3. Mark the Contract Drawings or Shop Drawings, whichever is most capable of showing actual physical conditions, completely and accurately. If Shop Drawings are marked, show cross-reference on the Contract Drawings.

4. Mark record sets with erasable, red-colored pencil. Use other colors to distinguish between changes for different categories of the Work at the same location.

5. Mark important additional information that was either shown schematically or omitted from original Drawings. Mark new information that is important to the College but was not shown on Contract Drawings or Shop Drawings.
6. Note Construction Change Directive numbers, alternate numbers, Change Order numbers, request for information (RFI) numbers, and similar identification, where applicable.

7. Identify and date each drawing; include the printed designation "PROJECT RECORD DRAWINGS" in a prominent location on each drawing.

B. Format: Identify and date each Record Drawing; include the designation "PROJECT RECORD DRAWING" in a prominent location.

1. Record Prints: 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. Identification: As follows:

   a. Project name.
   b. Date.
   c. Designation "PROJECT RECORD DRAWINGS."
   d. Name of Architect.
   e. Name of Contractor.

2.2 RECORD SPECIFICATIONS

A. Preparation: Mark Specifications to indicate the actual products installed, 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 the manufacturer, supplier, Installer, and other information necessary to provide a record of selections made.

4. For each principal product, indicate whether Record Product Data has been submitted in operation and maintenance manuals instead of submitted as Record Product Data.

5. Note related Change Orders where applicable.

6. Use pen and black ink so marks will reproduce clearly.

2.3 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. Submit to the Architect for the Trustee's records.
1. Categories of requirements resulting in miscellaneous records include, but are not limited to, the following:
   a. Field records on excavations and foundations.
   b. Field records on underground construction and similar work.
   c. Survey showing locations and elevations of underground lines.
   d. Invert elevations of drainage piping.
   e. Surveys establishing building lines and levels.
   f. Authorized measurements utilizing unit prices or allowances.
   g. Records of plant treatment.
   h. Ambient and substrate condition tests.
   i. Certifications received in lieu of labels on bulk products.
   j. Batch mixing and bulk delivery records.
   k. Testing and qualification of tradesmen.
   l. Documented qualification of installation firms.
   m. Load and performance testing.
   n. Inspections and certifications by governing authorities.
      1) Blue or black line prints and other documents used to obtain permits from authorities having jurisdiction. Submit all prints and documents bearing official approval stamp of authorities having jurisdiction.
      2) Originals of all permits issued for the Work by authorities having jurisdiction.
      3) Originals of inspection cards completed by authorities having jurisdiction.
   o. Leakage and water-penetration tests.
   q. Final inspection and correction procedures.
   r. Field test reports.

PART 3 - EXECUTION

3.1 RECORDING AND MAINTENANCE

A. Recording: 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, but within 24 hours maximum; do not wait until the end of Project.

B. Maintenance of Record Documents and Samples: 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 legible condition, 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.

1. Maintain 1 set of all record documents at the Project site for the entire duration of construction.
2. Clearly label each document or item "PROJECT RECORD DRAWING," "PROJECT RECORD SAMPLE," "PROJECT RECORD SPECIFICATIONS," or similar as appropriate and applicable.

C. Do not conceal Work requiring verification for record documents until such information has been verified and recorded.

D. Certification: Within the title block or immediately adjacent, on each drawing sheet of the original mark-up record drawings and the front covers of record specifications, include the following statement signed by the Contractor:

"I certify to the best of my knowledge, information and belief that the information recorded on this drawing/specification is a complete and accurate record of the final Work of this Contract."

________________________  _________________________
Name (printed)             Title

________________________  _________________________
Signature                 Date

END OF SECTION
PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. This Section includes administrative and procedural requirements for preparing operation and maintenance manuals, including the following:

1. Operation and maintenance documentation directory.
2. Emergency manuals.
3. Operation manuals for systems, subsystems, and equipment.
4. Maintenance manuals for the care and maintenance of products, materials, and finishes, and systems and equipment.
5. Instruction of the College's operating personnel in the operation and maintenance of building systems and equipment, including video tape records of instruction sessions.

B. Related Sections include the following:

1. Division 1 Section "Submittal Procedures" for submitting copies of submittals for operation and maintenance manuals.
2. Division 1 Section "Closeout Procedures" for submitting operation and maintenance manuals.
3. Division 1 Section "Project Record Documents" for preparing Record Drawings for operation and maintenance manuals.
4. Divisions 2 through 16 Sections for specific operation and maintenance manual requirements for products in those Sections.

1.3 DEFINITIONS

A. System: An organized collection of parts, equipment, or subsystems united by regular interaction.

B. Subsystem: A portion of a system with characteristics similar to a system.

1.4 SUBMITTALS

A. Submit three (3) copies of each manual in final form at least fifteen (15) days before final inspection. College will receive two (2) copies. Architect will return one (1) copy with comments after final inspection.
SECTION 01782
OPERATION AND MAINTENANCE DATA

1. Correct or modify each manual to comply with Architect's comments. Submit six (6) copies of each corrected manual within fifteen (15) days of receipt of Architect's comments.

2. Corrected manuals shall be submitted fifteen (15) days before start of training of College personnel.

B. After final inspection submit video tapes of operation and maintenance instruction sessions.

1.5 COORDINATION

A. Where operation and maintenance documentation includes information on installations by more than one factory-authorized service representative, assemble and coordinate information furnished by representatives and prepare manuals.

PART 2 - PRODUCTS

2.1 OPERATION AND MAINTENANCE DOCUMENTATION DIRECTORY

A. Organization: Include a section in the directory for each of the following:
   1. List of documents.
   2. List of systems.
   3. List of equipment.
   4. Table of contents.

B. List of Systems and Subsystems: List systems alphabetically. Include references to operation and maintenance manuals that contain information about each system.

C. List of Equipment: List equipment for each system, organized alphabetically by system. For pieces of equipment not part of system, list alphabetically in separate list.

D. Tables of Contents: Include a table of contents for each emergency, operation, and maintenance manual.

E. Identification: In the documentation directory and in each operation and maintenance manual, identify each system, subsystem, and piece of equipment with the same designation used in the Contract Documents. If no designation exists, assign a designation according to ASHRAE Guideline 4, "Preparation of Operating and Maintenance Documentation for Building Systems."

2.2 MANUALS, GENERAL

A. Organization: Unless otherwise indicated, organize each manual into a separate section for each system and subsystem, and a separate section for each piece of equipment not part of a system, arranged in sections matching the name, number, and organization of the Project Specification Sections. Each manual shall contain the following materials, in the order listed:

   1. Title page.
   2. Table of contents.
B. Title Page: Enclose title page in transparent plastic sleeve. Include the following information:

1. Subject matter included in manual.
2. Name and address of Project, if off campus.
3. Name and address of College.
4. Date of submittal.
5. Name, address, and telephone number of Contractor.
6. Name and address of Architect.
7. Cross-reference to related systems in other operation and maintenance manuals.

C. Table of Contents: List each product included in manual, identified by product name, indexed to the content of the volume, and cross-referenced to Specification Section number in Project Manual.

1. If operation or maintenance documentation requires more than one volume to accommodate data, include comprehensive table of contents for all volumes in each volume of the set.

D. Manual Contents: Organize into sets of manageable size. Arrange contents alphabetically by system, subsystem, and equipment. If possible, assemble instructions for subsystems, equipment, and components of one system into a single binder.

1. Binders: Heavy-duty, 3-ring, vinyl-covered view, loose-leaf binders, in thickness necessary to accommodate contents, sized to hold 8-1/2-by-11-inch paper; with clear plastic sleeve on spine to hold label describing contents and with pockets inside covers to hold folded oversize sheets.
   a. If two or more binders are necessary to accommodate data of a system, organize data in each binder into groupings by subsystem and related components. Cross-reference other binders if necessary to provide essential information for proper operation or maintenance of equipment or system.
   b. Identify each binder on front and spine, with printed title "OPERATION AND MAINTENANCE MANUAL," Project title or name, College Representative’s contract number or other identification as applicable, and subject matter of contents. Indicate volume number for multiple-volume sets.

2. Dividers: Heavy-paper dividers with plastic-covered tabs for each section. Mark each tab to indicate contents and associated Specification Section number. Include typed list of products and major components of equipment included in the section on each divider, cross-referenced to Specification Section number and title of Project Manual. Reference the corresponding video tape where applicable.

3. Protective Plastic Sleeves: Transparent plastic sleeves designed to enclose diagnostic software diskettes for computerized electronic equipment.


5. Drawings: Attach reinforced, punched binder tabs on drawings and bind with text.
SECTION 01782
OPERATION AND MAINTENANCE DATA

a. If oversize drawings are necessary, fold drawings to same size as text pages and use as foldouts.
b. If drawings are too large to be used as foldouts, fold and place drawings in labeled envelopes and bind envelopes in rear of manual. At appropriate locations in manual, insert typewritten pages indicating drawing titles, descriptions of contents, and drawing locations.

6. Video Tape:

a. Where 2 or more video tapes are necessary to accommodate data, correlate data in each video tape into related groupings according to the Project Manual table of contents. Cross-reference other video tapes where necessary to provide essential information for proper operation or maintenance of the piece of equipment or system.
b. Identify each video tape jacket on front and spine, and on the long edge of each video tape cassette, with the printed title "OPERATION AND MAINTENANCE MANUAL," Project title or name, DSA A# or other identifying information as applicable, and subject matter covered. Indicate volume number for multiple volume sets of video tapes.

2.3 EMERGENCY MANUALS

A. Content: Organize manual into a separate section for each of the following:

1. Type of emergency.
2. Emergency instructions.
3. Emergency procedures.

B. Type of Emergency: Where applicable for each type of emergency indicated below, include instructions and procedures for each system, subsystem, piece of equipment, and component:

1. Fire.
2. Flood.
5. Power failure.
7. System, subsystem, or equipment failure.
8. Chemical release or spill.

C. Emergency Instructions: Describe and explain warnings, trouble indications, error messages, and similar codes and signals. Include responsibilities of College's operating personnel for notification of Installer, supplier, and manufacturer to maintain warranties.

D. Emergency Procedures: Include the following, as applicable:

1. Instructions on stopping.
2. Shutdown instructions for each type of emergency.
3. Operating instructions for conditions outside normal operating limits.
4. Required sequences for electric or electronic systems.
5. Special operating instructions and procedures.
2.4 OPERATION MANUALS

A. Content: In addition to requirements in this Section, include operation data required in individual Specification Sections and the following information:

1. System, subsystem, and equipment descriptions.
2. Performance and design criteria if Contractor is delegated design responsibility.
3. Operating standards.
4. Operating procedures.
5. Operating logs.
6. Wiring diagrams.
7. Control diagrams.
8. Piped system diagrams.
9. Precautions against improper use.
10. License requirements including inspection and renewal dates.

B. Descriptions: Include the following:

1. Product name and model number.
2. Manufacturer’s name.
3. Equipment identification with serial number of each component and other nameplate data.
4. Equipment function.
5. Operating characteristics.
6. Limiting conditions.
7. Performance curves.
8. Engineering data and tests.
9. Complete nomenclature and number of replacement parts.

C. Operating Procedures: Include the following, as applicable:

1. Startup procedures.
2. Equipment or system break-in procedures.
3. Routine and normal operating instructions.
4. Regulation and control procedures.
5. Instructions on stopping.
7. Seasonal and weekend operating instructions.
8. Required sequences for electric or electronic systems.
9. Special operating instructions and procedures.

D. Systems and Equipment Controls: Describe the sequence of operation, and diagram controls as installed.

E. Piped Systems: Diagram piping as installed, and identify color-coding where required for identification.

2.5 PRODUCT MAINTENANCE MANUAL

A. Content: Organize manual into a separate section for each product, material, and finish. Include source information, product information, maintenance procedures, repair materials and sources, and warranties and bonds, as described below.
B. Source Information: List each product included in manual, identified by product name and arranged to match manual’s table of contents. For each product, list name, address, and telephone number of Installer or supplier and maintenance service agent, and cross-reference Specification Section number and title in Project Manual.

C. Product Information: Include the following, as applicable:

1. Product name and model number.
2. Manufacturer’s name.
3. Color, pattern, and texture.
5. Reordering information for specially manufactured products.

D. Maintenance Procedures: Include manufacturer’s written recommendations and the following:

1. Inspection procedures.
2. Types of cleaning agents to be used and methods of cleaning.
3. List of cleaning agents and methods of cleaning detrimental to product.
4. Schedule for routine cleaning and maintenance.
5. Repair instructions.

E. Repair Materials and Sources: Include lists of materials and local sources of materials and related services.

F. Warranties and Bonds: Include copies of warranties and bonds and lists of circumstances and conditions that would affect validity of warranties or bonds.

1. Include procedures to follow and required notifications for warranty claims.

2.6 SYSTEMS AND EQUIPMENT MAINTENANCE MANUAL

A. Content: For each system, subsystem, and piece of equipment not part of a system, include source information, manufacturers’ maintenance documentation, maintenance procedures, maintenance and service schedules, spare parts list and source information, maintenance service contracts, and warranty and bond information, as described below.

B. Source Information: List each system, subsystem, and piece of equipment included in the manual, identified by product name and arranged to match manual’s table of contents. For each product, list name, address, and telephone number of Installer or supplier and maintenance service agent, and cross-reference Specification Section number and title in Project Manual.

1. At the front of each section in the manual, provide a tabbed divider page indicating the following:
   a. Name, address, and telephone number of local firm capable of providing factory-authorized repair and maintenance for each piece of equipment.
   b. Names, addresses, and telephone numbers of subcontractors and suppliers related to each material, system, and piece of equipment.
C. Manufacturers' Maintenance Documentation: Manufacturers' maintenance documentation including the following information for each component part or piece of equipment:

1. Standard printed maintenance instructions and bulletins.
2. Drawings, diagrams, and instructions required for maintenance, including disassembly and component removal, replacement, and assembly.
3. Identification and nomenclature of parts and components.
4. List of items recommended to be stocked as spare parts.

D. Maintenance Procedures: Include the following information and items that detail essential maintenance procedures:

1. Test and inspection instructions.
2. Troubleshooting guide.
3. Precautions against improper maintenance.
4. Disassembly; component removal, repair, and replacement; and reassembly instructions.
5. Aligning, adjusting, and checking instructions.
6. Demonstration and training videotape, if available.

E. Maintenance and Service Schedules: Include service and lubrication requirements, list of required lubricants for equipment, and separate schedules for preventive and routine maintenance and service with standard time allotment.

1. Scheduled Maintenance and Service: Tabulate actions for daily, weekly, monthly, quarterly, semiannual, and annual frequencies.
2. Maintenance and Service Record: Include manufacturers' forms for recording maintenance.

F. Spare Parts List and Source Information: Include lists of replacement and repair parts, with parts identified and cross-referenced to manufacturers' maintenance documentation and local sources of maintenance materials and related services.

G. Maintenance Service Contracts: Include copies of maintenance agreements with name and telephone number of service agent.

H. Warranties and Bonds: Include copies of warranties and bonds and lists of circumstances and conditions that would affect validity of warranties or bonds.

1. Include procedures to follow and required notifications for warranty claims.

PART 3 - EXECUTION

3.1 MANUAL PREPARATION

A. Operation and Maintenance Documentation Directory: Prepare a separate manual that provides an organized reference to emergency, operation, and maintenance manuals.
B. Emergency Manual: Assemble a complete set of emergency information indicating procedures for use by emergency personnel and by College's operating personnel for types of emergencies indicated.

C. Product Maintenance Manual: Assemble a complete set of maintenance data indicating care and maintenance of each product, material, and finish incorporated into the Work.

D. Operation and Maintenance Manuals: Assemble a complete set of operation and maintenance data indicating operation and maintenance of each system, subsystem, and piece of equipment not part of a system.

   1. Engage a factory-authorized service representative to assemble and prepare information for each system, subsystem, and piece of equipment not part of a system.
   2. Prepare a separate manual for each system and subsystem, in the form of an instructional manual for use by College's operating personnel.

E. Manufacturers' Data: Where manuals contain manufacturers' standard printed data, include only sheets pertinent to product or component installed. Mark each sheet to identify each product or component incorporated into the Work. If data include more than one item in a tabular format, identify each item using appropriate references from the Contract Documents. Identify data applicable to the Work and delete references to information not applicable.

   1. Prepare supplementary text if manufacturers' standard printed data are not available and where the information is necessary for proper operation and maintenance of equipment or systems.

F. Drawings: Prepare drawings supplementing manufacturers' printed data to illustrate the relationship of component parts of equipment and systems and to illustrate control sequence and flow diagrams. Coordinate these drawings with information contained in Record Drawings to ensure correct illustration of completed installation.

   1. Do not use original Project Record Documents as part of operation and maintenance manuals.
   2. Comply with requirements of newly prepared Record Drawings in Division 1 Section "Project Record Documents."

G. Comply with Division 1 Section "Closeout Procedures" for the schedule for submitting operation and maintenance documentation.

END OF SECTION
SECTION 01820
DEMONSTRATION AND TRAINING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. This Section includes administrative and procedural requirements for instructing the College's personnel, including the following:

1. Demonstration of operation of systems, subsystems, and equipment.

2. Training in operation and maintenance of systems, subsystems, and equipment.

B. Related Sections include the following:

1. Division 1 Section "Project Management and Coordination" for requirements for pre-instruction conferences.

2. Division 1 Section "Operation and Maintenance Data" for submittal requirements for operation and maintenance manuals.

1.3 SUBMITTALS

A. Instruction Program: Submit 10 copies of outline of instructional program for demonstration and training, including a schedule of proposed dates, times, length of instruction time, and instructors' names for each training module. Include learning objective and outline for each training module.

1. Fifteen (15) days before training, submit operation and maintenance manuals as per Division 1 Section "Operation and Maintenance Data".

2. At completion of training, submit four (4) complete training manuals for the College's use.

B. Qualification Data: For firms and persons specified in "Quality Assurance" Article to demonstrate their capabilities and experience. Include lists of completed projects with project names and addresses, names and addresses of architects and owners, and other information specified.

C. Attendance Record: For each training module, submit list of participants and length of instruction time.

D. Evaluations: For each participant and for each training module, submit results and documentation of performance-based test.

E. Demonstration and Training Videotape: Submit 2 copies at end of each training module.
1.4 QUALITY ASSURANCE

A. Facilitator Qualifications: A firm or individual experienced in training or educating maintenance personnel in a training program similar in content and extent to that indicated for this Project, and whose work has resulted in training or education with a record of successful learning performance.

B. Instructor Qualifications: A factory-authorized service representative, complying with requirements in Division 1 Section "Quality Requirements," experienced in operation and maintenance procedures and training.

C. Pre-instruction Conference: Conduct conference at Project site to comply with requirements in Division 1 Section "Project Management and Coordination." Review methods and procedures related to demonstration and training including, but not limited to, the following:

1. Inspect and discuss locations and other facilities required for instruction.

2. Review and finalize instruction schedule and verify availability of educational materials, instructors' personnel, audiovisual equipment, and facilities needed to avoid delays.

3. Review required content of instruction.

4. For instruction that must occur outside, review weather and forecasted weather conditions and procedures to follow if conditions are unfavorable.

1.5 COORDINATION

A. Coordinate instruction schedule with the College's operations. Adjust schedule as required to minimize disrupting the College's operations.

B. Coordinate instructors, including providing notification of dates, times, length of instruction time, and course content.

C. Coordinate content of training modules with content of approved emergency, operation, and maintenance manuals. Do not submit instruction program until operation and maintenance data has been reviewed and approved by Architect.

PART 2 - PRODUCTS

2.1 INSTRUCTION PROGRAM

A. Program Structure: Develop an instruction program that includes individual training modules for each system and equipment not part of a system, as required by individual Specification Sections, and as follows:

1. Fire-protection systems, including fire alarm and fire-extinguishing systems.

2. Intrusion detection systems.
3. Conveying systems, including elevators and wheelchair lifts.
4. Heat generation, including pumps and water distribution piping.
5. Refrigeration systems, including pumps and distribution piping.
6. HVAC systems, including air-handling equipment, air distribution systems and terminal equipment and devices.
7. HVAC instrumentation and controls.
8. Electrical service and distribution, including transformers, switchboards, panel boards and motor controls.
9. Packaged engine generators, including transfer switches.
10. Lighting equipment and controls.

B. Training Modules: Develop a learning objective and teaching outline for each module. Include a description of specific skills and knowledge that participant is expected to master. For each module, include instruction for the following:

1. Basis of System Design, Operational Requirements, and Criteria: Include the following:
   a. System, subsystem, and equipment descriptions.
   b. Performance and design criteria if Contractor is delegated design responsibility.
   c. Operating standards.
   d. Regulatory requirements.
   e. Equipment function.
   f. Operating characteristics.
   g. Limiting conditions.
   h. Performance curves.

2. Documentation: Review the following items in detail:
   a. Emergency manuals.
   b. Operations manuals.
   c. Maintenance manuals.
   d. Project Record Documents.
   e. Identification systems.
   f. Warranties and bonds.
   g. Maintenance service agreements and similar continuing commitments.

3. Emergencies: Include the following, as applicable:
   a. Instructions on meaning of warnings, trouble indications, and error messages.
   b. Instructions on stopping.
   c. Shutdown instructions for each type of emergency.
   d. Operating instructions for conditions outside of normal operating limits.
   e. Sequences for electric or electronic systems.
   f. Special operating instructions and procedures.
4. Operations: Include the following, as applicable:
   a. Startup procedures.
   b. Equipment or system break-in procedures.
   c. Routine and normal operating instructions.
   d. Regulation and control procedures.
   e. Control sequences.
   f. Safety procedures.
   g. Instructions on stopping.
   h. Normal shutdown instructions.
   i. Operating procedures for emergencies.
   j. Operating procedures for system, subsystem, or equipment failure.
   k. Seasonal and weekend operating instructions.
   l. Required sequences for electric or electronic systems.
   m. Special operating instructions and procedures.

5. Adjustments: Include the following:
   a. Alignments.
   b. Checking adjustments.
   c. Noise and vibration adjustments.
   d. Economy and efficiency adjustments.

6. Troubleshooting: Include the following:
   a. Diagnostic instructions.
   b. Test and inspection procedures.

7. Maintenance: Include the following:
   a. Inspection procedures.
   b. Types of cleaning agents to be used and methods of cleaning.
   c. List of cleaning agents and methods of cleaning detrimental to product.
   d. Procedures for routine cleaning.
   e. Procedures for preventive maintenance.
   f. Procedures for routine maintenance.
   g. Instruction on use of special tools.

8. Repairs: Include the following:
   a. Diagnosis instructions.
   b. Repair instructions.
   c. Disassembly, component removal, repair, and replacement, and reassembly instructions.
   d. Instructions for identifying parts and components.
   e. Review of spare parts needed for operation and maintenance.

PART 3 - EXECUTION

3.1 PREPARATION

A. Submit final operation and maintenance manuals 15 days before instructing the College’s personnel.
B. Assemble educational materials necessary for instruction, including documentation and training module. Assemble training modules into a combined training manual.

C. Set up instructional equipment at instruction location.

3.2 INSTRUCTION

A. Facilitator: Engage a qualified facilitator to prepare instruction program and training modules, to coordinate instructors, and to coordinate between Contractor and College for number of participants, instruction times, and location.

B. Engage qualified instructors to instruct College's personnel to adjust, operate, and maintain systems, subsystems, and equipment not part of a system.

1. Architect will furnish an instructor to describe basis of system design, operational requirements, criteria, and regulatory requirements.

2. Trustee will furnish an instructor to describe College's operational philosophy.

3. Trustee will furnish Contractor with names and positions of participants.

C. Scheduling: Provide instruction at mutually agreed on times. For equipment that requires seasonal operation, provide similar instruction at start of each season.

1. Schedule training with College personnel through Construction Manager, with at least 14 days' advance written notice.

D. Evaluation: At conclusion of each training module, assess and document each participant's mastery of module by use of a demonstration performance-based test.

E. Demonstration and Training Videotape: Record each training module separately. Include classroom instructions and demonstrations, board diagrams, and other visual aids, but not student practice.

1. At beginning of each training module, record each chart containing learning objective and lesson outline.

F. Cleanup: Collect used and leftover educational materials and give to College. Remove instructional equipment. Restore systems and equipment to condition existing before initial training use.

END OF SECTION
SECTION 01890
EXISTING FACILITY RECONSTRUCTION

PART 1 - GENERAL

1.1 SUMMARY

A. This section specifies procedures and requirements for reconstruction of damaged existing improvements, including but not limited to:

1. Damaged existing utility lines including gas, water, sewer, electrical, telephone, low voltage electrical, cable TV, security, fire alarm and communications.

2. Damaged asphalt, concrete, paving.

3. Damaged concrete and masonry sidewalks, stairs, curbs, gutters, walls, planters, footings, vaults, driveways and slabs.

4. Damaged landscape, including all planting, trees, shrubs, lawn and groundcover.

5. Damaged irrigation system, including pipes, valves, sprinkler heads, controllers, control wires, control wire conduit, and sleeves.

6. Re-grading and compaction of all site areas back to existing elevations.

B. Refer to other Sections of the Specifications for specific requirements applicable to Existing Facility Reconstruction for Alteration or Modernization projects.

C. Requirements of this Section apply to Sections in Divisions 2 through 16.

1.2 RELATED SECTIONS

A. Section 01100 – Summary of Work

B. Section 01731 – Cutting and Patching

1.3 RECONSTRUCTION OF EXISTING FACILITIES

A. Alteration/Modernization projects require that the Contractor may need to damage, demolish, cut, or later existing facilities. The contractor is required to reconstruct the existing facilities.

B. Alteration/Modernization projects may result in Construction Equipment and Construction Vehicle damage to existing facilities. The Contractor is required to reconstruct the Vehicle and Equipment damage to existing facilities.

C. The Drawings and specifications are not intended to show in detail all existing utilities and existing facilities for the Contractor where existing utilities and facilities will require reconstruction. It is the responsibility of the Contractor to include in the Contract Price Allowances for the reconstruction of existing facilities. Reconstruction of existing facilities is part of the contract and is not considered additional work.
1.4 QUALITY ASSURANCE

A. Matching existing Construction: On Alteration/Modernization projects new materials are to match existing.

B. Determine type and quality of existing materials by inspection and testing. Existing facility materials shall be used as a standard of quality for reconstruction unless noted or specified otherwise.

PART 2 - PRODUCTS

A. Use reconstruction materials that are identical to existing materials. If identical materials are not available or cannot be used where exposed surfaces are involved, use materials that match existing adjacent surfaces to the fullest extent possible with regard to visual effect. Use materials whose installed performance will equal or surpass that of existing materials.

B. Where extensive damage is present to existing facilities and new materials cannot be obtained to match existing, replace item entirely with new materials approved in advance by College and Architect.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verify that all demolition and damage to existing facilities has been completed and areas are ready for reconstruction.

B. College, IOR, and Architect shall inspect reconstruction areas for extent of work required to be restored. Cracked or broken edges of concrete are not acceptable. Concrete and asphalt shall have unbroken edges with smooth saw cuts. Concrete sidewalk reconstruction shall begin at the nearest control or expansion joint. Small narrow broken or saw cut patches are not allowed.

3.2 PREPARATION

A. Clean areas where reconstruction will take place. Provide for smooth transition to existing improvements.

B. Remove debris and abandoned items from areas of reconstruction daily.

3.3 INSTALLATION

A. Coordinate work of all trades involved to expedite completion and to accommodate reconstruction of all damaged areas.

B. Protect existing improvements from further damage until project completion.

END OF SECTION
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. Salvageable Improvements: Carefully remove items indicated to be salvaged and store on Owner's premises where indicated.

C. Utility Locator Service: Notify utility locator service for area where Project is located before site clearing.

D. 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 erosion- and sedimentation-control Drawings and requirements of authorities having jurisdiction.

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:

SITE CLEARING
1. Notify Construction Manager not less than two days in advance of proposed utility interruptions.
2. Do not proceed with utility interruptions without Construction Manager'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.
   1. 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 away from edge of excavations without intermixing with subsoil. Grade and shape stockpiles to drain surface water. Cover to prevent windblown dust and erosion by water.

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. Drainage course for slabs-on-grade.
4. Base course for asphalt paving.
5. Excavating and backfilling for utility trenches.

1.2 QUALITY ASSURANCE

A. Standard Specifications: Comply with the Standard Specifications for Public Works Construction (SSPWC), latest edition and supplements for rock materials. The Standard Specifications apply onl 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 REFERENCES

A. This specification section has been prepared using the project soils report [“Report of Geotechnical Consultation Proposed Soccer Field Rio Hondo College”, by Amec, dated October 5, 2012, as a reference.

1.4 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 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. Drainage Course: Course supporting the slab-on-grade that also minimizes upward capillary flow of pore water.

G. 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.

H. Fill: Soil materials used to raise existing grades.

I. 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.

J. Subgrade: Surface or elevation remaining after completing excavation, or top surface of a fill or backfill immediately below base, drainage fill, or topsoil materials.

K. Unclassified Excavation: Removal and disposal of materials encountered regardless of nature of materials, including rock.

L. Utilities: On-site underground pipes, conduits, ducts, and cables, as well as underground services within buildings.

1.5 PROJECT CONDITIONS

A. Examine site, Drawings, records of existing utilities and construction, record of test borings, and subsurface exploration report available from Owner. Records of test borings are for information only and are not guaranteed to represent all conditions that will be encountered.

1.6 PROTECTION

A. Soils Consultant: A geotechnical consultant shall advise on Construction techniques involved in work, including design, checking and approving of temporary bracing, sheeting, shoring, underpinning and other items pertinent to work, and encountered during prosecution of work. Consultant shall be primarily concerned with construction methods, which will prevent settlement or damage to surrounding structures, sidewalks, embankments, utilities and roads on Owner's property and adjoining properties.

B. Existing Utilities:

   1. Maintain existing utilities that are to remain in service. Before excavating over or adjacent to existing utilities, notify utility Owner to ensure protective work will be
coordinated and performed in accordance with utility Owner’s requirements. If existing service lines, utilities and utility structures, which are to remain in service, are uncovered or encountered during these operations, safeguard and protect from damage.

2. Within limits of excavation, remove existing piping, subsoil drainage systems, conduit, manholes and relocated items, which are to be abandoned. Plug open ends of utilities to remain with concrete.

3. Re-route existing subsoil drains which obstruct work around new constructions, or incorporate them into new drainage systems.

4. Consult Architect immediately for directions, should uncharted or incorrectly charted piping or other utilities be encountered during excavation. Cooperate with Owner and public and private utility companies in keeping their respective services, utilities and facilities in operation. If damaged, repair utilities to satisfaction of Architect and utility Owner.

C. Existing Facilities: Protect and maintain in satisfactory manner, existing pavements, curbs, gutters, structures, conduits, fences, walls and other facilities to remain above and below grade. Restore facilities damaged by construction operations.

D. Pumping and Draining: Excavate areas in such manner as to afford adequate drainage. Control grading in vicinity of excavated areas so ground surface will slope to prevent water running into excavated areas. Until work is completed, remove water from areas of construction that may interfere with proper performance of work or that may result in damage to the soil sub-grade and provide sumps, pumps, well points, electric power and attendance required for this purpose on a 24 hour basis if necessary. Protect construction from water during construction, including prevention of erosion of completed work during construction and until permanent drainage and erosion controls are operational. Repair adjoining properties, facilities and streets damaged due to improper protection.

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’s geotechnical investigation report.

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.

G. Drainage Course: Narrowly graded mixture of washed, crushed stone, or crushed or uncrushed gravel; ASTM D 448; coarse-aggregate grading Size 57; with 100 percent passing a 1-1/2-inch sieve and 0 to 5 percent passing a No. 8 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. Color 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 bents, 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. Proof-roll subgrade with heavy pneumatic-tired equipment to identify soft pockets and areas of excess yielding. Do not proof-roll wet or saturated subgrades.

B. 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 2,500 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. 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.

D. Place and compact final backfill of satisfactory soil to final subgrade elevation.

E. 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 steps and ramps, use engineered fill.
4. Under building slabs, use engineered fill.
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:

1. Under structures, building slabs, steps, and pavements, scarify and recompack top 12 inches of existing subgrade and each layer of backfill or fill soil material to 95 percent.
2. Under walkways, scarify and recompack top 6 inches below subgrade and compact each layer of backfill or fill soil material to 90 percent.
3. Under lawn or unpaved areas, scarify and recompack top 6 inches below subgrade and compact each layer of backfill or fill soil material to 85 percent.
4. 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.

C. Grading inside Building Lines: Finish subgrade to a tolerance of 1/2 inch when tested with a 10-foot straightedge.
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 DRAINAGE COURSE

A. Place drainage course on subgrades free of mud, frost, snow, or ice.

B. On prepared subgrade, place and compact drainage course under cast-in-place concrete slabs-
   on-grade as follows:
   1. Place drainage course that exceeds 6 inches in compacted thickness in layers of equal
      thickness, with no compacted layer more than 6 inches thick or less than 3 inches thick.
   2. Compact each layer of drainage course to required cross sections and thicknesses to not
      less than 95 percent of maximum dry unit weight according to ASTM D 698.

3.16 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.
3.17 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.

3.18 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 02510 – WATER DISTRIBUTION

PART 1 - GENERAL

1.1 SUMMARY

A. Requirements: Provide water distribution system, complete, as indicated on the Drawings or inferable therefrom and/or as specified in accordance with the Contract Documents.

1.2 SUBMITTALS

A. Product Data: Submit copies of manufacturer’s specifications and installation instructions for each material. Include certification or other data verifying compliance with required characteristics. Indicate by transmittal form that copy of each has been distributed to the Installer.

B. Shop Drawings: Submit layout and shop drawings as required under Section Submittals. Include details of reinforced concrete structures.

C. Test Reports: Submit certified Test Reports showing compliance of the following items in accordance with Section General Conditions.

1. Laboratory test for bedding and trench stabilization materials.
2. Concrete design mix.
3. Compression tests.
4. Water Test Reports: Submit results of water sample tests by State or local health authorities

1.3 QUALITY ASSURANCE

A. Regulatory Requirements:

1. Comply with requirements of utility company supplying water. Include tapping of water mains and backflow prevention.
2. 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.
3. The Contractor shall have one copy of the Standard Specifications at the job site.
4. 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.

B. Piping materials shall bear label, stamp, or other markings of specified testing agency.

C. Comply with FM’s "Approval Guide" or UL’s "Fire Protection Equipment Directory" for fire-service-main products.
D. NFPA Compliance: Comply with NFPA 24 for materials, installations, tests, flushing, and valve and hydrant supervision for fire-service-main piping for fire suppression.

E. NSF Compliance:
   1. Comply with NSF 14 for plastic potable-water-service piping.
   2. Comply with NSF 61 for materials for water-service piping and specialties for domestic water.

1.4 PROJECT CONDITIONS

A. Existing Utilities: Do not interrupt utilities serving facilities occupied by Owner or others unless permitted under the following conditions and then only after arranging to provide temporary utility services according to requirements indicated:
   1. Notify Construction Manager not less than two days in advance of proposed utility interruptions.
   2. Do not proceed with utility interruptions without Construction Manager written permission.

1.5 DELIVERY, STORAGE, AND HANDLING;

A. Prevent damage to materials during loading, transportation, and unloading. Store equipment with moving parts off ground on platforms or skids.

1.6 COORDINATION

A. Coordinate connection to water main with utility company.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

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. Manufacturers: Subject to compliance with requirements, provide products by one of the manufacturers specified.
2.2 PIPE AND FITTINGS


2.3 VALVES

A. AWWA, UL/FM Cast-Iron, Gate Valves:

1. Nonrising-Stem, Resilient-Seated Gate Valves: AWWA C509 and UL/F.M. approved, gray- or ductile-iron body and bonnet; with bronze or gray- or ductile-iron gate, resilient seats, bronze stem, and stem nut.
   b. End Connections: Flanged, push-on rubber gasketed, or mechanical joint, as required.
   c. Interior Coating: Complying with AWWA C550.

2.4 GATE VALVE ACCESSORIES AND SPECIALTIES

A. Valve Boxes: Comply with AWWA M44 for cast-iron valve boxes. Include top section, adjustable extension of length required for depth of burial of valve, plug with lettering "WATER," bottom section with base of size to fit over valve, and approximately 5-inch diameter barrel. Fabricate valve box cover to fit snugly to prevent displacement by traffic.

1. Operating Wrenches: Steel tee-handle with one pointed end, stem of length to operate deepest buried valve, and socket matching valve operating nut.

B. Vertical-Type Indicator Posts: UL 789, FM-approved, cast-iron body with operating wrench, extension rod, and adjustable cast-iron barrel of length required for depth of burial of valve with tamperproof electrical supervisory switch for connection to the fire alarm control panel system.

2.5 VALVE APPLICATION

A. General Application: Use mechanical-joint-end valves for NPS 3 and larger underground installation. Use threaded- or flanged-end valves for installation in vaults. Use UL/FM, nonrising-stem gate valves for installation with indicator posts. Use corporation valves and curb valves with ends compatible with piping, for NPS 2 and smaller installation.

1. Where specific valve types are not indicated, the following requirements apply:

   b. Underground Valves, NPS 4 and Larger, for Vertical-Type Indicator Posts: UL/FM, Cast-iron, nonrising-stem gate valves with indicator post.
PART 3 - EXECUTION

3.1 INSPECTION

A. Examination: Examine substrates, adjoining construction and conditions under which Work is to be installed. Do not proceed with Work until unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Field Measurements: Verify dimensions before proceeding with Work. Obtain field measurements for work required to be accurately fitted to other construction. Be responsible for accuracy of such measurements and precise fitting and assembly of finished work.

3.3 JOINT CONSTRUCTION

A. Make pipe joints according to the following:

1. PVC Piping Gasketed Joints: Use joining materials according to AWWA C900. Construct joints with elastomeric seals and lubricant according to ASTM D 2774 or ASTM D 3139 and pipe manufacturer's written instructions.
2. Dissimilar Materials Piping Joints: Use adapters compatible with both piping materials, with OD, and with system working pressure.

3.4 PIPING INSTALLATION

A. Project site water lines shall terminate approximately 5 feet from buildings, unless otherwise indicated on Drawings. Install temporary cap or plug terminals for future connection to building.

B. Bury piping-with depth of cover over top at least 36 inches, unless otherwise indicated.

C. Comply with NFPA 24 for fire-service-main piping materials and installation.

D. Install PVC, AWWA pipe according to AWWA M23 and ASTM F 645.

E. Install underground piping with restrained joints at horizontal and vertical changes in direction. Use restrained-joint piping, thrust blocks, anchors, tie-rods and clamps, and other supports for all lines NPS 3 or greater.

F. Water Main Connection: Arrange and pay for tap in the water main, water meter, and all associated fees from the water purveyor.

3.5 CLEARANCE OF WATER LINE

A. Building or Structure: 2 feet minimum horizontal separation.
3.6 ANCHORAGE INSTALLATION

A. Install anchorages for tees, plugs and caps, bends, crosses, valves, and hydrant branches for all lines NPS 3 or greater. Include anchorages for the following piping systems:

2. Gasketed-Joint, PVC Water-Service Piping: According to AWWA M23.

3.7 VALVE INSTALLATION

A. Gate Valves: Comply with AWWA C600 and AWWA M44. Install each underground valve with stem pointing up and with valve box.

B. Vertical-Type Indicator Post Gate Valves: Comply with NFPA 24. Install each underground valve and valves in vaults with stem pointing up and with vertical cast-iron indicator post. Include tamperproof electrical supervisory switch for connection to tie the fire alarm control panel system.

3.8 IDENTIFICATION

A. Install continuous underground detectable warning tape during backfilling of trench for underground water-service piping. Locate below finished grade, directly over piping. Refer to Division 2 Section "Earthwork" for tape specifications.

3.9 FIELD QUALITY CONTROL

A. Piping Tests: Conduct piping tests before joints are covered and after thrust blocks have hardened sufficiently. Fill pipeline 24 hours before testing and apply test pressure to stabilize system. Use only potable water.

B. Hydrostatic Tests: The piping shall be subjected for a minimum of two hours to a pressure of one and one-half times the working pressure, but in no case less than 150 psi. Examine all exposed pipe, joints, fittings and accessories during the test period. Replace or repair defective portions of the system, and repeat tests until results are satisfactory.

1. Allowable leakage shall be as specified in AWWA C-600, Table 3.

C. Prepare reports of testing activities.

3.10 CLEANING

A. Clean and disinfect water-distribution piping as follows:

1. Purge new water-distribution piping systems and parts of existing systems that have been altered, extended, or repaired before use.
2. Use purging and disinfecting procedure prescribed by authorities having jurisdiction or, if method is not prescribed by authorities having jurisdiction, use procedure described in AWWA C651 or as described below:

a. Fill system or part of system with water/chlorine solution containing at least 50 ppm of chlorine; isolate and allow to stand for 24 hours, or
b. Drain system or part of system of previous solution and refill with water/chlorine solution containing at least 200 ppm of chlorine; isolate and allow to stand for 3 hours.

c. After standing time, flush system with clean, potable water until no chlorine remains in water coming from system.

d. Submit water samples in sterile bottles to authorities having jurisdiction. Repeat procedure if biological examination shows evidence of contamination.

B. Prepare reports of purging and disinfecting activities.

END OF SECTION 02510
SECTION 02622 – SYNTHETIC TURF DYNAMIC BASE SYSTEM

PART I – GENERAL

1.1 SUMMARY

A. Provisions of Division 01 apply to this section.

B. This information is to be used as a guideline in construction of a dynamic aggregate base and drainage system. Project conditions may vary based on overall scope of work and location. Any variations shall be approved by Architect and/or Engineer of Record prior to execution.

C. This section includes the following:
   1. Excavation
   2. Aggregate Base Course
   3. Drainage
   4. Testing

D. Related Sections:
   1. Section 02300: Earthwork.
   2. Section 02630: Storm Drainage.
   4. Section 02920: Synthetic Turf System.
   5. Section 03100: Concrete Forms and Accessories.
   6. Section 03200: Concrete Reinforcement.
   7. Section 03300: Cast-in-Place Concrete.

E. Scope Narrative - The work inclusive of this section is to be completed per the Contract Documents and is to include all labor, materials, equipment, supervision and all other incidentals necessary for a complete professional finished product. All local guidelines and applicable laws must be adhered to throughout the duration of the project. Remove and legally dispose of all unnecessary materials to achieve subgrade. Place aggregate, drainage and geotextile material as directed to achieve final grade. (Note: Geotechnical evaluation to be provided by Owner)

1.2 SUBMITTALS

A. Provide evidence of compliance with all requirements of Quality Assurance sub-section below.

B. Provide the following:
1. Complete list of products and materials with installation instructions, product data sheets.


3. Manufacturer’s product literature describing drainage layer and installation instructions.

4. Submit proof that installer is authorized/approved by the manufacturer to install their products.

C. The following submittals are required for approval prior to installation:

1. Permeable geotextile fabric product data and/or Non-Permeable Liner

2. Collector piping and accessories product data

3. Flat drain product data

4. Synthetic nailer board data

5. Collector drain backfill material sieve analysis

6. Aggregate base course sieve analysis

7. Aggregate finish course sieve analysis

1.03 QUALITY ASSURANCE

A. Synthetic Turf Dynamic Base installer shall be authorized by manufacturer to install all products

B. Installer shall have successfully completed at least 5 projects in the past 5 years, and have been in business of furnishing and installing systems of this type for at least 10 years.

C. The surface to receive the synthetic turf dynamic base system shall be inspected by the installer, and prior to the beginning of installation, the Installer must accept in writing the sub-base surface planarity and compaction. The surface must be perfectly clean as installation commences and shall be maintained in that condition throughout the process.

D. Drainage layer manufacturer’s representative shall provide a certificate of installation approval.

E. System Performance Characteristics;

1. Installed field shall meet the following criteria:

   a. Permeability: The system shall allow minimum percolation rate of 10 inches per hour.

F. Synthetic turf dynamic base system, including all components required for a complete installation, shall comply with the current versions of ASTM standards:

1. ASTM C136 Standard Test Method for Sieve Analysis of Fine and Coarse Ag-
gregates

2. ASTM D4716 Test Method for determining the (in-plane) Flow Rate per Unit Width and Hydraulic Transmissivity of a Geosynthetic Using a Constant Head at 0.50% slope and minimum head.

7. ASTM D4491 Standard Test Methods for Water Permeability of Geotextiles by Permittivity


11. ASTM F970 Modified Test Method for Static Load Limit


13. ASTM F355 For shock absorbing properties of playing surface systems and materials.

G. Drainage layer Installer shall employ a surveyor licensed by the State of California to provide verification of the final elevations of aggregate base and curbs. The survey submittal shall certify that final grades are in compliance with the Contract Documents and shall be made prior to commencement of installation of turf. The surface tolerance shall not exceed ¼ inch over 10 feet. Turf installer shall also sign survey accepting finish grades as being within tolerance for the manufacturer's warranty. Drainage layer Installer shall inspect and provide written certificate that compacted sub-grade is accepted prior to installing the drainage layer.

K. Drainage layer shall be installed under the supervision of both drainage system installer, synthetic turf installer, and manufacturer's representative.

L. Synthetic turf installer and manufacturer representative shall inspect and certify in writing that the drainage layer is acceptable prior to installation of the turf.

PART II – PRODUCTS

A. Geotextile Fabric:

1. Description – The proposed fabric must consist of woven long-chain polymeric yarns. The yarns must be fabricated of 95% propylene or ester polymers.

2. Acceptable Manufacturers

   a. Mirafi

   b. Amoco

   c. Approved equal
3. Required Test Criteria – The fabric must meet the following test parameters

<table>
<thead>
<tr>
<th>Description</th>
<th>Minimum Requirement</th>
<th>Unit of Measurement</th>
<th>Test Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grab Tensile Strength</td>
<td>315</td>
<td>lbs.</td>
<td>ASTM D-4632</td>
</tr>
<tr>
<td>Grab Tensile Elongation</td>
<td>15</td>
<td>percent (%)</td>
<td>ASTM D-4632</td>
</tr>
<tr>
<td>Trapezoid Tear Strength</td>
<td>120</td>
<td>lbs.</td>
<td>ASTM D-4533</td>
</tr>
<tr>
<td>Mullen Burst Strength</td>
<td>600</td>
<td>psi</td>
<td>ASTM D-3786</td>
</tr>
<tr>
<td>Puncture Strength</td>
<td>145</td>
<td>lbs.</td>
<td>ASTM D-4833</td>
</tr>
<tr>
<td>Percent Open Area</td>
<td>1</td>
<td>percent (%)</td>
<td>COE-02215-86</td>
</tr>
<tr>
<td>Apparent Opening Size</td>
<td>0.425</td>
<td>Mm</td>
<td>ASTM D-4751</td>
</tr>
<tr>
<td>Permittivity</td>
<td>0.05</td>
<td>sec-1</td>
<td>ASTM D-4491</td>
</tr>
<tr>
<td>Flow Rate</td>
<td>163</td>
<td>gal/min/ft2</td>
<td>ASTM D-4491</td>
</tr>
<tr>
<td>UV Resistance (at 500 hours)</td>
<td>70</td>
<td>% strength retained</td>
<td>ASTM D-4355</td>
</tr>
</tbody>
</table>

B. Non-Permeable Liner:

1. Description – The proposed material is a non-permeable plastic liner with sealed joints over the entire subgrade with a minimum 18" overlap and taped with manufacturers recommended tape or welded when applicable.

2. Acceptable Manufacturers
   a. In-Line Plastic
   b. Colorado Liner
   c. Approved equal

3. Required Test Criteria – The fabric must meet the following test parameters:

<table>
<thead>
<tr>
<th>Properties</th>
<th>Test Method</th>
<th>Average Roll Values</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Black</td>
</tr>
<tr>
<td>Color</td>
<td>ASTM D5199</td>
<td>12</td>
</tr>
<tr>
<td>Thickness, mils</td>
<td>ASTM D1505</td>
<td>.92</td>
</tr>
<tr>
<td>Density, gram/cm</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tensile Properties – Each Direction</td>
<td>ASTM D638</td>
<td>43 (7)</td>
</tr>
<tr>
<td>Tensile Strength at Break, lbs/in width (N/mm)</td>
<td>ASTM D638</td>
<td>850</td>
</tr>
<tr>
<td>Elongation at Break, %</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Río Hondo Community College  
Soccer Field  
Construction Documents  

Tear Resistance, lbs (N)  
ASTM D1004  
6 (26)  11 (49)  16 (71)  22 (98)  

Puncture Resistance, lbs (N)  
ASTM D4833  
18 (80)  31 (137)  46 (205)  62 (276)  

Carbon Black, %  
ASTM D1603  
2  2  2  

Carbon Black Dispersion  
ASTM D5596  
Note (1)  Note (1)  Note (1)  Note (1)  

Note 1: 9 of 10 views shall be category 1 or 2. Not more than 1 view from category  

This data is provided for informational purposes only. In-Line Plastics, LC makes no warranties as to the suitability or the fitness for a specific use or merchantability of products referred to, no guarantee of satisfactory results from reliance upon contained information or recommendations and disclaims all liability from resulting loss or damage. This information is subject to change without notice, please check with In-Line Plastics for current updates.  

C. Collector Piping  
1. Description – HDPE (High Density Polyethylene) corrugated piping. Perforated smooth wall tubular style and required fittings. Size requirements are to be indicated in Contract Documents. Pipe to meet ASTM D3350 and AASHTO M252.  

2. Acceptable Manufacturers  
   a. ADS N-12®  
   b. Hancor  
   c. Approved equal  

D. Flat Drain Piping  
1. Description – Perforated plastic core pipe with a 12 inch wide 1 inch tall profile. Flat drain to be wrapped in geotextile fabric.  

2. Acceptable Manufacturers  
   a. ADS – AdvanEDGE  
   b. J-DRain  
   c. Approved equal  

E. Trench Backfill Aggregate  
1. Description – Angular, washed, free draining stone with a uniform mixture as the base course layer of the dynamic base. Product specific native to region may be utilized in this application only.
F. Aggregate Base Course

1. Description – Angular, washed aggregate consisting of crushed stone that must be placed and compacted in a uniform manner. Rounded stone is not permitted for this application. Aggregate must be tested by an independent party prior to delivery to site and must meet and/or exceed the specifications as provided herein contingent upon stone availability in specified region. Please see Part III for correct application. Other products of similar consistency native to region of project may be considered and approved by Architect and/or Engineer of Record.

2. Design Criteria

   a. Sieve Analysis

      | Sieve Dimension | % Passing by Weight |
      |-----------------|---------------------|
      | 1.5"            | 100                 |
      | 1.0"            | 80-95               |
      | ¾"             | 60-80               |
      | ½"             | 35-65               |
      | #8              | 10-25               |
      | #30             | 5-18                |

   b. Permeability - > 50 in./hr.

   c. Sulfate Soundness (C-88) - < 12% loss

   d. LA Abrasion (ASTM C131) - < 40

   e. Compaction – 92 - 95% of maximum density as determined by ASTM D-1557

   f. Optimum moisture content - > 90%

G. Aggregate Finish Course

1. Description – Angular, unwashed aggregate consisting of crushed stone that must be placed and compacted in a uniform manner. Rounded stone is not permitted for this application. Depth of finished course not to exceed 2". Aggregate must be tested by an independent party prior to delivery to site and must meet and/or exceed the specifications as provided herein. Please see Part III for correct application. Other products of similar consistency native to region of project may be considered and approved by Architect and/or Engineer of Record.

2. Design Criteria

   a. Sieve Analysis

      | Sieve Dimension | % Passing by Weight |
      |-----------------|---------------------|
      | ¼"             | 75-100              |
      | #8             | 35-75               |
      | #16             | 10-55               |
      | #30             | 5-20                |
b. Permeability - > 12 in./hr.

c. Sulfate Soundness (C-88) - < 12% loss

d. LA Abrasion (ASTM C131) - < 40

e. Compaction – 92 - 95% of maximum density as determined by ASTM D-1557

f. Optimum moisture content - > 90%

PART III – EXECUTION

A. General – All activities are to be sequenced properly and completed in a timely fashion. All measures must be taken to ensure a safe jobsite per all applicable guidelines. All existing conditions and/or new work in place within the job limits must be maintained at all times. Any damage to said materials will be the sole responsibility of the site work contractor.

B. Excavation

1. Survey – Surveyor to establish grade and control points necessary to complete the scope of work. Maintain such markings throughout the duration of the project. (Note: This may be provided by Owner. Please reference Contract Documents for verification)

2. Identify and mark all underground utilities prior to commencement or work. Utilize the services of a utility locating company if available.

3. Track Bridging – If an existing track is in place, proper track bridging must be in place prior to removal.

4. Removal

a. Saw cut edge of existing track, if applicable, to achieve a uniform perimeter.

b. Remove soils to a depth as indicated in the Contract Documents and legally dispose of or spoils. Grade and shape subgrade to a 0.5% slope from the centerline of the field (longitudinal) to the proposed edge of the excavation. Subgrade must be free of all rocks, roots, debris, etc.

c. Any additional excavation, without the written direction of the Owner, will be the sole responsibility of this contractor. Do not proceed with additional excavation unless authorized. If additional excavation is approved, engineered fill will be required in place of unsuitable soils.

d. Any necessary dewatering will be the responsibility of this contractor.

e. If contaminated soils, or potentially contaminated soils, are exposed during the excavation, all work is to stop immediately and the condition is to be communicated to the Owner.
C. Laser Grading – Laser guided machinery will be required to achieve the subgrade elevation as indicated on the Contract Documents. Subgrade must be achieved by laser grading to a ½" tolerance over a twenty-five foot continuous span. The subgrade must be compacted to achieve 95% of the maximum density as determined by ASTM D 698. Subgrade must have the required planarity to mirror that of the finished aggregate.

D. Testing

1. This contractor will be required to conduct a proof roll of the subgrade prior to approval. This is to be witnessed by an independent soils engineer (by Owner) and the Architect. If an area is determined to be unsuitable, at the direction of the Owner, remove the unsuitable soil to a depth determined acceptable by the soils engineer. Engineered fill will be required in place of the unsuitable soil. Proof roll area again in the presence of the soils engineer and architect once engineered fill has been installed.

2. Proof Roll is required with a minimum thirteen cubic yard tandem axel dump truck with a process directed by the hired geotechnical engineer.

3. Soils Engineer is to test for compaction prior to proceeding.

E. Geotextile Fabric/Impermeable Liner

1. Geotextile fabric/ Liner must be delivered to site in manufacturer's wrapping and must stay wrapped until placement.

2. Do not commence installation unless subgrade has been approved

3. Geotextile fabric/ Liner must be overlapped per the manufacturer's recommendations.

4. If geotextile fabric/ Liner becomes damaged during installation, remove, replace and/or patch per manufacturer's recommendations.

5. Do not leave geotextile fabric/ Liner exposed to the elements for more time that is recommended by the approved manufacturer.

F. Drainage

1. Collector Drain

   a. Collector drains are to be minimum of 10 inches, or as indicated on the Contract Documents, determined by Engineer.

   b. Pipe to be installed at 0.5% minimum to allow for drainage. The width of the trench should be one foot more than the diameter of the pipe. Location of outlet structure must be determined prior to installation. The point closest to the outlet structure will be the low point of the pipe within the excavation perimeter.

   c. The trench for the collector drain must be lined independently with geotextile fabric and/ or non-permeable liner allowing on overlap from the field and in the direction of water flow.
d. Free draining stone must be placed and compacted properly around the collector pipe to the elevation of the subgrade according to manufacturer's recommendations.

e. All connections are to be made with the manufacturer's recommendations

f. Damaged or used drainage piping is not to be utilized and will be removed from site.

g. Photo documentation of this process will be required.

2. Flat Drain

a. Flat drains are to be placed flat at a 45 degree angle at 20' O.C. over geotextile fabric and/or non-permeable liner. This is a "herringbone" layout.

b. In order to protect the flat drains, cover with aggregate as soon as possible.

c. Flat Drains need to be fastened to Geotextile Fabric by means of 8" staples, or by Duct Tape every 5' on impermeable liner to prevent movement during aggregate placement, grading of aggregate.

d. Mechanical connection to collector drain is not required unless specified in contract documents. Flat drains must be placed adjacent to collector drain per detail.

G. Aggregate Base Course

1. Place only approved aggregate to a depth as indicated in the Contract Documents.

2. Do not drive equipment over geotextile fabric and/or non-permeable liner in place.

3. Do not stockpile material in a central location and move to perimeter. Material shall not be moved more than 50 feet from final location and shall be kept moist to prevent separation of aggregate. Failure to do so will result in a separation of the gradations and a general lack of uniformity in the base.

4. Laser guided machinery will be required to achieve the base course elevation as indicated on the Contract Documents. Laser grade to a 1/2" tolerance over a twenty five foot continuous span. A 0.5% slope from centerline of field to nailer must be maintained. The subgrade must be compacted to achieve 95% of the maximum density as determined by ASTM D 698. Base Course must have the required planarity to mirror that of the finish course.

5. Compaction is to be achieved by using a roller. Aggregate may be wetted during the compaction process if needed.

H. Aggregate Finish Course

1. Place only approved finish aggregate to a maximum depth of 2".
2. 93%-95% Compaction is to be achieved by using a roller. Aggregate shall be watered during the compaction process and kept wet during the installation of the finish course to prevent separation of the aggregate. The finished course shall be free of all impressions, roller marks, etc.

3. Laser grade to achieve the desired elevation to a tolerance of 1/4" over a 10' foot continuous span. Failure to achieve such requirements will result in re-grading the unacceptable areas of the base.

4. If contract documents require a licensed surveyor, solicit services as need to verify field elevations and planarity.

5. Prior to synthetic turf installation, the planarity of the finish course must be approved. Site contractor may leave no more than ½ yard of finish course aggregate for repairs. Unused material shall be removed by site contractor.

6. Finished base is under the responsibility of the site contractor until the turf installation commences.

END OF SECTION 02622
SECTION 02630 – STORM DRAINAGE

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes gravity-flow, nonpressure storm drainage pipe and drainage structures outside the building.

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 MANUFACTURERS

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 HUB-AND-SPIGOT, CAST-IRON SOIL PIPE AND FITTINGS

A. Pipe and Fittings: ASTM A 74, Service class.

B. Gaskets: ASTM C 564, rubber.

C. Calking Materials: ASTM B 29, pure lead and oakum or hemp fiber.

2.3 CORRUGATED HIGH DENSITY POLYETHYLENE (HDPE) HDPE PIPE AND FITTINGS

A. HDPE Drainage Pipe and Fittings, NPS 4 to NPS 10: AASHTO M252, Type S, with bell-and-spigot ends. Gasketed joints shall be soil-tight with ASTM F 477, elastomeric seals.
B. HDPE Drainage Pipe and Fittings, NPS 12 to NPS 60: AASHTO M294, Type S, or ASTM F2306 with bell-and-spigot ends. Gasketed joints shall be soil-tight with ASTM F 477, elastomeric seal.

2.4 PVC PIPE AND FITTINGS


2.5 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 Cast-Iron Soil Pipes: ASTM C 564, rubber.
2. For Plastic Pipes: ASTM F 477, elastomeric seal or ASTM D 5926, PVC.
3. For Dissimilar Pipes: ASTM D 5926, PVC or other material compatible with pipe materials being joined.

C. 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.

D. 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.

2.6 CLEANOUTS

A. PVC Cleanouts: PVC body with PVC threaded plug. Include PVC sewer pipe fitting and riser to cleanout of same material as sewer piping.

2.7 CONCRETE

A. General: Cast-in-place concrete according to ACI 318/318R, ACI 350R, and the following:

1. Cement: ASTM C 150, Type II.
B. Ballast and Pipe Supports: Portland cement design mix, 3,000-psi minimum, with 0.58 maximum water-cementitious materials ratio.
   2. Reinforcement Bars: ASTM A 615/A 615M, Grade 60, deformed steel.

2.8 CATCH BASINS

A. Standard Precast Concrete Catch Basins: ASTM C 478, precast, reinforced concrete, of depth indicated, with provision for sealant joints.
   1. Base Section: 6-inch minimum thickness for floor slab and 4-inch minimum thickness for walls and base riser section, and having separate base slab or base section with integral floor.
   2. Top Section: Eccentric-cone type unless flat-slab-top type is indicated.

B. Frames and Grates: ASTM A 536, Grade 60-40-18, ductile iron designed for A-16 (heavy traffic) structural loading unless otherwise indicated. Include 24-inch ID by 7- to 9-inch riser with 4-inch minimum width flange, and 26-inch- diameter flat grate with small square or short-slotted drainage openings.
   1. Grate Free Area: Approximately 50 percent, unless otherwise indicated.

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. 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 manholes for changes in direction if shown on plan, otherwise use fittings. Use fittings for branch connections unless direct tap into existing storm drain is indicated.

C. 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.

D. 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 hub-and-spigot, cast-iron soil piping according to CISPI's "Cast Iron Soil Pipe and Fittings Handbook."
   3. Install PVC sewer piping according to ASTM D 2321 and ASTM F 1668.

E. Clear interior of piping and manholes of dirt and superfluous material as work progresses.

3.3 PIPE JOINT CONSTRUCTION

A. Join gravity-flow, nonpressure drainage piping according to the following:
   3. Join PVC sewer piping according to ASTM D 2321 and ASTM D 3034 for elastomeric-gasket joints.
   4. Join dissimilar pipe materials with nonpressure-type flexible couplings.

3.4 CATCH BASIN INSTALLATION

A. Set frames and grates to elevations indicated.

3.5 CONNECTIONS

A. Connect nonpressure, gravity-flow drainage piping to building's storm building drains specified in Division 15 Section "Storm Drainage Piping."

B. Make connections to existing piping and underground manholes.
   1. Use commercially manufactured wye fittings for piping branch connections. Remove section of existing pipe; install wye fitting into existing piping; and encase entire wye fitting, plus 6-inch overlap, with not less than 6 inches of concrete with 28-day compressive strength of 3,250 psi.
3.6 FIELD QUALITY CONTROL

A. Test new piping systems, and parts of existing systems that have been altered, extended, or repaired, 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. Hydrostatic Tests: Test sanitary sewerage according to requirements of authorities having jurisdiction and the following:
   a. Allowable leakage is maximum of 50 gal./inch of nominal pipe size per mile of pipe, during 24-hour period.
   b. Close openings in system and fill with water.
   c. Purge air and refill with water.
   d. Disconnect water supply.
   e. Test and inspect joints for leaks.
6. Option: Test ductile-iron piping according to AWWA C600, "Hydrostatic Testing" Section. Use test pressure of at least 10 psig.
7. Air Tests: Test storm drainage according to requirements of authorities having jurisdiction, UNI-B-6, and the following:
   a. 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 02741 – HOT-MIX ASPHALT PAVING

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes hot-mix asphalt paving.

1.2 SUBMITTALS

A. Product Data: For each type of product indicated. Include technical data and tested physical and performance properties.

B. Job-Mix Designs: Certification, by authorities having jurisdiction, of approval of each job mix proposed for the Work.

C. Material certificates.

D. Log of placement of asphalt, including dates, times, temperature readings and other pertinent information.

1.3 QUALITY ASSURANCE

A. Manufacturer Qualifications: Manufacturer shall be registered with and approved by authorities having jurisdiction or the DOT of the state in which Project is located.

B. Standard Specifications: Comply with the Standard Specifications for Public Works Construction (SSPWC) and the California Department of Transportation (Caltrans), latest editions and supplements for asphalt paving work. These 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.

C. Asphalt-Paving Publication: Comply with AIMS-22, "Construction of Hot Mix Asphalt Pavements," unless more stringent requirements are indicated.

1.4 PROJECT CONDITIONS

A. Environmental Limitations: Do not apply asphalt materials if subgrade is wet or excessively damp or if the following conditions are not met:

1. Tack Coat: Minimum surface temperature of 60 deg F.
2. Asphalt Base Course: Minimum surface temperature of 40 deg F and rising at time of placement.
3. Asphalt Surface Course: Minimum surface temperature of 60 deg F at time of placement.

B. Pavement Marking Paint: Proceed with pavement marking only on clean, dry surfaces and at a minimum ambient or surface temperature of 40 deg F for oil-based materials, 50 deg F for water-based materials, and not exceeding 95 deg F.

PART 2 - PRODUCTS

2.1 AGGREGATES

A. Coarse Aggregate: Crushed rock conforming to SSPWC 400-4.2.3.

B. Fine Aggregate: Sand, rock dust, mineral filler, or a blend of these materials conforming to SSPWC Section 400-4.2.4. Mineral filler, if required, shall conform to SSPWC Section 203-6.2.3.

2.2 ASPHALT MATERIALS

A. Asphalt Binder: Paving asphalt, viscosity grade PG 64-10 conforming to Section 92 of the Caltrans Standard Specification.

B. Tack Coat: PG 64-10 conforming to Section 92 of the Caltrans Standard Specifications.

C. Mixes: Hot-Mix Asphalt: Dense, hot-laid, hot-mix asphalt plant mix III-C3 PG 64-10 designed in conformance with SSPWC Section 400-4.

2.3 AUXILIARY MATERIALS

A. Herbicide: Commercial chemical for weed control, registered by the EPA. Provide in granular, liquid, or wettable powder form.

B. Pavement Marking Paint: Latex, waterborne emulsion, lead and chromate free, ready mixed, complying with Caltrans Standard Specifications - Section 84 (Federal Specification No. TT-P-1952 for Blue, Red and Green paint; and State of California Standard Specification No. PTWB-01 for White, Yellow and Black paint) with drying time of less than 45 minutes.

1. Color: White

2. Dowels: Galvanized steel, 3/4-inch diameter, 24-inch minimum length.

PART 3 - EXECUTION

HOT-MIX ASPHALT PAVING
3.1 SURFACE PREPARATION

A. Proof-roll subbase using heavy, pneumatic-tired rollers to locate areas that are unstable or that require further compaction.

B. Immediately before placing asphalt materials, remove loose and deleterious material from substrate surfaces. Ensure that prepared subgrade is ready to receive paving.
   1. Sweep loose granular particles from surface of unbound-aggregate base course. Do not dislodge or disturb aggregate embedded in compacted surface of base course.

C. Herbicide Treatment: Apply herbicide according to manufacturer's recommended rates and written application instructions. Apply to dry, prepared subgrade or surface of compacted-aggregate base before applying paving materials.

D. Tack Coat: Apply uniformly to surfaces of existing pavement at a rate of 0.05 to 0.15 gal./sq. yd.
   1. Allow tack coat to cure undisturbed before applying hot-mix asphalt paving.
   2. Avoid smearing or staining adjoining surfaces, appurtenances, and surroundings. Remove spillages and clean affected surfaces.

3.2 HOT-MIX ASPHALT PLACING

A. Machine place hot-mix asphalt on prepared surface, spread uniformly, and strike off. Place asphalt mix by hand to areas inaccessible to equipment in a manner that prevents segregation of mix. Place each course to required grade, cross section, and thickness when compacted.
   1. Spread mix at minimum temperature of 250 deg F.
   2. Regulate paver machine speed to obtain smooth, continuous surface free of pulls and tears in asphalt-paving mat.

B. Place paving in consecutive strips not less than 10 feet wide unless infill edge strips of a lesser width are required.

C. Promptly correct surface irregularities in paving course behind paver. Use suitable hand tools to remove excess material forming high spots. Fill depressions with hot-mix asphalt to prevent segregation of mix; use suitable hand tools to smooth surface.

3.3 COMPACTION

A. General: Begin compaction as soon as placed hot-mix paving will bear roller weight without excessive displacement. Compact hot-mix paving with hot, hand tampers or vibratory-plate compactors in areas inaccessible to rollers.
   1. Complete compaction before mix temperature cools to 185 deg F.
B. Breakdown Rolling: Complete breakdown or initial rolling immediately after rolling joints and outside edge. Examine surface immediately after breakdown rolling for indicated crown, grade, and smoothness. Correct laydown and rolling operations to comply with requirements.

C. Intermediate Rolling: Begin intermediate rolling immediately after breakdown rolling while hot-mix asphalt is still hot enough to achieve specified density. Continue rolling until hot-mix asphalt course has been uniformly compacted to the following density:

1. Average Density: 92 percent of reference maximum theoretical density according to ASTM D 2041, but not less than 90 percent nor greater than 96 percent.

D. Finish Rolling: Finish roll paved surfaces to remove roller marks while hot-mix asphalt is still warm.

E. Protection: After final rolling, do not permit vehicular traffic on pavement until it has cooled and hardened.

F. Erect barricades to protect paving from traffic until mixture has cooled enough not to become marked.

3.4 INSTALLATION TOLERANCES

A. Thickness: Compact each course to produce the thickness indicated within the following tolerances:

1. Base Course: Plus or minus 1/2 inch.
2. Surface Course: Plus 1/4 inch (no minus).

B. Surface Smoothness: Compact each course to produce a surface smoothness within the following tolerances as determined by using a 10-foot straightedge applied transversely or longitudinally to paved areas:

1. Base Course: 1/4 inch
2. Surface Course: 1/8 inch
3. Crowned Surfaces: Test with crowned template centered and at right angle to crown. Maximum allowable variance from template is 1/4 inch.

3.5 PAVEMENT MARKING

A. Do not apply pavement-marking paint until layout, colors, and placement have been verified with Architect.

B. Allow paving to age for 30 days before starting pavement marking.

C. Sweep and clean surface to eliminate loose material and dust.
D. Apply paint with mechanical equipment to produce pavement markings, of dimensions indicated, with uniform, straight edges. Apply at manufacturer's recommended rates to provide a minimum wet film thickness of 15 mils.

3.6 FIELD QUALITY CONTROL

A. Testing Agency: Owner will engage a qualified independent testing and inspecting agency to perform field tests and inspections and to prepare test reports.

B. Additional testing and inspecting, at Contractor's expense, will be performed to determine compliance of replaced or additional work with specified requirements.

C. Remove and replace or install additional hot-mix asphalt where test results or measurements indicate that it does not comply with specified requirements.

3.7 DISPOSAL

A. Except for material indicated to be recycled, remove excavated materials from Project site and legally dispose of them in an EPA-approved landfill.

END OF SECTION 02741
SECTION 02751 – CEMENT CONCRETE PAVEMENT

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes exterior cement concrete pavement for the following:

1. Driveways and roadways.
2. Parking lots.
3. Curbs and gutters.
4. Walkways.

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. Concrete finishes along accessible routes of travel to be slip-resistant as that described as a medium salted finish for slopes of less than 1%, and

2.1 STEEL REINFORCEMENT

A. Plain-Steel Welded Wire Reinforcement: ASTM A 185, fabricated from as-drawn steel wire into flat sheets.
B. Reinforcing Bars: ASTM A 615/A 615M, Grade 60; deformed.

C. Bar Supports: Bolsters, chairs, spacers, and other devices for spacing, supporting, and fastening reinforcing bars, welded wire reinforcement, 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. Supplement with the following:
   a. Pozzolan: ASTM C618, Class F or N Fly Ash, 100 pounds maximum per cubic yard, containing one percent or less carbon. Fly ash shall not be used in excess of 15 percent by weight of total cement quantity.

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. Liquid Curing Compound: ASTM C309, fugitive dye dissipating type, complying with Rule II 13 of the South Coast Air Quality Management District and Federal Air Quality Regulation 40 CFR 52.254.

B. Moisture-Retaining Cover (Curing Sheet): ASTM C 171, non-staining polyethylene film or white burlap-polyethylene sheet.

C. Water: Potable.

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

2.4 RELATED MATERIALS


B. Slip-Resistive Aggregate Finish: Factory-graded, packaged, rustproof, nonglazing, abrasive aggregate of fused aluminum-oxide granules or crushed emery with emery aggregate containing not less than 50 percent aluminum oxide and not less than 20 percent ferric oxide; unaffected by freezing, moisture, and cleaning materials.

C. Pavement-Marking Paint: Latex, waterborne emulsion, lead and chromate free, ready mixed, complying with Caltrans Standard Specifications - Section 84 (Federal Specification No. TT-P-
1952 for Blue, Red and Green paint; and State of California Standard Specification No. PTWB-01 for White, Yellow and Black paint) with drying time of less than 45 minutes.

1. Color: White, Yellow, and Blue.

2.5 WHEEL STOPS

A. Wheel Stops: Precast, air-entrained concrete.

1. Dowels: Galvanized steel, 3/4-inch diameter, 18-inch minimum length.

2.6 CONCRETE MIXTURES

A. Prepare design mixtures, proportioned according to ACI 301, with the following properties:

1. Compressive Strength (28 Days): 2,500 psi
2. Maximum Water-Cementitious Materials Ratio at Point of Placement: 0.60
3. Slump Limit: 4 inches, plus or minus 1 inch.

2.7 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.

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 edgings 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.

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. Burlap Finish: Drag a seamless strip of damp burlap across float-finished concrete, perpendicular to line of traffic, to provide a uniform, gritty texture.
2. 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.
3. Medium-to-Coarse-Textured Broom Finish: Provide a coarse finish by striating float-finished concrete surface 1/16 to 1/8 inch deep with a stiff-bristled broom, perpendicular to line of traffic.

C. Slip-Resistant Aggregate Finish: Before final floating, spread slip-resistant aggregate finish on pavement surface according to manufacturer's written instructions.

1. Cure concrete with curing compound recommended by slip-resistant aggregate manufacturer. Apply curing compound immediately after final finishing.
2. After curing, lightly work surface with a steel wire brush or abrasive stone and water to expose nonslip aggregate.

3.7 CONCRETE PROTECTION AND CURING

A. General: Protect freshly placed concrete from premature drying and excessive cold or hot temperatures.

B. Comply with ACI 306.1 for cold-weather protection.

C. Evaporation Retarder: Apply evaporation retarder to concrete surfaces if hot, dry, or windy conditions cause moisture loss approaching 0.2 lb/sq. ft. x h before and during finishing operations. Apply according to manufacturer's written instructions after placing, screeding, and bull floating or darbying concrete, but before float finishing.

D. Begin curing after finishing concrete but not before free water has disappeared from concrete surface.

E. Curing Methods: Cure concrete by moisture curing, moisture-retaining-cover curing, curing compound or a combination of these methods.

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, unleveled straightedge not to exceed 1/4 inch.
4. Joint Spacing: 3 inches.
5. Contraction Joint Depth: Plus 1/4 inch no minus.
3.9  PAVEMENT MARKING
   A. Do not apply pavement-marking paint until layout, colors, and placement have been verified with Architect.
   B. Allow concrete pavement to cure for 28 days and be dry before starting pavement marking.
   C. Sweep and clean surface to eliminate loose material and dust.
   D. Apply paint with mechanical equipment to produce pavement markings of dimensions indicated with uniform, straight edges. Apply at manufacturer's recommended rates to provide a minimum wet film thickness of 15 mils.

3.10  WHEEL STOPS
   A. Securely attach wheel stops into pavement with not less than two galvanized steel dowels embedded in holes drilled or cast into wheel stops at one-quarter to one-third points. Firmly bond each dowel to wheel stop and to pavement. Securely install dowels into pavement and bond to wheel stop. Recess head of dowel 1 inch beneath top of wheel stop.

3.11  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 inspections.

END OF SECTION 02751
SECTION 02752 - PAVEMENT MARKING

PART 1 GENERAL

1.01 RELATED DOCUMENTS

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

1.02 SUMMARY

A. This Section includes pavement marking.

B. Related Sections include the following:
   1. Division 2 Section "Earthwork" for subgrade preparation, grading, and subbase course.
   2. Division 3 Section "Cast-in-Place Concrete" for general building applications of concrete.

1.03 SYSTEM DESCRIPTION

A. Indicate pavement markings as follows:
   1. Painted lines and markings on pavement shall be 3 inches minimum in width and blue in color equal to Color 15090 per Federal Standard 595B and CBC 1117B.5.8.1.1.
   2. Color “yellow” conforming to Federal Color No. 33538 as shown in Table IV of Standard No. 595B.

B. Parking spaces for disabled shall be marked according to figure CBC 11B-18A, 11B-18B, 11B-18C, and CBC 1129B.4(1).
   1. Detectable warnings at transit boarding platforms per CBC1133B.8.3.
   2. Detectable directional texture at boarding platforms per CBC 1133B.8.4.
   3. Detectable warnings at curb ramps per CBC 1127B.5(8).
   4. Detectable warnings at hazardous vehicular areas per CBC 1133B.8.5.

1.04 SUBMITTALS

A. Product Data: For each type of manufactured material and product indicated.

1.05 QUALITY ASSURANCE

A. Reference Standards:
   1. 2010 Building Standards Administrative Code, Part 1, CBSC.
6. 2010 California Energy Code, Part 6, CBSC.
7. 2010 California Historical Building Code, Part 8, CBSC.
9. 2010 California referenced Standards, Part 12 CBSC.
10. Title 8 C.C.R. Chapter 4, Sub-Ch. 6 – Elevator Safety Orders.
11. Title 19 C.C.R., Public Safety, SFM Regulations.
12. Americans with Disabilities Act (ADA), Title II or III.

1.06 PROJECT CONDITIONS

A. Traffic Control: Maintain access for vehicular and pedestrian traffic as required for other construction activities.

1.07 WARRANTY

A. Special Warranty: Manufacturer’s standard form in which manufacturer agrees to repair or replace pavement marking that fails in materials or workmanship within specified warranty period.
   1. Warranty Period: 1 year.

B. Installer’s Warranty: 1 year.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Pavement Markings: Subject to compliance with requirements, provide either the named product or an equal product by one of the other manufacturers specified.
   1. 506 Traffic Line Paint by Frazee. (Basis of Design)
   2. ICI.
   4. Or equal.

2.02 PAVEMENT MARKINGS

A. Pavement-Marking Paint: Alkyd-resin type, lead and chromate free, ready mixed, complying with FS TT-P-115, Type I or AASHTO M 248, Type N.
   1. Color: As indicated.
PART 3 EXECUTION

3.01 PAVEMENT MARKING

A. Do not apply pavement-marking paint until layout, colors, and placement have been verified with Architect.

B. Allow concrete pavement to cure for 28 days and be dry before starting pavement marking.

C. Sweep and clean surface to eliminate loose material and dust.

D. Apply paint with mechanical equipment to produce pavement markings of dimensions indicated with uniform, straight edges. Apply at manufacturer's recommended rates to provide a minimum wet film thickness of 15 mils.

3.02 SCHEDULE

A. 02752.A: PAVEMENT MARKING.

END OF SECTION 02752
SECTION 02753 - DETECTABLE WARNING SURFACES

PART 1 GENERAL

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

1.02 SUMMARY
   A. This Section includes exterior cement concrete pavement for the following:
      1. Raised truncated domes.
      2. Directional texture.
   B. Related Sections include the following:
      1. Division 2 Section "Cement Concrete Pavement" pavement.
      2. Division 2 Section "Pavement Joint Sealants" for joint sealants of joints in concrete
         pavement and at isolation joints of concrete pavement with adjacent construction.
      3. Division 2 Section "Pavement Marking" for pavement marking.
      4. Division 3 Section "Cast-in-Place Concrete" for general building applications of concrete.

1.03 SUBMITTALS
   A. Product Data: For each type of manufactured material and product indicated.
   B. Samples: 5 by 5 inch sample.
   C. Shop Drawings: Show fabrication details, composite structural system, joints, and material to be
      used as well as outlining installation materials and procedure.
   D. Qualification Data: For manufacturer.
   E. Material Test Reports: From a qualified testing agency indicating and interpreting test results
      for compliance requirements indicated, based on comprehensive testing of current materials.
   F. Minutes of pre-installation conference.

1.04 QUALITY ASSURANCE
   A. Reference Standards:
      1. 2010 Building Standards Administrative Code, Part 1, CBSC.
      2. 2010 California Building Code (CBC), Part 2, CBSC (2009 IBC & California
         Amendments).
         California Amendments).
         & California Amendments).
6. 2010 California Energy Code, Part 6, CBSC.
7. 2010 California Historical Building Code, Part 8, CBSC.
9. 2010 California referenced Standards, Part 12 CBSC.
10. Title 8 C.C.R. Chapter 4, Sub-Ch. 6 – Elevator Safety Orders.
11. Title 19 C.C.R., Public Safety, SFM Regulations.
12. Americans with Disabilities Act (ADA), Title II or III.

B. Mockups: Cast mockups of full-size sections of concrete pavement to demonstrate typical joints, surface finish, texture, color, and standard of workmanship.
1. Build mockups in the location and of the size indicated or, if not indicated, as directed by Architect.
2. Notify Architect seven days in advance of dates and times when mockups will be constructed.
4. Maintain approved mockups during construction in an undisturbed condition as a standard for judging the completed pavement.
5. Approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

C. Pre-installation Conference: Conduct conference at Project site to comply with requirements in Division 1 Section "Project Management and Coordination."

1.05 WARRANTY

A. Duration: 5 years. Such warranty shall indicate compliance with architectural standards as published in the current edition of the California Building Standards Code, and also include durability criteria which indicate that the shape, color fastness, confirmation, sound-on-cane acoustic quality, resilience, and attachment will not degrade significantly for specified years after initial installation.
1. As used in this bulletin, "not degrade significantly" means that the product maintains at least 90 percent of its approved design characteristics, as determined by the enforcing agency.

B. Installer's Warranty: 1 year.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Raised Truncated Domes: Subject to compliance with requirements, provide either the named product or an equal product by one of the other manufacturers specified.
1. Armor-Tile by Engineered Plastics Inc. (Basis of Design)
2. ADA Tactile Systems.
3. Or equal.
RAISED TRUNCATED DOMES

A. At contractor's option, provide either cast-in-place or surface applied system complying with following requirements:

1. Material: Vitrified Polymer Composite (VPC) tiles shall be an epoxy polymer composition with an ultra violet stabilized coating employing aluminum oxide particles in the truncated domes.

2. The tile shall incorporate an in-line dome pattern of truncated domes 0.2" in height, 0.9" diameter at the base, and 0.4" diameter at top of dome spaced 2.35" nominal as measured on a diagonal and 1.70" nominal as measured side by side. For wheelchair safety the field area shall consist of a non-slip surface with a minimum of 40 - 90° raised points 0.045" high, per square inch.

3. For wheelchair safety the field area shall consist of a non-slip surface with a minimum of 40 - 90° raised points 0.045" high, per square inch.

4. Length and Width: As indicated on Drawings.

5. Nominal Depth: 1.375 (1-3/8") +/- 5% max.

6. Face Thickness: 0.1875 (1-3/8") +/- 5% max.

7. Warpage of Edge: 0.5% max.

8. Embedment Flange Spacing: shall be no greater than 3.1"

9. Water Absorption of Tile when tested by ASTM D 570-98 not to exceed 0.05%.

10. Slip Resistance of Tile when tested by ASTM C 1028-96 the combined Wet and Dry Static Co-Efficients of Friction not to be less than 0.80 on top of domes and field area.

11. Compressive Strength of Tile when tested by ASTM D 695-02a not to be less than 28,000 psi.

12. Tensile Strength of Tile when tested by ASTM D 638-03 not to be less than 19,000 psi.

13. Flexural Strength of Tile when tested by ASTM D 790-03 not to be less than 25,000 psi.

14. Chemical Stain Resistance of Tile when tested by ASTM D 543-95 (re approved 2001) to withstand without discoloration or staining - 10% hydrochloric acid, urine, saturated calcium chloride, black stamp pad ink, chewing gum, red aerosol paint, 10% ammonium hydroxide, 1% soap solution, turpentine, Urea 5%, diesel fuel and motor oil.

15. Abrasive Wear of Tile when tested by BYK - Gardner Tester ASTM D 2486-00 with reciprocating linear motion of 37± cycles per minute over a 10" travel. The abrasive medium, a 40 grit Norton Metallite sand paper, to be fixed and leveled to a holder. The combined mass of the sled, weight and wood block is to be 3.2 lb. Average wear depth shall not exceed 0.060 after 1000 abrasion cycles when measured on the top surface of the dome representing the average of three measurement locations per sample.

16. Resistance to Wear of Unglazed Ceramic Tile by Taber Abrasion per ASTM C501-84 (re approved 2002) shall not be less than 500.

17. Fire Resistance of Tile when tested to ASTM E 84-05 flame spread shall be less than 15.

18. Gardner Impact to Geometry "GE" of the standard when tested by ASTM D 5420-04 to have a mean failure energy expressed as a function of specimen thickness of not less than 550 in. Ib/ft². A failure is noted when a crack is visible on either surface or when any brittle splitting is observed on the bottom plaque in the specimen.

19. Accelerated Weathering of Tile when tested by ASTM G 155-05a for 3000 hours shall exhibit the following result – ΔΕ < 4.5, as well as no deterioration, fading or chalking of surface of tile color No 33538

20. Accelerated Aging and Freeze Thaw Test of Tile and Adhesive System when tested to ASTM D 1037-99 shall show no evidence of cracking, delamination, warpage, checking, blistering, color change, loosening of tiles or other detrimental defects.

21. Salt and Spray Performance of Tile when tested to ASTM B 117-03 not to show any deterioration or other defects after 200 hours of exposure.

22. AASHTO H8-17 single wheel HS20-44 loading "Standard Specifications for Highways and Bridges". Tile shall be mounted on a concrete platform with a 1/2" airspace at the underside of the tile top plate then subjected to the specified maximum load of 10,400
lbs., corresponding to an 8000 lb individual wheel load and a 30% impact factor. The tile shall exhibit no visible damage at the maximum load of 10,400 lbs.

23. Embedment flange spacing shall be no greater than 3.1" center to center spacing as illustrated.

24. Accessories for surface applied system:
   a. Fasteners: Color matched, corrosion resistant, flat head drive anchor: 1/4" diameter x 1-3/4" long Armor-Drive.
   c. Sealants: Armor-Seal.

PART 3 EXECUTION

3.01 EXAMINATION

A. Examine exposed surfaces for compliance with requirements for dimensional, grading, and elevation tolerances.

B. Proceed with operations only after nonconforming conditions have been corrected and subgrade is ready to receive pavement.

3.02 INSTALLATION

A. Cast-In-Place System:
   1. During Cast-In-Place Detectable/Tactile Warning Surface Tile installation procedures, ensure adequate safety guidelines are in place and that they are in accordance with the applicable industry and government standards.
   2. Prior to placement of the Cast-In-Place Detectable/Tactile Warning Surface Tile system, review manufacturer and contract drawings with the Contractor prior to the construction and refer any and all discrepancies to Architect.
   3. The specifications of the structural embedment flange system and related materials shall be in strict accordance with the contract documents and the guidelines set by their respective manufacturers. Not recommended for asphalt applications.
   4. The physical characteristics of the concrete shall be consistent with the contract specifications while maintaining a slump range of 4 - 7 to permit solid placement of the Cast-In-Place Detectable/Tactile Warning Surface Tile system. An overly wet mix will cause the tile to float. Under these conditions, suitable weights such as 2 concrete blocks or sandbags (25 lb) shall be placed on each tile.
   5. The concrete pouring and finishing operations require typical mason’s tools, however, a 4’ long level with electronic slope readout, 25 lb. weights, and a large non-marring rubber mallet are specific to the installation of the Cast-In-Place Detectable/Tactile Warning Surface Tile system. A vibrating mechanism such as that manufactured by Vibco can be employed, if desired. The vibrating unit should be fixed to a soft base such as wood, at least 1 foot square.
   6. The factory-installed plastic sheeting must remain in place during the entire installation process to prevent the splashing of concrete onto the finished surface of the tile.
   7. When preparing to set the tile, it is important that no concrete be removed in the area to accept the tile. It is imperative that the installation technique eliminates any air voids under the tile. Holes in the tile perimeter allow air to escape during the installation process. Concrete will flow through the large holes in each embedment flange on the underside of the tile. This will lock the tile solidly into the cured concrete.
8. The concrete shall be poured and finished true and smooth to the required dimensions and slope prior to the tile placement. Immediately after finishing concrete, the electronic level should be used to check that the required slope is achieved. The tile shall be placed true and square to the curb edge in accordance with the contract drawings. The Cast-In-Place Detectable/Tactile Warning Surface Tiles shall be tamped (or vibrated) into the fresh concrete to ensure that the field level of the tile is flush to the adjacent concrete surface. The embedment process should not be accomplished by stepping on the tile as this may cause uneven setting which can result in air voids under the tile surface. The contract drawings indicate that the tile field level (base of truncated dome) is flush to adjacent surfaces to permit proper water drainage and eliminate tripping hazards between adjacent finishes.

9. In cold weather climates it is recommended that the Cast-In-Place Detectable/Tactile Warning Surface Tiles be set deeper such that the top of domes are level to the adjacent concrete on the top and sides of ramp and that the base of domes to allow water drainage. This installation will reduce the possibility of damage due to snow clearing operations.

10. Immediately after placement, the tile elevation is to be checked to adjacent concrete. The elevation and slope should be set consistent with contract drawings to permit water drainage to curb as the design dictates. Ensure that the field surface of the tile is flush with the surrounding concrete and back of curb so that no ponding is possible on the tile at the back side of curb.

11. While concrete is workable, a 3/8" radius edging tool shall be used to create a finished edge of concrete, then a steel trowel shall be used to finish the concrete around the tile's perimeter, flush to the field level of the tile.

12. During and after the tile installation and the concrete curing stage, it is imperative that there is no walking, leaning or external forces placed on the tile that may rock the tile causing a void between the underside of tile and concrete.

13. Following tile placement, review installation tolerances to contract drawings and adjust tile before the concrete sets. Two suitable weights of 25 lb each may be required to be placed on each tile as necessary to ensure solid contact of the underside of tile to concrete.

14. Following the concrete curing stage, protective plastic wrap is to be removed from the tile surface by cutting the plastic with a sharp knife, tight to the concrete/tile interface. If concrete bled under the plastic, a soft brass wire brush will clean the residue without damage to the tile surface.

15. If desired, individual tiles can be bolted together using 1/4 inch or equivalent hardware. This can help to ensure that adjacent tiles are flush to each other during the installation process. Tape or caulking can be placed on the underside of the bolted butt joint to ensure that concrete does not rise up between the tiles during installation. Any protective plastic wrap which was peeled back to facilitate bolting or cutting, should be replaced and taped to ensure that the tile surface remains free of concrete during the installation process.

16. Tiles can be cut to custom sizes, or to make a radius, using a continuous rim diamond blade in a circular saw or mini-grinder. Use of a straightedge to guide the cut is advisable where appropriate.

17. Any sound-amplifying plates on the underside of the tile, which are dislodged during handling or cutting, should be replaced and secured with construction adhesive. The air gap created between these plates and the bottom of the tile is important in preserving the sound on cane audible properties of the system as required in various jurisdictions.

B. Surface Applied System:

1. During all surface preparation and tile installation procedures, ensure adequate safety guidelines are in place and that they are in accordance with the applicable industry and government standards.
2. The application of all tile, adhesives, mechanical fasteners, and caulking shall be in strict accordance with the guidelines set by their respective manufacturers.

3. Ensure that the surfaces being prepared and fabricated to receive the tiles are constructed correctly and adequately for tile installation. Review design drawings with the Contractor prior to the construction and refer any and all discrepancies to the Architect.

4. Set the tile true and square to the curb ramp area as detailed in the design drawings, so that its location can be marked on the concrete surface. A thin permanent marker works well. Remove tile when done marking its location.

5. The surface to receive the detectable warning surface tile (not recommended for asphalt) is to be mechanically cleaned with a diamond cup grinder or shot blaster to remove any dirt or foreign material. This cleaning and roughening of the concrete surface should include at least 4 inches around the perimeter of the area to receive the tile, and also along the cross pattern established by the corresponding areas on the backside of the tile. Those same areas should then be cleaned with a rag soaked in Acetone.

6. Immediately prior to installing the detectable warning surface tile, the concrete surfaces must be inspected to ensure that they are clean, dry, free of voids, curing compounds, projections, loose material, dust, oil, grease, sealers and determined to be structurally sound and cured for a minimum of 30 days.

7. Using Acetone, wipe the backside of the tile around the perimeter and along the internal cross pattern, to remove any dirt or dust particles from the area to receive the adhesive.

8. Apply the adhesive on the backside of the tile, following the perimeter and internal cross pattern established by the tile manufacturer. Sufficient adhesive must be placed on the prescribed areas to have full coverage across the 2" width of the adhesive locator. A 3 x 4 foot tile will typically require an entire tube of adhesive.

9. Set the tile true and square to the curb ramp area as detailed in the design drawings.

10. Standing with both feet applying pressure around the molded recess provided in the tile, drill a hole true and straight to a depth of 3-1/2 inch using the recommended diameter bit. Drill through the tile without hammer option until the tile has been successfully penetrated, and then with hammer option to drill into the concrete.

11. Immediately after drilling each hole, and while still applying foot pressure, vacuum, brush or blow away dust and set the mechanical fastener as described below, before moving on to the next hole.

12. Mechanically fasten tiles to the concrete substrate using a hammer to set the fasteners. Ensure the fastener has been placed to full depth in the dome, straight, and flush to the top of dome. Drive the pin of the fastener with the hammer, taking care to avoid any inadvertent blows to the truncated dome or tile surface. A plastic deadblow or leather hammer is recommended.

13. Working in a sequence which will prevent buckles in the tile, proceed to drill and install all fasteners in the tile's molded recesses.

14. Following the installation of the tiles, the perimeter caulking sealant should be applied. Follow the perimeter caulking sealant manufacturer's recommendations when applying. Tape all perimeter edges of the tile and also tape the adjacent concrete back 1/2" from the tile's perimeter edge. Tool the perimeter caulking with a plastic applicator or spatula to create a straight edge in a cove profile between the tile and adjacent concrete. Remove tape immediately after tooling perimeter caulking sealant.

15. Do not allow foot traffic on installed tiles until the perimeter caulking sealant has cured sufficiently to avoid tracking.

3.03 SCHEDULE

A. 02753.A: RAISED TRUNCATED DOMES.

END OF SECTION 02753
SECTION 02785 – STABILIZED DECOMPOSED GRANITE

PART 1 GENERAL

1.01 SUMMARY

A. This Section Includes: All services, materials, labor, transportation, tools and equipment necessary to perform work indicated on Drawing including the installation of base material and header edging for construction with Decomposed granite paving with soil binding agent additive for the following items:

1. Stabilized decomposed granite surface

B. Related Documents: The Conditions of the Contract and Division 1 are part of this Section as fully as if repeated herein.

C. Related Sections:

1. 02300 Earthwork
2. 02950 Planting

PERFORMANCE REQUIREMENTS

A. Perform gradation of decomposed granite material or 3/8" minus or 1/4" minus crusher fines aggregate in accordance with ASTM C 136 – Method for Sieve Analysis for Fine and Course.

B. The edition of the specifications and standards referenced herein, published by the following organization, apply to the granular paving work only to the extent specified by the reference.

1.02 SUBMITTALS

A. Products and Data:

1. Decomposed Granite: Provide packaged sample equal to one half (1/2) pound of decomposed granite or crushed 3/8" minus or 1/4" minus for strength and color, include source of material with telephone number and address.

2. Aggregate Binder: Provide packaged samples equal to one half (1/2) pound, include source of material with telephone number and address as well as manufacturer's instructions for mixing and application.

1.03 PROJECT/SITE CONDITIONS
A. Field Measurements: Each bidder is required to visit the site of the Work to verify the existing conditions. No adjustments will be made to the Contract Sum for variations in the existing conditions.

1. Where surfacing is indicated to fit with other construction, verify dimensions of other construction by field measurements before proceeding with the work.

B. Environmental Limitations: Do not install decomposed granite or crushed 3/8" or 1/4" minus aggregate paving during rainy conditions or below 40 degrees Fahrenheit and falling.

1.04 QUALITY ASSURANCE

A. Installer Qualifications: Installer to provide evidence to indicate successful experience in providing stabilized decomposed granite aggregate paving.

1.05 FIELD MOCK-UP

A. Construct at earliest possible time and at approved location before proceeding with the work.

1. Prepare one (1) 10 feet by width of path, paving mock-up, complete with base coarse-if required, edging, and compacted as specified. Include adjustments, approved by the Owner’s Representative from reviews of the mock-up process. Coordinate work with conditions and material placement of other work and adjacent conditions.

2. The Mock-up shall be reviewed and approved by the Owner’s Representative prior to proceeding with the work. When necessary, remove and reconstruct the field sample until approved. Approved mock-up shall serve as the standard of acceptance for the paving work.

3. The approved mock-up may be incorporated into the final work. Demolish and remove non-approved mock-ups.

1.06 DELIVERY, STORAGE AND HANDLING

A. Do not expose materials to excessive moisture or other conditions that would adversely affect their serviceability.

1.07 WARRANTY

A. General Warranty: The special warranty specified in this Article shall not deprive the Owner of other rights the Owner may have under other provisions of the Contract Documents and shall be in addition to, and run concurrent with, other warranties made by the Contractor under requirements of the Contract Documents.

B. Special Warranty: Submit a written warranty executed by the installer agreeing to repair or replace components of stabilized surfacing that fail in materials or workmanship within the specified warranty period. Failures include, but are not limited to, the following:

1. Premature wear and tear provided the material is maintained in accordance with manufacturer’s written maintenance instructions.

2. Failure of system to meet performance requirements.
C. Warranty Period: Contractor shall provide warranty for performance of product. Contractor shall warranty installation of product for the time of one year from completion.

D. Contractor shall provide, for a period of sixty days, unconditional maintenance and repairs as required.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Pre blended decomposed granite and binder for crushed stone surfaces provided by the following Supplier:
   1. Decorative Stone Solutions, Inc.
      P.O. Box 662 Rancho Cucamonga, CA 991729-0662
      Phone: 1(800) 699-1878; Fax (909) 356-1449
      www.decorativestonesolutions.com
      email: info@decorativestonesolutions.com

2.2 MATERIALS

A. Binder: Organic, non-toxic, non-staining, odorless, environmentally safe powder which binds decomposed granite, crusher fines 3/8" minus or 1/4" minus aggregate.

B. Decomposed Granite: Crushed aggregate fines color shall be brown/gray and size shall be 3/8" as supplied by Decorative Stone Solutions, Inc. Material shall consist of inert materials that are hard and durable, with stone free from surface coatings and deleterious materials. Gradation recommendations shall be as follows unless otherwise specified.

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<th>U.S. Sieve No.</th>
<th>Percent Passing by</th>
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C. Sand: Equivalent shall be in the range of 35-55. The R-value shall be a minimum of 71. ASTM testing shall be used for the sand equivalent and R-value determination.

D. Decomposed Granite and Binder Compound: Decomposed Granite or 3/8" minus or 1/4" minus crushed aggregate screenings will be supplied to Contractor from a single source in a preblended ratio of 12 lbs of soil binding agent per 1-ton of Decomposed Granite.

STABILIZED DECOMPOSED GRANITE
E. Water, clean potable.

F. Imported Base Material if required: Class 2 base Crushed aggregate base consisting entirely of crushed rock and rock dust, uniformly graded.

G. Other Materials: Specify

2.3 EXCESS MATERIALS

A. Provide owner's authorized rep. With the following excess materials for use in future decomposed granite or 3/8" minus or 1/4" minus crushed aggregate paving repair: 40 to 50 lb. bags of the aggregate paving blended with proper amount of binder.

2.02 HEADER AND EDGING MATERIALS

A. Pressure treated lumber

B. Concrete edging

PART 3 EXECUTION

3.01 SURFACE CONDITIONS

A. Areas receiving paving materials shall be examined for correct and complete base preparation, compaction, grade, pitch, and drainage installation. To prevent path erosion in slope condition, path shall have drainage channel on upside of slope, so that runoff shall not cross path, to allow sufficient drainage runoff.

B. Prepared subgrade shall be proof rolled to check for unstable conditions and areas requiring additional compaction. The subgrade shall be compacted to a minimum 95% dry density. A compaction test shall be taken at questionable areas identified by the Owner's Representative. If native soil will not sufficiently compact, import Class 2 aggregate base to be wet.

C. Report unsatisfactory conditions to the Owner's Representative. Do not begin paving work until unsatisfactory conditions have been corrected and is ready to receive paving. Proceeding with the installation constitutes acceptance of existing conditions and responsibility for satisfactory performance.

D. Herbicide Treatment: Pre-emergence herbicide shall be recommended and applied by a licensed pest control service. Apply herbicide in strict compliance with manufacturer's recommended instructions, and local and state regulations. Apply to compacted, dry, subgrade prior to application of aggregate base course. Do not use weed control chemicals that may stain decomposed granite or surrounding surfaces.

3.02 PREPARATION

A. Pre-soak base material with water prior to installing stabilized Aggregate Paving material.

B. Install the specified header or edging material on peripheral edges of area to be paved not already adjacent to a solid surface.
3.03 PLACEMENT

A. Place the stabilized D.G. on the prepared sub grade, and rake smooth to desired grade and cross section. Place material to sufficient depth to allow approximately 1/4" of compaction for every 2" of loose D.G.

B. Depth of pathways – 3" for heavy foot traffic and light vehicles.

3.04 WATERING

A. Areas shall be thoroughly watered as to achieve moisture penetration to the full depth of the paving material. Water is the activation mechanism for binding agent. During water application test water penetration depths with a probing devise. Take care to not underwater, it is not possible to over-water this product, it will however extend the set up time before compaction can take place.

3.05 COMPACTION

A. Upon thorough moisture penetrations do not begin compaction for at least 6 hours and up to 48 hours after placement or until such time that the paving material is able to accept 85% relative compaction from a 1 to 5 ton roller/compactor without separation, plowing or any other physical compromise of the paving material. Compact the material with compactor as specified above making 3 to 4 passes. Avoid a vibratory plate compactor when possible, however tight spaces may mandate the use of a small handheld unit.

B. Take care in compacting decomposed granite or crushed 3/8" or 1/4" minus aggregate screenings when adjacent to planting and irrigation systems. Hand tamping with 8" or 10" hand tamp recommended.

C. Header and Edging Tolerances to Path:
   1. Elevation: 1/4 inch.
   2. Surface Gap: Minus 1/4 inch.

3.06 INSPECTION

A. Finished surface of entire pathway shall be smooth, uniform and solid, free of ruts, dips and roller marks with surface of path crowned to allow sufficient water run-off due to irrigation, weather or undue water application. There shall be no evidence of chipping or cracking. Cured and compacted pathway shall be firm throughout profile with no spongy areas. Loose material shall not be present on the surface. Any significant irregularities in path surface shall be repaired to the uniformity of entire installation.

B. At the end of the day, the installation shall terminate at a paving edge or other transition. No material shall be deposited on paving which has hardened sufficiently to cause the formation of seams, planes, weakness within the section, or visible lines in the finished surface.
C. Protect the entire area from foot or vehicular traffic until fully dried. Protect the area from contamination or damage by other work in progress.

3.07 MAINTENANCE

A. Remove debris, such as paper, grass clippings, leaves or other organic material by mechanically blowing or hand raking the surface as needed.

B. During the first year, a minor amount of loose aggregate will appear on the paving surface. If this material exceeds a 1/4", redistribute the material over the entire surface. Water thoroughly to the depth of 1". Compact with power roller of no less than 1000 lbs. Repeat process as needed.

C. If cracking occurs, simply sweep fines into the cracks, water thoroughly and hand tamp with an 8" – 10" hand tamp plate.

3.08 REPAIRS

A. Excavate damaged area to the depth of the stabilized aggregate and square off sidewalks.

B. If area is dry, moisten damaged portion lightly.

C. Pre-bend the dry required amount of soil binding agent with the proper amount of aggregate in a concrete mixer.

D. Add water to the blended mix. Thoroughly moisten mix with 25 to 45 gallons per 1-ton of pre-blended material or to approximately 10% moisture content.

E. Apply moistened pre-blended aggregate to excavated area to finish grade.

F. Compact with an 8" to 10" hand tamp or 250 to 300 pound roller. Keep traffic off areas for 12 to 48 hours after repair has been completed.

END OF SECTION
SECTION 02794 - SYNTHETIC RUNNING TRACK SURFACE

PART 1 - GENERAL

1.01 SUMMARY

A. Provisions of Division 01 apply to this section.
B. Contract work to be performed under this section consist of furnishing all required labor, materials, equipment, implements, parts and supplies necessary for the installation of running track and specified field events surfacing in accordance with these specifications.
C. Surface is to be a polyurethane bound impermeable sandwich running track surface with an embedded broadcast EPDM rubber finish. Total thickness of finished product shall be an average of 14mm (1/2") in thickness.
D. Related Sections:
   1. Section 02300: Earthwork.
   2. Section 02630: Storm Drainage.
   4. Section 02920: Synthetic Turf System.
   5. Section 03100: Concrete Forms and Accessories.
   6. Section 03200: Concrete Reinforcement.
   7. Section 03300: Cast-in-Place Concrete.

1.02 SUBMITTALS

A. Material Sample: Submit three (3) 12" by 12" samples of the synthetic track system.
B. Submit Manufacturers' and Installers' product data, installation instructions and maintenance recommendations.
C. Submit striping diagrams and calculations per Section 3.03.
D. Submit MSDS sheets for all products used.
E. Submit proof that installer is authorized by the manufacture to install their products.
1.03 QUALITY ASSURANCE

A. The work hereunder shall be done in a thorough, workmanlike manner and conform to standards for running track construction.

B. Follow manufacturer's recommendations for preparation and installation, unless otherwise indicated.

C. Provide components of the synthetic track system by a single source manufacturer.

D. Polyurethane used shall be from an approved manufacturer listed in 2.01 of this specification. Polyurethane materials used must be ISO 9001 certified.

D. Track surface shall be applied by a licensed contractor, which has successfully installed polyurethane material included in the specification for the past three (3) years.

E. All chemically based products must be approved by Owner's Office of Environmental Health and Safety (OEHS).

1.04 WARRANTY

A. Provide manufactures and installers written warranties that track shall be free from defects in materials and installations for a period of five (5) years.

PART 2 - PRODUCTS

2.01 APPROVED MANUFACTURERS

A. TUFLITE as manufactured by United Sports Systems

B. BEYNON track surface

C. Manufacturer determined as equal

2.02 PRODUCTS AND MATERIAL DESCRIPTION

A. Running Track Surface: Synthetic rubber surface shall consist of Carboxylated Styrene Butadiene Rubber (SBR) Binder and synthetic elastomeric granules. Surface thickness shall be 1/2" (one half inch) for track oval, chute and field event areas.

1. Application of the synthetic rubber surface shall consist of base preparation for adhesion, installation of surface base mat and injection spray coating of the surface.

2. Synthetic rubber surface shall consist of a 50:50 component ratio by weight of Carboxylated Styrene Butadiene rubber Binder and synthetic elastomeric granules. Solid content of Carboxylated Styrene Butadiene Rubber Binder shall be 50% and at no time shall binder be thinned prior to mixture or application.

3. All rubber granules shall be EPDM rubber, unless otherwise specified and approved, in
writing, by the Manufacturer.

4. The completed surface shall exhibit the specified surface thickness while remaining porous in composition. The cured surface shall provide strength, weather resistance and proper frictional characteristics consistent with conditions required for running.

5. Athletic track and field event surfaces shall adhere strongly to the base foundation without the use of extraneous adhesives.

6. Finished surfaces shall have integral color and consist of a specially compounded color throughout the surface. Color shall be Red, Blue or custom color as selected by District.

B. Materials

1. Carboxylated Styrene Butadiene Rubber Binder shall be manufactured in strict accordance with the written guidelines of the Manufacturer.

2. Carboxylated Styrene Butadiene Rubber Binder shall contain specific additives for ultraviolet, ozone, and oxygen resistance.

3. At no time shall the binder material that is installed contain less than 50% solids.

4. Minimum dry elongation of binder shall be 438%.

5. No acrylic binder shall be used.

6. At no time shall water be added to the binder.

7. Synthetic elastomeric granules shall be ground rubber, free of all foreign matter. Granules in all layers (except black in color) shall be ground EPDM rubber. Particle size shall be 1-3mm throughout the surface, in accordance with the written guidelines of the Manufacturer.

8. NOTE: At no time shall Rubber Buffings or Stranded Type Rubber be used.

9. Pigment Color shall be of an industrial, non-fading, free-flowing liquid type mixed in strict accordance with the written guidelines of United Sport Systems™ LLC of Wichita, Kansas. Pigment Color shall contain specific additives for resistance to fading caused by sunlight.

10. Synthetic rubber surfacing shall contain No Asphalt products of any kind.

11. Finish surface shall be stable, firm, and slip resistant per CBC 1124B.1.

C. Adhesion Preparation

1. Installed base shall be thoroughly cleaned by use of power blower and sweepers. This process shall remove all debris and foreign particles.

2. Installed base shall be primer coated with Carboxylated Styrene Butadiene Rubber Binder. Purpose-built spray equipment shall be utilized (as designed and built by the Manufacturer) in order to apply a complete spray coat of Carboxylated Styrene Butadiene Rubber Binder.

3. This spray coating shall be allowed to fully dry.
PART 3 - EXECUTION

3.01 INSTALLATION

A. Surface Installation

1. Install systems in accordance with manufacturer's recommendations.

2. Beginning installation stipulates that the track installer "accepts" existing conditions. Adhesion to existing asphalt is surfacing contractor's responsibility.

3. Entire surface shall be clean and free of dirt, oil, grease or any other matter upon arrival of installation team. Any dirt, etc. shall be pressure washed off base by general contractor.

4. The surface shall be coated with Carboxylated Styrene Butadiene Rubber Binder. This coating shall be wet at the time of TUFLITE™ synthetic rubber surface application.

5. Synthetic rubber granules and Carboxylated Styrene Butadiene Rubber Binder shall be mixed in specified quantities utilizing a mechanical mixer such that all granules are fully encapsulated in binder.

6. BINDER MUST BE MIXED WTH GRANULES SUCH THAT GRANULES ARE FULLY ENCAPSULATED PRIOR TO APPLYING THE MIXTURE TO THE SURFACE. Rubber shall not be placed on surface dry with binder added later through spray applications.

7. The surface mixture shall be applied by screed spreading with a rake in uniform lines. The mixture shall then be troweled perpendicular to the rake lines.

8. Surface installation shall be applied in two separate layers. Each layer shall contain equal amounts of both binder and rubber by weight.

B. Injection Spray Coating

1. Only purpose-built spray equipment (as designed and built by United Sport Systems™ LLC, Wichita, Kansas) shall be utilized for the injection spray coating.

2. Surface spray coating shall be pressure injected at 1,000 (one thousand) PSI with pigment colored Carboxylated Styrene Butadiene Binder.

3. The injection spray coating process shall be completed in a minimum of three applications.

3.02 SITE CONDITIONS

A. Weather: Surfacing shall not be done when threat of freezing exists for following 24 hours, areas to be surfaced are damp, or rain is imminent. Surface Pressure Injections shall be completed in clear weather, no rain imminent and local winds reported at five miles per hour.
or less.

B. Site: While surfacing and striping are being done, sprinkler systems must be curtailed, shut off, or controlled so that no water falls on track or event area surfaces. Other trades, School District personnel must stay off wet or curing surfaces.

C. Do not apply rubberized topping when base surface temperature is less than 50 degrees F.

D. Provide temporary barriers as required to prevent public entry to construction area and to protect adjacent properties from damage during construction operation.

E. Keep all construction personnel, other than employees of track installer, 100 feet from equipment and workers.

3.03 STRIPING AND RACE MONUMENTS

A. Contractor shall consult with owner prior to start of his calculations for determination of finish line location, events to be run, location of lane numbers and additional paint markings. After this meeting a scaled striping diagram shall be submitted.

B. An experienced track-striping specialist with at least 5 years experience.

C. Paint to be used is Metalatex Semi Gloss acrylic paint manufactured by Sherwin Williams or equal paint, which is California VOC compliant and compatible with track surfacing material.

D. A scaled drawing showing all markings on track shall be provided to owner as part of closeout documents.

3.04 PROTECTION OF SURFACING

A. Protect from exposure to weather and mechanical damage during installation and curing.

B. Protect the Work of this section until Substantial Completion.

3.05 CLEAN UP

A. Remove rubbish, debris, and waste materials and legally dispose of off the Project site.

3.06 PROJECT CLOSE-OUT

A. Track installer shall meet with Rio Hondo Community College staff after installation and provide instructions on maintaining the track. Instructions shall include type of equipment, cleaning materials and frequency of method and materials shall be addressed at this session. Other specific concerns shall be addressed as well such as moving equipment across the track, and cleated foot traffic. Include instructions on managing the wear on lane #1 and #2. All recommendations shall be followed by written instructions.

END OF SECTION
SECTION 02810 - IRRIGATION

PART 1 - GENERAL

1.1 SUMMARY

A. Provide all labor, materials equipment, tools, services and miscellaneous and incidental work to complete all irrigation as indicated on the Drawings and as specified.

B. Remove and modify existing system; install new system.

C. Related Work Specified Elsewhere:
   1. Planting - Section 02950.
   2. Landscape Maintenance - Section 02952.

1.2 QUALITY ASSURANCE

A. Perform work in accord with requirements of applicable Plumbing Code.

1.3 SUBMITTALS

A. Make submittals per Section 01300.

B. Record Drawings (As-Builts): The Contractor shall provide and keep up to date in accordance with section "Project Records" a complete set of record "as-built" Bond prints which shall be corrected daily and show every change from the original drawings and specifications and the exact "as-built" locations, sizes and types of equipment. Prints for this purpose may be obtained from the Owner. This set of drawings shall be kept on the site and shall be used only as a record set. These drawings shall also serve as work in progress sheets and the Contractor shall make neat and legible notations therein daily, as work proceeds, showing the work as actually installed. These drawings shall be available at all times for inspection and shall be kept in a location designated by the Landscape Architect.

2. The Contractor shall dimension from two (2) permanent points of reference, building corners, sidewalk or road intersections, etc. the location of the following items:

   a) Gate valves
   b) The routing of the sprinkler system main lines.
   c) Corrections to the existing water lines.
   d) The routing of the control wires.
   e) Sprinkler control valves.
   f) Quick coupler valves.
   g) Backflow device

C. Submit controller chart diagram for Owner’s Representative reviews, prior to making photocopy reduction. See Section 3.11.C

D. List of materials:
   1. See Section 01340 for procedure.
   2. Quantities of materials and equipment need not be included.
3. Deviations from the specifications will not be allowed unless substitutions have been requested in accordance with Section 01640A.

4. The Owner's Representative's decision shall be final in determining the equivalency of materials, equipment and method.

E. Instruction: During the specified Maintenance period, instruct the Owner's designated personnel on the use and adjustment of the automatic sprinkler controller.

F. Service Manuals: Furnish three (3) sets of service manuals to the Owner, in loose leaf binders containing complete catalog numbers and price lists, with manufacturer's names, addresses and phone numbers.

G. Furnish the Owner with three (3) full nozzle sets for each type of sprinkler installed.

1.4 DELIVERY, STORAGE AND HANDLING

A. Plastic Pipe: Handle pipe and fittings carefully. Store under cover to avoid damage. Beds on which pipe is transported and stored shall be full length of pipe to avoid damage. Do not install damaged, dented pipe.

1.5 JOB CONDITIONS

A. Examine site: Before starting work carefully examine the site and existing mechanical, electrical, paving and other similar conditions which may conflict or be within the area of work. Install the work coordinated with existing conditions, making necessary minor changes, without extra cost to the Owner.

B. Scaled dimensions are approximate. Before proceeding with work carefully check and verify all locations.

C. Before excavating for sprinkler lines, locate all underground utility lines to avoid damage to those utilities. Notify the Owner's Representative promptly upon discovery of unknown lines for proper identification and disposition.

D. Spacing of sprinkler heads, location of valves and quick couplers shall be indicated on the drawings. Coordinate the layout of the sprinkler system with the layout of the planting and paving, and fully carry out the intent of the design.

E. Pipe lines, unless dimensioned, may be located in the most reasonable and practicable alignment. Accurately locate on record drawings. Sprinkler heads and valves may be shifted slightly where necessary to avoid obstructions. Owner's Representative's acceptance of deviations from the Drawings shall be obtained prior to installation. Accurately locate such deviations on the record drawings.

F. If errors, conflicts and ambiguities between drawings and specifications or between drawings or specifications and actual field conditions are discovered, immediately notify the Owner's Representative. Do not proceed with the affected portions of the work until the Owner's Representative has provided further instructions.

G. Do not backfill trenches until the work has been reviewed and accepted by Owner's Representative.

1.6 GUARANTEE
A. In addition to manufacturers' specific warranties, warrant the entire irrigation system for a period of one year from date of notice of completion.

1. Should trouble develop within the year due to poor work or defective material, promptly make corrections at the Contractor's expense.

2. At Contractor's expense, promptly repair all damage to paving, planting and other components that are due to settlement of improperly compacted trench soil.

PART 2 - PRODUCTS

2.1 MATERIALS

A. New, of the best grade of each respective and unless otherwise specified.

B. Copper Pipe and Fittings:

1. Copper pipe shall be type "K", hard tempered ASTM B88 and fittings shall be wrought solder joint type in accordance with American Standards Association (ASA) B16 22.

2. Joints shall be soldered with silver solder, 45% silver, 15% copper, 16% zinc, 24% cadmium and solidus at 1125° F. and liquidus at 1145° F., conforming to specifications ASTM B206-52T and Federal QQB 00655.

C. All Lateral and Mainline Piping:

Mainline less than 3" - Schedule 40 PVC
Mainline over 3" - CL 315 PVC
Lateral line - Schedule 40 PVC

D. Plastic Pipe Fittings:

a. Solvent weld pipe extruded of an improved P.V.C. virgin pipe compound featuring high impact strength. Conform to ASTM D1784 or D2241 to meet the requirements of cell classification 12454B for pipe. Compound shall have a 2,000 P.S.I. hydrostatic design stress rating.

Type: Pacific Plastics or approved equal.

b. Rubber gasket P.V.C. pipe: Conform to ASTM D1784 Type I, Grade I, 2,000 P.S.I. design stress. Standard dimensional ratio for pipe shall be SDR 21 (Class 200). All pipe shall conform to commercial standards CS64 (pressure rated pipe), and National Sanitation Foundation (NSF) testing laboratories. Rubber gaskets shall conform to ASTM 1869.

Type: Pacific Plastics or approved equal.

c. All pipe and fittings shall bear the following markings: Manufacturer's name, nominal pipe size, schedule or class, pressure rating P.S.I., NSF, and date of extrusion.

d. Make solvent cement joints for plastic pipe and fittings as prescribed by the manufacturer.
e. All mainline P.V.C. fittings shall be Schedule 80 P.V.C., all other P.V.C. fittings shall be schedule 40 P.V.C.

f. All fittings: Injection molded of an approved P.V.C. fitting compound featuring high tensile strength, high chemical resistance, and high impact strength. Fittings shall conform to ASTM D1784, and meet the requirements of cell classification 12454B. Where threads are required in plastic fittings, these shall be injection molded also.

Type: Dura Plastic Products, or approved equal.

g. Rubber Gasket Fittings: Fittings shall be ductile iron deep bell type. Fittings shall be constructed of grade 65-45-12 ductile iron in accordance with ASTM A-536. Fitting gaskets shall be rubber in accordance with ASTM F-477. All ductile iron fittings shall be manufactured with exterior lugs and be fitted with a joint restraint system.

Type: Fittings: Leemco ductile iron slant bell or approved equal.

Leemco Joint Restraint System or approved equal.

h. All threaded nipples: Standard weight Schedule 80, with molded threads.

i. All threaded fittings: Use 3/4-inch size Teflon tape.

j. Reclaimed water pipe: Pipe shall be extruded of an improved P.V.C. virgin pipe compound featuring high impact strength. Confirm to ASTM D1784 or D2241 to meet the requirements of cell classification 12454B for pipe. Compound shall have a 2,000 P.S.I. hydrostatic design stress rating. Reclaimed water pipe shall be color-coded purple with the words "CAUTION - RECLAIMED WATER" printed in black letters on two sides of the pipe. Reclaimed water pipe shall use standard white Sch. 40 P.V.C. or standard gray Sch. 80 fittings as described above for Lateral/Mainline respectively.

Type: Pacific Plastics, or approved equal.

k. Ultra-Violet Resistant (U.V.R.) pipe: Pipe shall be extruded of an improved P.V.C. virgin pipe compound featuring high impact strength. Confirm to ASTM D1784 or D2241 to meet the requirements of cell classification 12454B for pipe. Compound shall have a 2,000 P.S.I. hydrostatic design stress rating. U.V.R. water pipe shall be manufactured using a process and/or ingredients proven to resist weakening or corrosion by ultra-violet radiation. Pipe shall be color-coded brown. U.V.R. water pipe shall use Sch. 40 P.V.C. fittings manufactured of the same material or process as the U.V.R. pipe on which they are used.

Type: Pipe: Sun Stop or approved equal.

Fittings: Dura or approved equal

E. Ball Valves: Valve shall be brass casting with 300 pound WOG test certified or Schedule 80 PVC as shown on drawings. Stem to be blowout proof with dual seals. Valve to be capable of inspection and repair without dismantling system lines and shall be full port type.

Type: Nibco T-185, KBI or approved equal.

F. Quick Coupler Valves and Quick Coupler Valve Assemblies: Locking vinyl top, two-piece, brass and bronze, size as shown.
Type: Buckner or approved equal.

G. Valve Keys: Provide two 30" galvanized keys to operate cross-handles of quick coupler valves for manual adjustment. Buckner or equal. Also provide 1 ft. nut wrench for gate valves.

H. Remote Control Valves: Griswold brass, 2000 Series. Provide Valve ID tags on each valve.

I. Valve Boxes:

a. Round valve boxes shall be 10 inch diameter x 10 1/4 inch high constructed of rigid polyolefin, chemically inert plastic, with 6 inch Cl. 160 P.V.C. extension sleeves where required. Valve boxes shall have locking plastic covers. Valve boxes and covers shall be green in color unless used with reclaimed water where they shall be color coded purple and embossed with the required reclaimed water warning statements. Heat brand box lid with the appropriate identification letters.

Type: NDS, Applied Engineering or approved equal.

b. Rectangular valve boxes shall be 9 1/2 inch wide x 16 inch long x 11 inch high constructed of rigid polyolefin, chemically inert plastic, with valve box extensions where required. Valve boxes shall have locking plastic covers. Valve boxes and covers shall be green in color unless used with reclaimed water where they shall be color coded purple and embossed with the required reclaimed water warning statements. Heat brand box lid with the appropriate identification letters and/or numbers.

Type: NDS, Applied Engineering or approved equal.

c. Identification letters or numbers shall be 2 inch high and heat branded onto the box cover. Identification shall be as indicated on the detail drawings.

d. Heat branding shall be accomplished using branding irons specifically designed for this purpose. Heat branding shall not weaken or in any way puncture the valve box cover.

e. Valve box covers shall be green in color unless directed to be purple in color for use with reclaimed water. Reclaimed water Valve boxes shall have appropriate reclaimed water warnings embossed onto the cover in English and Spanish, as well as the international "Do Not Drink" symbol.

Type: Rectangular: NDS, Applied Engineering or approved equal.
Round: NDS, Applied Engineering or approved equal.

f. Valve box covers shall be locking type secured with a 3/8-inch stainless steel bolt, washer and nut.

g. Valve boxes used for irrigation equipment shall be as follows:

i. Round valve boxes shall be used for gate valves, butterfly valves, quick coupler valves, and drip system flush valves

ii. Rectangular valve boxes shall be used for remote control valves, master control valves, drip control valves, pressure regulators, flow sensors, ball valves, and pull boxes.
J. Electrical Conduit: Comply with requirements of the governing code and shall be approved and identified by the Underwriters Laboratories, Inc. Conduit shall be PVC Schedule 40, gray color.

K. Sprinkler Heads: refer to drawings and schedule.

L. Sleeves for Piping under Paving: Schedule 40 PVC. Sleeve size shall be a minimum of twice (2x) the diameter of the pipe to be sleeved.

M. Thrust Blocks: 3,000 psi concrete in 28 days.

N. Tracer wire: Detectable underground utility marking tape, minimum 4.85 mil overall thickness, blue color, by Christy Type III, Magnatec, or equal.

O. Sprinkler Controller: Calsense and/or Rainbird, unless otherwise noted on plans.

PART 3 - EXECUTION

3.1 CONNECTIONS

A. To Existing Steel Pipe: For 1-1/2" size pipe and smaller, use Moody or Dresser or equal slip joint fittings. For 2" and larger, cut thread and install threaded fittings.

B. To Existing Asbestos Cement Pipe: Use tapping sleeve with gate valve, service clamp or ductile material and flat straps with rubber gaskets, using precautions, types and sizes as recommended by pipe manufacturer, OSHA and EPA regulations, or cut and install new cast iron fitting.

C. To Existing PVC Pipe: Use PVC fittings welded onto existing PVC pipe.

3.2 TRENCHING AND BACKFILLING

A. Trenches for all pipe shall be open vertical and construction with firm level bottom and wide enough to provide free working space around the work installed and to provide ample space for backfilling and tamping.

B. Neatly windrow excavated material to cause the least inconvenience to pedestrian and vehicular traffic. Do not place soil on concrete paving without a moisture-proof membrane to protect paving.

C. Trench Depth: Sufficient to provide not less than the following cover over top of pipe.

1. 24" over all pipe for mains and supply lines with 2-3" of sand over pipe.
2. 24" over control wires from controllers to remote control valves.
3. 12" over sprinkler lines (lateral).

D. When two pipes are to be placed in the same trench, provide not less than 6" space between pipes. Irrigation piping shall not occupy same trench with piping or conduits of any other utility or service.
E. After the installation is complete and the required tests and inspections have been made and reviewed, backfill the excavation and trenches with clean soil, free of rubbish.

1. Compact the backfill for all trenches, regardless of the type of pipe covered, in areas under or which closely parallel concrete or asphaltic concrete, to 90% of maximum density.

2. Trenches which traverse areas to be planted may be compacted by thoroughly flooding the backfill.

3.3 TRENCHING AND BACKFILLING UNDER PAVING

A. Trenches located under areas where paving or concrete will be installed shall be backfilled with sand (a layer 6" below the pipe and 24" above the pipe), and compacted in layers to 95% compaction using manual or mechanical tamping devices. Trenches for piping shall be compacted to equal the compaction of the existing adjacent undisturbed soil and shall be left in a firm unyielding condition. All trenches shall be left flush with the adjoining grade. Set pipes in place, cap, and pressure test all piping under paving prior to backfilling, and prior to the paving work.

B. Piping under existing walks is generally done by jacking, boring, or hydraulic driving. Any cutting or breaking of sidewalks or concrete necessary shall be performed by the Contractor and paving replaced as a part of the contract cost. Permission to cut or break sidewalks or concrete shall be obtained from the Owner's Representative. No hydraulic driving will be permitted under asphaltic concrete paving.

C. Coordinate installation of piping and wires under paved areas.

D. Sleeves may be installed, but are not required, for future installation of water lines and wires, unless otherwise noted.

3.7 REDUCING FITTINGS

A. Use where any change in pipe size occurs. Do not use street ells, bushings, close nipples, long screws or service tees.

3.8 OFF-SETS

A. Make with fittings. Do not bend pipe.

3.9 DIELECTRIC COUPLINGS

A. Install approved dielectric couplings, unions, or fittings wherever two dissimilar metals are connected whether shown on the drawings or not.

3.10 CLOSING OF PIPING

A. As soon as lines have been installed, cap or plug all openings to prevent the entrance of materials that would obstruct the pipe.

3.11 SPRINKLER CONTROLLERS
A. Connect remote control valves to existing controller in a clockwise sequence to correspond with station setting beginning with Station 1, 2, 3, etc. unless otherwise shown.

B. Prepare a map diagram showing location of all valves, lateral lines and route of the control wires. Identify all valves as to size, station number, and type of planting irrigated, i.e., lawn, shrubs, or groundcover.

   1. Reduce drawing photographically to a size which will fit in space available on the door inside of the controller. Seal within two laminated plastic sheets. Mount permanently on inside surface of the door. Submit one (1) additional diagram to Owner’s Representative.

3.12 UNDERGROUND FEEDERS (CONTROL WIRES)

   A. Color code all wiring.

   B. Install wires, sprinkler laterals and mains in common trenches wherever possible.

   C. Sizing of wire shall be in accordance with manufacturer’s recommendations.

   D. Install wires at least 24" below finish grade and laid to the side of the main line where possible. Locate them no less than 6" from pipes and fittings, except at terminal points. Provide looped slack at valves and snake wires in trench to allow for concentration of wires. Tie wires in bundles at 10’ intervals.

   E. Wire splices not allowed.

   F. Run all wire passing under future or existing paving, or construction in a PVC Schedule 40 or galvanized steel conduit extending at least 12” beyond edges of the paving or construction. Provide pull boxes as necessary in long runs and at sharp bends in the conduit run.

   G. Provide meter box at ends of runs for future valves, and over all splices.

   H. Install warning tape 6" above all wire routes not located in trenches with irrigation mains.

3.13 VALVES

   A. Provide piping systems with valves at all points shown on the drawings or specified herein, arranged to give complete regulating control throughout.

   B. Install valves with the best skill, neat appearance and groupings so all parts are easily accessible and maintained. Set valves near walks and curbs within 12” and parallel to same. Install remote control valves in groundcover or shrub areas wherever feasible.

   C. Valves shall be the full size of the line in which they are installed unless otherwise specified.

   D. Adjust remote control valves so that most of the sprinkler heads operate at pressure recommended by the head manufacturer, and so that a uniform distribution of water is applied by the sprinkler heads to the planting areas for each individual valve system.
E. Set valve boxes 3/4" above the designated finish grade at each valve, and stencil paint station numbers of valves on covers. Numbers shall be 4" minimum in height.

F. Identify locations of all valves by painting purple symbols pointing to valves on surface of nearest curb or paving. Templates to be provided by Owner's Representative.

3.14 SPRINKLER HEADS

A. Prior to installing heads, thoroughly flush laterals and risers with full line pressure. Repeat whenever system is opened up for repairs or replacement. Start flushing operation at the highest point of delivery and work to the lower.

B. Set sprinkler heads as detailed on drawings.

C. Upon completion of the installation, adjust sprinkler heads to properly distribute water flow and place entire irrigation system in optimum operating condition.

D. Align all part-circle heads so that spray does not hit building walls and windows, and is in proper relation to adjacent paving, headers, or curbs.

E. Adjust all spray nozzles so that there will be a minimum amount of overspray, and so that the entire set will be as evenly balanced as possible.

3.15 REMOVALS, SALVAGE AND MODIFICATIONS

A. Prior to starting work, confer with Owner's Representatives to discover potential problem areas and locations of points of joining between the removal work and existing system to remain in service. Also identify locations of shut-off valves for all emergencies. Immediately reconnect existing service beyond the site irrigation system, should removal or modifications affect the service.

B. No shut-downs shall be made without prior approval of the Owner. Requests for shut-downs shall include date, time and the period of time for shut-down. Requests shall be made a minimum of three (3) working days prior to the requested shut-down.

C. Replace or repair, to the satisfaction of the Owner's Representative, all existing paving or landscaping disturbed during the course of this work. New paving and landscaping shall be of the same type, strength, texture, and finish and be equal in every way to the material removed. Repair work shall be done at no additional cost to the Owner. All existing irrigation systems serving adjacent planted areas shall remain operational throughout all capping and abandoning of existing irrigation mainlines.

D. All sprinkler heads, valves, and equipment within the limits of work shall be salvaged and signed over to the Owner. Piping shall not be abandoned in place. Piping removed shall be legally disposed of off the site.

E. All connections made from the new work to the existing system shall be recorded on the Record Drawings. All other utility lines, site drainage lines, etc. found and which are to be saved shall also be recorded.

3.16 ELECTRICAL CONDUIT

A. Install electrical conduit to sprinkler controller(s) only as shown and as directed.
B. Conduits shall be installed with a minimum of 24" cover and terminated with long sweep ells and capped with non-cemented PVC pipe caps.

C. Install pull boxes at all sharp bends and as recommended to assure successful pulling of conductors.

D. Install pull cords as required.

3.17 FIELD QUALITY CONTROL

A. Tests:

1. Make hydrostatic tests only in the Owner's Representative's presence.

2. Plastic Pipe: After all welded joints have cured at least 24 hours, and before sprinkler heads are installed, flush out lines, then cap all outlets and test system under a pressure of 50 lbs. over normal water pressure in the presence of the Owner's Representative. Leave all joints exposed for inspection during pressure test. Center load pipe with small amount of backfill to prevent arching or slipping under pressure. Test for not less than 24 hours.

3. Automatic System: Test for 14 days prior to end of maintenance period. Installed work shall function satisfactorily without stoppage and other problems. Check out all sprinklers for proper alignment, coverage and make final adjustment to valves. Set timing for various valve stations as directed by the Owner's Representative.

B. Installation Reviews:

1. At the completion of all installations, and prior to the start of the planting operations, a review shall be made to check the overall coverage of the system by the Contractor and the Owner's Representative.

2. At the end of the Plant Maintenance Period, a final review shall be made by the Owner's Representative and Contractor to check out the entire system.

3. Provide the Owner's Representative with three (3) working days prior notice to the requests.

3.18 IRRIGATION SYSTEM CONTROLS CHART

A. Provide two (2) charts for each controller. The charts shall be a photographically reduced print of the actual record drawing of the system and color-shaded to clearly indicate the individual sets of sprinklers and the areas covered.

B. Approved charts shall be sealed between two plastic sheets. Minimum thickness of plastic sheets shall be 20 mils.

C. One (1) set of the charts shall be placed inside the controller cabinets prior to the final review of the contract work. The other set of charts shall be submitted to the Owner's Representative.

END OF SECTION 02810
SECTION 02821 - CHAIN-LINK FENCES AND GATES

PART 1 GENERAL

1.01 RELATED DOCUMENTS

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

1.02 SUMMARY

A. This Section includes the following:

B. Related Sections include the following:
   1. Division 3 Section "Cast-in-Place Concrete" for concrete post concrete fill.
   2. Division 16 Sections for electrical service and connections for motor operators, controls, limit and disconnect switches, and safety features and for system disconnect switches.

1.03 PERFORMANCE REQUIREMENTS

A. Structural Performance: Provide chain-link fences and gates capable of withstanding the effects of gravity loads and the following loads and stresses within limits and under conditions indicated:
   1. Determine minimum post size, group, and section according to ASTM F 1043 for framework up to 12 feet high, and post spacing not to exceed 10 feet.

B. Accessibility Requirements:
   1. Gates in path of travel must comply with door requirements per CBC Section 1133B.1.1.1.4/ADAAG 4.13.3.
   2. Hand-activated gate opening hardware, handles, pulls, latches, locks, and other operating devices on accessible gates shall have a shape that is easy to grasp with one hand and does not require tight grasping, tight pinching, or twisting of the wrist to operate per CBC Section 1133B.2.5.2.
   3. The bottom 10 inches of an accessible gate shall have a smooth, uninterrupted surface on each side. The bottom of the gate shall be within 3 inches of the finish surface of the path of travel. The maximum effort to operate the gate shall not exceed 5 pounds per CBC Sections 1133B.2.5, 1133B.2.6, and 1110B.1.6, Item 6 - similar application.
   4. Adjust gates to open with not more than 5.0 lbs pressure to open.
   5. Thresholds: floor or landing no more than 1/2" below the top of the threshold of the doorway. Change in level between 1/4" and 1/2": beveled to slope no greater than 1:2 (50 percent slope). California Building Code Section 1133B.2.4.1.
   6. Specify hand-activated hardware between 30° to 44° "AFL; lever-type hardware; panic bars; push-pull activating or U-shaped handles; lever handle for thumb turn lead-bolt.
   7. Sweep period of door closer shall be adjusted so that from an open position of 70 degrees, the door will take at least 3 seconds to move to a point 3 1/2 inches from the gate latch, measured to the leading edge of door.
1.04 SUBMITTALS

A. Product Data: Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for chain-link fences and gates.
   1. Fence and gate posts, rails, and fittings.
   2. Chain-link fabric, reinforcements, and attachments.
   3. Gates and hardware.

B. Shop Drawings: Show locations of fences, gates, posts, rails, tension wires, details of extended posts, extension arms, swing gate, or other operation, hardware, and accessories. Indicate materials, dimensions, sizes, weights, and finishes of components. Include plans, gate elevations, sections, details of post anchorage, attachment, bracing, and other required installation and operational clearances.

C. Product Certificates: For each type of chain-link fence, and gate, signed by product manufacturer.
   1. Strength test results for framing according to ASTM F 1043.

D. Qualification Data: For Installer.

E. Field quality-control test reports.

F. Maintenance Data: For the following to include in maintenance manuals:

1.05 QUALITY ASSURANCE

A. Reference Standards:
   1. 2010 Building Standards Administrative Code, Part 1, CBSC.
   6. 2010 California Energy Code, Part 6, CBSC.
   7. 2010 California Historical Building Code, Part 8, CBSC.
   9. 2010 California referenced Standards, Part 12 CBSC.
   10. Title 8 C.C.R. Chapter 4, Sub-Ch. 6 – Elevator Safety Orders.
   11. Title 19 C.C.R., Public Safety, SFM Regulations.
   12. Americans with Disabilities Act (ADA), Title II or III.

B. Installer Qualifications: An experienced installer who has completed chain-link fences and gates similar in material, design, and extent to those indicated for this Project and whose work has resulted in construction with a record of successful in-service performance.

C. Preinstallation Conference: Conduct conference at Project site to comply with requirements in Division 1 Section "Project Management and Coordination."
1.06  PROJECT CONDITIONS

A. Field Measurements: Verify layout information for chain-link fences and gates shown on Drawings in relation to property survey and existing structures. Verify dimensions by field measurements.

B. Interruption of Existing Utility Service: Do not interrupt utility services to 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 no fewer than 2 days in advance of proposed interruption of utility services.
   2. Do not proceed with interruption of utility services without Architect's written permission.

1.07  WARRANTY

A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of chain-link fences and gates that fails in materials or workmanship within specified warranty period.
   1. Warranty Period: 2 years.

B. Installer's Warranty: 1 year.

PART 2  PRODUCTS

2.01  MANUFACTURERS

A. Chain-Link Fences and Gates: Subject to compliance with requirements, provide products by one of the following.
   1. Master-Halco.
   2. Ameristar.
   3. Anchor Fence.
   5. Or equal.

2.02  CHAIN-LINK FENCE FABRIC

A. General: Provide fabric in one-piece heights measured between top and bottom of outer edge of selvage knuckle or twist. Comply with ASTM A 392, CLFMI CLF 2445, and requirements indicated below:
   1. Steel Wire Fabric: Metallic coated wire with 9 gage (0.144 inches) core thickness.
      a. Mesh Size: 2 inches
      b. Weight of Metallic (Zinc) Coating: ASTM A 392, Type II, Class 2, 2.0 oz./sq. ft.
         with zinc coating applied after weaving.
   2. Selvage: Knuckled at both selvages.

2.03  INDUSTRIAL FENCE FRAMING

A. Posts and Rails: Comply with ASTM F 1043 for framing, and the following:
2. Fence Height: As indicated on Drawings.
4. Post Diameter and Thickness:
   b. Terminal Post (Corner, End, and Gate Post): 2-7/8 inch O.D. (nominal 2-1/2 inch).
5. End and Corner Post Top: Dome.
6. Coating for Steel Framing:
   a. Metallic Coating:
      1) Type A, consisting of not less than minimum 2.0-oz./sq. ft. average zinc coating per ASTM A 123 or 4.0-oz./sq. ft. zinc coating per ASTM A 653.
      2) Type B, zinc with organic overcoat, consisting of a minimum of 0.9 oz./sq. ft. of zinc after welding, a chromate conversion coating, and a clear, verifiable polymer film.
      3) External, Type B, zinc with organic overcoat, consisting of a minimum of 0.9 oz./sq. ft. of zinc after welding, a chromate conversion coating, and a clear, verifiable polymer film. Internal, Type D, consisting of 81 percent, not less than 0.3-mil- thick, zinc pigmented coating.
      4) Type C, Zn-5-Al-MM alloy, consisting of not less than 1.8-oz./sq. ft. coating.
      5) Coatings: Any coating above.

2.04 TENSION WIRE

A. General: Provide horizontal tension wire at the following locations:
   1. Location: Extended along bottom of fence fabric and along top when either top or bottom rails are not indicated on Drawings.

B. Metallic-Coated Steel Wire: Minimum 0.177-inch- diameter, marcelled tension wire complying with ASTM A 817, ASTM A 824, and the following:

2.05 FITTINGS

A. General: Comply with ASTM F 626.

B. Post and Line Caps: Provide for each post.
   1. Line post caps with loop to receive tension wire or top rail.

C. Rail and Brace Ends: Attach rails securely to each gate, corner, pull, and end post.

D. Rail Fittings: Provide the following:
   1. Top Rail Sleeves: Pressed-steel or round-steel tubing not less than 6 inches long.
   2. Rail Clamps: Line and corner boulevard clamps for connecting intermediate and bottom rails in the fence line-to-line posts.

E. Tension and Brace Bands: Pressed steel.
F. Tension Bars: Steel, length not less than 2 inches shorter than full height of chain-link fabric. Provide one bar for each gate and end post, and two for each corner and pull post, unless fabric is integrally woven into post.

G. Truss Rod Assemblies: Steel, hot-dip galvanized after threading rod and turnbuckle or other means of adjustment.

H. Tie Wires, Clips, and Fasteners: According to ASTM F 626.
   1. Standard Round Wire Ties: For attaching chain-link fabric to posts, rails, and frames, complying with the following:
      a. Hot-Dip Galvanized Steel: 0.148-inch diameter wire; galvanized coating thickness matching coating thickness of chain-link fence fabric.

I. Kick Plate: Stainless steel, 10" minimum.

J. Tie Wires, Clips, and Fasteners: According to ASTM F 626.
   1. Standard Round Wire Ties: For attaching chain-link fabric to posts, rails, and frames, complying with the following:
      a. Hot-Dip Galvanized Steel: 0.148-inch diameter wire; galvanized coating thickness matching coating thickness of chain-link fence fabric.

2.06 INDUSTRIAL SWING GATES

A. General: Comply with ASTM F 900 for swing gate types.

B. Frames and Bracing: Fabricate members from round, galvanized steel tubing with outside dimension and weight according to ASTM F 900, domestic Deluxe Quality (DQ), and the following:
   1. Gate Fabric Height: 2 inches less than adjacent fence height.
   2. Leaf Width: As indicated.
   3. Frame members, including interior bracing:

C. Frame Corner Construction:
   1. Welded adjustable truss rods for panels 5 feet wide or wider.

D. Hardware:

HARDWARE SET NO. 01

PROVIDE EACH SGL DOOR(S) WITH THE FOLLOWING:

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CHAIN-LINK FENCES AND GATES
HARDWARE SET NO. 02

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HARDWARE SET NO. 04

PROVIDE EACH SGL DOOR(S) WITH THE FOLLOWING:

<table>
<thead>
<tr>
<th>QTY</th>
<th>DESCRIPTION</th>
<th>CATALOG NUMBER</th>
<th>FINISH</th>
<th>MFR</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>PADLOCK L/CYL-FSIC</td>
<td>KS43F3200</td>
<td>606</td>
<td>SCH</td>
</tr>
<tr>
<td>1</td>
<td>FSIC CORE</td>
<td>23-030</td>
<td>626</td>
<td>SCH</td>
</tr>
<tr>
<td>1</td>
<td>NOTE</td>
<td>REMAINDER OF HARDWARE BY GATE B/O MANUFACTURER</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

E. Hardware:

1. Hinges: hot dip galvanized pressed steel or malleable iron, structurally capable of supporting gate leaf and allow opening and closing without binding. Non-lift-off type hinge design shall permit gate to swing 180° (3.14 rad), 2 for gates up to 60 inches high, 3 for taller gates.

2. Latch: Galvanized forked type capable of retaining gate in closed position and have provision for padlock. Latch shall permit operation from either side of gate.

3. Double gates: Provide galvanized drop rod with center gate stop pipe or receiver to secure inactive leaf in the closed position. Provide galvanized pressed steel locking latch, requiring one padlock for locking both gate leaves, accessible from either side.

2.07 PRIVACY SLATS

A. Material: PVC, UV-light stabilized, flame resistant, 4 ply, not less than 0.006 inch thick; attached to not less than 0.0475-inch diameter, twisted galvanized wire; hedge-type lattice; sized to fit mesh specified for direction indicated.

1. Color: selected by Architect from manufacturer’s full range.
2.08 CAST-IN-PLACE CONCRETE

A. Comply with requirements of Division 3 Section “Cast-In-Place Concrete”.

2.09 GROUT AND ANCHORING CEMENT

A. Nonshrink, Nonmetallic Grout: Premixed, factory-packaged, nonstaining, noncorrosive, nongaseous grout complying with ASTM C 1107. Provide grout, recommended in writing by manufacturer, for exterior applications.

B. Erosion-Resistant Anchoring Cement: Factory-packaged, nonshrink, nonstaining, hydraulic-controlled expansion cement formulation for mixing with potable water at Project site to create pourable anchoring, patching, and grouting compound. Provide formulation that is resistant to erosion from water exposure without needing protection by a sealer or waterproof coating and that is recommended in writing by manufacturer, for exterior applications.

PART 3 EXECUTION

3.01 EXAMINATION

A. Examine areas and conditions, with Installer present, for compliance with requirements for a verified survey of property lines and legal boundaries, site clearing, earthwork, pavement work, and other conditions affecting performance.
   1. Do not begin installation before final grading is completed, unless otherwise permitted by Architect.
   2. Proceed with installation only after unsatisfactory conditions have been corrected.

3.02 PREPARATION

A. Stake locations of fence lines, gates, and terminal posts. Do not exceed intervals of 500 feet or line of sight between stakes. Indicate locations of utilities, lawn sprinkler system, underground structures, benchmarks, and property monuments.

3.03 INSTALLATION, GENERAL

A. Install chain-link fencing to comply with ASTM F 567 and more stringent requirements specified.

3.04 CHAIN-LINK FENCE INSTALLATION

A. Post Excavation: Drill or hand-excavate holes for posts to diameters and spacings indicated, in firm, undisturbed soil.

B. Post Setting: Set posts in concrete at indicated spacing into firm, undisturbed soil.
   1. Verify that posts are set plumb, aligned, and at correct height and spacing, and hold in position during setting with concrete or mechanical devices.
   2. Concrete Fill: Place concrete around posts and vibrate or tamp for consolidation. Protect aboveground portion of posts from concrete splatter.
a. Hole diameter dug or drilled minimum 4 times largest cross section of post and minimum depth of 24 inches plus additional 3 inch for each 1 feet increase in fence height over 4 feet.

b. Exposed Concrete: Extend 2 inches above grade; shape and smooth to shed water.

C. Terminal Posts: Locate terminal end, corner, and gate posts per ASTM F 567 and terminal pull posts at changes in horizontal or vertical alignment of 15 degrees or more.

D. Line Posts: Space line posts equidistant at intervals not exceeding 10 feet o.c unless otherwise indicated.

E. Post Bracing and Intermediate Rails: Install according to ASTM F 567, maintaining plumb position and alignment of fencing. Install braces at end and gate posts and at both sides of corner and pull posts.
   1. Locate horizontal braces at midheight of fabric 6 feet or higher, on fences with top rail and at 2/3 fabric height on fences without top rail. Install so posts are plumb when diagonal rod is under proper tension.

F. Top Rail: Install according to ASTM F 567, maintaining plumb position and alignment of fencing. Run rail continuously through line post caps, bending to radius for curved runs and terminating into rail end attached to posts or post caps fabricated to receive rail at terminal posts. Provide expansion couplings as recommended in writing by fencing manufacturer.

G. Bottom Rails: Install, spanning between posts.

H. Chain-Link Fabric: Apply fabric to outside of enclosing framework. Leave 2 inches between finish grade or surface, unless otherwise indicated. Pull fabric taut and tie to posts, rails, and tension wires. Anchor to framework so fabric remains under tension after pulling force is released.

I. Tension or Stretcher Bars: Thread through fabric and secure to end, corner, pull, and gate posts with tension bands spaced not more than 15 inches o.c.

J. Tie Wires: Use wire of proper length to firmly secure fabric to line posts and rails. Attach wire at 1 end to chain-link fabric, wrap wire around post a minimum of 180 degrees, and attach other end to chain-link fabric per ASTM F 626. Bend ends of wire to minimize hazard to individuals and clothing.
   1. Maximum Spacing: Tie fabric to line posts at 12 inches o.c. and to braces at 24 inches o.c.

K. Fasteners: Install nuts for tension bands and carriage bolts on the side of the fence opposite the fabric side. Peen ends of bolts or score threads to prevent removal of nuts.

L. Privacy Slats: Install slats in direction indicated, securely locked in place.
   1. Diagonally, for privacy factor of 80 to 85.

3.05 GATE INSTALLATION

A. Install gates according to manufacturer's written instructions, level, plumb, and secure for full opening without interference. Attach fabric as for fencing. Attach hardware using tamper-resistant or concealed means. Install ground-set items in concrete for anchorage. Adjust hardware for smooth operation and lubricate where necessary.
3.06 ADJUSTING

A. Gate: Adjust gate to operate smoothly, easily, and quietly, free of binding, warp, excessive deflection, distortion, nonalignment, misplacement, disruption, or malfunction, throughout entire operational range. Confirm that latches and locks engage accurately and securely without forcing or binding.

B. Lubricate hardware and other moving parts.

END OF SECTION 02821
SECTION 02870 - SITE FURNISHINGS

PART 1 GENERAL

1.01 RELATED DOCUMENTS

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

1.02 SUMMARY

A. This Section includes the following:
   1. Standard Scorers Table
   2. Portable 15' Player Bench without Back Rest

B. Products furnished, but not installed under this Section.

1.03 SUBMITTALS

A. Product Data: For each type of product indicated.

B. Samples for Verification: For each type of exposed finish required, prepared on Samples of size indicated below.
   1. Size: Not less than 6-inch- long linear components and 4-inch- square sheet components.

C. Product Schedule: For site furnishings. Use same designations indicated on Drawings.

D. Maintenance Data: For site furnishings to include in maintenance manuals.

1.04 QUALITY ASSURANCE

A. Reference Standards:
   1. 2010 Building Standards Administrative Code, Part 1, CBSC.
   6. 2010 California Energy Code, Part 6, CBSC.
   7. 2010 California Historical Building Code, Part 8, CBSC.
   9. 2010 California referenced Standards, Part 12 CBSC.
   10. Title 8 C.C.R. Chapter 4, Sub-Ch. 6 – Elevator Safety Orders.
11. Title 19 C.C.R., Public Safety, SFM Regulations.
12. Americans with Disabilities Act (ADA), Title II or III.

B. Source Limitations: Obtain site furnishing(s) through one source from a single manufacturer.

1.05 WARRANTY

A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of site furnishings that fails in materials or workmanship within specified warranty period.
1. Warranty Period: 1 year.

B. Installer's Warranty: 1 year.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Standard Scorers Table
1. Jaypro Sports Equipment
2. Or equal

B. Portable Player Bench
1. Jaypro Sports Equipment
2. National Recreation Systems
3. Or equal

2.02 MATERIALS

A. Aluminum: Alloy and temper recommended by aluminum producer and finisher for type of use and finish indicated; free of surface blemishes and complying with the following:
1. Rolled or Cold-Finished Bars, Rods, and Wire: ASTM B 211
2. Extruded Bars, Rods, Wire, Profiles, and Tubes: ASTM B 221
3. Structural Pipe and Tube: ASTM B 429
4. Sheet and Plate: ASTM B 209
5. Castings: ASTM B 26

B. Anchors, Fasteners, Fittings, and Hardware: Manufacturer's standard, corrosion-resistant-coated or noncorrodible materials; commercial quality, vandal and theft resistant

C. Galvanizing: Where indicated for steel and iron components, provide the following protective zinc coating applied to components after fabrication:
1. Zinc-Coated Tubing: External, zinc with organic overcoat, consisting of a minimum of 0.9 oz./sq. ft. of zinc after welding, a chromate conversion coating, and a clear, polymer film. Internal, same as external or consisting of 81 percent zinc pigmented coating, not less than 0.3 mil thick
2. Hot-Dip Galvanizing: According to ASTM A 123/A 123M, ASTM A 153/A 153M, or ASTM A 924/A 924M
2.03 SEATING

A. Frame: Galvanized steel

B. Seat, Back and Shelf:
   1. Material:
      a. Aluminum Sheet: metal
   2. Seat Height: 17 1/2"
   3. Seat Surface Shape: Flat
   4. Overall Height: As indicated
   5. Overall Width: As indicated
   6. Overall Depth: As indicated
   7. Arms: None
   8. Seating Configuration: as indicated

C. Aluminum Finish: Mill finish

D. Steel Finish: Galvanized coated

2.04 FABRICATION

A. Metal Components: Form to required shapes and sizes with true, consistent curves, lines, and angles. Separate metals from dissimilar materials to prevent electrolytic action.

B. Welded Connections: Weld connections continuously. Weld solid members with full-length, full-penetration welds and hollow members with full-circumference welds. At exposed connections, finish surfaces smooth and blended so no roughness or unevenness shows after finishing and welded surface matches contours of adjoining surfaces.

C. Pipes and Tubes: Form simple and compound curves by bending members in jigs to produce uniform curvature for each repetitive configuration required; maintain cylindrical cross section of member throughout entire bend without buckling, twisting, cracking, or otherwise deforming exposed surfaces of handrail and railing components.

D. Exposed Surfaces: Polished, sanded, or otherwise finished; all surfaces smooth, free of burrs, barbs, splinters, and sharpness; all edges and ends rolled, rounded, or capped.

E. Factory Assembly: Assemble components in the factory to greatest extent possible to minimize field assembly. Clearly mark units for assembly in the field.

2.05 FINISHES, GENERAL

A. Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.
PART 3 EXECUTION

3.01 EXAMINATION

A. Examine areas and conditions, with Installer present, for compliance with requirements for correct and level finished grade, mounting surfaces, installation tolerances, and other conditions affecting performance.
   1. Proceed with installation only after unsatisfactory conditions have been corrected.

3.02 INSTALLATION, GENERAL

A. Comply with manufacturer's written installation instructions unless more stringent requirements are indicated. Complete field assembly of site furnishings where required.

B. Unless otherwise indicated, install site furnishings after landscaping and paving have been completed.

3.03 CLEANING

A. After completing site furnishing installation, inspect components. Remove spots, dirt, and debris. Repair damaged finishes to match original finish or replace component.

3.04 SCHEDULE

A. 02870.A: SEATING.

END OF SECTION 02870
SECTION 02920 – SYNTHETIC TURF SYSTEM

PART I – GENERAL

1.1 SUMMARY

A. Provisions of Division 01 apply to this section.

B. Related Sections:
   1. Section 02300: Earthwork.
   2. Section 02621: Synthetic Turf Dynamic Base System.
   3. Section 02630: Storm Drainage.
   5. Section 03100: Concrete Forms and Accessories.
   6. Section 03200: Concrete Reinforcement.
   7. Section 03300: Cast-in-Place Concrete.

1.2 The work under this section shall consist of furnishing all labor, materials, and equipment necessary to install, in place, all synthetic turf and other materials as indicated on the plans and as specified herein. The installation of all new materials shall be performed in strict accordance with these specifications, the manufacturer’s instructions and in accordance with all details and shop drawings.

1.3 SUBMITTALS

A. Substitutions: Conform to General Conditions Article 4 for approval of Or Equal, Substitutions or Alternatives.

B. Provide the following:
   1. Complete list of products and materials with installation instructions, product data sheets, material safety data sheets (MSDS), specifications, preparation and installation instructions
   3. Submit three (3) 12" by 12" manufacturer’s product samples showing each field color, one linear foot of game striping colors, and colors for other field logos and markings.
   4. Submit (3) three 12"x12" assembled turf samples with backing and infill.
   5. Submit proof that installer is authorized/approved by the manufacturer to install their products.
   6. Submit proof that turf manufacturer has produced and installed a minimum of five (5) monofilament fiber fields that have been used for football, soccer and baseball in the last five (5) years. And that the manufacturer has been in business at least ten (10) years.
7. Provide three (3) sets of the manufacturers maintenance manuals, for the proper care of synthetic turf system.

C. Test Results: The following test results, certified by a licensed independent testing laboratory, shall be submitted as outlined below
   1. Mandatory and minimum specifications as shown in Part 2. Products not meeting the minimum specifications will be rejected.

D. Shop Drawings: Show fabrication and installation details for synthetic turf including, but not limited to:
   1. Drawings shall show recommended details of construction noting any deviation from contract documents. Include any miscellaneous details for posts, inserts, covers, edge termination, utility vaults etc. required for a complete installation.
   2. Proposed locations of all seams in fabric surfacing. Show installation methods and construction.
   3. Field lining and marking - Submit a complete scale and dimensional drawing of inlaid or tufted-in field lines and marking boundaries. Include graphics for center logo artwork for approval as well.
   4. All submittals will conform to the contract requirements as stated in General Conditions Article 4.

E. Manufacturer Certificates: Certified list of five (5) existing installations of the synthetic turf and infill system that is specified for this project within the last five (5) years, including Owner Representative and telephone number, attesting compliance with quality assurance information. These fields must comply with the materials section of this specification. All must be located within the continental United States. List both turf contractor and manufacturer per project.

F. Sample Warranty: Provide a sample pre-paid third party insured warranty. Policy must be in force at the time of the bid.
   1. The Contractor shall provide a warranty to the Owner that covers defects in materials and installation workmanship of the turf for a period of eight (8) years from the date of substantial completion. The turf manufacturer must verify that their representative has inspected the installation and that the work conforms to the manufacturer's requirements and any written directives. The manufacturer's warranty shall include general wear and damage caused from UV degradation. Other items that must be addressed include the following:
      a. Acceptable uses for the field
      b. Fading
      c. Color match within specifications
      d. Excessive fiber wear
      e. Wrinkling and panel movement
      f. Shock absorbency
      g. Seam integrity
h. Drainage (through the turf only)

2. Exclusions shall include the following:
   a. Vandalism
   b. Acts of God beyond the control of the Owner or the Manufacturer

G. Maintenance and Operations Data: At the completion of the project submit 3 complete sets, in manual form, of all the manufacturer's recommended procedures and materials for, but not limited to general maintenance, line/marketing installation, small repair procedures, cleaning, etc.

H. Project Record Documents: Record actual locations of seams, drains, and other pertinent information in accordance with the General Requirements

1.4 QUALITY ASSURANCE

A. Manufacturer Qualifications
   1. Shall be experienced in the manufacture and installation of the specified type of synthetic infill grass for a minimum of ten (10) years.
   2. Shall provide third party certification confirming compliance with referenced standards.

B. Installer Qualifications:
   1. Installation team shall be an established, insured installation firm experienced as a premium turf installer with suitable equipment and supervisory personnel, with a minimum of ten (10) years experience.
   2. Installation team shall be trained and certified, in writing, by the turf manufacturer, as competent in the installation of the specified material, including seaming and proper installation of the infill mixture.
   3. Site superintendent shall have successfully completed at least five (5) installations similar to this type within the last five (5) years.

C. Source Limitations: Obtain synthetic turf through one source from a single manufacturer.

D. All components and their installation method shall be designed and manufactured for use on outdoor athletic fields. The materials as hereinafter specified, should be able to withstand full climatic exposure, be resistant to insect infestation, rot, fungus and mildew; to ultra-violet light and heat degradation, and shall have the basic characteristic of flow-through drainage allowing free movement of surface run-off through the turf and directly into prepared granular base and into the field drainage system.

E. The synthetic turf and components shall be of national reputation with previous use at all levels of competition, including professional and collegiate levels of football and soccer and shall have been in use for a period of not less than three years. The turf fabric shall be
produced by the manufacturer and installed by factory-authorized distributors directly employing the installation crew.

1.5 PROJECT CONDITIONS

A. Weather Limitations: Proceed with installation only when existing and forecasted weather conditions permit synthetic turf work to be performed according to Contractor or Manufacturer’s written instructions and warranty requirements.

B. Field Measurements: Indicate measurements on Shop Drawings.

1.6 MAINTENANCE SERVICE – Turf Installation Contractor shall train maintenance staff and/or contracted maintenance staff in the use of the recommended maintenance equipment and provide maintenance guidelines to the facility maintenance staff.

PART TWO – PRODUCTS

1.1 ACCEPTABLE MANUFACTURERS

A. AstroTurf
B. FieldTurf
C. Shaw Sportsturf
D. Approved equal

1.2 MATERIALS

A. Synthetic Turf System 1: Reference Landscape Plan L-3

a. Basis of Design: AstroTurf®, LLC – AstroTurf® GameDay Grass™3DXtreme – 52
   A complete synthetic turf system consisting of a combination of horseshoe shaped monofilament polyethylene and parallel slit film fibers along with an extruded monofilament (polylon) RootZone™. Pile height shall be nominal 2.00". Fibers shall be tufted to a tri-composite primary backing and a mechanically applied adhesive secondary backing.

1. The tufted fiber shall no weigh less than 52 ounces per square yard. The tufted rows of fiber are to be spaced no more than 3/8" apart. ASTM tests proving the fiber meets these qualifications must be provided with the bid. Turf systems that do not meet this specification will be disqualified.

2. The carpets' primary backing shall be comprised of two layers (18pic and 13pic) of woven polypropylene with a binding layer of polypropylene which is needled in between the two layers of woven primary to create a single composite structure. This tri-composite backing is to have a minimum weight of 8.0 oz per square yard. The carpet shall then be coated with a secondary backing of Biocel™ Polyurethane synthetic coating material with a minimum application rate of 26 ounces per square yard and then perforated for adequate drainage. Carpets that are not perforated for adequate drainage shall not be acceptable.
3. The carpet shall be delivered in 15’ wide rolls. The rolls shall be of sufficient length to go from sideline to sideline. Head seams, other than at sidelines, will not be acceptable.

B. The pile surface shall provide good traction in all types of weather with the use of conventional sneaker type shoes, composition mold sole athletic shoes, baseball spikes and screw-on football spikes.

C. The pile surface shall be suitable for both temporary and permanent line markings using acrylic paint, as per the manufacturer’s recommendations.

D. All adhesives used in bonding the seams shall be resistant to moisture, freeze/thaw, bacteria and fungus attacks, and resistant to ultraviolet radiation. The adhesive shall be made especially for the adhesion of synthetic turf seams.

E. The adhesive system shall consist of a factory-made adhesive bed applied to a non-woven fabric seaming tape. The adhesive bed shall be a metered amount suitable for the application. It shall be heat and pressure activated. A special heat application machine and pressure application using weighted rollers is mandatory.

F. As Alternate #1, the entire turf system may include a factory-applied heat reduction technology.

G. Perimeter edge details required for the system shall be as detailed and recommended by the manufacturer, and as approved by the manufacturer.

1.3 FABRIC SURFACE

A. The pile surface shall resemble freshly mown natural grass in appearance, texture and color.

B. The pile surface shall be nominally uniform in length.

C. The pile fiber angle shall be 90 degrees ± 15 degrees, measured from the horizontal after installation of the infill material.

D. The entire system shall be resistant to weather, insects, rot, mildew and fungus growth and will be non-allergic and non-toxic.

E. The Synthetic Turf System 1 shall have a nominal fiber length of 2.00". The Synthetic Turf System 2 shall have a nominal fiber length of 1 5/8".

F. Each roll shall be minimum 15’ wide

G. The entire system shall be constructed for porous standards as specified. Synthetic turf system shall be perforated at 4 – 6” on center. Systems that are not perforated for maximum drainage shall not be acceptable.

H. All markings shall be tufted in-place, inlaid or glued. It is recommended that the maximum amount of markings be factory-prefabricated into the turf system prior to shipment to site.

1.4 PRODUCT SPECIFICATIONS

A. Synthetic Turf System 1: Face yarns shall be a combination of:
   1. A proven athletic quality, outdoor stabilized blend of non-texturized monofilament yarn with a horseshoe shaped cross-section and parallel slit film polyethylene fibers and;
2. A texturized monofilament blended (polylon) RootZone™ designed specifically for outdoor use, made with carbon black, to best resist the effects of ultraviolet degradation, heat, foot traffic, water and airborne pollutants.

B. The fabric shall possess the following minimum physical characteristics. ASTM testing shall be provided with the bid and any products not meeting the minimum physical characteristics will be rejected:

**Synthetic Turf System 1:**

<table>
<thead>
<tr>
<th>Property</th>
<th>Standard</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average Pile Yarn Weight</td>
<td>ASTM D 5848</td>
<td>52 oz/square yard</td>
</tr>
<tr>
<td>Average Total Weight</td>
<td>ASTM D 5848</td>
<td>86 oz/square yard</td>
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<tr>
<td>Secondary Backing Weight</td>
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<td>Primary Backing</td>
<td>ASTM D 5848</td>
<td>8 oz/square yard</td>
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<td>Average Tuft Length</td>
<td>ASTM D 5823</td>
<td>2.00&quot;</td>
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<tr>
<td>Stitches Per Inch</td>
<td>ASTM D 5793</td>
<td>2.3</td>
</tr>
<tr>
<td>Tufting Gauge</td>
<td>ASTM D 5793</td>
<td>3/8” maximum</td>
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<tr>
<td>Tuft Bind</td>
<td>ASTM D 1335</td>
<td>&gt; 9 lbs</td>
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<tr>
<td>Yarn Denier (monofilament fiber)</td>
<td>ASTM D 1577</td>
<td>10,800</td>
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<tr>
<td>Yarn Denier (silt film fiber)</td>
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<tr>
<td>Yarn Denier (secondary fiber)</td>
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<td>4,200</td>
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<td>Surface Flammability</td>
<td>ASTM D 2859</td>
<td>8 of 8 PASS</td>
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<td>Permeability</td>
<td>ASTM F 1551</td>
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<td>Melt Point</td>
<td>ASTM D 789</td>
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<tr>
<td>Gmax (American Football)</td>
<td>ASTM F 355</td>
<td>&lt;125 at installation &lt; 175 over life of warranty</td>
</tr>
</tbody>
</table>

1.5 Infill Material

A. Infill particles shall be recycled granulated SBR rubber, free of belting fabric and/or wire; and silica sand with a minimum fill height necessary to achieve the required shock absorbing properties and bio-mechanical properties.

PART 3 - EXECUTION

1.1 EXAMINATION

A. Examine substrates and conditions, with Installer present, for compliance with requirements for visual installation tolerances. Proceed with installation only after satisfactory conditions have been corrected.
B. Certification of prior work: The synthetic turf manufacturer and/or installation contractor shall perform a visual inspection of the field base onto which the synthetic turf system is to be installed and to examine the finished surface for required compaction, and grade tolerances (through string line testing). After any discrepancies between the required materials, application and tolerance requirements noted have been corrected, the synthetic turf installer should submit a written certification of VISUAL acceptance of the base for installation of the synthetic turf system. Any tests other than VISUAL tests (string line, water hose, etc...) shall be the responsibility of the General Contractor or Landscape Architect.

C. Installation of all materials shall be performed in full compliance with approved project shop drawings. Only factory trained technicians skilled in the installation of athletic caliber synthetic turf systems, working under the direct supervision of the manufacturer’s supervisors, shall undertake the placement of the turf system. The designated Supervisory personnel on the project must be certified, in writing by the turf manufacturer as competent in the installation of these materials, including proper seaming and proper installation of the infill mixture. The manufacturer shall certify the installation and warranty compliance.

3.2 PREPARATION

A. Inspect delivered field surface fabric and components immediately prior to installation. Any damaged or defective items shall be rejected. Installed artificial system shall be inspected for, but not limited to, the following:
   1. Uniformity of product and color
   2. Surface bubbles
   3. Field markings
   4. Field Edge installation
   5. Pile height of each roll shall be measured. Any material(s) that does not meet minimum height and thickness specifications shall be rejected. Pile height shall be measured in its finished positions.

B. Environmental Conditions: Weather conditions are important for the successful installation of the systems. No work under this section will proceed when:
   1. Ambient temperatures are below 45 degrees F.
   2. Material temperatures are below 45 degrees F.
   3. Surfaces are wet or damp
   4. Rain is imminent or falling.
   5. Conditions exist or are imminent, which will be unsuitable to installation requirements of the systems specified herein. Humidity levels will be inside the limits recommended by the adhesive manufacturer to obtain optimum bonding characteristics of the surfaces.

1.3 INSTALLATION OF THE SYNTHETIC TURF
A. The carpet rolls are to be installed directly over the properly prepared base stone. Extreme care should be taken to avoid disturbing the base stone both in regard to compaction and planarity. A 2-5 ton static roller shall be on site and available to repair and properly compact any disturbed areas of the base stone.

B. The full width rolls shall be laid out across the field. When all of the rolls of the playing surface have been installed, the sideline areas will be installed at right angles to the playing field turf. All work shall be such that the seams shall remain as required for the duration of the warranty period at a minimum. All seam widths are to be held to a minimum and shall be traverse to the field direction. Seams shall be flat, tight and permanent with no separation or fraying.

C. The perimeter of the field shall be firmly secured to the edge anchors for the life of the warranty and in accordance to project details.

D. Resilient Infill
   1. The rubber infill material shall be spot inspected and tested for conformance to sieve specifications. Any metal found in the rubber shall be cause for rejection of the rubber sack and immediate inspection of all materials.
   2. Infill must be placed in such a way as to minimize fiber entrapment.
   3. The infill must be uniformly applied so as to ensure uniform, predictable surface. The turf foreman must take numerous on site measurements to confirm the uniformity of the infill.

1.4 Field Lining and Markings
   1. General: A complete field “Lining, Marking and Field Boundary” system will be provided with the installation of the surfacing system specified herein. All markings shall be installed in accordance with prior approved project Shop Drawings.
   2. Inlays shall conform to the manufacturers’ specifications, directions and recommendations for the best results.
   3. Striping layouts shall be accurately surveyed by the Contractor before installation of inlaid field markings
   4. Install inlays only when the surface is completely dry. Adhere all inlays securely into place. Never loose-lay and sew an inlay into place.

1.5 FIELD QUALITY CONTROL

A. Testing Agency: Owner will engage a qualified independent testing and inspecting agency to perform field tests and inspections and prepare test reports.
B. Testing Services: Testing and inspecting of completed applications of synthetic turf system shall take place in suggestive states, in areas of extent and using methods that are industry standard. Do not proceed with application of next stages until test results for previously completed applications show compliance.

C. Remove and replace items where test results indicate that it does not comply with specified requirements.

1.6 FINAL ACCEPTANCE

A. Prior to final acceptance, the Contractor shall submit to the Owner three (3) copies of Maintenance Manuals, which will include all necessary instructions for the proper care and preventative maintenance of the synthetic turf system, including painting and striping.

B. The Contractor shall provide evidence that the turf can be plowed with conventional rubber bladed snow removal equipment.

C. The finished playing surface shall appear as mowed grass with no irregularities and shall afford excellent traction for conventional athletic shoes of all types. The finished surface shall resist abrasion and cutting from normal use.

1.7 CLEANING

A. Contractor shall provide the labor, supplies and equipment as necessary for final cleaning of surfaces and installed items. All usable remnants of new material shall become the property of the Owner. The Contractor shall keep the area clean throughout the project and clear of debris. Surfaces, recesses, enclosures, etc... shall be cleaned, as necessary, to leave the work area in a clean, immaculate condition ready for immediate occupancy and use by the Owner.

END OF SECTION 02920
SECTION - 02950 PLANTING

PART 1 - GENERAL

1.1 SUMMARY

A. Provide all labor, materials, equipment, tools, services and miscellaneous and incidental work to complete all planting as indicated on the Drawings and as specified.

B. Related work specified elsewhere:
   1. Earthwork - Section 02200.
   2. Irrigation System - Section 02810.
   3. Landscape Maintenance - Section 02952.

1.2 QUALITY ASSURANCE

A. Reference Standards:

B. Nomenclature: Plant names conform to "Standardized Plant Names" by American Joint Committee on Horticultural Nomenclature, except in cases not covered therein. In these instances the custom of the nursery trade is followed.

C. Substitutions: Allowed when specified material is unavailable but only with the acceptance by the Owner's Representative and upon Contractor's written request for such substitutions.

D. Quality: Conform to the State of California "Grading Code of Nursery Stock". Provide first grade plants, of normal growth, vigorous, free from disease, insect pests, insect eggs, with healthy normal root systems.

E. Plant quantities on planting plan.
   1. Plant totals given on the drawings are for the convenience of the Contractor only and are not guaranteed. Provide all indicated and required planting.

F. Inspection: Approval or rejection is reserved at the place of growth and/or at the project site. Plants shall be inspected for size, condition, defects or injury. All plants shall be true to name, and one of each bundle or lot shall be tagged with the name and size of the plants in accordance with the Standards of Practice recommended by the American Association of Nurserymen. Promptly remove rejected material from the site.

1.3 SUBMITTALS

A. Record Documents: Provide Record Documents in accordance with Section 01720, to furnish an accurate record of the final planting installation, including but not limited to:
   1. Plant material substitutions with size, genus and species.
   2. Replacements due to tree failure (existing and transplanted trees).
3. Material substitutions.

4. Revisions to the scope of work.

B. Submit the following per Section 01300.

1. Certificates of Inspection: Conform to requirements of federal, state and county laws requiring inspection for plant diseases and infestations of insects or their eggs. Accompany each shipment, invoice or order with inspection certificates required by law.

2. Fertilizer analysis. Also provide labels of each fertilizer used and the quantities used at each application.

3. Soil conditioner analysis.

4. Analysis of on-site and imported topsoils.

5. Samples of bark mulch and soil conditioner.

6. Herbicide, Pesticides, Fungicides: Furnish manufacturer’s certification by the USDA, description of ingredients, and recommendations for usage and application rates for each material to be used and dates of application.

7. Seed: Furnish certification by the grower for the type, and trueness to name of the grass variety or strain. Where seed is used, provide the quantity of seed to be delivered and incorporated for the work.

1.4 DELIVERY, STORAGE AND HANDLING

A. Protect all plant materials from winds and direct, hot sun. Water as necessary to prevent water stress.

1.5 JOB CONDITIONS

A. All scaled dimensions are approximate. Before proceeding with work, carefully check and verify all dimensions and quantities, and immediately inform the Owner’s Representative of discrepancies between the information on the drawings and actual conditions. Refrain from doing any work in said areas until given instructions.

B. Do not permit trucks and vehicles to pass over curbs, sidewalks, or paving, without adequate protection against damage.

C. Protect and maintain existing trees, shrubs and groundcovers. Provide adequate water and fertilization to maintain healthy growth.

1.6 SEQUENCING AND SCHEDULING

A. Notify Owner’s Representative in writing, allowing at least three (3) working days notice for the following:

1. Initial meeting at site prior to start of any work.

2. Plant material acceptance at source or on site.

3. Final location of plants prior to preparation of planting pits.
4. Finish grades prior to hydro-seeding lawns.

5. Check inspection of completion of all work, to establish beginning of maintenance period.

6. Final inspection.

1.7 GUARANTEE

A. Guarantee all trees in the work to live and grow for one year from the date of final acceptance. Trees found to be dead, missing or in poor condition, shall be replaced immediately.

B. Guarantee all shrubs and groundcovers and turf to live and grow for 6 months from the date of final acceptance. Material found to be dead, missing or in poor condition shall be replaced immediately.

C. Make replacements, all at Contractor's expense, to the same specifications required for original planting.

D. The replacements shall have the same guarantee as that specified for the original plant material.

E. The definition of 'Replacement' is the death of a plant or 30% leave loss.

PART 2 - PRODUCTS

2.1 MATERIALS

A. All required materials shall be of standard, approved, first grade quality, in first class condition and in ample quantities. The following products comprise the principal materials but do not set the limitation for materials required to complete the intended development.

2.2 TOP SOIL

A. Where top soil is required (to achieve final grade where import is required in the designated planting areas as part of the earthwork section, for example), provide sandy loams, fertile, friable, natural topsoil, free from decay, subsoil, rocks, sticks, and other foreign materials. Do not take from areas in which noxious weeds, including without limitation, Ipomoea tricolor (Morning Glory), Oxalis corniculata (Oxalis), Cynodon dactylon (Bermuda Grass), or Cyperus hydra (Nut Grass) are found. Soil shall be free of deleterious and harmful factors.

B. "Unclassified" Top Soil: Soil found in the designated landscape area, including soil compacted in place as part of the earthwork specified for the project. Test samples of on-site soils shall be taken under the supervision of and as directed by the Owner's Representative. Soil amendments shall be added in accordance to the soils testing laboratory's recommendation upon approval of the Owner's Representative.

C. In all planting beds, cultivate the top soil to a minimum depth of 12 inches and work into planting condition eliminating all foreign material prior to any planting.

D. At least thirty (30) days prior to delivery and installation of the topsoil, retain and pay for testing agency: Soil and Plant Laboratories, 1594 North Main Street, Orange, CA 92667, (714) 282-8777; Wallace Laboratories, 365 Coral Circle, El Segundo, CA 90245, (310)
2.3 SOIL CONDITIONER:

A. Nitrogen stabilized wood residuals, consisting of not less than 90% organic wood materials, 0.75% Nitrogen, 0.01% wetting agent. Composted, leached and aged for 10 to 12 months, and pH factor between 4.0 and 4.5.

2.4 FERTILIZERS

A. Controlled release type with coated and uncoated pills formulated as 16-7-12 (+2% iron), Agriform 16-7-12 (+ iron), or equal.

B. Planting tablets of 20-10-5 analysis, 21 grams and 5 grams; Agriform 20-10-5, Gro-Power or equal.

C. Ammonium Nitrate – Standard in trade.

D. Agricultural Gypsum - Standard in trade.

E. Soil Sulfur - 95% test pure elemental sulfur agricultural or landscape grade, dry free-flowing granular or powdered uniform material.

2.5 HERBICIDES

A. Selective pre-emergence type, 5% trifluralin: Treflan (Elanco Products Co.) 5%; diphenamid: Dymid (Elanco Products Co.) or equal.

2.6 PREPARED BACKFILL MIX

A. Prepare and thoroughly mix the amendments shown in the ‘Planting Notes’ on the drawings.

2.7 SOD LAWNS:

A. ‘PennBlue Turf’, or equal, as produced by Pacific Sod Farms, (800) 542-7633.

PART 3 - EXECUTION

3.1 SITE PREPARATION AND GRADING

A. Preparatory Cleaning: Completely remove all weeds, rocks (over 1” in diameter) and debris from work areas prior to starting finish grading and soil work. Contractor shall thoroughly water all landscape areas to be planted to germinate any existing weed seeds. Once the weeds have germinated, they are to be killed and removed prior to any soil preparation and planting. For further information on weed removal, see ‘Planting Notes’ on the Planting Plan. Keep all planting areas free of weeds for the duration of this
contract. Planting operations will not occur until all planting areas are 100% free of weeds. Weed abatement shall occur no less than 21 days before planting.

B. Earthwork: Shall include excavation and backfilling for the irrigation system and preparation for the spreading, densification, cultivation and raking of topsoil and/or site soil in designated planting areas, including fertilization and conditioning.

C. Preliminary Grading: Scarify the existing soil to a depth of 6 inches prior to backfilling with topsoil. Scarify and cultivate "unclassified" topsoil as described in Subsection 2.2.C., to a finely divided condition to a depth of 8 inches minimum below finish grade. Remove during preliminary grading operation all stones over 1 inch in greatest dimension. Prepare grades to within one tenth of a foot of the finish grade.

D. In Previously Paved Areas: Remove the top 6 inches of existing soil and dispose of off the site. Replace with clean, rock free site soil from previously unpaved areas or approved "imported" topsoil in accordance with Subsection 2.2.B., to the indicated finish grade.

E. Finish Grading:

1. The soil shall not be worked when the moisture content is so great that excessive compaction will occur, nor so dry that dust will form or clods will not readily break up.

2. Finish Grade: All planting areas, after soil preparation, settlement and planting, shall be the grades as shown on the drawings and as herein specified. Local depressed or mounded surfaces except as shown by note or contour lines will not be accepted.

   a. Unless otherwise indicated, set all finish grades 1" below curbs, headers and walks that border shrubs and groundcover areas.

   b. Set finish grades of raised planters 3" below top of walls, or 1" below line of damp-proofing.

3.2 SOIL PREPARATION

A. Thoroughly rip and cultivate all areas to a depth of not less than 12". See 'Planting Notes' on drawings for amendments.

B. Rake, drag and float to create a smooth and even planting bed. Remove all hard and non-friable materials larger than 1-1/2" in diameter from the top 2" of the prepared planting areas.

C. Areas not to be prepared:

1. Slopes 2:1 and steeper.

2. Areas designated to receive bark mulch only with no planting.

3.3 WEED CONTROL

A. Immediately after all plantings have been completed, apply Treflan at rate of 1 lb. active material per 40,000 square feet and Dymid at rate of 6 lbs of active material for 40,000 square feet to all groundcover.
B. Water thoroughly immediately.

3.4 CLEAN UP AND REVIEW

A. Upon completion of all planting, clean site of all debris, superfluous materials and equipment. Broom or flush clean all paving and walks.

B. A request for a check review of installations shall be made to the Owner's Representative providing three (3) working days notice. This review will establish the start of the maintenance period subject to the Owner's Representative's acceptance.

END OF SECTION
SECTION 02952- LANDSCAPE MAINTENANCE

PART 1 - GENERAL

1.1 SUMMARY

A. Provide all labor, materials, equipment, tools, services and miscellaneous and incidental work to complete all landscape maintenance as indicated on the Drawings and as specified.

B. Related work specified elsewhere:
   1. Landscape Irrigation - Section 02810
   2. Synthetic Turf – Section 02920
   3. Landscape Planting - Section 02950

1.2 DESCRIPTION OF WORK

A. Maintenance period shall be 90 calendar days beginning on day of check review and upon approval of the Owner’s Representative.

1.3 QUALITY ASSURANCE

A. Arrange for subsequent check review at 30-day intervals with Contractor and Owner’s Representative. Provide seven (7) days advance notice.

B. Make final review at completion of maintenance period to determine acceptability of work.

C. Prior to date of final review, acquire from Owner’s Representative approved reproducible prints and record from job record set all changes made during construction, label said prints “Project Record”, and deliver to Owner’s Representative. Prior to date of final review deliver to Owner’s Representative “Landscape and Irrigation Guarantee” as required.

D. Deliver all turnover items noted in other specification sections prior to a final review.

1.4 GUARANTEE

A. Guarantee all plant material installed under contract against any and all poor, inadequate or inferior materials and/or workmanship, per Section 02950, Planting. Replace any plant found to be dead, missing, or in poor condition due to faulty materials or workmanship, as determined by Owner’s Representative, at no cost to the Owner.

B. Replace all material found to be dead, missing, or in poor condition during maintenance period immediately. The Owner’s Representative shall be sole judge as to condition of material. Replace material within 15 days of written notification by Owner’s Representative.

PART 2 - PRODUCTS

LANDSCAPE MAINTENANCE
2.1 MATERIALS

A. All material to conform to planting specifications in other sections or otherwise be acceptable to the Owner's Representative. Provide monthly record of all herbicides, fertilizers, insecticides and disease control chemicals used to the Owner's Representative.

PART 3 - EXECUTION

3.1 GENERAL

A. Continuously maintain all areas involved in this contract during progress of work and during maintenance period until final acceptance of work by the Owner's Representative.

B. Unacceptable condition of any planting at termination of schedule maintenance period may cause postponement of final completion date of contract. Maintenance to be continued by Contractor until all work is acceptable.

C. In order to carry out maintenance work, furnish sufficient men and adequate equipment to perform work in timely fashion during plant maintenance period.

D. Start of Maintenance criteria: Maintenance period shall not start until all elements of construction, planting and irrigation for entire project are complete. Project will not be segmented into maintenance phases, unless specifically authorized in writing by the Owner's Representative.

E. Request inspection to begin plant maintenance period after all planting and related work has been completed in accordance with contract documents.

F. Watering schedules shall be given to the Owner's Representative on a weekly basis.

3.2 MAINTENANCE

A. Keep all areas free of debris and weeds. Keep planted areas weed-free. Pick up all litter in planted and hardscape areas. Clean up run-off onto paved areas caused by erosion of soil in planted areas. All pick-up and cleaning operations including hardscape shall be done weekly.

B. Provide adequate protection of all areas. Repair damaged areas at Contractor's expense. All hazardous conditions shall be remedied immediately.

C. Between 15th and 20th day of maintenance period, re-sod all spots or areas within lawn where normal turf growth is not evident as determined by Owner's Representative. Re-sod as often as necessary to provide assured complete coverage of turf.

D. Do not remove by hand or by mechanical means any noxious weeds (to include but not limited to Bermuda Grass, Kikuya Grass, Nut Sedge, Oxalis and Morning Glory.)

3.3 TREE AND SHRUB CARE

A. Watering: Maintain an adequate water basin around plants so that enough water can be applied to establish moisture through major root zone. When hand-watering, use a water wand to break water force. Use mulches to reduce evaporation and frequency of watering.
B. Pruning:

1. Trees:
   a. Prune trees to select and develop permanent scaffold branches, and radial orientation so as not to overlay one another; to eliminate diseased or damaged growth; to eliminate narrow V-shaped branch forks that lack strength; to reduce toppling and wind damage by thinning out crowsns; to maintain growth within space limitations; to maintain a natural appearance; to balance crown with roots.
   b. Under no circumstances will stripping of lower branches (raising up) of young trees be permitted. Retain lower branches in a “tipped back” or pinched condition with as much foliage as possible to promote caliper trunk growth (tapered trunk). Lower branches can be cut flush with trunk only after tree is able to stand erect without staking or other support. Remove sucker growth if deemed appropriate by Owner’s Representative.
   c. Thin out evergreen trees and shape when necessary to prevent wind and storm damage. Primary pruning of deciduous trees shall be done during dormant season. Prune damaged trees or those that constitute health of safety hazards at any time of year as required to eliminate these conditions.

2. Shrubs:
   a. Objective of shrub pruning is same as for trees. Do not clip shrubs into balled or boxed forms unless such is required by design and directed by Owner’s Representative.
   b. Make all pruning cuts to lateral branches or buds to trunk with 1/4” to 1/2” shoulder. “Stubbing” not permitted.

C. Staking and Guying: Remove stakes and guys as soon as they are no longer needed. Stakes and guys are to be inspected to prevent girdling of trunks or branches and to prevent rubbing that causes bark wounds. Replace all broken stakes and ties with specified materials.

D. Weed Control: Keep basins and areas between plants free of weeds. Use recommended legally approved herbicides. Avoid frequent soil cultivation that destroys shallow roots. Use mulches to help prevent weed seed germination.

E. Insect and Disease Control: Maintain control with approved materials. Work will not be accepted if any plants show infestation by disease or insects.

3.4 GROUNDCOVER CARE

A. Weed Control: Control weeds with chemical spray or by mechanical means so as to cause minimal damage to planted material.

B. Do not remove by hand or by mechanical means any noxious weeds (to include but not limited to Bermuda Grass, Kikuya Grass, Nut Sedge, Oxalis and Morning Glory.)

C. Watering: Water enough that moisture penetrates throughout root zone and only as frequently as necessary to maintain healthy growth.
D. Trash Removal: Remove trash weekly.
E. Edging: Edge groundcover to keep in bounds and trim top growth as necessary to achieve an overall even appearance.

3.5 LAWN AND TURF CARE

A. Mowing and Edging:
   1. Lawns shall be mowed at 2” height.
   2. Commence mowing of turf when grass has reached recommended mowing height for specified species. Mow at least weekly after first cut. Turf must be well-established and free of bare spots and weeds to satisfaction of Owner’s Representative prior to final acceptance.
   3. Pick up excess grass clippings as determined by Owner’s Representative and remove from site and premises.
   4. Trim edges at least twice monthly or as needed for neat appearance. Clippings to either be vacuumed or blown off walks.

B. Watering: Water lawns at such frequency as weather conditions require as to replenish soil moisture below root zone and maintain healthy growth.

C. Weed Control: If needed, control broad leaf weeds with selective herbicide.

3.6 FERTILIZING

A. Fertilize all planting areas with following:
   1. At end of first 30 days and at 30 day intervals, apply 7 lbs per 1,000 square feet of 16-7-12 (+ iron) fertilizer.
   2. At end of maintenance period and at 30-day intervals should maintenance period be extended, apply 10 lbs per 1,000 square feet of 16-7-12 (+ iron) fertilizer.

3.7 SYNTHETIC TURF CARE

A. Field Maintenance
   1. Perform regularly scheduled periodic maintenance twice per year. The maintenance will include but not be limited to a complete inspection and repair including all materials and cleaners of all areas of the field including: Fiber fibrillation analysis, Seam analysis, Perimeter anchoring, Excessive wear analysis, UV fade inspection, Infill – consistency in depth, Infill – migration analysis, Glued inlay analysis, Base stability analysis, Painted marking inspection, Debris removal, Brushing, Aerating, Grooming, Removal of weeds and moss, Removal of stains, Keeping the infill level.
   2. The inspection and maintenance will be performed by an Authorized Maintainer, if the person is not the same as the previous visit, then credentials will be submitted for approval before the visit.
   3. Approximate number of times is 2 times per year for 8 years through the warranty period.
4. The maintenance activities will include and not be limited to the most current Maintenance Guidelines at the time the maintenance is being undertaken.

B. Adjustment and Cleaning

1. Do not permit traffic over unprotected surface.

2. Contractor shall provide the labor, supplies, and equipment as necessary for final cleaning of surfaces and installed items.

3. All usable remnants of new material shall become the property of the Owner.

4. The Contractor shall keep the area clean throughout the project and clear of debris.

5. Surfaces, recesses, enclosures, and related spaces shall be cleaned as necessary to leave the work area in a clean, immaculate condition ready for immediate occupancy and use by the Owner.

C. Protection

1. Protect installation throughout construction process until date of final completion.

3.8 IRRIGATION SYSTEM

A. Checking System: Check entire system weekly for proper operation. Flush out lateral lines after removing last sprinkler head or two at each end of lateral. All heads are to be adjusted as necessary for unimpeded coverage.

B. Programming: Provide to Owner’s Representative written weekly irrigation schedules for each remote control valve for scheduling input for the Campus Irrigation Controller Computer. Provide Owner’s Representative two (2) keys to controller enclosure.

C. Repairs: Repair all damages to irrigation system at Contractor’s expense. Repairs to be made within one watering period.

END OF SECTION 02952
SECTION 03100 - CONCRETE FORMS AND ACCESSORIES

SECTION 1: GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Formwork for cast-in-place concrete as indicated.
   2. Installation of items to be embedded in concrete, such as anchor bolts, inserts, embeds, and sleeves.

B. Related Sections:
   1. Section 03200: Concrete Reinforcement.
   2. Section 03300: Cast-In-Place Concrete.

1.2 SYSTEM DESCRIPTION

A. Regulatory Requirements: Except as otherwise specified herein, Work of this section shall be in accordance with CBC, Chapter 19A, Concrete.

1.3 SUBMITTALS

A. Shop Drawings: Submit Shop Drawings indicating locations of: forms, joints, embedded items, and accessories. Review and approval will not include form strength and adequacy.

B. Product Data: Submit manufacturer's Product Data for form materials and accessories.

C. Record Document: Keep an accurate record of the dates of removal of forms, form shores and reshores, and furnish copies to the Architect.

1.4 QUALITY ASSURANCE

A. Construction of Forms shall comply with the following as a minimum requirement:
   1. ACI 347, "Recommended Practice for Concrete Formwork"
   2. CBC Section 1906A.
   3. Tolerances shall conform to those as specified in ACI 301, "Specifications for Structural Concrete for Buildings", as applicable, unless exceeded by requirements of DSA or otherwise indicated or specified.
   4. Plywood: Conform to tables for form design and strength in APA Form V 345.

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 camber,
which may be required for the project. The Architect, Structural Engineer of record, Contractor and Contractor's formwork installer shall be in attendance at this meeting.

C. Mock-ups: Provide mock-ups for all exposed finishes; 9 square feet minimum size. Locate as required by the Architect, for review and approval prior to installation.

1.5 DELIVERY, STORAGE, AND HANDLING:

A. Deliver materials for forms in timely manner to ensure uninterrupted progress.

B. Store materials by methods that prevent damage and permit ready access for inspection and identification.

SECTION 2: PRODUCTS

2.1 GENERAL

A. Form materials may be reused during progress of the Work provided they are completely cleaned and reconditioned, recoated for each use, capable of producing formwork of required quality, and are structurally sound.

B. Form Lumber: WCLIB Construction Grade or Better, WWPA No. 1 or Better.

C. Plywood: PS 1-95, Group I, Exterior Grade B-B Plyform or better, minimum 5-ply and 3/4 inch thick for exposed locations and at least 5/8 inch thick for unexposed locations, grade marked, not mill oiled. Furnished plywood with medium or high density overlay is permitted.

D. Coated Form Plywood: For exposed painted concrete, plastic overlaid plywood of grade specified above, factory coated with a form coating and release agent Noxcrete®, or equal.


F. Joist Forms: Code recognized steel or molded plastic types as required.

G. Special Forms: For exposed integrally-colored concrete, plywood as above with high density overlay, plywood with integral structural hardboard facing or fibrous glass reinforced plastic facing, providing specified finish.

H. Form Ties: Prefabricated rod, flat band, wire, internally threaded disconnecting type, not leaving metal within 1-1/2 inch of concrete surface.

J. Form Coating: Non-staining clear coating free from oil, silicone, wax, not grain-raising. "Formshield" by A.C. Horn, Inc., "Release" by Burke Concrete Accessories, or "Cast-Off" by Sonneborn Building Products. Where form liners are furnished, provide form coatings recommended by form liner manufacturer.
SECTION 3: EXECUTION

3.1 GENERAL

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. Forms shall be constructed so as to shape final concrete structure conforming to shape, lines and dimensions of members required by Drawings and Specifications, and shall be sufficiently tight to prevent leakage of mortar. They shall be properly braced or tied together to maintain position and shape. Forms and their supports shall be designed so that previously placed structures will not be damaged. Forms shall be true to line within tolerances as permitted under section 1.4 above.

3.2 FORM ERECTION AND REMOVAL:

A. Conform to ACI 301 and ACI 347 except as exceeded by the requirements of Code, regulatory agencies, or herein.

B. 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, reglets, 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.

C. Camber: Place suitable jacks, wedges, or similar means to induce camber and to correct settlement in forms before and during concrete placing. Camber shall be as determined in pre-installation meeting specified above. In general, formwork shall be capable of accommodating camber of 1/8" per 10' of span plus 1/4". Provide Camber as noted on the Structural Drawings (if required).

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. Reglets and Rebates: Form required reglets and rebates to receive frames, flashing, and other equipment. Obtain required dimensions, details, and precise positions for work to be installed under other sections and form concrete accordingly.

F. Form Joints: Fill joints to produce smooth surfaces, intersections, and arises. Use polymer foam or equivalent fillers at joints and where forms abut or overlap existing concrete to prevent leakage of mortar.

G. Recesses, Drips, and Profiles: Provide smooth milled wood or pre-formed rubber or plastic shapes of types shown and required.
H. 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.

I. Re-Use: Clean and recondition form material before re-use.

J. Form Removal: Do not remove concrete forms until concrete attains sufficient strength to support its own weight and all superimposed loads as determine by testing field cured concrete cylinders, but not sooner than specified in ACI 347, paragraph 3.6.2.3, or CBC Section 1906A.2. Load supporting forms may be removed when concrete has attained 75 percent of required 28 day compressive strength, but no sooner than 3 days provided construction is restored. Vertical formwork for cast-in-place concrete walls may be removed no sooner than 1 day following concrete placement, provided that contractor can demonstrate that no sloughing or sagging of concrete will occur.

1. Reshore structural members as specified per ACI 347R-94.

2. Remove formwork progressively so unbalanced loads are not imposed on the structure.

3. Avoid damage concrete surfaces during form removal.

4. Store reusable forms for exposed architectural concrete to prevent damage to contact surfaces.

5. Remove formwork in same sequence as concrete placement to achieve similar concrete surface coloration.

3.3 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:
   - In 10'-0" 1/4 inch
   - In any story or 20'-0" 3/8 inch
   - In 40'-0" or more 3/4 inch

2. Variation from Level or Grades Indicated
   - In 10'-0" 1/4 inch
   - In any bay or 20'-0" maximum 3/8 inch
   - In 40'-0" or more 3/4 inch

3. Cross-Sectional Dimensions
Minus 1/4 inch

Plus 1/2 inch

A. Building Lines: Variation of linear building lines from established position in plan and related position of columns, walls and partitions:

1. In any bay or 10'-0" maximum 1/2 inch

2. In 40'-0" or more 1 inch

B. Slab Openings: Variations in size and location of sleeves and slab openings shall not exceed 1/4 inch.

3.4 SURVEY AND ADJUSTMENT:

A. Check forms before and during placement of concrete, using an instrument, and make corrections as work proceeds.

3.5 EMBEDDED PIPING AND ROUGH HARDWARE:

A. Comply with CBC, Section 1906A.3. 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. 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 outside diameter greater than 1/3 the slab thickness nor be placed below the bottom reinforcing steel or over top reinforcing steel.

C. Conduits and pipes of aluminum shall not be embedded in structural concrete unless coated or covered to prevent aluminum-concrete reaction or electrolytic action between aluminum and reinforcing steel.

D. 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.

E. 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.

F. Clusters of Conduits:

1. Clusters of conduits embedded in a concrete slab shall not exceed 6 conduits per cluster and each conduit per cluster shall be individually spaced as per the above requirements. Conduit clusters exceeding this requirement shall be reviewed and approved by the structural engineer of record and DSA prior to the installation of the conduits.
2. If more than one conduit cluster is required in a specific area of the slab, routing and spacing of the clusters shall be reviewed and approved by the structural engineer of record and DSA prior to the installation of the conduits.

3. At no time shall the quantity and routing of clusters of conduits impair the strength of the concrete construction.

3.6 FIELD QUALITY CONTROL

A. Inspection: Obtain inspection and approval of forms before placing structural concrete.

3.7 CLEAN UP

A. Remove rubbish, debris and waste materials and legally dispose of off the Project site.

END OF SECTION
SECTION 03200 - CONCRETE REINFORCEMENT

SECTION 1: GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Reinforcing bars for cast-in-place concrete
   2. Reinforcing mesh for cast-in-place concrete
   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, splash blocks, equipment bases, and other items as shown or required to complete all work.

B. Related Sections:
   1. Section 03300: Cast-In-Place Concrete.

1.2 SYSTEM DESCRIPTION

A. Regulatory Requirements: Fabrication and placement of reinforcing shall be in accordance with requirements of CBC, Chapter 19A.

1.3 SUBMITTALS

A. Shop Drawings: Submit steel reinforcement Shop Drawings in accordance with ACI 315. Shop drawings should include 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 CBC requirements. After approval of initial submission, subsequent submittals may be waived.

B. Contractor to prepare 3’ x 3’ sample mock-up on site for review and approval by Owner’s Representative prior to installation. Sample will show all concrete finishes, joints and colors.

C. Certification: Submit copies of welding operator's certificate.

D. Chemical Analysis: Provide for bars to be welded, in accordance with CBC, 1903A.5.

E. Closeout Submittals: Record exact locations of reinforcing that vary from Shop Drawings.

1.4 QUALITY ASSURANCE

A. Comply with the following as a minimum requirement:


3. American Concrete Institute (ACI).

4. CBC, Chapter 19A, Concrete.

B. Source Quality Control: Refer to Division 01 Sections & CBC Sections 1929A.2 and 1903A.5.2 for general requirements and to following paragraphs for specific procedures. Testing laboratory retained by the Owner shall perform following conformance testing, select test Samples of bars, ties, and stirrups from the material at the Project site or from the place of distribution, with each Sample consisting of not less than two 18 inch long pieces, and perform the following tests according to ASTM A 615 and/or ASTM A 706.

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 the 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 performed 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.

3. Testing to be per CBC Sections 1929A.2 and 1929A.12.

C. Certification of Welders: Shop and Project site welding shall be performed by certified welding operators.

1.5 DELIVERY, STORAGE AND HANDLING

A. Avoid exposure to dirt, moisture or conditions harmful to reinforcing.

B. Reinforcing steel bars, wire, and wire fabric shall be stored on the Project site to permit easy access for examination and identification of each shipment. Material of each shipment shall be separated for size and shape. Use metal tags indicating size, length and other marking shown on placement drawings. Maintain tags after bundles are broken.

SECTION 2: PRODUCTS

2.1 GENERAL

A. Provide reinforcing of sizes, gages and lengths indicated, bent to indicated shapes.
2.2 MATERIALS

A. Steel Reinforcing Bars: ASTM A 615, or ASTM A 706 deformed grade 60 billet steel unless otherwise specified or indicated. Deformations to be per ASTM A-305.

B. Reinforcing Bars for welding: ASTM A706, Grade 60.

C. Reinforcing Mesh: ASTM A185, mesh size and gauge as shown, 60 ksi minimum tensile strength. Provide mesh in flat sheets only.

D. Tie Wire: ASTM A 82, fully annealed, copper-bearing steel wire, 16 gage minimum.

E. Chairs and similar support items:
   2. Use dense precast concrete supports with embedded wire ties for reinforcement placed on grade. Elsewhere, use wire bar supports.

F. Welding electrodes: AWS D1.4, Table 5.1 and 5.3 low hydrogen electrodes, E9018 for Grade 60 steel.


2.3 FABRICATION OF REINFORCING BARS:


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 reinforcement for bending. Bend bars No. 6 size and larger in the shop only. Bars with unscheduled kinks or bends are not permitted. Provide only tested and permitted bar materials.

SECTION 3: EXECUTION

3.1 INSTALLATION

A. Bars shall be bent cold. Bars partially embedded in concrete shall not be field bent except as indicated on reviewed Shop Drawings. Before installation, and again before concrete is placed, clean reinforcing of loose scale, rust, oil, dirt and any coating that could 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.
Use care not to damage vapor barriers where they occur. Accurately position, install, and secure reinforcing to prevent displacement during the placement of concrete.

C. Exposed Concrete Surfaces: Provide stainless steel or exterior quality vinyl plastic tipped chairs, bolsters, and accessories where exposed on exterior or interior concrete surfaces not to be painted or permanently covered. Provide metal chairs to hold reinforcement the required distance above form bottoms. In beams and slab construction, provide chairs under top slab reinforcement as well as under bottom reinforcement. Space chairs so that reinforcement will not be displaced during installation. Provide metal spacers to secure proper spacing. Stirrups shall be accurately and securely wired to bars at both top and bottom. At slabs, footings, and beams in contact with earth, provide concrete blocks to support reinforcement at required distance above grade.

D. Clearances: Maintain minimum clear distances between reinforcing bars and face of concrete as indicated on Structural Drawings.

E. Splices: Do not splice reinforcing bars at the points of maximum stress except where indicated. Lap splices as shown or required to develop the full strength or stress of bars. Stagger splices in horizontal wall bars at least 48" longitudinally in alternate bars and opposite faces.

F. Maintaining Bars In Position: Take adequate precautions to assure that reinforcing position and spacing is maintained during placement of concrete.

G. Reinforcing Mesh: Lap one full mesh plus 2", or 9" whichever is greater, at splices, wire tie, and support the same as specified for bars.

3.2 FIELD QUALITY CONTROL:
A. Supervision: Perform Work to this Section under supervision of a capable superintendent.

B. Inspection: Obtain inspection per CBC Sections 1929A.12 & 1929A.2 and approval of reinforcing before concrete is placed.

3.3 CLEAN UP
A. Remove rubbish, debris and waste materials and legally dispose of off the Project site.

3.4 PROTECTION
A. Protect the Work of this section until Substantial Completion.

END OF SECTION
SECTION 03300 - CAST-IN-PLACE CONCRETE

SECTION 1: GENERAL

1.1 SUMMARY

A. Section Includes:

B. Related Sections:
   1. Section 03200: Concrete Reinforcement.

1.2 SUBMITTALS

A. Shop Drawings: Submit Shop Drawings indicating locations of cast-in-place concrete Work, dimensioned locations and types of construction and expansion joints, and accessory items such as vapor barriers. Include details and locations of reinforcing, embedded items, and interfacing with other Work.

B. Product Data:
   1. Mix Design: Submit a concrete mix design for each mix that will be provided for the Work. Include intended locations for use, water/cement ratio, size of coarse aggregate and amount of any admixture. Predict minimum compressive strength, maximum slump and air content percentage. Limit water content per cubic yard of mixed concrete to 285 pounds maximum.

   2. Manufacturer of ready-mixed concrete shall deliver to the IOR a certificate with each mixer truck. Certificate shall bear the signature of representative of the testing laboratory, and shall state quantity of cement, water, fine and coarse aggregate and admixtures.

C. Material Samples: Contractor to provide 3’ x 3’ mock-up samples for each type of concrete color, finish and jointing for Owner’s approval prior to installation.

D. Certificates: Submit a notarized certificate that each of following conforms to standards indicated:
   1. Aggregates - ASTM Standards C33
   2. Admixtures - ASTM Standards C260
   3. Curing materials - ASTM Standards C171

1.3 QUALITY ASSURANCE

A. Concrete Manufacturer: Furnish concrete from licensed commercial ready-mix concrete plant conforming to CBC sections 1903A, 1904A, & 1905A, UBC Std. 19-3 and DSA approved plans. Requirements herein govern when exceeding CBC
Material, UBC Std. 19-3.

B. 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.

C. Comply with the following American Concrete Institute (ACI) Publications as a minimum requirement:
1. ACI 211 - Recommended Practice for Selecting Proportions of Concrete.
2. ACI 304 - Recommended Practice for Measuring, Mixing, Transporting and Placing Concrete.
3. ACI 305 - Recommended Practice for Hot Weather Concreting.
4. ACI 306 - Recommended Practice for Cold Weather Concreting.
5. ACI 308 - Recommended Practice for Curing Concrete.
6. ACI 309 - Recommended Practice for Consolidation of Concrete.

D. Comply with the following American Society for Testing and Materials (ASTM) Standards as a minimum requirement:
1. ASTM A 185 - Welded Steel Wire Fabric For Concrete Reinforcement.
2. ASTM C 31 - Making and Curing Concrete Test Specimens in the Field.
3. ASTM C 33 - Concrete Aggregates.
4. ASTM C 39 - Compressive Strength of Cylindrical Concrete Specimens.
5. ASTM C 88 - Soundness of Aggregates by use of Sulphate or Magnesium Sulphate.
6. ASTM C 94 - Ready-Mixed Concrete.
7. ASTM C 143 - Slump of Hydraulic Cement Concrete.
8. ASTM C 150 - Portland Cement.
9. ASTM C 171 - Sheet Materials for Curing Concrete.
10. ASTM C 172 - Sampling Freshly Mixed Concrete.
11. ASTM C 173 - Air Content of Freshly Mixed Concrete by the Volumetric Method.
13. ASTM C 231 - Air Content of Freshly Mixed Concrete by the Pressure Method.


15. ASTM C 289 - Potential Reactivity of Aggregates (Chemical Method).

16. ASTM D 1751 - Preformed Expansion Joint Fillers for Concrete Paving and Structural Construction (Non-extruding and Resilient Bituminous Types).

E. 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 DSA. Testing Laboratory shall perform following conformance testing.

1. Portland Cement: Furnish mill certificates in accordance with the CBC section 1929A.1 and acceptable to Architect and DSA, showing conformance with requirements specified; otherwise, the Testing Laboratory shall perform one test for each 250 barrels of cement in accordance with UBC Std. 19-1 and 1929A. 1.

2. Cementitious Material Test. The concrete supplier shall furnish to the enforcement agency certification from the cement manufacturer that the cement proposed for use on the project has been manufactured and tested in compliance with the requirements of ASTM C 150 for Portland cement and ASTM C 595 or ASTM C 1157 for blended hydraulic cement, whichever is applicable. When a mineral admixture or ground granulated blast-furnace slag is proposed for use, the concrete supplier shall furnish to the enforcement agency certification from the manufacturer that they have been manufactured and tested in compliance with ASTM C 618 or ASTM C 989, whichever is applicable. An affidavit shall be provided by the concrete supplier which identifies the cementitious material used for the project by the manufacturer, date of receipt of cementitious material by the concrete supplier, place of storage and date of use of the cementitious material. If such information is not available, one grab sample of cementitious material used on the project shall be taken for each day's pour and shall be tested as directed by the structural engineer, architect or enforcement agency. See CBC Section 1929A.6 for waiver of tests.

3. Aggregates 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 properties listed in the following table.
<table>
<thead>
<tr>
<th>PHYSICAL PROPERTIES</th>
<th>Test Method</th>
<th>Minimum values</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical Properties, units</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sieve analysis</td>
<td>ASTM C136</td>
<td></td>
</tr>
<tr>
<td>Organic impurities</td>
<td>ASTM C40</td>
<td>Fine aggregate not darker than reference standard color</td>
</tr>
<tr>
<td>Soundness</td>
<td>ASTM C88</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>Abrasion</td>
<td>ASTM C131</td>
<td>Weight loss not more than 10.5 percent after 100 revolutions, 42 percent after 500 revolutions</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>

5. Concrete Batch Plant Inspections: Conform to CBC section 1929A.4. Continuous batch plant inspection is required for structural concrete, performed by a specially qualified inspector approved by DSA. As allowed by CBC section, 1929A.5, batch plant inspection may be waived provided all the requirements in CBC section 1929A.5 are satisfied. DSA approval will be required prior to the waiving batch plant inspection.

E. 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.

1.4 CONCRETE MIX DESIGNS

A registered civil engineer with experience in concrete mix design shall select the relative amounts of ingredients to be used as basic proportions of the concrete mixes proposed for use under the provisions of method B, CBC section 1905A.2.3. Method B mixes shall be based on existing approved compressive strength test data for concrete mixes in accordance with CBC Section 1905A.3.1.1 and requirements below:

A. Strength Requirements: Design mixes for structural concrete for minimum 28-day compressive strengths required by Drawings and Specifications. The trial batch strength for each mix shall exceed indicated or specified strength by 750 psi or a lesser amount based on the standard deviations of strength test records according to ACI 318.

B. Normal Weight Concrete Mix Design: Design all mixes for workability and durability of concrete. Control the mixes in accordance with CBC 1905A.2.3, ACI 211.1,
Standard Practice for Selecting Proportions for Normal, Heavyweight, and Mass Concrete, and Chapter 4, ACI 318, Building Code Requirements for Reinforced Concrete. Slump and water-cement ratio shall be per the construction document general notes. Make adjustments in cement content required for concrete strengths at Contractor's expense and do not exceed 0.60 absolute water-cement or cement plus fly ash ratio by weight. Do not use calcium chloride or any admix containing such material. Admixtures containing a material releasing nitrates in solution are limited to 0.06 percent by weight for the chloride ion.

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 1" maximum size, except maximum 1-1/2" size for foundations and maximum 3/8" size at congested reinforcing or thin sections, as submitted by the contractor and approved by the Architect and Structural Engineer of Record.

D. CBC section 1905A.3.1.1 (Method B) with test records. Where a testing laboratory acceptable to the enforcement agency has records of compressive strength tests, a standard deviation shall be established. Test records from which a standard deviation is calculated shall:

1. Represent materials, quality control procedures and conditions similar to those expected, and changes in materials and proportions within the test records shall not have been more restricted than those for proposed work.

2. Represent concrete produced to meet a specified strength or strengths $f'_c$ within 1,000 psi (6.89 Mpa) of that specified for proposed work.

3. Must consist of at least 30 consecutive tests or two groups of consecutive tests totaling at least 30 tests as defined in CBC Sections 1905A.3.3 and 1905A.6.1.4, except as provided in CBC Section 1905A.3.1.2.

1.5 DELIVERY, STORAGE AND HANDLING

A. Ready-mix concrete shall be mixed and delivered in accordance with ASTM C 94 and CBC Standard 19-3 and 19-4. Each batch of concrete delivered to the Project site shall be accompanied by a time slip bearing departure time and signature of batch plant supervisor. Concrete shall be placed within 90 minutes after start of mixing. Deliver all materials in timely manner to ensure uninterrupted progress of the work.

B. Store cement and aggregate materials so as to prevent their deterioration or intrusion by foreign matter. Deteriorated or contaminated materials shall not be furnished.

1.5 JOB CONDITIONS

A. Cold Weather Requirements:

1. Adequate equipment shall be provided for heating concrete materials and protecting concrete during freezing or near-freezing weather. Surfaces, in which concrete is to come in contact with, shall be free from frost or ice. No frozen materials or materials containing ice shall be furnished.
2. When placing concrete during freezing or near-freezing weather the mix shall have a temperature of at least 50 degrees F., but not more than 90 degrees F. when cement is added. Concrete shall be maintained at a temperature of at least 50 degrees F. for at least 72 hours after placing or until it has thoroughly hydrated. When necessary, concrete materials shall be heated before mixing. Special precautions shall be provided for protection of transit-mixed concrete.

B. Hot Weather Requirements: During hot weather, proper attention shall be provided for ingredients, production methods, handling, placing, protection and curing, to prevent excessive concrete temperatures or water evaporation which could impair required strength or durability.

SECTION 2: PRODUCTS

2.1 GENERAL

A. Ready-Mixed Concrete: Mix and deliver in accordance with requirements of CBC Chapter 1905A.

2.2 MATERIALS

A. Portland cement: UBC Standard 19-1, Type II or V, low alkali. Do not change brand without prior approval.

B. White Portland cement: UBC Standard 19-1, Type 1, from one approved source.

C. Aggregates: ASTM C33 and C 227, from approved pits, free from vegetable matter and of opaline, feldspar, or siliceous magnesium substances; all washed, clean, hard, fine-grained sound crushed rock or gravel; not over 5 percent by weight of flat, thin, elongated, friable, or laminated pieces (pieces having major dimension over 5 times average dimension) or more than 2 percent by weight of shale or cherty material. Any suitable individual grading of coarse aggregate may be furnished, provided Grading of Combined Aggregate indicated in following table is obtained. Refer to Section 01420: Testing and Inspection.

<table>
<thead>
<tr>
<th>Sieve Number or Size in Inches</th>
<th>1-1/2&quot;</th>
<th>1&quot;</th>
<th>3/4&quot;</th>
</tr>
</thead>
<tbody>
<tr>
<td>Passing a 2&quot;</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Passing a 1-1/2&quot;</td>
<td>95-100</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Passing a 1&quot;</td>
<td>70-80</td>
<td>90-100</td>
<td></td>
</tr>
<tr>
<td>Passing a 3/4&quot;</td>
<td>50-80</td>
<td>70-95</td>
<td>90-100</td>
</tr>
<tr>
<td>Passing a 3/8&quot;</td>
<td>40-60</td>
<td>45-70</td>
<td>55-75</td>
</tr>
<tr>
<td>Passing a No. 4</td>
<td>35-55</td>
<td>35-55</td>
<td>40-60</td>
</tr>
<tr>
<td>Passing a No. 8</td>
<td>25-40</td>
<td>27-45</td>
<td>30-46</td>
</tr>
<tr>
<td>Passing a No. 16</td>
<td>16-34</td>
<td>20-38</td>
<td>23-40</td>
</tr>
<tr>
<td>Passing a No. 30</td>
<td>12-25</td>
<td>12-27</td>
<td>13-28</td>
</tr>
<tr>
<td>Passing a No. 50</td>
<td>2-12</td>
<td>5-15</td>
<td>5-15</td>
</tr>
<tr>
<td>Passing a No. 100</td>
<td>0-3</td>
<td>0-5</td>
<td>0-5</td>
</tr>
</tbody>
</table>

C. Water: Water shall be potable and free from deleterious matter.
D. Pozzolan: ASTM C618, Class F or N Fly Ash, 100 pounds maximum per cubic yard, containing one percent or less carbon. Fly ash shall not be used in excess of 15 percent by weight of total cement quantity.

E. Admixtures: CBC Chapter 19A, Section 1903A.6, Type A or D, manufactured by Grace or approved equal. Admixtures to be used in concrete shall be subject to prior approval by DSA.

F. Expansion Joint Fillers: Preformed strips, non-extruding and resilient bituminous type, of thickness indicated, conforming to ASTM D 1751 and ASTM D1752.

G. Construction Joint Materials: "Key-Kold" or "Kwik-Joint," of profiles indicated.

H. Curing Paper and Liquid Curing Compounds:
   2. Liquid Curing Compounds: A standard brand complying with Rule II 13 of the South Coast Air Quality Management District and Federal Air Quality Regulation 40 CFR 52.254, clear liquid conforming to ASTM C 309, Master Builders, Grace, Anthydro.

I. Underlayment: Latex underlayment for filling low spots in concrete shall be Tile-Tex by Flintkote Co., Webtex #60 or Fixallatex by Dowman Products Co.

J. Vapor Barrier: Vapor barrier shall be installed below all slabs poured on grade conforming to ASTM E 1745. Barrier shall have a permeance rating of 0.01 perms or less, an impact strength greater than 70 grams per mil, and must be resistant to deterioration. Provide minimum 2-inch wide waterproof plastic self-adhering tape for sealing edges and ends of sheeting.

K. Non-shrink grout:
   1. For concealed areas: Master Builders "Embeco 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 (CRC-C 611), without segregation or bleeding at any temperature between 45 degrees F and 100 degrees F. Working time 30 minutes or more.
   2. For exposed areas: Master Builders "Masterflow 926," with same characteristics as specified for concealed areas.

L. 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. In lieu of field mixing, Contractor may use factory mixed drypack material, such as Master Builders "Set Grout."

M. Epoxy Grout: Master Builders "Ceilcote 648," or equal.

N. Bonding Agent: "Weld-Crete," manufactured by Larsen Products Co., P.O. Box 2127, Rockville, MD 20852, Master Builders "Concrex," or equal.
2.3 CONCRETE MIXING

Furnish ready-mixed concrete from an approved commercial off-site plant. Conform to UBC Standard 19-3, except materials, testing, and mix designs as specified herein. Use transit mixer trucks equipped with automatic devices for recording number of revolutions of drum. Comply with CBC Section, 1905A.

A. Admixtures: All approved admixtures shall be introduced into the concrete at the batch plant. Field additions are not acceptable.

B. Slump: Adjust quantity of water so concrete at point and time of placing does not exceed the slumps per plans when tested according to ASTM C143. Use the minimum water necessary for workability required by part of structure being cast.

SECTION 3: EXECUTION

3.1 GENERAL

A. Time of Placing: Do not place concrete until reinforcement, conduits, outlet boxes, anchors, hangers, sleeves, bolts, and other embedded materials are securely fastened in place. Contact the IOR at least 24 hours before placing concrete; do not place concrete until inspected by the IOR.

B. Pouring Record: A record shall be kept on the Project site of time and date of placing concrete in each portion of structure. Such record shall be maintained on the Project site until Substantial Completion and shall be available for examination by the Architect and DSA.

3.2 PREPARATION

A. Moisture Barrier: Before installation of screeds and slab reinforcement, install a moisture barrier under slabs on grade. Place membrane in as large sheets as possible, lapped 12 inches at sides and ends, with top lap placed in the direction of the spreading of concrete. Extend membrane and lap at least 4 inches onto adjoining wall surfaces and seal with pressure-sensitive tape.
   1. Install moisture barrier on minimum 2-inch bed of sand, unless otherwise indicated, over gravel base as indicated on the Drawings.
   2. Patch punctures and tears in moisture barrier.

B. Reglets and Rebates:
   1. Form reglets and rebates in concrete to receive flashing, frames and other equipment as detailed and required. Coordinate dimensions and locations required with other related Work.
   2. If concrete slabs on grade adjoin a wall or other perpendicular concrete surface, form a reglet in wall to receive and carry horizontal concrete Work. Reglet shall be full thickness of the slab and shall be 3/4 inch wide, unless otherwise indicated. Requirement does not apply to exterior walks, unless specifically indicated.
C. **Screeds**: Install screeds accurately and maintain at required grade or slab elevations after steel reinforcement has been installed, but before starting to place concrete. Install screeds adjacent to walls and in parallel rows not to exceed 8 feet on centers.

D. **Screeds Over Vapor Barrier**: Use weighted pad or cradle type screeds and do not drive stakes through the vapor barrier. Check with an instrument level, transit, or laser.

E. **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.**

F. **Wetting**: Wet wood forms sufficiently to tighten up cracks. Wet other materials sufficiently to reduce adsorption and to help maintain concrete workability.

G. **Earth Subgrade**: Dampen 24 hours before placing concrete, but do not muddy. Re-roll where necessary for smoothness and remove loose material.

H. **Gravel Fill**: Recompress disturbed gravel and bring to correct elevation.

I. **Sand Beds or Subslab Drainage Fill**: Recompress disturbed material and bring to correct elevation.

J. **All concrete shall be thoroughly consolidated by suitable means during placement and shall be thoroughly worked around reinforcement and embedded fixtures and into corners of forms.**

### 3.3 INSTALLATION

A. **Conveying and Placing:**

1. **Do not place concrete until reinforcing steel and forms or decks have been approved by the Inspector and other authorities having jurisdiction. Concrete shall be placed only under direct observation of the IOR. Do not place concrete outside of regular working hours, unless the IOR has been notified at least 48 hours in advance.**

2. **Comply with CBC Sections 1905A.9 and 1905A.10.**

3. **Concrete shall be conveyed from mixer to location of final placement by methods, which will prevent separation or loss of materials. Place concrete in horizontal layers not more than 18" thick within 90 minutes after water is first added to the batch.**

4. **Concrete shall be placed as nearly as practicable to its final position to avoid segregation due to re-handling or flowing. No concrete that has partially hydrated or has been contaminated by foreign materials shall be placed, nor shall re-tempered concrete or concrete which has been remixed after initial set be placed.**

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5. In placing concrete in columns, walls or thin sections, provide openings in forms, elephant trunks, tremies or other recognized devices, to prevent segregation and accumulation of partially hydrated concrete on forms or metal reinforcement above level of concrete being placed. Such devices shall be installed so that concrete will be dropped vertically. Unconfined vertical drop of concrete from end of such devices to final placement surface shall not exceed 5-feet for concealed concrete or over 3-feet for exposed concrete.

6. Concrete shall be placed as a continuous operation until placing of panel or section is completed. Top surfaces of vertically formed lifts shall be level.

7. Concrete shall be thoroughly consolidated during placement, and shall be worked around reinforcement and embedded fixtures with mechanical vibrators.

8. Where conditions make consolidation difficult, or where reinforcement is congested, batches of concrete adjusted to use smaller size aggregates than specified in the mix design shall be used as approved by the Architect, Structural Engineer and the Enforcement Agency.

9. Where new concrete is placed against or on old or existing concrete, apply bonding agent to surface of old concrete prior to placement of new concrete.

B. Compaction and Screeding:

1. 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.

2. 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.

3. Tamp freshly placed concrete with a heavy tamper until at least 3/8 inch of mortar is brought to surface. Concrete shall then be tamped with a light tamper and screeded with a heavy straightedge until depressions and irregularities are eliminated, and surface is true to finish grades or elevations. Remove excess water and debris.

4. Where slabs are to receive separate cement finish or mortar setting bed, continued tamping to raise mortar to surface is not performed. Laitance shall be removed by brushing with a stiff brush or by light sandblasting to expose clean top surface of coarse aggregate.

C. Floating and Troweling:
1. When concrete has hydrated sufficiently, it shall be floated to a compact and smooth surface. After floating, wait until concrete has reached proper consistency before troweling. Top surfaces shall receive at least 2 troweling operations with steel hand trowel. Prior to and during final troweling, apply a fine mist of water frequently with an atomizing type fog sprayer. Omit troweling for slabs to receive a separate cement finish.

2. Architectural finishes shall be as specified in Section 03307. Non-architectural vertical concrete surfaces shall be finished smooth and free from marks or other surface defects.

D. Joints: Comply with CBC Section 1906A.4. Locate joints in concrete only where shown or approved and obtain prior approval for points of stoppage of any pour. Clean and roughen surface of construction joints by removing entire surface and exposing 1/4" of clean coarse aggregate solidly embedded in mortar matrix by sandblasting, chipping, use of an approved retarder agent, or equal. Water and keep hardened concrete wet for not less than 24 hours before placing the next lift or abutting concrete. Cover the horizontal surfaces of existing or previously placed and hardened concrete with a 2" thick layer of fresh concrete of required mix less 50 percent of coarse aggregate just before balance of concrete is placed.

E. Vertical Elements: Stop placement of concrete in walls and columns 1-1/2" below bottom of beams or supported slabs. Stop placement at sills and heads of wall openings in the same manner. Allow concrete in vertical elements to be in place at least 2 hours and until vertical settlement has ceased before placing concrete for floor framing.

F. Correction of Segregation: Before placing next layer of concrete, and at the top of each placement for vertical elements, remove all concrete containing excess water or fine aggregate, or showing deficiency of coarse aggregate, and fill the space with compacted concrete of correct proportions. Comply with CBC Section, 1906A.4.

G. Curing:

1. All curing shall be per CBC Section 1905A.11. Keep forms containing concrete in a wet condition until removed. Keep concrete continuously moist for not less than 7 days after placement. Keep concrete above 50°F and moist with a fine fog water spray until protected by curing media.

2. Forms containing concrete, top of concrete between forms, and exposed concrete surfaces after removal of forms shall be maintained in a thoroughly wet condition for at least 7 consecutive days after placing. Use the water curing method, curing sheet material, or a clear liquid membrane-forming curing compound except as otherwise specified.

3. During times of dry or excessive winds, high ambient temperature, low humidity, or other ambient conditions causing rapid drying, use specified evaporation retardant and finishing aid material according to the manufacturers instructions and cure concrete with a fine fog spray of water, or equal, applied both during and after finishing and continued until final curing operations are started.
4. Within 24 hours after finishing, exterior slabs and paving, and interior slabs to receive cement topping or mortar setting beds, shall be covered with sand to a depth of 2 inches and kept thoroughly wet for 7 days.
   a. Instead of sand covering, exterior walks and paving where no other surface treatment is specified, may be cured with clear liquid curing compound immediately installed in accordance with manufacturer's directions.

H. Filling, Leveling and Patching:

1. Concrete slabs exhibiting high or low spots and indicated to receive resilient floor covering or soft floor covering, shall have surfaces repaired. High spots shall be honed, or ground with power-driven machines to required tolerances. Low spots shall be filled with latex underlayment, installed in strict accordance with manufacturer’s written recommendations.

2. Holes resulting from form ties or sleeve nuts shall be solidly packed, through exterior walls, by pressure grouting with cement grout, as specified. Grouted holes on exposed surfaces shall be screeded flush and finished to match adjoining surfaces.

I. Cement Base: Cement base shall be of the height, thickness, and shape detailed. Base shall be reinforced with one inch mesh, 18 gage, zinc-coated wire fabric. Base finish mixture shall be one part Portland cement, 2 parts of fine aggregate and one part pea gravel. Colored cement base shall include a chemically inert mineral oxide pigment in the mix.

3.4 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. 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 moistened thoroughly immediately 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, chain, 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.
3.5 FINISHING NON-ARCHITECTURAL CONCRETE

A. Soda and Acid Wash: Concrete surfaces to receive plaster, paint or other finish, and which have been formed by oil coated forms, shall be scrubbed with a solution of 1-1/2 pounds of caustic soda to one gallon of water. Surfaces where smooth wood or waste molds have been furnished shall be scrubbed with a solution of 20 percent muriatic acid. Wash with clean water after scrubbing.

B. Sacking: Exposed concrete curbs, and other similar surfaces shall be sacked by an application of Portland cement grout, floated, and rubbed. Sacking shall not be performed until patching and filling of holes has been completed. Entire sacking operation for any continuous area shall be started and completed within the same day.

1. Mix one part portland cement and 1-1/2 parts fine sand with sufficient water to produce a grout having consistency of thick paint. Wet surface of concrete sufficiently to prevent absorption of water from grout. Apply grout uniformly with a brush or spray gun, then immediately float surface with a cork or other suitable float, scouring wall vigorously.

2. While grout is still plastic, finish surface with a sponge-rubber float, removing excess grout. Allow surface to dry thoroughly, then rub vigorously with dry burlap to completely remove dried grout. No visible film or grout shall remain after rubbing with burlap.

C. Sandblasting: Exterior concrete surfaces to receive stucco dash coat finish, where plywood or other smooth forms have been furnished, shall be uniformly sand-blasted with sharp quartz sand under sufficient air pressure to remove dirt, form oil and other foreign materials, and roughen surface to provide a proper bond. Such surfaces shall be thoroughly washed with clean water after sandblasting.

D. Abrasive: Concrete stair treads, landings, ramps and steps on interior and exterior of buildings, and interior exposed concrete floors in shop buildings shall receive an abrasive finish. Abrasive grains in amount of 30 pounds per 100 square feet shall be evenly installed by dust-on method and embedded into surface during first troweling operation. Additional abrasive grains, in amount of 30 pounds per 100 square feet, shall then be evenly installed and embedded into surface during final troweling operation.

E. Cement Grout and Dry-Pack Concrete: Cement grout shall be mixed at the Project site and shall be composed of one volume of portland cement and 2-1/2 volumes of fine aggregate. Materials shall be mixed dry with sufficient water added to make mixture flow under its own weight. When grout is used as a dry pack concrete, add sufficient water to provide a stiff mixture, which can be molded into a sphere.

3.6 FIELD QUALITY CONTROL

A. Level of Floors: Continuously monitor concrete placing to maintain level floor by use of an instrument level, transit, or laser.

B. Continuous Inspection: Construct structural concrete under continuous inspection of Inspector. Obtain inspection and approval of forms and reinforcing by DSA as required and by the Inspector before placing structural concrete.
C. Testing/Evaluation of Concrete: Conform to CBC Section, 1929A.6. Testing Laboratory shall perform following tests. Samples for testing shall be obtained in accordance with ASTM C 172, and shall be taken from as close to point of placement as possible.

1. Compressive Strength Tests: Cast one set of three or more cylinders from each days placing and each 50 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. 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 F. Test according to ASTM C39 at 7 and 28 day ages. The remaining cylinder shall be kept in reserve in case tests are unsatisfactory.

3. Control Test Cylinders: Cast a set of two or more cylinders for each day's placing of concrete for slabs supported on shoring. Place test cylinders on slabs represented by cylinders and cure the same as slabs. Test cylinders to determine proper times for removal of shores and reshoring. A strength test shall be the average of the compressive strengths of 2 cylinders made from the same sample of concrete and tested at 28 days.

D. Core Tests: Comply with CBC Section 1929A.8. If tests show that compressive strength of any concrete falls below required minimum at 28 day age, additional curing and testing of concrete which unsatisfactory test reports represent may be directed. Testing Laboratory shall take and test drilled cores as directed in accordance with ASTM C42. Contractor shall refill core holes with drypack concrete of the same compressive strength required for cored concrete. If core tests results are unsatisfactory, Contractor shall furnish required labor, equipment, and weights, and the Testing Laboratory shall conduct load testing on involved parts of building or structure as directed. Contractor shall bear additional curing and test costs, including Testing Laboratory costs, for concrete not meeting required compressive strength at 28 day age even if testing demonstrates that concrete has eventually attained required minimum compressive strength, and all costs for required corrections or removals and replacements as directed and required for approved construction.

3.7 EXPANSION AND CONSTRUCTION JOINTS

A. Construction Joints: Details and proposed location of construction joints shall be as indicated on the Drawings, located to least impair strength of structure, in accordance with the following:

1. Thoroughly clean contact surface by sand blasting entire surface not earlier than 5 days after initial placement.

2. A mix containing same proportion of sand and cement provided in concrete plus a maximum of 50 percent of coarse aggregate shall be placed to a depth
of at least one inch on horizontal joints. Vertical joints shall be wetted and coated with a neat cement grout immediately before placing of new concrete.

3. Should contact surface become coated with earth, sawdust, or deleterious material of any kind after being cleaned, entire surface shall be re-cleaned before applying mix.

B. Expansion Joints: Provide expansion joints where indicated in walks and exterior slabs. Space approximately 20 feet apart, unless otherwise indicated. Joints shall extend entirely through slab with joint filler in one piece for width of walk or slab. Joint filler shall be 3/8 inch thick, unless otherwise indicated.

C. Tooled Joints: Slabs, walks and paving shall be marked into areas as indicated with markings made with a V-grooving tool. Marks shall be round-edged, free from burrs or obstructions, with clean cut angles and shall be straight and true. Walks, if not indicated, shall be marked off into rectangles of not more than 12 square feet and shall have a center marking where more than 5 feet wide.

3.8 CLEAN UP

A. Remove rubbish, debris and waste materials and legally dispose of off the Project site.

3.9 PROTECTION

A. Protect the Work of this section until Substantial Completion.

END OF SECTION
SECTION 05120 - STRUCTURAL STEEL

SECTION 1: GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Structural steel.

1.2 REFERENCES


D. Structural Joint Reference Specification - The Specifications for Structural Joints Using ASTM A325 or ASTM A490 Bolts established by the Research Council On Riveted and Bolted Structural Joints of the Engineering Foundation, hereinafter referred to as "Ref Spec".

1.3 SUBMITTALS

A. Shop Drawings:
   1. Submit Shop Drawings, including complete details and schedules for fabrication and shop assembly of members, and details, schedules, procedures and diagrams showing the sequence of erection. Fully detail minor connections and fastenings not shown or specified in the Contract Documents to meet required conditions using similar detailing as shown in the Contract Documents. Include a fully detailed, well controlled sequence and technique plan for shop and field welding that minimizes locked in stresses and distortion; submit sequence and technique plan for review by the Architect.
      a. Include details of cuts, connections, camber, and holes in accordance with Figure 4.5 of AWS D1.1-06 or AISC Section J1.8, weld position plan and other pertinent data. Indicate welds by standard AWS symbols, and show size, length and type of each weld.
      b. Provide setting drawings, templates, and directions for installation of anchor bolts and other anchorages to be installed for Work specified in other sections.
      c. Erection and Bracing Plan and Erection Procedure: Submit an erection and bracing plan, including columns, beams, and girders, prepared, signed and sealed by a structural engineer registered in the State of California in accordance with Title 8 CCR, Section 1710.
Maintain a copy at the Project site as required by the California Division of Industrial Safety.

d. Submit a list of steel items to be galvanized.

B. Product Data:

1. Submit copies of fabricator's specifications and installation instructions for the following products. Include laboratory test reports and other data required demonstrating compliance with these Specifications.

   a. Structural steel, each type; including certified copies of mill reports covering chemical and physical properties.

   b. Welding electrodes.

   c. Welding gas.

   d. Unfinished bolts and nuts.

   e. Structural steel primer paint.

   f. High-strength bolts, including nuts and washers.

C. Manufacturer's Mill Certificate:

1. Submit, certifying that products meet or exceed specified requirements.

D. Mill Test Reports:

1. Submit manufacturer's certificates, indicating structural yield and tensile strength, destructive and non-destructive test analysis.

E. Charpy-V-Notch (CVN) Impact Test: Submit certified copies of Charpy-V-Notch (CVN) Impact Test by the manufacturer for applicable steel members and components.

1. Charpy-V-Notch (CVN) Impact Test for Base Metal: Moment frame columns, girders and other structural steel which is to be complete joint penetration welded and subjected to Charpy-V-Notch impact test in accordance with ASTM E 23 and ASTM A 673.

2. Exception: Rolled shapes listed under Groups 4 and 5 of Table 2, Page 1-8 of the 15th edition of the AISC Manual of Steel Construction shall have the Charpy-V-Notch test, as specified above, performed on flange material at the juncture of the web and flange, shown in Figure C-A3 1C in AISC Manual – 9th edition.

3. Charpy-V-Notch test shall be performed by the manufacturer employing Test Frequency (P) in accordance with ASTM A 673 and utilizing standard specimen sizes shown in Figure 6 of ASTM E 23. The absorbed energy in a CVN impact test shall not be less than that specified in Material Part 2 of this section.
F. Submit certified copies of tests by manufacturer for fine grain practice. Structural steel base material, as described above, shall be manufactured using fully killed fine grain practice having grain size number 5 or better as determined by ASTM E 112.

G. Weld Procedures: Submit weld procedures for all connections. Weld procedures shall be prequalified or qualified as described in AWS D1.1, Section 5.12 or 5.13 for self shielded FCAW. Weld procedures shall indicate joints details and tolerances, preheat and interpass temperature, post-heat treatment, single or multiple stringer passes, peening of stringer passes for groove welds except for the first and the last pass, electrode type and size, welding current, polarity and amperes and root treatment. The welding variables for each stringer pass shall be recorded and averaged, from these averages the weld heat input shall be calculated. Welding shall not proceed until WPS have been reviewed and approved by the Engineer of Record and DSA.

H. Welder's Certificates: Field welders shall be Project certified in accordance with AWS D1.1-06. Shop welders shall be Project certified for FCAWS in accordance with AWS D1.1-06.

I. Test Reports: Submit reports of tests conducted on shop and field welded and bolted connections. Include data on type of test conducted and test results.

1.4 QUALITY ASSURANCE:

A. Comply with the following as a minimum requirement:


B. Qualifications of Fabricator: Fabricate structural steel in shop of a licensed fabricator, AISC certified, in the same category of the scope of this project.

C. Requirements of Regulatory Agencies: Work of this Section shall conform to Title 8 CCR and to Subparagraph 1.02.A above.

D. Source Quality Control: Testing Laboratory shall perform conformance testing in accordance with CBC Section 2231A.1.

1. Identified Structural Steel: Tests are waived for steel identified by heat number, accompanied by mill analyses and mill test reports, and properly
tagged with an Identification Certificate so as to be readily identified for conformance with applicable ASTM. Comply with CBC Section, 2231A.

2. Unidentified Structural Steel: Steel not identified and certified as specified above shall be tested according to following requirements. Structural steel fabricator shall cut samples under direction of the Special Inspector and Testing Laboratory shall machine or otherwise prepare the specimens and perform testing of each 5 tons or fraction thereof for each size of unidentified steel except, in the case of random pieces or of steel having F_y greater than 36 KSI, testing of each piece is required. Tests required are:

a. For pipe, one tension and elongation test and one flattening test for each size.

b. For all other steel, one tension and elongation test and one bend test for each size.

c. Contractor shall reimburse to Owner all costs paid by Owner for testing unidentified steel.


E. 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.

F. Testing & Inspection shall comply with the following:

CBC Section 2231A.1 Tests of Structural Steel. All steel used for structural purposes shall be identified as required by CBC Section 2203A. Manufacturer's mill analyses and test reports are acceptable for properly identified steel, but the enforcement agency may require additional testing to determine the quality of the steel if there is any doubt as to its acceptability. Any steel not properly identified shall be tested to meet the minimum chemical and mechanical requirements of the ASTM standard appropriate for the steel specified for the structure.

EXCEPTION: No mechanical tests are required for unidentified steel when the minimum yield stress required by the design is less than or equal to 25 ksi (172 Mpa) and the steel is not part of the designated lateral-force-resisting system.

CBC Section 2231A.2 Tests of High-strength Bolts, Nuts and Washers. High-strength bolts, nuts and washers shall be sampled and tested by an approved independent testing laboratory for conformance with the requirements of Division III.

CBC Section 2231A.3 Tests of End-welded Studs. End-welded studs shall be sampled, tested and inspected per the requirements of the Structural Welding Code – Steel, 2006 edition, published by the American Welding Society.

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CBC Section 2231A.4 Inspection of Shop Fabrication. Inspection of shop fabrication shall be required for significant structural detailed connection and fabrication work as directed by the enforcement agency. This inspection shall be made by a qualified inspector approved by the enforcement agency. The inspector shall furnish the architect, structural engineer and the enforcement agency with a report that the materials and workmanship conform to the approved plans and specifications. (For OSHPD 1 & 4) When welds from web doubler plates or continuity plates occur in the k-area of rolled steel columns, the k-area adjacent to the welds shall be inspected after fabrication as required by the enforcement agency, using approved nondestructive methods conforming to AWS D1.1. The k-area is defined in wide flange shapes to be the area of the web immediately adjacent to the flange, extending from the fillet to a point approximately 1 1/2 inches beyond the point of tangency between the fillet and the web.

CBC Section 2231A.5 Inspection of Welding. Inspection of all shop and field welding operations, including the installation of automatic end-welded stud shear connectors shall be made by a qualified welding inspector approved by the enforcement agency. Such inspector shall be a person trained and thoroughly experienced in inspecting welding operations. The inspector's ability to distinguish between sound and unsound welding shall be reliably established. The minimum requirements for a qualified welding inspector shall be as those for an AWS certified welding inspector (CWI), as defined in the provisions of the ANSI/AWS QCC-1-96, Standard for AWS Certification of Welding Inspectors published by the American Welding Society. All welding inspectors shall be approved by the enforcement agency. The ability of each welder to produce sound welds of all types required by the work shall be established by welder qualification satisfactory to the enforcement agency. Welding inspection of structural welding shall conform to the requirements of AWS D1.1 Structural Welding Code – Steel, 1998 edition, published by the American Welding Society, except as modified by this section. Welding inspection of cold-formed steel members shall conform to the requirements of AWS D1.3.

The welding inspector shall make a systematic record of all welds. This record shall include in addition to other required records:

1. Identification marks of welders.
2. List of defective welds.
3. Manner of correction of defects.

The welding inspector shall check the material, equipment, details of construction and procedure, as well as the welds. The inspector shall also check the ability of the welder. The inspector shall verify that the installation procedure for automatic end-welded stud shear connectors is in accordance with the requirements of AWS D1.1, Structural Welding Code – Steel, 1998 edition, published by the American Welding Society and the approved plans and specifications. The inspector shall furnish the architect, structural engineer and the enforcement agency with a verified report that the welding is proper and has been done in conformity with AWS D1.1, Structural Welding Code – Steel, 1998 edition, published by the American Welding Society and the approved plans and specifications. The inspector shall use all means necessary to determine the quality of the weld. The inspector may use gamma ray, magnaflux, trepanning, sonics or any other aid to visual inspection, which the inspector may
deem necessary to be assured of the adequacy of the welding.

CBC Section 2231A.6 Inspection of High Strength Bolt Installations. Inspection of high-strength bolt installations shall be made in accordance with Division III by an inspector specially approved for that purpose by the enforcement agency. The inspector shall check the materials, equipment, details of construction and installation procedure. The inspector shall furnish the architect, structural engineer and the enforcement agency with a report that the work has been completed in every material respect in compliance with the approved plans and specifications.

1.5 DELIVERY, STORAGE AND HANDLING

A. Store structural steel above grade on platforms, skids or other supports.

B. Protect steel from corrosion.

C. Store welding electrodes in accordance with AWS D 12.1. Deliver electrodes to the site in unbroken packages bearing the manufacturer's name and label identifying the contents.

D. Store other materials in a weathertight and dry place until installed into the Work.

1.6 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.

SECTION 2: PRODUCTS

2.1 GENERAL

A. Stock Materials: Provide exact materials, sections, shapes, thickness, sizes, weights, and details of construction indicated on Drawings. Changes because of material stock or shop practices will be considered if net area of shape or section is not reduced thereby, if material and structural properties are at least equivalent, and if overall dimensions are not exceeded.

2.2 MATERIALS

A. Steel shapes: ASTM A992, or as noted on drawings.

B. Steel plates: ASTM A36 and A572-GR50 as noted on drawings.

C. Steel tubing: ASTM A500, Grade B, Fy = 46 ksi.
D. Steel pipe: ASTM A120 standard weight for general use; ASTM A53 Grade B where used for structural purposes.

E. Steel plates and tubes: ASTM A588, for weathered steel as noted on the drawings in Architecturally Exposed Elements. $F_y = 50$ ksi.


G. High-strength bolts, nuts, and washers: CBC Chapter 22A, Division III, ASTM A325 or ASTM A490 as indicated for the bolts, ASTM A563 Grade C for nuts, and ASTM F436 for carburized washers. All high-strength bolts shall have a suitable identifying mark placed on top of bolt head at the factory. Refer to drawings for bolt specification requirements.

H. Anchor Bolts: ASTM A36, A307, or A354 Bolts as specified per contract documents.

I. Electrodes: AWS D5.1, E70XX Series Low Hydrogen Electrodes as required for intended use. All electrodes shall have a minimum Notch -Toughness of 20 FT-Lb at -20 degree F.

J. Primer: Use types acceptable to governing air quality management officials.

1. For above-grade locations: Lead free metal primer, Tnemec 10-99 or Rust-Oleum X-60.

2. For below grade applications: Coal-tar epoxy coating, two coats, 5 mils per coat. Perma Bar, as manufactured by Karlee Co., Burbank, CA, or equal. Touch-up on job site with Perma-Bar coal-tar epoxy, match finish coat thickness.

3. Primer on galvanized members per Architect.

K. Non-shrink grout: Master Builders "Embeco 636", or equal, non-gas-forming, free of oxidizing catalysts and inorganic accelerators, performance and characteristics when mixed to a fluid consistency meeting CRD-C-79 and CRD-C-588, non-staining type in exposed areas.

L. Clevis & Turnbuckle materials to be C-1035 and shall have the capacity to resist loads equal to or greater than those specified in the Manual of Steel Construction – Allowable Stress Design, Ninth Edition Tables on 4-148 & 4-149. Supply Structural Engineer of Record evidence of conformance to the specified classifications and capacities.

2.3 FABRICATION

A. 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.

B. 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.

C. 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.

D. 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.

E. 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 without prior approval by the Architect.

F. 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.


H. Galvanizing: After fabrication, items indicated or specified to be galvanized shall be galvanized in largest practical sizes. Fabrication includes operations of shearing, punching, bending, forming, assembling or welding. Galvanized items shall be free from projections, barbs, or icicles resulting from the galvanizing process.

I. Welding:

1. Type of steel furnished in welded structures shall provide chemical properties suitable for welding as determined by chemical analysis. Welds shall conform to the requirements of CBC Chapter 17A.

2. Materials and workmanship shall conform to the requirements specified herein and to CBC requirements, modified as follows:

   a. No welded splices shall be permitted except those indicated on Drawings unless specifically reviewed by the Architect.

   b. Drawings will designate joints in which it is important that welding sequence and technique be controlled to minimize shrinkage stresses and distortion.

3. Welding shall be performed in accordance with requirements of the AWS Structural Welding Code.

J. Shop Finish:

1. Notify the IOR when Work is ready to receive shop prime coat. Work shall be inspected by the IOR before installation of primer.
2. Structural steel and fittings, (non-galvanized and galvanized items), which will be exposed when building is completed, shall receive a coat of primer.

3. The primer specified shall be spray applied, filling joints and corners and covering surfaces with a smooth unbroken film. The minimum dry film thickness of the primer shall be 2.0 mils.

K. Architectural Exposed Structural Steel (AESS): Conform to the requirements of AESS in Section 10 of the AISC Code of Standard Practice for Steel Building and Bridges for exposed structural steel elements indicated on the drawings.

2.4 CONNECTIONS:

A. Make connections with bolts as noted on the Structural Drawings.

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, and wrenches to Reference Standards and CBC Chapter 22A, Division III. Install all high-strength bolts under inspection required by CBC Section 2231A.6.

1. Connections shall be the "bearing bolt type" (A325-N) unless noted to be "friction type" or "slip-critical" (A325-SC and A490-SC). Refer to drawings.

2. Bolt lengths shall be the grip plus 1-1/4".

3. Tightening of nuts shall be done with properly calibrated wrenches or by the turn-of-the-nut method for A325-SC and A490-SC bolts. Tightening of the nuts for A325-N bolts to snug tightness shall be to Ref. Spec. Allowable bolt stresses shall conform to CBC Chapter 22A Division III and referenced standards.

4. Check calibrated wrenches individually for accuracy not less than once daily for actual conditions of application.

5. Clean all contact surfaces of bolted parts and threads free of scale, slag, burrs, pits, dirt, paint, and other foreign material or defects which would prevent solid seating of connected parts.

6. Install hardened washers per AISC Standards CBC Chapter 22A, Division III.

7. Tighten bolts systematically from most rigid part of connection to the free edges.

8. Retighten first installed bolts that may have loosened by tightening of subsequent bolts so all bolts are tightened to correct tension.

9. Mark fully tightened bolts with identifying symbol.
10. The contractor shall torque test 25% of the bolts in connections designated with A325-SC or A490-SC Bolts.

C. Load Indicator Washers: As manufactured and licensed by Cooper and Turner, Bethlehem Steel, or approved equal, may be used for the field installation of the high-strength bolts. Load indicator washers may not be substituted for any required washer, but may be used in conjunction with the required washers. Conform tightening to Paragraph 5e of the Reference Spec listed under Section 1.2. After sufficient bolts in a joint are snugged to bring the members into close contact, tightening shall progress from the most rigid part to the free edges until the load indicators on all bolts are closed to the required gap of 0.015" under bolt heads or 0.010" under the nuts. Do not completely close the gap to prevent overtightening and damage to the bolts. Conform to ASTM F959, A325 and A490.

D. 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.

2.5 WELDING:

A. Conform to CBC Section 2231A.5, AWS D1.1 as modified by referenced AISC Standards, and as indicated or noted on Drawings. Employ welding operators qualified in accordance with AWS D1.1, as applicable, who are thoroughly trained and experienced in arc welding and that produce uniformly reliable groove and fillet welds in flat, vertical, and overhead positions, and make neat and consistent welds. Weld all structural steel joints by shielded electric-arc method unless otherwise shown, specified, or approved. Conform welding in both shop and field, including the prequalification of welds and welder qualifications, to AWS D1.1.

B. 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, or as required by the manufacturer, 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.

C. Preparation: Clean steel surfaces to be welded of all 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.

D. 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. For Architectural Exposed Structural Steel (AESS) specified on the drawings, reference the "AISC Code of Standard Practice."
E. 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.

F. Weld Characteristics: Conform to AWS D1.1, Chapter 8, Statically Loaded Structures. Clean and wire brush all welds. Visual inspection of finished welds must show uniform section, smoothness of welded metal, feather edges without undercuts or overlays, freedom from porosity and inclusions, and good fusion and penetration into base metal at edges and ends of fillet welds.

2.6 SHOP PRIMING:
A. Clean surfaces according to AISC Specifications. Apply one shop coat of specified metal primer to minimum 1.0 mil dry film thickness. Work primer into joints. Do not prime the following:
   1. Steel surfaces embedded in concrete or masonry with the exception of those steel surfaces that support anchored brick veneer.
   2. Contact surfaces of high-strength bolted connections or field welded connections.
   3. Surfaces to receive directly adhered fireproofing.

2.7 SHOP AND FIELD QUALITY CONTROL
A. A special inspector, approved by DSA to inspect the Work of this section, shall inspect high-strength bolted connections. The Owner will provide a DSA approved independent testing laboratory to perform tests and prepare test reports in accordance with CBC 2231. The IOR shall be responsible for monitoring the work of the special inspector and testing laboratories to ensure that the testing program is satisfactorily completed.

B. An AWS CWI certified special inspector, approved by DSA to inspect the Work of this section, shall inspect welded connections. The Owner will provide a DSA approved independent testing laboratory to perform tests and prepare test reports in accordance with CBC 2231. The IOR shall be responsible for monitoring the work of the special inspector and testing laboratories to ensure that the testing program is satisfactorily completed.

C. The independent testing laboratory shall conduct and interpret test and state in each report whether test specimens comply with requirements, and specifically state any deviations therefrom.

D. Provide access to all places where structural steel Work is being fabricated or produced so required inspection and testing can be performed.

E. The independent testing laboratory may inspect and/or test structural steel at plant before shipment; however, Architect reserves the right at any time before Final Completion to deem materials not in compliance with the specified requirements as defective Work.
F. Correct defects in structural Work when inspections and laboratory test reports indicate noncompliance with specified requirements. Perform additional tests as may be required to reconfirm noncompliance of original Work, and as may be required to show demonstrate compliance of corrected Work.

G. Welding: Inspect and test during fabrication and erection of structural steel assemblies as follows:

1. Certify welders and conduct inspections and tests as required. Record types and locations of defects found in the Work. Record Work required and performed to correct deficiencies.

2. Inspect welds. Welds shall be visually inspected before performing any non-destructive testing. Groove weld shall be inspected by ultrasonic or other approved non-destructive test methods. Testing shall be performed to AWS D1.1 Table 6.3 cyclically loaded non-tubular connections.

3. Ultrasonic testing shall be performed by a specially trained and qualified technician who shall operate the equipment, examine welds, and maintain a record of welds examined, defects found, and disposition of each defect. Repair and test defective welds.

4. Rate of Testing: Groove welds contained in joints and splices shall be tested 100 percent either by ultrasonic testing or by radiography.

5. Welds, when installed in column splices, shall be tested by either ultrasonic testing or radiography.

6. Base metal thicker than 1-1/2 inches, when subjected to through-thickness weld shrinkage strains, shall be ultrasonically inspected by shear wave methods for discontinuities directly behind such welds. Tests shall be performed at least 48 hours after completed joint has cooled down to ambient air temperature.

7. Any material discontinuities shall be reviewed based on the defect rating in accordance with the criteria of AWS D1.1 table 6.3 by the Architect and DSA.

8. Other method of non-destructive testing and inspection, for example, liquid dye penetrate testing, magnetic particle inspection or radiographic inspection may be performed on weld if required.

9. Lamellar Tearing: Lamellar-tearing resulting from welding is a crack (with zero tolerance) and shall be repaired in accordance with AWS D1.1.

10. Lamination: The rejection criteria shall be based on ASTM A 435.

11. Where testing reveals lamination or conditions of lamellar tearing in base metal, the steel fabricator shall submit a proposed method of repair for review by the Architect. Test repaired areas as required.

12. Magnetic Particle Testing: Magnetic particle testing when required shall be provided in accordance with AWS D1.1 for procedure and technique. The
standards of acceptance shall be in accordance with AWS D1.1 – Qualification. 

H. Lamellar Tearing: Prior to welding plates 1 to 1-1/2 inches thick and greater and rolled shapes within the distance from 6 inches above the top of the joint to 6 inches below the bottom of the joint shall be checked by ultrasonic testing for laminations in base metal which may interfere with the inspection of the completed joint. Should these defects occur, members will be reviewed by the Architect and DSA. Welding procedure specifications in sub-section 1.5G specify welding practices to minimize lamellar tearing.

I. Prior Testing of Base Material: Test material before fabrication.

J. Lines and levels of erected steel shall be certified by a State of California licensed surveyor.

K. Welded studs shall be tested and inspected by the special inspector in accordance with requirements of AWS D1.1 – Stud Welding.

L. Record Drawings: After steel has been erected, correct or revise Shop Drawings and erection diagrams to correspond with reviewed changes performed in the field.

SECTION 3: EXECUTION

3.1 PREPARATION

A. Verify governing dimensions and conditions of the Work before commencing erection Work.

B. Provide temporary shoring and bracing, and other support during performance of the Work. Remove after steel is in place and connected, and after cast-in-place concrete has reached its design strength.

3.2 ERECTION

A. 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 guying to resist loads and stresses to which the structure may be subjected, including those due to erection equipment and its operation.

B. 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.

C. Clean surfaces of base plates and bearing plates.

1. Install base and bearing plates for structural members on wedges, shims, or setting nuts as required.

2. Tighten anchor bolts after supported members have been positioned and plumbed. Do not remove wedges or shims; cut off flush with edge of base or bearing plate before packing with grout.

E. Align and adjust steel members. Adjust for variations in elevation or alignment. Level and plumb structural members.

F. Do not permit thermal cutting during erection of structural steel.

G. 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.

H. Where indicated for field connections, provide standard bolts complying with ASTM A325.

I. Install high strength steel bolts at locations indicated. Assembly and installation shall be in accordance with CBC requirements.

J. Erect structural steel plumb and level and to proper tolerances as set forth in the AISC Manual. Provide temporary bracing, supports or connections required for complete safety of structure until final permanent connections are installed.

K. 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.

L. 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.

3.3 FINISHING

A. After erection, spots or surfaces where paint has been removed, damaged, or burned off and field rivets, bolts, and other field connections not concealed in the Work, shall be cleaned of dirt, oil, grease, and burned paint and furnished with a spot coat of the same primer installed during shop priming.
B. Touchup Painting: Immediately after erection, clean field welds, bolted connections, and abraded areas of shop paint. Install paint to exposed areas with the same material installed during shop painting. Install by brush or spray to provide a minimum dry film thickness of 1.5 mils.

C. Finish Painting: Per Architect.

3.4 FIELD QUALITY CONTROL

A. Owner will provide a special inspector and independent testing laboratory to perform field inspections and tests and to prepare test reports.

B. All welders shall be qualified for each process and position per the latest edition of AWS D1.1, Chapter 4, Part C - Performance Qualifications. The welder’s qualification shall be considered as remaining in effect indefinitely unless the welder is not engaged in a given process of welding for which the welder is qualified for a period exceeding six months or unless there is some specific reason to question a welder’s ability.

C. Inspection of Shop Fabrication: Required for structural steel according to CBC Section 2231A.4.

D. Inspection of Shop and Field Welding: Required for all structural steel according to CBC Section 2231A.5.

E. Inspection of High Strength Bolt Installation: Required for both shop and field installation according to CBC Section 2231A.6.

F. Erection Inspection: Inspector shall inspect all erection including the grouting under base plates.

G. Non-Destructive Welding Inspection: The Special Inspector(s) shall continuously inspect and test all welds by ultrasonic or other non-destructive tests as approved. Test procedure for ultrasonic tests shall conform to AWS D1.1 and requirements herein.

1. Required Testing: Test following welds by ultrasonic testing method:
   a. Full Penetration Groove welded connections of column to column, column to girder, girder to girder, and like connections.
   b. Other welded connections indicated to be ultrasonically tested on Structural Drawings.
   c. Other welds directed to be ultrasonically tested by the Architect, Structural Engineer, or Inspector Of Record.

2. Ultrasonic Testing: An AWS Certified Welding Inspector, approved by DSA shall operate ultrasonic testing equipment, examine welds, and maintain a record of welds examined, defects found, and disposition of each defect. Defective welds shall be repaired in accordance with AWS D1.1, latest revision, and costs for retesting defective welds shall be responsibility of the Contractor. Tests shall be complete tests according to AWS D1.1, latest revision.
3. Rate of Testing: Test welds requiring ultrasonic testing at 100 percent. No reduction in testing rate will be permitted.

4. 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.

5. Ultrasonic Instrumentation: Calibrated by technician to evaluate the quality of welds in accordance with AWS D1.1, latest revision, Sections 5 and 6.

6. Acceptance Criteria: In accordance with larger reflector criteria of AWS D1.1, latest revision.

H. Correct deficiencies in or remove and replace structural steel that inspections and test reports indicate do not comply with specified requirements.

3.5 CLEAN UP

A. Remove rubbish, debris and waste materials and legally dispose of off the Project site.

3.6 PROTECTION

A. Protect the Work of this section until Substantial Completion.

END OF SECTION
SECTION 05521 - PIPE AND TUBE RAILINGS

PART 1  GENERAL

1.01  RELATED DOCUMENTS

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

1.02  SUMMARY

A. This Section includes the following:
   1. Steel pipe and tube railings.

B. Related Sections include the following:
   1. Division 3 Section "Cast-In-Place Concrete" for concrete foundation.
   2. Division 5 Section "Metal Fabrications" for abrasive metal nosing.

1.03  DEFINITIONS

A. Exterior: Defined as the following:
   1. Areas, locations, and surfaces that are unprotected, or exposed to environmental elements.
   2. Areas, locations and surfaces within uncontrolled environments.
   3. Areas, locations and surfaces of unconditioned spaces, including belowgrade/underground, partially-exposed, or "covered" parking areas.

1.04  DESIGN REQUIREMENTS

A. Railing and Handrail Requirements:
   1. Handrails for stairs and ramps to be 1-1/4 to 1-1/2 inches in diameter (1-1/2 inch nominal) and mounted 1-1/2 inches minimum clear from side walls per CBC 1133B.4.2.6.1 and CBC 1133B.4.2.5.
   2. All welded joints and surfaces to be round smooth, no sharp or abrasive corners, edges, or surfaces per CBC 1133B.4.2.6.1.
   3. Handrail brackets shall be mounted to bottom handrail per CBC 1133B.4.2.6.1.
   4. Vertical arm of bracket shall provide minimum 1-1/2 inch clearance from top surface of horizontal surface of bracket that attaches to wall per CBC fig. 11B-36(b) Sim. and Guidelines fig 10.28.

1.05  PERFORMANCE REQUIREMENTS

A. General: In engineering railings to withstand structural loads indicated, determine allowable design working stresses of railing materials based on the following:
   1. Steel: 72 percent of minimum yield strength.
B. Structural Performance: Provide railings capable of withstanding the effects of gravity loads and the following loads and stresses within limits and under conditions indicated:
   1. Handrails:
      a. Uniform load of 50 lbf/ft. applied in any direction.
      b. Concentrated load of 200 lbf applied in any direction.
      c. Uniform and concentrated loads need not be assumed to act concurrently.
   2. Top Rails of Guards:
      a. Uniform load of 50 lbf/ft. applied in any direction.
      b. Concentrated load of 200 lbf applied in any direction.
      c. Uniform and concentrated loads need not be assumed to act concurrently.
   3. Infill of Guards:
      a. Uniform load of 25 lbf/sq. ft. applied horizontally.
      b. Infill load and other loads need not be assumed to act concurrently.

C. Thermal Movements: Provide exterior railings 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 deg F, ambient; 180 deg F, material surfaces.

D. Control of Corrosion: Prevent galvanic action and other forms of corrosion by insulating metals and other materials from direct contact with incompatible materials.

1.06 SUBMITTALS

A. Product Data: For the following:
   1. Manufacturer's product lines of mechanically connected railings.
   2. Grout, anchoring cement, and paint products.

B. 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.

C. Product Test Reports: Based on evaluation of comprehensive tests performed by a qualified testing agency, according to ASTM E 894 and ASTM E 935.

1.07 QUALITY ASSURANCE

A. Reference Standards:
   1. 2010 Building Standards Administrative Code, Part 1, CBSC.
   6. 2010 California Energy Code, Part 6, CBSC.
   7. 2010 California Historical Building Code, Part 8, CBSC.
9. 2010 California referenced Standards, Part 12 CBSC.
10. Title 8 C.C.R. Chapter 4, Sub-Ch. 6 – Elevator Safety Orders.
11. Title 19 C.C.R., Public Safety, SFM Regulations.
12. Americans with Disabilities Act (ADA), Title II or III.

B. Source Limitations: Obtain each type of railing through one source from a single manufacturer.

C. Welding: Qualify procedures and personnel according to the following:
1. AWS D1.1, "Structural Welding Code—Steel."

D. Appearance: Galvanized articles shall be free from uncoated areas, blisters, flux deposits, acid and black spots, and dross inclusions. Lumps, projections, globules, or heavy deposits of zinc which will interfere with the intended use of the material will not be permitted.

1.08 COORDINATION AND SCHEDULING

A. Coordinate installation of anchorages for railings. 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.

B. Schedule installation so wall attachments are made only to completed walls. Do not support railings temporarily by any means that do not satisfy structural performance requirements.

1.09 WARRANTY

A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of pipe and tube railings that fails in materials or workmanship within specified warranty period.
1. Failures include, but are not limited to, the following:
   a. Structural failures.
   b. Deterioration of metals, metal finishes, and other materials beyond normal weathering.
2. Warranty Period: 2 years.

B. Installer's Warranty: 1 year.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Steel Pipe and Tube Railings:
1. Local iron fabricators.

B. Nonshrink, Nonmetallic Grout:
1. 1107 Advantage Grout by Dayton Superior Chemical & Cement Products.
3. General-Purpose Grout by Symons.
4. Or equal.

2.02 METALS, GENERAL

A. Metal Surfaces, General: Provide materials with smooth surfaces, without seam marks, roller marks, rolled trade names, stains, discolorations, or blemishes.

B. Brackets, Flanges, and Anchors: Cast or formed metal of same type of material and finish as supported rails, unless otherwise indicated.

2.03 STEEL AND IRON

A. Tubing: ASTM A 500 (cold formed) or ASTM A 513, Type 5 (mandrel drawn).

B. Pipe: ASTM A 53, Type F or Type S, Grade A, Standard Weight (Schedule 40), unless another grade and weight are required by structural loads.
   1. Provide galvanized finish for exterior installations and where indicated.

C. Plates, Shapes, and Bars: ASTM A 36.

D. Castings: Either gray or malleable iron, unless otherwise indicated.
   1. Gray Iron: ASTM A 48, Class 30, unless another class is indicated or required by structural loads.

2.04 FASTENERS

A. General: Provide the following:

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.
   1. Provide concealed fasteners for interconnecting railing components and for attaching them to other work, unless exposed fasteners are unavoidable or are the standard fastening method for railings indicated.

C. Anchors: Provide cast-in-place anchors, fabricated from corrosion-resistant materials with capability to sustain, without failure, a load equal to six times the load imposed when installed in unit masonry and equal to four times the load imposed when installed in concrete, as determined by testing per ASTM E 488 conducted by a qualified independent testing agency.

2.05 MISCELLANEOUS MATERIALS

A. Welding Rods and Bare Electrodes: Select according to AWS specifications for metal alloy welded.

C. Bituminous Paint: Cold-applied asphalt emulsion complying with ASTM D 1187.


2.06 FABRICATION

A. General: 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, 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.

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. Connections: Fabricate railings with either welded or nonwelded connections, unless otherwise indicated.

H. Welded Connections: Cope components at connections to provide close fit, or use fittings designed for this purpose. 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, finish exposed surfaces smooth and blended so no roughness shows after finishing and welded surface matches contours of adjoining surfaces.

I. Nonwelded Connections: Connect members with concealed mechanical fasteners and fittings. Fabricate members and fittings to produce flush, smooth, rigid, hairline joints.

J. Form changes in direction as detailed.

K. Form simple and compound curves by bending members in jigs to produce uniform curvature for each repetitive configuration required; maintain cross section of member throughout entire bend without buckling, twisting, cracking, or otherwise deforming exposed surfaces of components.

L. Close exposed ends of railing members with prefabricated end fittings.
M. Provide wall returns at ends of wall-mounted handrails, unless otherwise indicated. Close ends of returns unless clearance between end of rail and wall is 1/4 inch or less.

N. Brackets, Flanges, Fittings, and Anchors: Provide wall brackets, flanges, miscellaneous fittings, and anchors to interconnect railing members to other work, unless otherwise indicated.

O. Provide inserts and other anchorage devices for connecting railings to concrete or masonry work. Fabricate anchorage devices capable of withstanding loads imposed by railings. Coordinate anchorage devices with supporting structure.

2.07 FINISHES, GENERAL

A. Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.

B. Protect mechanical finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.

C. Appearance of Finished Work: Variations in appearance of abutting or adjacent pieces are acceptable if they are within one-half of the range of approved Samples. Noticeable variations in the same piece are not acceptable. Variations in appearance of other components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.

2.08 STEEL AND IRON FINISHES

A. Galvanized Railings:
   1. Hot-dip galvanize exterior steel and iron railings, including hardware, after fabrication.
   2. Comply with ASTM A 123 for hot-dip galvanized railings.

B. For galvanized railings, provide hot-dip galvanized fittings, brackets, fasteners, sleeves, and other ferrous components.

C. Preparation for Shop Priming: After galvanizing, thoroughly clean railings of grease, dirt, oil, flux, and other foreign matter, and treat with metallic-phosphate process.
   1. Exterior Railings (SSPC Zone 1B): SSPC-SP 6/NACE No. 3, "Commercial Blast Cleaning."
   2. Do not apply primer to galvanized surfaces.
   3. Stripe paint corners, crevices, bolts, welds, and sharp edges.

PART 3 EXECUTION

3.01 EXAMINATION

3.02 INSTALLATION, GENERAL

A. Fit exposed connections together to form tight, hairline joints.
B. 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 and variations from parallel with rake of steps and ramps for sloping members do not exceed 1/4 inch in 12 feet.

3.03 RAILING CONNECTIONS

A. Nonwelded Connections: Use mechanical or adhesive joints for permanently connecting railing components. Use wood blocks and padding to prevent damage to railing members and fittings. Seal recessed holes of exposed locking screws using plastic cement filler colored to match finish of railings.

B. Welded Connections: 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.

3.04 ANCHORING POSTS

A. Use steel pipe sleeves preset and anchored into concrete for installing posts. After posts have been inserted into sleeves, fill annular space between post and sleeve with nonshrink, nonmetallic grout or anchoring cement, mixed and placed to comply with anchoring material manufacturer's written instructions.

B. Form or core-drill holes not less than 5 inches deep and 3/4 inch larger than OD of post for installing posts in concrete. Clean holes of loose material, insert posts, and fill annular space between post and concrete with nonshrink, nonmetallic grout or anchoring cement, mixed and placed to comply with anchoring material manufacturer's written instructions.

C. Cover anchorage joint with flange of same metal as post, attached to post with set screws.

D. Leave anchorage joint exposed; wipe off surplus anchoring material; and leave 1/8-inch buildup, sloped away from post.
   1. For steel pipe railings, weld flanges to post and bolt to metal supporting surfaces.

3.05 ANCHORING RAILING ENDS

A. Anchor railing ends to concrete and masonry with round flanges connected to railing ends and anchored to wall construction with anchors and bolts.

3.06 ADJUSTING AND CLEANING

A. Touchup Painting: Immediately after erection, clean field welds, bolted connections, and abraded areas of shop paint, and paint exposed areas with same material as used for shop painting to comply with SSPC-PA 1 for touching up shop-painted surfaces.
B. Galvanized Surfaces: Clean field welds, bolted connections, and abraded areas and repair galvanizing to comply with ASTM A 780.

3.07 PROTECTION

A. Protect finishes of railings from damage during construction period with temporary protective coverings approved by railing manufacturer. Remove protective coverings at time of Substantial Completion.

B. Restore finishes damaged during installation and construction period so no evidence remains of correction work. Return items that cannot be refinished in the field to the shop; make required alterations and refinish entire unit, or provide new units.

3.08 SCHEDULE

A. 05521.C: STEEL PIPE AND TUBE RAILING.

B. 05521.D: ANCHOR.

C. 05521.E: NONSHRINK, NONMETALLIC GROUT.

END OF SECTION 05521

END OF SECTION 02821
SECTION 07131 - SELF-ADHERING SHEET WATERPROOFING

PART 1 GENERAL

1.01 RELATED DOCUMENTS

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

1.02 SUMMARY

A. This Section includes the following:

1.03 SUBMITTALS

A. Product Data: Include manufacturer’s written instructions for evaluating, preparing, and treating substrate, technical data, and tested physical and performance properties of waterproofing.

B. Shop Drawings: Show locations and extent of waterproofing. Include details for substrate joints and cracks, sheet flashings, penetrations, inside and outside corners, tie-ins with adjoining waterproofing, and other termination conditions.

C. Installer Certificates: Signed by manufacturers certifying that installers comply with requirements.

D. Qualification Data: For Installer.

E. Product Test Reports: Based on evaluation of comprehensive tests performed by a qualified testing agency, for waterproofing.

1.04 QUALITY ASSURANCE

A. Reference Standards:
1. 2010 Building Standards Administrative Code, Part 1, CBSC.
6. 2010 California Energy Code, Part 6, CBSC.
7. 2010 California Historical Building Code, Part 8, CBSC.
9. 2010 California Referenced Standards, Part 12, CBSC.
10. Title 8 C.C.R., Ch. 4, Sub-Ch. 6 – Elevator Safety Orders.
11. Title 19 C.C.R., Public Safety, SFM Regulations.
12. Americans with Disabilities Act (ADA), Title II or Title III.

B. Installer Qualifications: A firm that is acceptable to waterproofing manufacturer for installation of waterproofing required for this Project.

C. Source Limitations: Obtain waterproofing materials and molded-sheet drainage panels through one source from a single manufacturer.

D. Preinstallation Conference: Conduct conference at Project site.
   1. Review waterproofing requirements including surface preparation, substrate condition and pretreatment, minimum curing period, forecasted weather conditions, special details and sheet flashings, installation procedures, testing and inspection procedures, and protection and repairs.

1.05 DELIVERY, STORAGE, AND HANDLING

A. Deliver liquid materials to Project site in original packages with seals unbroken, labeled with manufacturer’s name, product brand name and type, date of manufacture, and directions for storing and mixing with other components.

B. Store liquid materials in their original undamaged packages in a clean, dry, protected location and within temperature range required by waterproofing manufacturer.

C. Remove and replace liquid materials that cannot be applied within their stated shelf life.

D. Store rolls according to manufacturer’s written instructions.

E. Protect stored materials from direct sunlight.

1.06 PROJECT CONDITIONS

A. Environmental Limitations: Apply waterproofing within the range of ambient and substrate temperatures recommended by waterproofing manufacturer. Do not apply waterproofing to a damp or wet substrate.
   1. Do not apply waterproofing in snow, rain, fog, or mist.

B. Maintain adequate ventilation during preparation and application of waterproofing materials.

1.07 WARRANTY

A. Special Manufacturer's Warranty: Manufacturer's standard form in which manufacturer agrees to replace waterproofing material that does not comply with requirements or that fails to remain watertight within specified warranty period.
   1. Failure includes, but is not limited to, failure of waterproofing due to failure of substrate prepared and treated according to requirements or formation of new joints and cracks in substrate exceeding 1/16 inch in width.
   2. Warranty Period: Five years from date of Substantial Completion.
2.01 MANUFACTURERS

A. Modified bituminous Sheet: Subject to compliance with requirements, provide either the named product or a comparable product by one of the other manufacturers specified.
   5. Or equal.

B. Molded sheet drainage panels
   1. Carlisle: Miradrain 6000
   2. Or equal

C. Perimeter Drain: See Civil Drawings.

2.02 MODIFIED BITUMINOUS SHEET WATERPROOFING

A. Modified Bituminous Sheet: 60-mil- thick, self-adhering sheet consisting of 56 mils of rubberized asphalt laminated to a 4-mil- thick, polyethylene film with release liner on adhesive side and formulated for application with primer or surface conditioner that complies with VOC limits of authorities having jurisdiction.
   1. Physical Properties:
      a. Tensile Strength: 250 psi minimum; ASTM D 412, Die C, modified.
      b. Ultimate Elongation: 300 percent minimum; ASTM D 412, Die C, modified.
      d. Crack Cycling: Unaffected after 100 cycles of 1/8-inch movement; ASTM C 836.
      e. Puncture Resistance: 40 lbf minimum; ASTM E 154.
      f. Hydrostatic-Head Resistance: 150 feet minimum; ASTM D 5385.
      g. Water Absorption: 0.15 percent weight-gain maximum after 48-hour immersion at 70 deg F; ASTM D 570.
      h. Vapor Permeance: 0.05 perms; ASTM E 96, Water Method.

2.03 AUXILIARY MATERIALS

A. General: Furnish auxiliary materials recommended by waterproofing manufacturer for intended use and compatible with sheet waterproofing.
   1. Furnish liquid-type auxiliary materials that comply with VOC limits of authorities having jurisdiction.

B. Primer: Liquid waterborne primer recommended for substrate by manufacturer of sheet waterproofing material.

C. Surface Conditioner: Liquid, waterborne surface conditioner recommended for substrate by manufacturer of sheet waterproofing material.

D. Liquid Membrane: Elastomeric, two-component liquid, cold fluid applied, trowel grade or low viscosity.

E. Substrate Patching Membrane: Low-viscosity, two-component, asphalt-modified coating.
F. Sheet Strips: Self-adhering, rubberized-asphalt sheet strips of same material and thickness as sheet waterproofing.

G. Metal Termination Bars: Aluminum bars, approximately 1 by 1/8 inch thick, predrilled at 9-inch centers.

2.04 MOLDED-SHEET DRAINAGE PANELS

A. Nonwoven-Geotextile-Faced, Molded-Sheet Drainage Panel: Manufactured composite subsurface drainage panels consisting of a nonwoven, needle-punched geotextile facing with an apparent opening size not exceeding No. 70 sieve laminated to one side with a polymeric film bonded to the other side of a studded, nonbiodegradable, molded-plastic-sheet drainage core, with a vertical flow rate of 9 to 15 gpm per ft.

PART 3 EXECUTION

3.01 EXAMINATION

A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements and other conditions affecting performance.
   1. Verify that concrete has cured and aged for minimum time period recommended by waterproofing manufacturer.
   2. Verify that concrete is visibly dry and free of moisture. Test for capillary moisture by plastic sheet method according to ASTM D 4263.
   3. Proceed with installation only after unsatisfactory conditions have been corrected.

3.02 SURFACE PREPARATION

A. Clean, prepare, and treat substrates according to manufacturer’s written instructions. Provide clean, dust-free, and dry substrates for waterproofing application.

B. Remove grease, oil, bitumen, form-release agents, paints, curing compounds, and other penetrating contaminants or film-forming coatings from concrete.

C. Remove fins, ridges, mortar, and other projections and fill honeycomb, aggregate pockets, holes, and other voids.

D. Prepare, fill, prime, and treat joints and cracks in substrates. Remove dust and dirt from joints and cracks according to ASTM D 4258.

E. Corners: Prepare, prime, and treat inside and outside corners according to ASTM D 6135.
   1. Install membrane strips centered over vertical inside corners. Install 3/4-inch fillets of liquid membrane on horizontal inside corners and as follows:
      a. At footing-to-wall intersections, extend liquid membrane each direction from corner or install membrane strip centered over corner.
      b. At plaza deck-to-wall intersections, extend liquid membrane or sheet strips onto deck waterproofing and to finished height of sheet flashing.

F. Prepare, treat, and seal vertical and horizontal surfaces at terminations and penetrations through waterproofing and at drains and protrusions according to ASTM D 6135.
3.03 MODIFIED BITUMINOUS SHEET WATERPROOFING APPLICATION

A. Install modified bituminous sheets according to waterproofing manufacturer's written instructions and according to recommendations in ASTM D 6135.

B. Apply primer to substrates at required rate and allow to dry. Limit priming to areas that will be covered by sheet waterproofing in same day. Reprime areas exposed for more than 24 hours.

C. Apply and firmly adhere sheets over area to receive waterproofing. Accurately align sheets and maintain uniform 2-1/2-inch minimum lap widths and end laps. Overlap and seal seams and stagger end laps to ensure watertight installation.

1. When ambient and substrate temperatures range between 25 and 40 deg F, install self-adhering, modified bituminous sheets produced for low-temperature application. Do not use low-temperature sheets if ambient or substrate temperature is higher than 60 deg F.

D. Apply continuous sheets over sheet strips bridging substrate cracks, construction, and contraction joints.

E. Seal exposed edges of sheets at terminations not concealed by metal counterflashings or ending in reglets with mastic.

F. Repair tears, voids, and lapped seams in waterproofing not complying with requirements. Slit and flatten fishmouths and blisters. Patch with sheet waterproofing extending 6 inches beyond repaired areas in all directions.

3.04 MOLDED-SHEET DRAINAGE PANEL INSTALLATION

A. Place and secure molded-sheet drainage panels, with geotextile facing away from wall or deck substrate, according to manufacturer's written instructions. Use adhesives or mechanical fasteners that do not penetrate waterproofing. Lap edges and ends of geotextile to maintain continuity. Protect installed molded-sheet drainage panels during subsequent construction.

3.05 PROTECTION AND CLEANING

A. Protect waterproofing from damage and wear during remainder of construction period.

B. Clean spillage and soiling from adjacent construction using cleaning agents and procedures recommended by manufacturer of affected construction.

END OF SECTION 07131
SECTION 10431 - 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.

1.2 SUMMARY

A. This Section includes the following:
1. Panel signs.
2. Parking signs.

1.3 SYSTEM DESCRIPTION

A. Design Requirements:
1. Comply with 1114B, 1115B.5 and 1117B.5.
2. Signage font, size, color and color of background per CBC 1117B.5.

1.4 SUBMITTALS

A. Product Data: Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for each type of sign.

B. Shop Drawings: Include plans, elevations, and large-scale sections of typical members and other components. Show mounting methods, grounds, mounting heights, layout, spacing, reinforcement, accessories, and installation details.
1. Provide message list for each sign, including large-scale details of wording, lettering, artwork, and braille layout.

C. Samples for Initial Selection: For each type of sign material indicated that involves color selection.

D. Samples for Verification: For each type of sign, include the following Samples to verify color selected:
1. Panel Signs: Full-size Samples of each type of sign required.
2. Approved samples will not be returned for installation into Project.

E. Qualification Data: For Installer.

F. Maintenance Data: For signage cleaning and maintenance requirements to include in maintenance manuals.
1.5 QUALITY ASSURANCE

A. Reference Standards:
   1. 2010 Building Standards Administrative Code, Part 1, Title 24 C.C.R.
   6. 2010 California Energy Code, Part 6, Title 24 C.C.R.
   8. 2010 California Green Building Standards Code (CALGreen), Part 11, Title 24 C.C.R.
   9. 2010 California Referenced Standards, Part 12, Title 24 C.C.R.
   10. Title 19 C.C.R., Public Safety, SFM Regulations.
   11. 2010 ADA Standards for Accessible Design.

B. Installer Qualifications: An authorized representative of signage manufacturer for installation and maintenance of units required for this Project.

C. Source Limitations: Obtain each sign type through one source from a single manufacturer.

D. Regulatory Requirements: Comply with the Americans with Disabilities Act (ADA) and with code provisions as adopted by authorities having jurisdiction.

1.6 PROJECT CONDITIONS

A. Field Measurements: Where sizes of signs are determined by dimensions of surfaces on which they are installed, verify dimensions by field measurement before fabrication and indicate measurements on Shop Drawings.

1.7 COORDINATION

A. For signs supported by or anchored to permanent construction, advise installers of anchorage devices about specific requirements for placement of anchorage devices and similar items to be used for attaching signs.
   1. For signs supported by or anchored to permanent construction, furnish templates for installation of anchorage devices.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Signs: Subject to compliance with requirements, provide either the named product or an equal product by one of the other manufacturers specified.
   1. Best Sign Systems Inc. (Basis of Design)
   2. ASI Sign Systems, Inc.
   4. Sign A Rama.
5. Or equal.

2.2 PANEL SIGNS

A. General: Provide panel signs that comply with requirements indicated for materials, thicknesses, finishes, colors, designs, shapes, sizes, and details of construction.
1. Produce smooth panel sign surfaces constructed to remain flat under installed conditions within tolerance of plus or minus 1/16 inch measured diagonally.

B. Product: HC300 ADA Sign System by Best Sign Systems.
1. Unframed Panel Signs: Fabricate signs with edges mechanically and smoothly finished.
2. Room, Occupancy, Wayfinding Signs: As selected from 4 standard copy size signs.
   a. 4" x 2" with up to 4 characters each.
   b. 6" x 2" with up to 8 characters each.
   c. 8" x 2" with up to 12 characters each.
   d. 10" x 2" with up to 14 characters each.
3. Toilet Room Signs: As selected from manufacturer's standard 6" x 8".
4. Symbols of Accessibility: Provide 6-inch high symbol fabricated from opaque nonreflective vinyl film, 0.0035-inch nominal thickness, with pressure-sensitive adhesive backing suitable for both exterior and interior applications.

5. Material:
   a. 1/4 inch thick (thicker than standard) "MP", acrylic sheet, ASTM D 4802, Category A-1 (cell-cast sheet), Type UVA (UV absorbing).

6. Tactile and Braille Copy: Manufacturer's standard process for producing copy complying with ADA Accessibility Guidelines and ICC/ANSI A117.1. Text shall be accompanied by California Contracted Grade 2 Braille raised domed dots. Produce precisely formed characters with square cut edges free from burrs and cut marks, use dome dots 1/32" min.(0.794 mm) in conformance with CBC Section 1117B.5.5.1.


8. Proportions: Raised characters on signs shall be selected from fonts where the width of the uppercase letter "O" is 60 percent minimum and 110 percent maximum of the height of the uppercase letter "I". Stroke thickness of the uppercase letter "I" shall be 15 percent maximum of the height of the character.

9. Colors:
   a. Contrast between character, symbols and their background must be 70% minimum and have a non-glare finish per CBC Section 1117B.5.2.

2.3 PARKING SIGNS

A. Material: 0.063" aluminum, screen printed copy on engineer grade reflective vinyl sheeting.
1. Text: Symbols of accessibility, accessible direction, etc. as indicated on Drawings.

B. Accessible signs are blue with white symbol.

C. Post: 2 inch diameter, schedule 40 galvanized pipe.

2.4 ACCESSORIES

A. Mounting Methods: Use concealed fasteners fabricated from materials that are not corrosive to sign material and mounting surface.
B. Anchors and Inserts: Provide nonferrous-metal or hot-dip galvanized anchors and inserts for exterior installations and elsewhere as required for corrosion resistance. Use toothed steel or lead expansion-bolt devices for drilled-in-place anchors. Furnish inserts, as required, to be set into concrete or masonry work.

2.5 FINISHES, GENERAL

A. Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.

B. Protect mechanical finishes on exposed surfaces from damage by applying strippable, temporary protective covering before shipping.

C. Appearance of Finished Work: Variations in appearance of abutting or adjacent pieces are acceptable if they are within one-half of range of approved Samples. Noticeable variations in same piece are not acceptable. Variations in appearance of other components are acceptable if they are within range of approved Samples and are assembled or installed to minimize contrast.

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. Verify that items, including anchor inserts, provided under other sections of Work are sized and located to accommodate signs.

C. Examine supporting members to ensure that surfaces are at elevations indicated or required to comply with authorities having jurisdiction and are free from dirt and other deleterious matter.

D. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

A. General: Locate signs and accessories where indicated, using mounting methods of types described and in compliance with manufacturer's written instructions.
   1. Install signs level, plumb, and at heights indicated, with sign surfaces free from distortion and other defects in appearance.

B. Wall-Mounted Panel Signs:
   1. Exterior and Interior Signs on Rough Substrates:
      a. Mechanical Fasteners: Mechanical fasteners placed through predrilled holes. Attach signs with fasteners and anchors suitable for secure attachment to substrate as recommended in writing by sign manufacturer.
        1) Fastener: Stainless steel screws, tamper-resistant flat head countersink.
        2) Anchors: Suitable for secure attachment to substrate.

C. Parking and Traffic Signs
1. General: Locate sign units and accessories where indicated, using mounting methods of the type described and in compliance with the manufacturer's instructions.
2. Install sign level, plumb, and at height indicated.
3. Cap post with galvanized cap.

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 10431
SECTION 11480 – SOCCER SCOREBOARD

PART 1 GENERAL

1.01 SECTION INCLUDES
   A. Single-sided LED soccer scoreboard

1.02 REFERENCES
   A. Standard for Electric Signs, UL-48, 13th Edition
   B. Standard for Control Centers for Changing Message Type Signs, UL-1433, 1st Edition
   C. Standard for CAN/CSA C22.2
   D. Federal Communications Commission Regulation Part 15
   E. National Electric Code

1.03 SUBMITTALS
   A. Substitutions: Conform to General Conditions Article 4 for approval of Or Equal, Substitutions or Alternatives.
   B. Product data: Submit manufacturer's product illustrations, data and literature that fully describe the scoreboards and accessories proposed for installation.
   C. Shop drawings: Submit mechanical and electrical drawings.
   D. Maintenance data: Submit manufacturer's installation, operation, and maintenance manuals.

1.04 DELIVERY, STORAGE, AND HANDLING
   A. Product delivered on site.
   B. Scoreboard and equipment to be housed in a clean, dry environment.

1.05 PROJECT CONDITIONS
   A. Environmental limitations: Do not install scoreboard equipment until mounting structure is secure and concrete has ample time to cure.
   B. Field measurements: Verify position and elevation of structure and its layout for scoreboard equipment. Verify dimensions by field measurements.
   C. Verify mounting structure is capable of supporting the scoreboard's weight and windload in addition to the auxiliary equipment.
   D. Installation may proceed within acceptable weather conditions.

1.06 QUALITY ASSURANCE
   A. For outdoor use
   B. Source Limitations: Obtain each type of scoring or related equipment through one source from a single manufacturer.
   C. ETL listed to UL Standards 48 and 1433
   D. NEC compliant
   E. FCC compliant
   F. ETLC listed to CAN/CSA 22.2
Río Hondo Community College  
Soccer Field  
Construction Documents

1.07 WARRANTY
A. Provide 5 years of parts coverage  
B. Provide toll-free service coordination  
C. Provide technical phone support during business hours

PART 2 PRODUCTS

2.01 MANUFACTURER
A. Daktronics, Inc., 331 32nd Avenue, P.O. Box 5128, Brookings, South Dakota 57006-5128  
B. Nevco, Inc., 301 East Harris Avenue, Greensville, IL 62246  
C. Sportable Scoreboards, 106 Max Hurt Dr., Murray, KY 42071.  
D. Electro-Mech Scoreboard Co, 72 Industrial Blvd, Wrightsville, GA 31096  
E. Approved equal

2.02 PRODUCT
A. Basis of Design: Daktronics SO-2013 single-sided soccer scoreboard scores Period Time to 99:59, HOME and GUEST scores to 99, PERIOD to 9, SHOTS and Corner (C.) KICKS TO 99 for both teams.

2.03 SCOREBOARD
A. General information  
1. Dimensions: 6'-0" (1830 mm) high, 16'-0" (4880 mm) wide, 0'-8" (203 mm) deep  
2. Weight: 450 lb (204 kg)  
3. Power requirement: 600 W, 5 Amps  
4. Color: over 150 "Martin Senour" factory colors to choose from  
B. Construction  
1. Alcoa aluminum alloy 5052 construction  
2. Scoreboard back and perimeter: 0.050" thick  
3. Scoreboard face: 0.063" thick  
C. Digits  
1. Seven bar segments per digit  
2. PanaView® technology  
3. Digit size: Clock digits 24" (609 mm); All others 18" (457 mm) high  
4. Red or amber in color  
D. Captions  
1. HOME and GUEST captions: 10" (254 mm) high  
2. All other captions: 7" (178 mm) high  
3. All captions: white vinyl applied directly to display face  
E. Provide Optional Equipment  
1. Scoreboard striping  
2. Vinyl team name caption in place of the HOME caption  
3. Individual protective screens for LED digits

2.04 SCORING CONSOLE
A. Console is an All Sport® 5000 controller  
B. Capable of scoring soccer  
C. Capable of controlling other All Sport® controlled scoreboards  
D. Console has a maximum power requirement of 6 watts  
E. Console includes:
PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that mounting structure is ready to receive scoreboard. Verify that placement of conduit and junction boxes are as specified and indicated in plans and shop drawings. Verify concrete has cured adequately according to specifications.

3.02 INSTALLATION

A. All power and control cables to scoreboards and displays will be routed in conduit, power to the scoreboards/displays as well as raceways shown on electrical plans by the Electrical Contractor. Scoreboard control wiring including conduit will be the responsibility of the contractor assigned the scoreboard equipment.

B. Install scoreboards and exterior displays to beams in location detailed and in accordance with manufacturer’s instructions. Verify unit is plumb and level.

C. Mounting: See Architectural and Structural Drawings

3.03 INSTALLATION—CONTROL CENTER

A. Provide boxes, cover plates and jacks in locations per plans.

B. Test connect control unit to all jacks and check for proper operation of control unit, scoreboard and all features. Leave control unit in carrying case and other loose accessories with owner’s designated representative.

C. Verify earth ground does not exceed 15 ohms.

END OF SECTION 11480
SECTION 11482 – ATHLETIC EQUIPMENT

PART 1 GENERAL

1.01 WORK INCLUDES
A. Provide all equipment and materials, and do all work necessary to furnish and install the athletic equipment, as indicated on the drawings and as specified herein. Athletic equipment shall include, but not be limited to:
1. Regulation Soccer Goals
2. Corner Flags

1.02 QUALITY ASSURANCE
A. Reference Standards:
1. 2010 Building Standards Administrative Code, Part 1, CBSC.
6. 2010 California Energy Code, Part 6, CBSC.
7. 2010 California Historical Building Code, Part 8, CBSC.
9. 2010 California referenced Standards, Part 12 CBSC.
10. Title 8 C.C.R. Chapter 4, Sub-Ch. 6 – Elevator Safety Orders.
11. Title 19 C.C.R., Public Safety, SFM Regulations.
12. Americans with Disabilities Act (ADA), Title II or III.

1.03 SUBMITTALS
A. Substitutions: Conform to General Conditions Article 4 for approval of Or Equal, Substitutions or Alternatives.
B. Product data: Provide manufacturers product data prior to actual field installation work.
C. Shop drawings: Provide drawings of the manufacturers recommended installation and foundation requirements prior to actual field installation work.
D. Maintenance data: Submit manufacturer’s installation, operation, and maintenance manuals.

1.04 DELIVERY, STORAGE, AND HANDLING
A. Materials delivered to the site shall be examined for damage or defects in shipping. Any defects shall be noted and reported to the Owners representative. Replacements, if necessary, shall be immediately re-ordered, so as to minimize any conflict with the construction schedule. Sound materials shall be stored above ground under protective cover or indoors so as to provide proper protection.
1.05 QUALITY ASSURANCE

A. Manufacturers warranties shall pass to the Owner and certification made that the product materials meet all applicable grade trademarks or conform to industry standards and inspection requirements.

PART 2 PRODUCTS

2.01 MANUFACTURER

A. Regulation Soccer Goals
   1. Sportsfield Specialties, Inc.
   2. Jaypro
   3. Approved equal

B. Corner Flags
   1. Sportsfield Specialties, Inc.
   2. Jaypro
   3. Approved equal

2.02 PRODUCT

A. Regulation Soccer Goals
   1. Top Cross Bar fabricated of 6061 T6 extruded aluminum tube, 4.375in square x 4.688in, having the following attributes:
      a. Length: 24.0ft
      b. Round Face with Radiused Backside Corners
      c. 7 Ga. Steel Crossbar Attachment Brackets
      d. Powder Coated White
   2. End Frame fabricated of 6061 T6 extruded aluminum tube having the following attributes:
      a. Corner Upright Posts, 4.375in x 4.688in
      b. Rolled Side Frame, 2.0in x 3.0in x .125in, Tig Welded to Corner Upright Posts
      c. Round Face with Radiused Backside Corners
      d. Powder Coated White
   3. Bottom Ground Bar fabricated of 6061 T6 extruded aluminum tube, 2.0in square x .250in thick having the following attributes:
      a. Powder Coated White
   4. Accessories:
      a. Welded Aluminum Net Clips; Guaranteed for life.
      b. Orange Polypropylene Soccer Net
      c. Associated Stainless Steel Hardware
      *Additional Net Colors Available with Upcharge

B. Optional:
   1. Soccer Goal Portable Wheel Mobility Kit:
      a. Soccer Goal Wheel Insert
         1. Welded 13 Ga. Stainless Steel Frame
         2. UHMW Plastic Wheel
         3. All Stainless Steel Hardware
   2. Soccer Goal Mobility Handle:
      a. Aluminum Frame
      b. All Stainless Steel Hardware
      c. Powder Coat: White
C. Optional:
   1. Soccer Goal Back Bar Safety Clamp Kit:
      a. Safety Clamp
         1. Fabricated of (.187) 3/16in Aluminum
         2. Powder Coated White
         3. Stainless Steel Hardware
      b. Access Kit
         1. Fabricated of 0.125in Aluminum and 16 Ga. Stainless Steel
         2. Cover Plug fabricated of 0.187in Aluminum and 0.50in Weather Resistant Plywood
         3. Stainless Steel Assembly Hardware
         4. Galvanized Steel Anchoring Hardware

D. Corner Flags
   1. Set of four corner flags
   2. 80" height upright with red flags
   3. Yellow sand filled hollow bases

PART 3 EXECUTION

3.01 INSTALLATION
   A. All athletic equipment shall be installed as recommended with manufacturer's written directions, and as indicated on the drawings.

END OF SECTION 11482
SECTION 13125 – GRANDSTANDS AND BLEACHERS

PART 1 GENERAL

1.01 RELATED DOCUMENTS

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

1.02 SUMMARY

A. This Section includes the following:
   1. Permanent bleachers
      a. Rise per row = 8 inches
      b. Depth per row = 24 inches

1.03 DESIGN

A. The design and construction shall be in accordance with the 1997 edition of the Uniform Building Code. Local building regulations and the ADA. Specific loads to be:
   1. Wind: Minimum 90 mph basic wind speed, exposure importance 1.
   3. Live load of Seat and Floor Plank: 120 PLF.
   4. Live load: 100 psf of gross horizontal projection.
   5. Lateral sway load, seat plank: 24 PLF.
   6. Perpendicular sway load, seat plank: 10 PLF.

B. Individual frame sections shall be of 100 percent welded construction. Lateral bracing, ties and railposts and other incidental members shall be bolted connections.

1.04 SUBMITTALS

A. Manufacturer qualifications: manufacturer must have ten years experience in the fabrication and installation of bleachers. Welders must be AWS Certified.

B. Warranty: The manufacturer shall provide owner with a written warranty that guarantees the bleachers for not less than 5 years against defective materials, fasteners, workmanship and welding with provisions that any manufactures part that wears out or proves to be defective will be replaced at no additional cost to the owner. Damage resulting from vandalism, misuse and acts of God excepted. It is recommended that a yearly inspection of your bleacher be performed and any irregularities be reported to manufacturer.

1.05 QUALITY ASSURANCE

A. Reference Standards:
   1. 2010 Building Standards Administrative Code, Part 1, CBSC.
PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Bleachers
   1. Aluminum Seating, Inc. (800) 757-SEAT
   2. Approved Equal

2.02 MATERIALS

A. Extruded Aluminum: 6061 alloy, T6 temper.
B. Fasteners: Cadmium or zinc chromate plate steel.
D. Seat Boards: Nominal 2” X 10”, wall thickness 0.093 anodized aluminum plank 6063-T6.
E. Foot Boards: 2 nominal 2” X 10”, wall thickness 0.093 mill finish aluminum, plank 6063-T6.
F. Risers: Nominal 1” X 6” mill finish plank 6063-T6.
G. End Caps: Plank and riser end caps-extruded aluminum, wall thickness 0.090 60603-T6.
H. Splices: All plank splices shall be made over a supporting frame not less than 2” wide, dual sleeve inserts of extruded 6063-T6 alluminum channels 18” in length.
I. Understructure:
   1. Vertical members: 2” X 2” square tube 6061-T6
   2. Horizontal board supports: 2” X 2” X 0.187 angle 6061-T6.
   3. Base sill angle: 2” X 3” X 0.188 angle 6061-T6.
   4. Diagonal horizontal and “X” braces: 1.50” X 1.50” X 0.125 angle 6061-T6.
J. Guardrail System: All rails shall pass through the rail posts and terminate with a rail post, no end caps shall be used.
   1. Railing: Extruded aluminum tubing 1.50” diameter 6061-T6 anodized.
   2. Rail Post: Real rail posts: 2.50” X 3.50” X 0.168 angle 6061-T6
      Side rail posts: 2” X 2” square tube 6061-T6 with welded end caps.
2.03 FABRICATION
   A. Fabrication and assembly of bleachers as per the manufacturer’s standards.

PART 3 EXECUTION

3.01 INSTALLATION
   A. Installation shall be in accordance with manufacturer’s installation procedures.

END OF SECTION 13125
SECTION 15410 - PLUMBING FIXTURES

PART 1 GENERAL

1.01 RELATED DOCUMENTS

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

1.02 SUMMARY

A. This Section includes the following conventional plumbing fixtures and related components:
   1. Drinking Fountains

1.03 DEFINITIONS


B. Accessible Fixture: Plumbing fixture that can be approached, entered, and used by people with disabilities.

C. Fitting: Device that controls the flow of water into or out of the plumbing fixture. Fittings specified in this Section include supplies and stops, faucets and spouts, shower heads and tub spouts, drains and tailpieces, and traps and waste pipes. Piping and general-duty valves are included where indicated.

D. PMMA: Polymethyl methacrylate (acrylic) plastic.

E. PVC: Polyvinyl chloride plastic.

1.04 SUBMITTALS

A. Product Data: For each type of plumbing fixture indicated. Include selected fixture and trim, fittings, accessories, appliances, appurtenances, equipment, and supports. Indicate materials and finishes, dimensions, construction details, and flow-control rates.

B. Operation and Maintenance Data: For plumbing fixtures to include in emergency, operation, and maintenance manuals.

C. Warranty: Special warranty specified in this Section.

1.05 QUALITY ASSURANCE

A. Reference Standards:
   1. 2010 Building Standards Administrative Code, Part 1, CBSC.
6. 2010 California Energy Code, Part 6, CBSC.
7. 2010 California Historical Building Code, Part 8, CBSC.
9. 2010 California referenced Standards, Part 12 CBSC.
10. Title 8 C.C.R. Chapter 4, Sub-Ch. 6 – Elevator Safety Orders.
11. Title 19 C.C.R., Public Safety, SFM Regulations.
12. Americans with Disabilities Act (ADA), Title II or III.

B. Source Limitations: Obtain plumbing fixtures, faucets, and other components of each category through one source from a single manufacturer.
   1. Exception: If fixtures, faucets, or other components are not available from a single manufacturer, obtain similar products from other manufacturers specified for that category.


D. NSF Standard: Comply with NSF 61, "Drinking Water System Components--Health Effects," for fixture materials that will be in contact with potable water.

E. Select combinations of fixtures and trim, faucets, fittings, and other components that are compatible.

F. Installer's Warranty: 1 year.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Drinking Fountain
   1. Haws Model 150
   2. Approved Equal

PART 3 EXECUTION

3.01 EXAMINATION

A. Examine roughing-in of water supply and sanitary drainage and vent piping systems to verify actual locations of piping connections before plumbing fixture installation.

B. Examine cabinets, counters, floors, and walls for suitable conditions where fixtures will be installed.
Proceed with installation only after unsatisfactory conditions have been corrected.

3.02 INSTALLATION

A. Assemble plumbing fixtures, trim, fittings, and other components according to manufacturers’ written instructions.

B. Install floor-mounting fixtures on closet flanges or other attachments to piping or building substrate.

C. Install fixtures level and plumb according to roughing-in drawings.

D. Install water-supply piping with stop on each supply to each fixture to be connected to water distribution piping. Attach supplies to supports or substrate within pipe spaces behind fixtures. Install stops in locations where they can be easily reached for operation.
   1. Exception: Use ball, gate, or globe valves if supply stops are not specified with fixture.

E. Install trap and tubular waste piping on drain outlet of each fixture to be directly connected to sanitary drainage system.

F. Install faucet-spout fittings with specified flow rates and patterns in faucet spouts if faucets are not available with required rates and patterns. Include adapters if required.

G. Install water-supply flow-control fittings with specified flow rates in fixture supplies at stop valves.

H. Install traps on fixture outlets.
   1. Exception: Omit trap on fixtures with integral traps.
   2. Exception: Omit trap on indirect wastes, unless otherwise indicated.

3.03 FIELD QUALITY CONTROL

A. Verify that installed plumbing fixtures are categories and types specified for locations where installed.

B. Check that plumbing fixtures are complete with trim, faucets, fittings, and other specified components.

C. Inspect installed plumbing fixtures for damage. Replace damaged fixtures and components.

D. Test installed fixtures after water systems are pressurized for proper operation. Replace malfunctioning fixtures and components, then retest. Repeat procedure until units operate properly.

3.04 ADJUSTING

A. Operate and adjust faucets and controls. Replace damaged and malfunctioning fixtures, fittings, and controls.

B. Replace washers and seals of leaking and dripping faucets and stops.
3.05 CLEANING

A. Clean fixtures, faucets, and other fittings with manufacturers' recommended cleaning methods and materials. Do the following:
   1. Remove faucet spouts and strainers, remove sediment and debris, and reinstall strainers and spouts.
   2. Remove sediment and debris from drains.

B. After completing installation of exposed, factory-finished fixtures, faucets, and fittings, inspect exposed finishes and repair damaged finishes.

END OF SECTION 15410
SECTION 16010 - ELECTRICAL GENERAL REQUIREMENTS

PART 1 - GENERAL

1.01 SCOPE

Electrical General Requirements specifically applicable to Division 16 Sections, in addition to Division 1 - General Requirements. Work includes but is not necessarily limited to the following:

A. Definitions, guarantees, submittals, clean-up, "As-Built" and all other applicable requirements of Division 0 and Division 1 apply to the work of this section.

B. Examine all other sections for work related to those sections which are required to be included as work under this section.

C. Coordinate all work in this Division with related trades.

D. Furnish and install the following:

1. Incidental items not indicated on the drawings nor mentioned in the Specifications that belong to the work described, or are required to provide complete systems, as though called out here in every detail.
2. Musco sports lighting poles and sport light fixtures.
3. Driveway, bleacher and emergency flood light fixtures, including driveway light poles and lamps.
4. Conduits, wire, disconnects, outlets and junction boxes for power to Field House (Maintenance Building) disconnect switch and transformer, Musco Lighting Control Panel and Pole Mounted Terminal Cabinets and field portable PA system power cord assembly as indicated on the electrical plans.
5. Medium voltage dual primary winding pad mounted transformer, low voltage switchboard and lighting controls including transformer incoming 4.16 kV incoming feeder (conductors rated 12 kV) and all interconnecting power and control wiring per plans.
6. Cleaning, patching, repairing and painting.

1.02 APPLICABLE PUBLICATIONS

The following publications form a part of this specification to the extent referenced. The publications are referred to in the text by the basic designation only.

A. American National Standards Institute, Inc. (ANSI) Publications:

2. C37.20-81 Switchgear Assemblies, including supp. C37.20A, C37.20B, Interfiled; C37.20D-78

B. State of California Administrative Codes:

1. Title 8, Industrial Relations
2. Title 19, State Fire Marshal Regulations
3. Title 24, Part 2, California Energy Code, California Adopted Edition
4. Title 24, Part 3, CCR, California Electrical Code, California Adopted Edition
5. Title 24, Part 9, CCR, California Fire Code, California Adopted Edition

C. National Electrical Manufacturers Association (NEMA) Publication:
   1. ICS6-83 (R86) Enclosures for Industrial Controls and Systems

D. National Fire Protection Association (NFPA) Publications:
   1. 70-National Electrical Code (NEC), California Adopted Edition
   2. 70B-Electrical Equipment Maintenance, California Adopted Edition

E. State of California Public Utilities Commission (Cal. P.U.C.) Publication:
   1. G.O. 128 Rules for Construction of Underground Electrical Supply and Communications Systems

1.03 WORK SEQUENCE

A. Install work to accommodate Campus's scheduling requirements. During the construction period, coordinate electrical schedule and operations with Campus and other trades. Refer to Division 1 - General Requirements.

1.04 DEFINITIONS

A. The words "work" or "electrical work" herein include products, labor, equipment, tools, appliances, transportation and all related items, directly or indirectly required to complete the specified and indicated electrical installation.

B. The word "code" shall mean any and all regulations and requirements of regulatory bodies, public and private, having jurisdiction over the work involved.

C. The word "product" used in Division 16 means all material, equipment, machinery, and/or appliances directly or indirectly required to complete the specified and/or indicated electrical work.

D. The words "standard product" shall mean a manufactured product, illustrated and/or described in catalogs or brochures, which are in general distribution prior to the date of issue of construction documents or bidding. Products will generally be identified by means of a specific catalog number and manufacturer's name.

E. The word "provide shall mean furnish and install and where applicable shall also mean connect, complete installation and test.

F. Refer to Division 1, General Requirements, for additional definitions of words and phrases used to describe Division 16, Electrical Work.

1.05 CAMPUS FURNISHED PRODUCTS

Unless noted otherwise, all items shall be furnished by the Contractor for a complete and operational installation.
A. All items required for a complete and operational installation shall be furnished and installed by the Contractor.

1.06 DISCREPANCIES

A. Where a conflict in requirements occurs between the specifications and drawings, or in the specifications or on the drawings, and a resolution is not obtained from the Design Consultant before the bidding date, the more expensive alternate will become the contractual requirements.

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

C. The Contractor shall check all drawings furnished him immediately upon their receipt and shall promptly notify the Architect of any discrepancies. Figures marked on drawings shall in general be followed in preference to scale measurements. Large scale drawings shall in general govern small scale drawings. The Contractor shall compare all drawings and verify the figures before laying out the work and will be responsible for any errors which might have been avoided thereby.

1.07 CHANGES

A. The Contractor shall be responsible to make and obtain approval for all necessary adjustments in circuiting as required to accommodate the relocations of equipment and/or devices which are affected by any approved authorized changes. All changes shall be clearly indicated on the "As-Built" drawings.

1.08 SUBMITTALS

A. Submit shop drawings, manufacturer's data certificates for equipment, materials and finish, and pertinent details for each system where specified in each individual section, and obtain approval before procurement, fabrication, or delivery of the items to the job site. Partial submittals are not acceptable and will be returned without review. Include the manufacturer's name, trade name, catalog model or number, nameplate data, size, layout dimensions, capacity, project specification and paragraph reference, applicable technical society publication references, and other information necessary to establish contract compliance of each item the Contractor proposes to furnish. Photographs of existing installations and data submitted in lieu of catalog data are not acceptable and will be returned without approval. Contractor shall be responsible for reviewing and certifying submittals as conforming to the drawings and specifications prior to submittal and shall verify conformance of equipment as delivered with final shop submittals, specifications and plans. Contractor shall report to Architect any deviations prior to initiation of construction. Contractor is responsible for promptly reporting to Campus any news of late equipment delivery which is likely or certain to delay installation.

B. Submit under provisions of Division 1.

C. Proposed Products List: Include Products specified in the following Sections:
1. Section 16170 - Grounding and Bonding
2. Section 16195 - Electrical Identification

D. Submit shop drawings and product data grouped and referenced by the technical Section numbers.

E. The Contractor shall be responsible for all equipment ordered and/or installed prior to receipt of shop drawings returned from the Architect bearing the electrical engineer's stamp of "Reviewed". All corrections or modifications to the equipment as noted on the shop drawings shall be performed and equipment removed from the job site at the request of the Architect without additional compensation.

F. Manufacturer's Data: For each manufactured item, provide current manufacturer's descriptive literature of cataloged products, equipment drawings, diagrams, performance and characteristic curves if applicable, and catalog cuts.

1.09 REGULATORY REQUIREMENTS

A. Electrical: Conform to NFPA 70, ANSI C2 and all other state and local codes.

B. The requirements of authorities shall be the minimum acceptable requirements for the work and nothing described in these Specifications or indicated on the drawings shall be construed to permit work not conформing to the most stringent of the applicable codes and regulations. When drawings or specifications call for materials or construction of better quality of larger size than required by codes, laws, rules and regulations, the drawings and specifications shall take precedence.

C. Equipment not complying with applicable codes shall be removed and replaced with approved equipment at Contractor's expense. UL listing labels, where applicable, shall be installed prior to shipment from factory.

D. Obtain permits, and request inspections from authority having jurisdiction.

1.10 PRODUCT ALTERNATES OR SUBSTITUTIONS

A. Where a manufacturer's product is specified, the intent is to establish definite quality, construction and performance characteristics. The manufacturer's latest published catalog data for the product shall become part of this specification as though stated herein to the extent that such data establishes quality desired, testing procedures, safety features, life expectancy, performance characteristics and, in the case of finish material, the general appearance. Substitute products, where permitted, will be required to equal or exceed these various requirements as established by the specified product manufacturer's literature.

1.11 GUARANTEE

A. Except as may be specified under other sections in the Specifications, guarantee all equipment furnished under the Specifications for a period of one year from date of acceptance against defective workmanship and material and improper installation. Upon notification of failure, correct deficiency immediately and without cost to the Campus.

B. Standard warranty of manufacturer shall apply for replacement of parts after expiration of the above period. Manufacturer shall furnish replacement parts to the Campus or their service
agency as directed. Furnish manufacturer's warranties in accordance with Division 0 of this Specification.

1.12 PROJECT/SITE CONDITIONS

A. Install work in locations shown on drawings, unless prevented by project conditions.

1.13 CATALOGED PRODUCTS/SERVICE AVAILABILITY

A. Materials and equipment shall be current products by manufacturers regularly engaged in the production of such products. Products shall have been in satisfactory commercial or industrial use for 2 years prior to bid opening. The 2-year period shall include applications of equipment and materials under similar circumstances and of similar size. The 2-year period shall be satisfactorily completed by a product for sale on the commercial market through advertisements, manufacturer's catalogs, or brochures. Products having less than a 2-year field service record will be acceptable if a certified record of satisfactory field operation for not less than 6000 hours, exclusive of the manufacturer's factory or laboratory tests, is furnished. The equipment items shall be supported by service organizations which are reasonably convenient to the equipment installation in order to render satisfactory service to the equipment on a regular and emergency basis during the warranty period of the contract.

PART 2 - PRODUCTS

Not Used.

PART 3 - EXECUTION

3.01 Obtain and pay for all permits and inspections. All work shall conform to the requirements of the latest edition of the CEC.

3.02 WORK RESPONSIBILITIES

A. The drawings indicate diagrammatically the desired locations or arrangement of conduit runs, outlets, equipment, etc., and are to be followed as closely as possible. Proper judgment must be exercised in executing the work so as to secure the best possible installation in the available space and to overcome local difficulties due to space limitations or interference with structural conditions. The contractor is responsible for the correct placing of his work and the proper location and connection of his work in relation to the work of other trades. Advise appropriate trade as to locations of access panels.

B. Where equipment is furnished by others, verify dimensions and the correct locations of this equipment before proceeding with the roughing-in of connections.

C. All scaled and figured dimensions are approximate of typical equipment of the class indicated. Before proceeding with any work, carefully check and verify all dimensions, sizes, etc. with the shop drawings to see that the equipment will fit into the spaces provided without violation of applicable codes.
E. Should any changes to the work indicated on the drawings or described in the specifications be necessary in order to comply with the above requirements, notify the Architect immediately and cease work on all parts of the contract which are affected until approval for any required modifications to the construction has been obtained from the Architect.

F. Be responsible for any cooperative work which must be altered due to lack of proper supervision or failure to make proper provisions in time. Such changes shall be under direction of the Architect and shall be made to his satisfaction.

G. Perform all work with competent and skilled personnel.

H. All work, including aesthetic as well as electrical and mechanical aspects of the work, shall be of the highest quality consistent with the best practices of the trade.

I. Replace or repair, without additional compensation, and any work which, in the opinion of the Architect, does not comply with these requirements.

3.03 PAINTING OF EQUIPMENT

A. Factory Applied: Electrical equipment shall have factory-applied painting systems which shall, as a minimum, meet the requirements of NEMA ICS 6 corrosion-resistance test, except equipment specified to meet requirements of ANSI C37.20 shall have a finish as specified in ANSI C37.20.

B. Field Applied: Paint electrical equipment as required to touch up, to match finish on other equipment in adjacent spaces or to meet safety criteria.

C. When not already covered under the painting section of the specifications, all electrical work exposed to view shall be painted in accordance with the painting section of the specifications to match surroundings. Work to be painted shall include conduit, hangars, outlet boxes, pull boxes, surface raceway and similar items.

END OF SECTION
SECTION 16050 - BASIC MATERIALS AND METHODS

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Conduit
B. Fittings and Conduit Bodies
C. Boxes
D. Wiring Devices

1.02 RELATED SECTIONS

A. Section 16010 - Electrical General Requirements, applies to this section, with the additions and modifications specified herein.
B. Section 16170 - Grounding and Bonding.
C. Section 16195 - Electrical Identification.

1.03 APPLICABLE PUBLICATIONS

The following publications form a part of this specification to the extent referenced. The publications are referred to in the text by the basic designation only.

A. American National Standards Institute, Inc. (ANSI) Publications

1. C80.1-95 Rigid Steel Conduit, Zinc Coated
2. C80.3-95 Electrical Metallic Tubing, Zinc Coated
3. FB 1-97 Fittings, Cast Metal Boxes, and Conduit Bodies for Conduit and Cable Assemblies
4. OS 1-84 Sheet-Steel Outlet Boxes, Device Boxes, Covers and Box Supports
5. OS 2-86 Nonmetallic Outlet Boxes, Device Boxes, Covers and Box Supports

B. National Electrical Manufacturers Association (NEMA) Publications:

1. KS 1-96 Enclosed Switches
2. TC 2-90 Electrical Plastic Tubing (EPT) and Conduit (EPC-40) and (EPC-80)
3. WD 1-83 General Requirements for Wiring Devices
4. WD 6-88 Wiring Device Dimensional Requirements

C. California Electrical Code (Latest Edition):

D. Underwriters Laboratories, Inc. (U.L.) Publications:

1. 1-93 Standard for Flexible Metal Conduit
2. 6-93 Rigid Metallic Conduit
3. 50-95 Cabinet and Boxes
4. 360-96 Liquid-tight Flexible Steel Conduit
5. 486A-91 Wire Connectors and Soldering Lugs, for use with Copper Conductors
6. 498-96 Attachment Plugs and Receptacles
7. 510-94 Insulating Tape
8. 514A-91 Metallic Outlet Boxes
9. 514B-89 Fittings for Conduit and Outlet Box
10. 0651-95 Schedule for 40 & 80 Rigid PVC Conduit
11. 797-93 Electrical Metallic Tubing

1.04 SUBMITTALS

A. Submit under provisions of Section 16010 and Division -1.

B. Product Data: Provide for:
   1. Conduit (all types)
   2. Receptacles (all types)
   3. Safety Switches

C. Test Reports: Provide for:
   1. Insulation resistance tests of low voltage conductors.

1.05 PROJECT RECORD DOCUMENTS

A. Submit under provisions of Division -1.

B. Accurately record actual location of each new receptacle.

1.06 REGULATORY REQUIREMENTS

A. Conform to requirements of ANSI/NFPA 70 and with all state adopted amendments, except where requirements herein are more stringent.

B. Furnish products listed and classified by Underwriters Laboratories, Inc. or a testing firm acceptable to authority having jurisdiction as suitable for purpose specified and shown.

1.07 QUALITY ASSURANCE

In each standard referenced to herein, consider the advisory provisions to be mandatory, as though the word "shall" has been substituted for "should" wherever it appears. Interpret references in these standards to "authority having jurisdiction," or other words of similar meaning, to mean Campus.

1.08 DELIVERY, STORAGE, AND HANDLING

A. Deliver, store, protect, and handle Products to site under provisions of Section 16010.
B. Protect conduit from corrosion and entrance of debris by storing above grade. Provide appropriate covering.

1.09 PROJECT CONDITIONS

A. The drawings are diagrammatic and shall not be scaled for exact locations: Field conditions and non-interference with other utilities and trades, shall determine exact locations.

B. Verify routing and termination locations of conduit prior to rough-in.

C. Conduit routing is shown on Drawings in approximate locations unless dimensioned. Route as required to complete wiring system.

PART 2 - PRODUCTS

2.01 MATERIALS AND EQUIPMENT

Materials and equipment shall conform to the respective specifications and standards and to the specifications herein. Electrical ratings shall be as indicated. Except where specifically indicated otherwise, provide only new materials having all legally required approvals and/or labels. Items of a similar nature shall be of the same type and manufacturer.

2.02 CONDUIT

A. Rigid Steel Conduit (Zinc-coated): ANSI C80.1, UL 6, hot-dip galvanized, threaded type.

B. Electrical Metallic Tubing: UL 797, ANSI C80.3.

C. Rigid Plastic Conduit: NEMA TC-2, UL 651, PVC Schedule 40, Carlon or approved equal.

D. Flexible Metal Conduit: UL 1.

E. Liquidtight Flexible Metallic Conduit: UL 360, Interlocked steel construction with a polyurethane jacket, Electri-Flex Liquatite® type CEA or approved equal.

2.03 FITTINGS


B. Fittings for EMT: Compression type. Split couplings unacceptable.

C. Fittings for Flexible Metal Conduit: ANSI/NEMA FB 1.

D. Expansion/Deflection Fittings: Provide fitting capable of a straight line expansion movement of 2" in either direction and a movement of 3/4" from the normal in all other directions, OZ Gedney Type AX DX. Provide complete with grounding and bonding jumpers.

2.05 OUTLET BOXES
A. Sheet Metal Outlet Boxes: ANSI/NEMA OS 1, galvanized steel.
   1. Luminaire and Equipment Supporting Boxes: Rated for weight of equipment supported; include 1/2 inch male fixture studs where required.
   2. Concrete Ceiling Boxes: Concrete type.

B. Nonmetallic Outlet Boxes: ANSI/NEMA OS 2.

C. Cast Boxes: NEMA FB 1, Type FD, cast ferroloy. Provide gasketed cover and threaded hubs by box manufacturer.

2.09 JUNCTION BOXES AND PULL BOXES: UL 50

A. Provide junction boxes of Code gauge steel sized as indicated or required. Provide 16 gauge steel minimum, unless otherwise noted. Indoor enclosures shall conform to NEMA ICS 6 for the type 1, unless otherwise noted.

B. Size junction to not less than minimum Code requirements. Increase size above Code requirements where necessary to provide space for pulling, racking or splicing enclosed conductors, or where specified or indicated dimensions exceed Code requirements.

2.10 LIGHTING

A. Ferrous mounting hardware and accessories shall be finished using either a galvanic or phosphate primer/baked paint process to prevent corrosion and discoloration of plaster.

B. Fasteners shall be manufactured of non-magnetic stainless steel or anodized aluminum, except in indoor applications where galvanized steel shall be acceptable.

C. Fixtures shall be free of light leaks and shall be designed to provide sufficient ventilation of lamps and ballasts including vent holes where required. Outdoor fixtures shall have wire mesh corrosion resistant screens in the vent holes.

D. All sheet metal work shall be free from tool marks and dents and shall have accurate angles bent as sharp as compatible with the gauges of the required metal. All intersections and joints shall be formed true and of adequate strength and structural rigidity to prevent any deformation after assembly. All sheet metal shall be free of light leaks. All edges shall be finished so there are no sharp edges exposed. All mitres shall be in accurate alignment with abutting intersecting members. Placing of plates in individual runs in single planes and the use of spliced pieces or filler material to cover defective workmanship shall not be allowed. Sheet metal work shall be properly fabricated so that planes will not deform, i.e. become concave or convex, due to normal expected ambient and operating conditions.

E. Wiring channels and lampholder mountings shall be rigid and accurately made.

2.11 WIRE CONNECTORS AND TERMINALS: For use with copper conductors. UL 486A.

2.12 INSULATING TAPES: UL 510.

A. NAMEPLATES: Provide as specified in Section 16195, "Electrical Identification."
B. **LIGHTING**: Provide all required hardware to install specified fixtures.

**PART 3 - EXECUTION**

3.01 **INSTALLATION**: Electrical installation shall conform to requirements of NFPA 70, state and local codes, and to requirements specified herein.

3.02 **LOCATIONS**

A. The drawings indicate diagrammatically the desired locations and arrangements of the components of the electrical work. Follow the drawings as closely as possible, but use judgment and coordinate with other trades to secure the best possible installation in the available space and under the developed conditions.

B. Before installing any equipment, conduit, or locating any outlet, examine the complete set of documents, including shop drawings and specifications, and verify all dimensions and space requirements.

C. No additional compensation will be allowed for omissions, inadequate space, misunderstandings or rejected work caused by neglect of these requirements.

3.03 **CONDUIT**

A. Rigid steel conduit may be used in all locations. Rigid steel conduit shall not be installed below grade in direct contact with earth.

B. Electrical metallic tubing (EMT) may be installed in indoor dry locations only. It shall not be installed lower than four feet above the finished floor. Restrictions applicable to EMT:

1. Do not install below grade.
2. Do not encase in concrete.
3. Do not use in areas subject to severe physical damage (including, but not limited to, mechanical equipment rooms and electrical equipment rooms).
4. Do not use in hazardous areas.
5. Do not use outdoors.

E. Use flexible metallic conduit in short lengths for final connections to lighting fixtures in accessible ceilings, motors, transformers and other vibration type equipment, or with the approval of the Architect, where absolutely necessary due to structural conditions. Use liquidtight flexible metal conduit where flexible conduit is exposed to weather, oil or moisture. Provide green ground conductor in all flexible conduit.

F. Install conduit in accordance with NECA "Standard of Installation." The electrical drawings are diagrammatic and do not show all offsets, bends, fittings, junction boxes, pull boxes and expansion fittings required to meet field conditions. Determine actual material and hardware requirements and verify all dimensions by field inspection.

G. Arrange supports to prevent misalignment during wiring installation.

H. Support conduit using coated steel or malleable iron straps, lay-in adjustable hangers, clevis hangers, and split hangers.

**BASIC MATERIALS AND METHODS**
I. Arrange conduit to maintain headroom and present neat appearance.

J. Route exposed conduit parallel and perpendicular to walls.

K. Cut conduit square using saw or pipe cutter; de-burr cut ends.

L. Bring conduit to shoulder of fittings; fasten securely.

M. Where conduit passes from one type of construction to another, or where there is a possibility of dissimilar movements, an expansion/deflection device or a suitable loop of sealtight flexible conduit shall be installed. Loop sealed flexible conduit shall consist of 18” minimum length of looped conduit with a junction box at one or both ends, wherever conduit crosses building seismic joints.

N. Avoid moisture traps; provide junction box with drain fitting at low points in conduit system.

O. Provide 1/8” diameter polyethylene pull line in each new empty conduit except sleeves and nipples.

Q. Acceptable Manufacturers: 3M, Carborundum, Hevi-Duty/Nelson, or approved equal.

R. Ground and bond conduit under provisions of Section 16170.

3.04 FITTINGS

A. Use threaded fittings for rigid metal conduit and compression fittings for tubing.

B. Use cement-on fittings for plastic conduit and tapered drive-on fittings for fiber conduit.

C. Fittings for flexible conduit shall be of the threadless hinged clamp type. Do not use fittings threaded internally into the flexible conduit ends.

D. Use fittings made of the same material as the raceway except:
   1. Malleable iron and steel are interchangeable.
   2. Die cast fittings may be used for flexible steel conduit and for factory manufactured offsets.
   3. Use aluminum fittings only with aluminum conduit.
   4. Use plastic insulated bushings for conduit sizes larger than 1”.
   5. Use insulated throat connectors for electrical metallic tubing.

3.05 WIRING DEVICES

A. Use products of a single manufacturer for each type of wiring device. Different manufacturers may be used for different type devices, if the requirements of the specification are fulfilled.

B. Position receptacles so that the ground contact in grounding type receptacles is on bottom of parallel prongs.

C. Coordinate the electrical work with the work of other trades to ensure that wiring device flush outlets are positioned with box openings aligned with the face of the surrounding finish material.
Pay special attention to installations in cabinet work, and in connection with specially building equipment requiring very exact electrical rough-in.

3.06 BOXES, OUTLETS AND SUPPORTS:

Provide boxes in wiring or raceway systems wherever required for pulling of wires, making connections, and mounting of devices or fixtures. Boxes for metallic raceways shall be cast-metal, hub-type when located in wet locations, when surface mounted on outside of exterior surfaces, when installed exposed up to 7 feet above interior floors, when installed under raised floor or when installed in hazardous areas. Boxes in other areas shall be sheet steel. Each box shall have volume required by CEC for number of conductors enclosed in the box. Provide gaskets for cast-metal boxes installed in wet locations.

3.07 LIGHTING

Provide a lighting fixture for each lighting outlet as indicated.

A. Provide complete fixtures, including glassware, diffusers, lenses, fitters, canopies, sockets, reflectors, ballast's, wiring, hangers and any accessories necessary to complete each fixture installation.

B. Provide adequate and sturdy support for each lighting fixture. Verify weight and mounting method of all fixtures and furnish and install suitable supports. Fixture mounting assemblies shall comply with all local seismic codes and regulations.

C. At the completion of construction clean the bottoms, the trim, the reflecting surfaces, lenses, baffles, louvers and reflector cones of all lighting fixtures so as to render them free of any material, substance or film foreign to the fixture.

D. Ascertaint and ensure that all lamps installed are exactly as specified for each fixture type.

E. Replace all burned-out or inoperative lamps and inoperative ballast's in all high intensity discharge and fluorescent fixtures before the project is accepted by the University so that all lighting fixtures will be in first-class operating condition.

3.09 FIELD TESTS:

As an exception to requirements that may be stated elsewhere in the contract, the Campus shall be given minimum 5 working days notice prior to each test. The Contractor shall provide all test equipment and personnel and submit written copies of all test results.

A. Operational Tests: Demonstrate the operation of each switch, relay and other item of electrical control with the system fully energized and operating. Each shall be demonstrated three times. Any faulty or defective Contractor furnished materials and workmanship found during the tests shall be replaced or corrected by the Contractor at no additional cost to the Campus.
SECTION 16120 - WIRES AND CABLES

PART 1 - GENERAL

1.01 SUMMARY

A. Contractor shall furnish all labor, equipment, materials, and incidentals necessary to install wires and cables and other related work complete, as indicated on the drawings and as specified.

1.02 REFERENCES

A. The following publication forms a part of this specification to the extent referenced. The publication is referred to in the text by the basic designation only.

B. Insulated Cable Engineers Association (ICEA) Publication.


D. IEEE-404, "IEEE Standard for Cable Joints for Use With Extruded Dielectric Cable Rated 5000 - 138000 V and Cable Joints for Use With Laminated Dielectric Cable Rated 2500 - 500000 V."

E. IEEE-48, "IEEE Standard Test Procedures and Requirements for AC Cables Terminations 2.5 kV through 765 kV."

1.03 SECTION INCLUDES

A. Low voltage power and control cable

B. Medium voltage power cable

C. Grounding conductors

D. Splices

E. Terminators

F. Fireproofing

1.04 SUBMITTALS

A. Submit under provisions of Section 16010, "Electrical General Requirements", Paragraph 1.08, Submittals. Except as specifically noted, permitted or otherwise directed in this Section, submit all items in this section under a single common submission. Partial submittals are unacceptable and will be returned "Revise and Resubmit".

B. Product Data: Provide for:
1. Low and Medium Voltage Cables (include draft warranty language with Product Data submittal)
2. Inline Splice Kits (include 20 year warranty with product data submittal)
3. Terminations (include 20 year warranty with product data submittal)
4. Cable Lubricant
5. Fireproofing and Glass Cloth Tape
6. Cable Pulling Tension Reports (see 3.02B)

C. Field samples: Samples will not be returned to the Contractor. Provide for:
   1. Low and Medium voltage cable: Provide samples of Low Voltage multi-conductor and all Medium Voltage conductor products. Each sample shall be not less than 24 inches long and contain at least one full cycle of marking text.

D. Manufacturer's Instructions (where commonly included with standard shipping package):
   1. Installation instructions for cable
   2. Installation instructions for each type of splicing kit.
   3. Installation instructions for each type of termination kit.
   4. Installation instructions for fireproofing tape.
   5. Where manufacturer's instructions are not commonly included with standard packaging, Contractor shall install per ANSI recognized industry standards, such as NECA 1 or NEMA.

E. Factory Test Reports:
   1. Medium Voltage Cable: Submit certified report of factory tests performed in accordance with AEIC CS-8, Section E and IEC 60339 for approval prior to shipment of cable from the factory. Manufacturer shall provide certification of manufacturing date for each cable.

F. Certification of Cable Splicer/Terminator:
   1. Under a separate submittal, submit medium voltage cable Splicer/Terminator certification of competency and experience 30 days before splices or terminations are made in medium voltage cables. Each splicer shall have completed splice/termination certification training provided by the splice or termination manufacturer within 180 days prior to the initial splice or termination installations for this contract.
   2. In addition to a certification of competency above, the Contractor must demonstrate the qualification of a proposed cable splicer/terminator through formal training and relevant experience in splicing and termination cables of the type and class under this Contract. The Contractor shall provide a company officer signed listing verifying relevant projects completed by the proposed splicer/terminator during the past three years and all completed formal training documentation must be submitted to demonstrate qualification.
   3. Each cable splicer may be required to make an approved dummy splice in accordance with the manufacturer's instructions in the presence of the Engineer. The Contractor shall furnish all tools, materials and supplies necessary for the dummy splices.

G. Cable Warranty: Submit manufacturer's medium voltage cable warranty following installation.

H. Cable Pull Tension:
   1. Under separate submission, the contractor shall submit cable pulling criteria and
calculations for approval prior to work.

I. Cable Field Test Reports:

1. Submit field test reports consistent with InterNational Electrical Testing Association (NETA) Acceptance Testing Specifications (ATS) on all new cables installed under this project within 30 days of testing.

1.05 QUALITY ASSURANCE

A. Wire and cable shall be delivered and stored on site in factory assembled packaging or on factory reels. All cable ends for 600 volt cable No. 4/0 and larger and all medium voltage cable shall be sealed with heat shrinkable sealant coated end caps. All cables that have been pulled into a subsurface structure shall have any exposed ends sealed with a heat shrinkable adhesive coated cap. Caps shall be applied immediately after installation, unless cable accessory (splice or termination) installation will occur during the same day. Cable ends shall not be left open and exposed. Hand taped caps are not acceptable. Tyco-Raychem ESC series or approved equal.

B. Medium voltage cable shall be shipped on reels with both ends of the cable pigtailed out and accessible for high-potential testing while on the reel. All medium voltage cable ends shall be sealed with heat shrinkable sealant coated end caps. Tyco-Raychem ESC series or approved equal.

C. Manufacturer shall furnish a certificate of compliance to demonstrate Medium Voltage cable furnished is in complete compliance with ICEA S-68-516, Part 3. Test reports including X-Y plot of corona test shall be supplied with cable delivery. Include copies of these reports and the certificate in the O & M Manual.

D. All wire and cable shall be brought to project in original containers bearing the Underwriters Label or on original factory reels.

1.06 CONDUCTOR COLOR CODING

A. Single power conductors and individual conductors of multiconductor power cables, No. 6 AWG and smaller, shall be identified with integral insulation pigmentation of the designated colors. Alternately, conductors larger than No. 6 AWG may be color code identified by wrapping the conductor at each end and at all accessible locations with vinyl tape. Where this method of color-coding is used, wrap at least six full overlapping turns of tape around the conductor covering an area 1-1/2 to 2 inches wide at a visible location.

B. Phase sequences A, B, and C implies the phase sequence.

C. Color shall be green for all grounding conductors, gray for 480/277V neutrals, and white for 208/120V neutrals.

D. Use the following colors unless directed otherwise approved by the Engineer. Verify color-coding with Engineer prior to construction.
<table>
<thead>
<tr>
<th>System</th>
<th>Conductor</th>
<th>Color</th>
</tr>
</thead>
<tbody>
<tr>
<td>12,000 volts</td>
<td>Phase A</td>
<td>Yellow</td>
</tr>
<tr>
<td>3-Phase, 3-Wire</td>
<td>Phase B</td>
<td>Red</td>
</tr>
<tr>
<td></td>
<td>Phase C</td>
<td>Blue</td>
</tr>
<tr>
<td>480/277 volts</td>
<td>Phase A</td>
<td>Brown</td>
</tr>
<tr>
<td>3-Phase, 4-Wire</td>
<td>Phase B</td>
<td>Orange</td>
</tr>
<tr>
<td></td>
<td>Phase C</td>
<td>Yellow</td>
</tr>
<tr>
<td>208/120 volts</td>
<td>Phase A</td>
<td>Black</td>
</tr>
<tr>
<td>3-Phase, 4-Wire</td>
<td>Phase B</td>
<td>Red</td>
</tr>
<tr>
<td></td>
<td>Phase C</td>
<td>Blue</td>
</tr>
</tbody>
</table>

PART 2 - PRODUCTS

2.01 WIRE AND CABLE, SECONDARY VOLTAGE, 600 VOLT AND BELOW

A. Conductors shall bear the date of manufacture imprinted on the insulation with other identification. Wire and cable manufactured more than 12 months before delivery to the job site shall not be used.

B. 600 Volt Wires and Cables: UL 44, ICEA S-95-658, NEMA WC-70. Conductors shall be stranded copper per ASTM B-3, B-8 or B496. Insulation shall be type THWN unless otherwise noted on drawings. Conductors 250 kcmil or larger shall be type XHHW. Interior & Above Grade conductors to be 90 °C copper with Type THWN-2/THHN or XHHW insulation.

C. Aluminum conductors are not approved for use on this project.

2.02 WIRE AND CABLE, MEDIUM VOLTAGE (5/8 AND 25 KV)

A. This specification covers single conductor, Ethylene Propylene Rubber (EPR) insulated power cables medium voltage applications rated 15 kV for 12,000 volts application. The cables shall be capable of operating continuously in both wet and dry locations at conductor temperature of 105 °C for normal operations, 140 °C under emergency operating conditions and 250 °C under short circuit conditions. Furnished cable shall be UL listed as type MV-105 in accordance with UL 1072.

B. Conductors shall be Class B stranded, concentric, compressed or compact round, soft or annealed copper per Part 2 of ICEA S-93-639.

C. Strand screen shall be extruded EPR compatible semi-conducting compound applied over the conductor. The material shall be compatible with the conductor metal, shall be uniformly and firmly bonded to the overlying insulation and be free stripping from the conductor.

D. Insulation shall be high quality, heat, moisture, ozone and corona resistant EPR compound. The insulation shall contrast in color from the strand screen and insulation shield per AEIC CS-8. Insulation level shall be 133 percent for 15 kV cables. The minimum thickness of the insulation at any point shall not be less than 90 percent of the specified nominal thickness.
E. Insulation screen shall be extruded EPR compatible semi-conducting compound applied directly over the insulation. The material shall be compatible with the insulation and overlying metallic shield. The insulation shield shall free stripping from the insulation and comply with Para D.1 of AEIC CS-8. The insulation shield shall leave no conductive residue on the surface of the insulation after stripping.

F. The strand screen, insulation and insulation screen shall be applied in a single pass employing a triple tandem extrusion process and cured simultaneously to provide a virtual corona free cable core. The EPR insulation shall not be exposed to the atmosphere during manufacture.

G. Metallic shield shall be a single 0.005 inch thickness of copper tape, helically applied over the insulation screen material with a nominal 25 percent overlap.

H. Jacket shall be extruded polyvinyl chloride (PVC) material meeting physical and dimensional requirements of ICEA S-93-639, Section 7.

I. Identifying information shall be printed on the jacket in a contrasting color. Information shall consist of manufacturer’s name, location code of plant, conductor size, insulation type, insulation thickness, voltage rating and UL designation. Mark "FOR CT USE" where applicable.

J. Size of cable shall be as specified on the drawings.

K. The manufacturer shall have a minimum of twenty-five years U.S. experience with manufacturing medium voltage power cable. The cable shall be manufactured and tested in accordance with AEIC CS-6, ICEA S-93-639 and UL 1072.

L. Cables shall be manufactured within 12 months of delivery. Copies of certificates shall be included in O&M manuals.

M. Cable Warranty: Manufacturer shall warrant that the cable is free from defects in materials and workmanship for a life of thirty (40) years from the date of installation when installed, terminated and operated within acceptable industry practices. In the event the cable is found to be defective, the manufacturer shall replace the length of cable free of charge and shall extend the same guarantee on the replacement cable.

N. Approved Manufacturers: The Okonite Co. type "Okoguard-Okoseal," or approved equal.

2.03 SPLICES (600V)

A. For above grade cable and conductor sizes, provide compression in line splices or stub style splices with 1000V rated premolded RVC (stub splice) cover or heat shrinkable tubing cover: TE Connectivity: WCSM or RVC caps or approved equal. Tubing and RVC caps must be UL Listed.

B. For below grade splices in pull boxes, manholes or cable vaults, provide compression type in line splices for two-way connections and C type compression connectors for taps or three-way connections. Cover all below grade splices with 1000V UL Listed Heat Shrinkable TE Connectivity tubing (WCSM) or approved equal.

2.04 SPLICES (8 AND 25 KV)

A. High voltage in-line splices shall be fully compatible with cables described in Section 16120 and shall contain all necessary components to reinstate primary cable insulation, semi-con shielding, metallic shielding and grounding systems, and overall jacket to the equivalent of the
cable itself. Splices shall be of a uniform cross-section and shall consist of heat-shrinkable radiation cross-linked material. Splices shall be of a uniform cross-section and shall consist of a single triple extruded heat-shrinkable radiation cross-linked tube. High voltage splices shall be TE Connectivity/Raychem HVS-C or engineer approved equal.

B. High voltage cable splices shall be qualified to IEEE-404-2006 standards and shall be capable of properly splicing cables described in Section 16120. Splices shall be qualified to the water submersion tests described in ANSI-C119.2. Splices shall be tested by a third party agency to meet the performance requirements of the MV-105 standards with 105C continuous operating temperature / 140C emergency operating temperature.

C. The splice shall be re-jacketed with a heavy wall, heat-shrinkable, sealant-lined sleeve to provide a waterproof hot melt adhesive seal.

D. Splices shall be provided with long barrel Shearbolt (ASBS/CSBS) or Copper Crimped Connectors TE Connectivity Utilux Brand or approved equal.

2.05 TERMINATIONS (600V)

A. 600 volt terminations shall be crimp compression type bolted to equipment or set screw terminal type in equipment not suitable for compression connectors. Conductors, No. 12 and smaller shall utilize eye type compression set terminator when termination is to a bolted or set screw type terminal block or terminal cabinet.

B. For stranded conductors provide terminations designed for use with stranded conductors.

2.06 TERMINATIONS (MEDIUM VOLTAGE)

A. The kits shall be factory-engineered for the application and shall consist of an exterior heat-shrinkable tubing coated internally with a high permittivity stress control material and skirts (for outdoor applications) fabricated of UV stable, non-tracking (per ASTM D2303) materials, and heat-activated sealant to prevent ingress of moisture and contaminants. Terminations shall be TE Connectivity/Raychem HVT-Z or engineer-approved equal.

B. Medium voltage cable terminations shall be qualified to class 1, IEEE-48 standards and shall be capable of properly terminating cables described in Section 16120. Terminations shall be tested by a third party agency to meet the performance requirements of the MV-105 standards with 105C continuous operating temperature / 140C emergency operating temperature.

C. Multi-conductor terminations shall provide a heat-shrinkable breakout boot, factory coated with sealant to seal the outer jacket and/or armor termination point. Each kit shall include heat-shrinkable re-jacketing tubing to prevent corrosion and shifting of the shielding layers between the end of the sealing boot and the phase termination installation point. If grounding / ground check wires are included, heat-shrinkable tubing shall be provided to seal and protect these wires also.

D. Terminations shall be provided with either 2-Hole Shearbolt or Copper Long Barrel Lugs TE Connectivity Utilux Brand or approved equal.

E. Connection to live front insulated bus shall be re-insulated with a suitable voltage class heat shrinkable bus insulation tubing or tape. TE Connectivity BPTM or approved equal.

F. Dead front connections or Separable Modular Splices shall be accomplished with the either
200A or 600A Elbows and Junctions as required. Elbows shall meet the requirements of ANSI/IEEE Std. 386, and shall be fully compatible with the cables described in section 16120. 600A Elbows shall consist of Molded Rubber T-Body, Bi-metal Shearbolt Connector or compression connector, cable adaptor with molded in stress cone and cable stop, test point with cap, silicone lubricant, Insulating plug, stud and heat shrinkable elbow sealing adaptor. 15/28 kV Dead Break elbows shall meet/exceed IEEE-386-2006 Standards. TE Connectivity/Raychem Pt# ELB-15/28-610 Series (600A), ELB-15-210 Series (200A), ELB-15/28-610T Series (600A Modular) or approved equal.

2.07 GROUND WIRE

A. Ground wire shall be 600 volt insulated, with green colored insulation, copper or bare copper where installed with ungrounded conductors, bare copper where direct buried or exposed in pull boxes, manholes, or cable vaults, soft drawn, sized as noted on the drawings.

2.08 PLASTIC CABLE TIES

A. Cable ties shall be nylon or equivalent, locking type. Panduit EH cross-section, PLT locking type, 250 pound loop tensile strength.

2.09 ELECTRICAL TAPES

A. Electrical tapes shall be as follows:
1. Insulating tape shall be 3M Scotch Super 33+, TE 3030 vinyl electrical type or equal.
2. Fire proofing tape shall be 3 inch wide, Scotch 3M No. 77, TE Connectivity Fire and Electric Arc Proofing tape or equal.
3. Glass cloth electrical tape shall be Scotch 3M No. 69 or equal.

PART 3 - EXECUTION

3.01 GENERAL

A. Wire and cable shall be installed in conduits and duct banks as shown on the drawings. The installation shall include preparing of conduits, pulling, laying and securing of wires and cables and making conductor splices, terminal connections to equipment and devices, and performing cable tests. Avoid surrounding any single conductor power cable with magnetic material; steel components, raceways, clamps, duct protectors, etc.

B. Do not exceed cable manufacturer’s recommendations for maximum pulling tensions and minimum bending radii. Wires and cables shall not be pulled into conduits until the conduit runs have been cleaned and are free from obstructions and sharp corners. A mandrel, followed by a clean, dry, tight-fitting rag shall be drawn through the conduit immediately before installing the wire or cable. The wires and cables shall be installed so that there will not be cuts or abrasions in the insulation or protective covering or kinks in the wires and cables. Gradual and uniform pulling stresses shall be applied to wires and cables. Where a lubricant is needed as an aid to the pulling of wires and cables, use only compounds acceptable to, or approved by, the cable manufacturer. Cable guides shall be installed as required in order to prevent the cable from being damaged by sharp surfaces.
C. Cables shall be racked in the pull boxes, manholes, and cable vaults with consideration given to cable movement during load cycling. The cables shall be racked or supported in such a manner that adequate room is allowed for splicing and they shall be fanned out from the duct mouth so as not to cross other ducts or cables. Cable shall be racked so that personnel can enter and leave the manhole easily without stepping on or hitting cables.

D. All medium voltage cables in handholes and manholes, shall be wrapped using the fire proofing tape spirally wound tightly around the conductor(s). Use half lapped wrapping. The fire proofing tape shall be applied with the coated side toward the conductor and shall extend one inch into the duct. To prevent the fire proofing tape from unraveling, each individual set of three conductors shall be bundled and randomly wrapped for the entire length of the fire proofing with pressure sensitive glass cloth tape.

3.02 CABLE PULLING

A. Contractor shall inspect wire and cable for damage before and during installation. Conductors and shall be installed in the raceways indicated on the Drawings.

B. Wire and cable pulling equipment shall be equipped with an accurate gauge to allow continuous monitoring of pulling tension. Pulling tension shall not exceed manufacturers maximum recommended values for pulling tensions and sidewalk pressures.

C. Wire and cable shall be pulled using a tugger or winch, similar to Greenlee power puller, Ideal pulling kit, or vehicle mounted electric winch. Vehicles shall not be utilized for pulling cable. Avoid routing cable such that cables travel and rub on companion cable/reels. Support cables over each other at the feed in location.

D. A swivel shall be placed between the pulling rope and pulling grip.

E. The wire and cable shall be fed through a cable feeder or over sheaves in such a way that it does not contact the edge of the manhole or duct. Bending radius shall not be less than 12 times the conductor or cable diameter. The cable shall be fed straight into the duct in the pay-off manhole and straight out of the duct at the pulling manhole.

F. Wire and cable shall be adequately and thoroughly manually lubricated at pay-off end with cable manufacturer approved cable pulling compound.

G. The pay-off reel shall be tended throughout the pulling process.

H. The rate of pull shall be constant and shall not exceed 50 feet per minute.

I. Pull boxes, manholes and cable vaults may fill with water due to tide and groundwater fluctuations. Prior and during cable pulling, Contractor shall pump pull boxes, manholes and cable vaults and keep them dry until the project is completed to allow subsequent inspections. Pumped water shall be managed by the Contractor and shall not be dumped into the ocean, storm drain or sanitary sewer.

3.03 TERMINATIONS (600V)

A. Do not score the conductor when stripping insulation, pare or pencil when using a blade, use of a stripping tool is preferable.

B. Terminate all wires and cables at their assigned points of connection at panels, switches,
3.04 POWER CABLE TERMINATIONS (12 KV)

A. Power cable shall be terminated by means of the specified compression or sheerebolt lug or at appropriate terminals in the equipment. Manual or hydraulic tools shall be utilized as specified for the size of wire by the lug manufacturer. The correct size jaws shall be used for the indenting tool so that a full stroke is required for proper indentation. For installing the lug, the insulation shall be stripped from the conductor only the distance required for inserting the conductor to the full depth of the lug. Cable insulation on power conductors shall be properly penciled and tapered where the conductors enter terminating devices as required by the termination manufacturer. For compression connections contractor shall supply a copy of the hydraulic tool calibration report certifying that the tool is within compliance. Report shall be dated within 6 months prior to the planned start of the project.

3.05 600 VOLT SPLICES AND TERMINATIONS

A. Splices:

1. Splices in conductors No. 12 AWG and smaller shall be made with "Scotchlok" insulated connectors or equal of proper size for conductors being spliced. Connectors shall be PE taped.
2. Splices in conductors No. 10 AWG and larger shall be made with pressure type solderless connectors. The splice area shall be insulated with heat shrink to provide equal or greater insulation than the original. Tape run back over the original insulation shall extend 3 to 5 overall diameters of the insulated wire.

B. Connectors and terminal lugs shall be used for terminating stranded conductors #6 AWG and larger and shall be TE Connnectivity, T&B, or approved equal solderless connectors.

C. Wire in panels, cabinets, pull boxes and wiring gutters shall be neatly grouped, strapped together with T&B Model Tyrap cable strap or laced with No. 12 stranded lacing twine and fanned out to the terminals.

3.06 POWER CABLE SPLICES (12 KV)

A. 8 and 25 kV splices and shall be installed in accordance with manufacturer's instructions. Shear bolt connectors or hydraulic tools shall be utilized as specified for the size of wire by the splice manufacturer. For compression connections, contractor shall supply a copy of the hydraulic tool calibration report certifying that the tool is within compliance. Report shall be dated within 6 months prior to the planned start of the project.

3.07 CABLE SHIELDS (12 KV)

A. Cable shields shall be connected to the appropriate ground bus or conductor in manholes, cable vaults and at equipment. All ends of cables shall have shields connected to ground. Cable ends shall have an appropriate shield adapter to collect and terminate the drain wires at terminations and splices.
3.08 POWER CABLE SUPPORTS

A. Provide conductor support device assembly.

B. Cable entering equipment shall be securely clamped or secured inside the equipment. Cable supports shall be installed in the equipment for supporting the incoming cable from the point of entrance to the point of termination.

C. Attach cables and splices to support assemblies by using nylon cable ties, Panduit EH, PLT locking type, 250 pound loop tensile strength rating.

3.09 CABLE IDENTIFICATION

A. Power cables shall be identified at each manhole entry/exit point and shore power outlets with an engraved cable identification tag. Refer to Section 16195 – 2.04 - "Electrical Identification," for cable tag requirements.

3.10 TESTS

A. Perform all tests in accordance with the requirements of InterNational Electrical Testing Association (NETA) Acceptance Testing Specifications (ATS). DC hi-pot or field partial discharge testing is permitted for EPR insulated cables. Test cable prior to energizing cable or putting cable into service. In addition, test all wiring connections for continuity and ground before loads are reconnected. If tests indicate faulty or defective insulation, the defective cables shall be repaired or replaced and the tests conducted again.

3.11 CABLE MARKING (600 VOLT CONTROL CABLE)

A. Control circuit conductor identification shall be made by heat shrink sleeve type identifiers sized for the conductor. Conductor identification shall be provided within all manholes, shore power outlets, and at each enclosure where a tap, splice, or termination is made. Sleeves shall be shrunk down onto the wire to ensure secure application. TE Connectivity ShrinkMark or approved equal.

3.12 PHASE MARKING (12 KV)

A. The phase conductors for the 8 and 25 kV distribution system shall be identified at all pull boxes, manholes, cable vaults and equipment, switches, and transformers, using the indicated cable identification tags and color coded as required in Paragraph 1.06

B. Phase sequence for the 8 and 25 kV distributions shall be established as shown on the Drawings and maintained throughout the project.

END OF SECTION
SECTION 16170 GROUNDING AND BONDING

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Equipment grounding conductors.

B. Bonding.

1.02 RELATED SECTIONS

A. Section 16010 - Electrical General Requirements, applies to this section, with the additions and modifications specified herein.

1.03 APPLICABLE PUBLICATIONS: The following publications form a part of this specification to the extent referenced. The publications are referred to in the text by the basic designation only.

A. American National Standards Institute (ANSI) Publication:

B. National Fire Protection Association (NFPA) Publication:
   1. 70-2002 National Electrical Code (NEC)

C. Underwriters Laboratories, Inc. (U.L.) Publication:
   1. 83-1983 Thermoplastic Insulated Wires
   2. 467-84 (R86) Grounding and Bonding

1.04 SUBMITTALS

A. Submit under provisions of Section 16010.

B. Product Data: Provide data for the following:
   1. Connections (all types)

1.05 QUALITY ASSURANCE: In each standard referenced to herein, consider the advisory provisions to be mandatory, as though the word "shall" has been substituted for "should" wherever it appears. Interpret references in these standards to "authority having jurisdiction," or other words of similar meaning, to mean Owner.

GROUNDING AND BONDING 16170-1
1.06 PROJECT RECORD DOCUMENTS
   A. Submit under provisions of Special Provisions Section S.P.9.
   B. Accurately record actual locations of grounding electrodes.
   C. Accurately record signal ground wire pathways, points of bonding, and point of connection to building grounds.
   D. Protector grounding shall indicate ground source, distance, and size of ground wire.

1.07 QUALIFICATIONS
   A. Manufacturer: Company specializing in manufacturing Products specified in this Section with minimum three years documented experience.

1.08 REGULATORY REQUIREMENTS
   A. Conform to requirements of NFPA 70 and ANSI C2.
   B. Furnish products listed and classified by Underwriters Laboratories, Inc. or testing firm acceptable to the Engineer as suitable for purpose specified and shown.

PART 2 - PRODUCTS

2.01 MATERIALS AND EQUIPMENT: Materials and equipment shall conform to the respective specifications and standards and to the specifications herein. Electrical ratings shall be as indicated. Except where specifically indicated otherwise, provide only new materials having all legally required approvals and/or labels. Materials shall conform to the requirements of UL 467 where applicable.

2.02 CONDUCTOR, UL 83
   A. Ground and bonding conductors shall be green-insulated, soft-drawn stranded copper conductors, unless otherwise indicated, installed with sufficient slack to avoid breaking due to settlement and movement of conductors or attached points.

2.03 CONNECTORS AND TERMINALS
   A. Wire Connectors and Terminals for use with Copper Conductors: UL 486A.
PART 3 - EXECUTION

3.01 EXAMINATION

A. Verify that final backfill and compaction has been completed before driving rod electrodes.

3.02 INSTALLATION: Provide grounding and bonding in accordance with the requirements of NFPA 70, IEEE 142, state and local codes, and to requirements specified herein. Codes shall be complied with as a minimum requirement with specifications prevailing when they are more stringent.

A. Bonding

1. Metallic conduits, electrical equipment housings, and all non-current carrying metallic parts shall be grounded. The metallic conduit system shall be used for equipment and enclosure grounding but not as a system ground conductor. Include a code sized green insulated copper grounding conductor in nonmetallic conduits and terminate each end on suitable lug, bus, or bushing.

2. All conduit stub-ups shall be grounded and where multiple stub-ups are made within an equipment enclosure, such as a switchboard, they shall be equipped with grounding bushings and bonded together and to the enclosure and the enclosure ground bus.

3. Bond together ball field fences and bleachers with # 2 AWG bare copper conductor.

B. Equipment Ground

1. All branch circuit wiring in nonmetallic conduit shall carry a green TW insulated code sized ground conductor per circuit properly connected for electrical ground continuity.

2. Flexible conduit shall not be used as a ground path. Include code sized green conductor in all flex conduit.

3. Provide bonding devices, fittings or jumpers at expansion fitting, isolation sections or wherever continuity of ground is broken.

3.03 FIELD TESTS:

A. Inspect grounding and bonding system conductors and connections for tightness and proper installation.

END OF SECTION
SECTION 16195 - ELECTRICAL IDENTIFICATION

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Wire and cable markers.

B. Conduit markers.

C. Transformer Nameplate and High Voltage Warning Sign.

D. Switchboard, Panelboard and Lighting Control Panel and Terminal Cabinet Nameplates

1.02 APPLICABLE PUBLICATIONS:

The following publications form a part of this specification. The publications are referred to in the text by the basic designation only.

A. American National Standards Institute, Inc. (ANSI) Publications:

B. California Electrical Code (Latest Edition)

1.03 SUBMITTALS

A. Submit under provisions of Section 16010.

B. Product Data: Provide data for nameplates, labels, conduit and wire markers.

1.04 REGULATORY REQUIREMENTS

A. Conform to requirements of CEC

PART 2 - PRODUCTS

2.01 NAMEPLATES

A. Nameplate designations shall clearly state:

1. Manufacturer's nameplate including equipment design rating of current, voltage, kVA, bus bracing rating, or as applicable.

2. Equipment nameplate designating system usage and purpose, system
nominal voltage, equipment rating for kVA, amperes, panel designation and circuit number, identification (I.D.) of equipment.


B. Nameplates shall be melamine plastic, 0.125-inch thick, white with black center core. Surface shall be matte finish. Corners shall be square. Accurately align lettering into the black core. Minimum size of nameplates shall be 1.0 inch by 2.5 inches, except that wiring device nameplates shall be 0.5 inch by 1.5 inch. Lettering shall be normal block style unless otherwise noted.

C. Letter Size:
   1. Use 0.25 inch letters for identifying individual equipment and loads.
   2. Use 0.50 inch for identifying grouped equipment and loads.

D. Provide nameplates for the following equipment.
   1. Transformers

2.02 WIRE MARKERS

A. Description: Tape or tubing type wire markers, 3M ScotchCode or approved equal.

B. Legend:
   1. Power and Lighting Circuits: Branch circuit or feeder number indicated on drawings.
   2. Control Circuits: Control wire number indicated on schematic or interconnection diagrams on shop drawings.

2.03 MV CABLE TAGS

A. Cable identification tags shall be engraved laminated plastic connected to the cable by means of self-locking cable ties. Tags shall contain the following information:
   1. Feeder Number
   2. Cable start-point.
   3. Cable destination.
   4. Cable length.

B. Cable identification tags shall be melamine plastic, 0.125 inch thick by 2.5 inch
by 5.0 inch, black with white center core. Surface shall be matte finish. Corners shall be square. Accurately align lettering into the white core. Lettering shall be 0.25 inch-high normal block style unless otherwise noted.

2.04 WARNING SIGNS

A. Warning signs shall be per ANSI Z35.1. New warning signs shall be provided, in addition to the requirements on the drawings and in Section 16010, on gates of all outdoor substations containing equipment energized above 150 volts to ground.

B. Warning designations in 1" red letters shall be pre-printed adhesive on each new cabinet stating "Danger" and giving voltage of enclosed conductors such as "Danger – 16,900 Volts", for all systems over 150 volts to ground.

2.05 CIRCUIT DIRECTORIES

A. Provide laminated circuit directories for all panelboards. Circuit directories shall be type written and identify the load amount and description for each circuit breaker.

PART 3 - EXECUTION

3.01 PREPARATION

A. Degrease and clean surfaces to receive nameplates and labels.

3.02 NAMEPLATES

A. Provide laminated plastic nameplates for all electrical equipment and devices including, but not limited to, the following:

1. Enclosures for switchgear, medium voltage controllers, transformers, low voltage switchgear, distribution boards, panels, panelboards, busways, pull boxes, junction boxes, and cabinets.

2. Enclosures for all separately enclosed devices including, but not limited to, disconnect switches, circuit breakers, contactors, time switches, control stations and relays.

3. Special systems, such as, but not limited to, telephone, warning and signal systems. Identification shall be at each equipment rack, terminal cabinet, control panel and pull box.

4. Devices mounted within and part of an equipment including circuit breakers, switches, control devices, control transformers, relays, indication devices and instruments.

5. Mounting: Provide number, location, and letter designation of nameplates as indicated. Install nameplate parallel to equipment lines. Nameplates shall be permanently attached to enclosures
with a minimum of two sheet-metal screws or two rivets or other approved means, suitable for the environment. High strength, long curing (12 hour or longer) epoxy shall be acceptable where screws or rivets would provide water ingress to an enclosure.

3.03 MV CABLE TAGS

A. All new cables installed shall be identified at each end and at all accessible points in between (such as manholes, pull boxes, switchgear, etc.).

3.04 WARNING SIGN MOUNTING

A. Signs shall be permanently mounted with cadmium-plated steel screws or nickel-plated brass bolts.

3.05 WIRE MARKERS: Provide markers for each conductor at panelboard gutters, pull boxes, junction boxes, outlet boxes, and each load connection.

END OF SECTION
SECTION 16219 - PAD-MOUNTED, LIQUID-FILLED, MEDIUM-VOLTAGE TRANSFORMERS

PART 1 - GENERAL

1.01 SUMMARY

A. This section specifies the furnishing, installation, connection, and testing of the pad-mounted, liquid-filled, 4.16kV/12.0 kV dual rated primary medium-voltage transformer with 480/277V secondary, indicated as transformers in this section.

1.02 RELATED WORK

A. Section 16010, ELECTRICAL GENERAL REQUIREMENTS.

B. Section 16120, WIRES AND CABLES.

C. Section 16170, GROUNDING AND BONDING.

1.03 QUALITY ASSURANCE

A. Refer to Paragraph, 1.05, in Section 16170, GROUNDING AND BONDING.

1.04 FACTORY TESTS

A. Transformers shall be thoroughly tested at the factory to ensure that there are no electrical or mechanical defects. Tests shall be conducted as per IEEE Standards. Factory tests shall be certified. The following tests shall be performed:

1. Perform insulation-resistance tests, winding-to-winding and each winding-to-ground.
2. Perform turns-ratio tests at all tap positions.

B. Furnish four (4) copies of certified manufacturer's factory test reports to the Architect/Engineer prior to shipment of the transformers to ensure that the transformers have been successfully tested as specified.

1.05 SUBMITTALS

A. Submit under the provisions of Division 1.

1.06 APPLICABLE PUBLICATIONS

A. Publications listed below (including amendments, addenda, revisions, supplements, and errata) form a part of this specification to the extent referenced. Publications are referenced in the text by designation only.
B. American National Standards Institute (ANSI):

C37.47-00 ................. High Voltage Current-Limiting Type Distribution Class Fuses and Fuse Disconnecting Switches
C57.12.26-92 ............... Pad-Mounted, Compartmental-Type, Self-Cooled, Three-Phase Distribution Transformers for Use with Separable Insulated High-Voltage Connectors (34500 Grd Y/19920 V and Below, 2500 kVA and Smaller)
C57.12.28-05 ............... Pad-Mounted Equipment - Enclosure Integrity
C57.12.34-10 ............... Pad-Mounted, Compartmental-Type, Self-Cooled, Three-Phase Distribution Transformers, 5 MVA and Smaller; High Voltage, 34.5 kV Nominal System Voltage and Below; Low Voltage, 15kV Nominal System Voltage and Below

D. Institute of Electrical and Electronic Engineers (IEEE):

C2-07 ...................... National Electrical Safety Code
C57.12.90-10 ............... Test Code for Liquid-Immersed Distribution, Power, and Regulating Transformers
48-09 ...................... Test Procedures and Requirements for Alternating-Current Cable Terminations Used on Shielded Cables Having Laminated Insulation Rated 2.5kV Through 765kV or Extruded Insulation Rated 2.5kV Through 500kV
386-06 ...................... Separable Insulated Connector Systems for Power Distribution Systems Above 600 V
592-07 ...................... Exposed Semiconducting Shields on High-Voltage Cable Joints and Separable Connectors

PART 2 - PRODUCTS

2.01 GENERAL REQUIREMENTS

A. Transformers shall be in accordance with ANSI, ASTM, IEEE, NEMA, NFPA, UL, as shown on the drawings, and as specified herein. Each transformer shall be assembled as an integral unit by a single manufacturer.

B. Transformers shall be complete, outdoor type, continuous duty, integral assembly, grounded, tamper-resistant, and with liquid-immersed windings.

C. Ratings shall not be less than shown on the drawings.

D. Completely fabricate transformers at the factory so that only the external cable connections are required at the project site.

E. Thoroughly clean, phosphatize, and finish all the metal surfaces at the factory with a rust-resistant primer and dark green enamel finish coat, except where a different color is specified in Section 09 06 00, SCHEDULE FOR FINISHES. All surfaces of the transformer that will be in contact with the concrete pad shall be treated with corrosion-resistant compounds and epoxy resin or a rubberized sealing compound.
2.02 COMPARTMENTS

A. Construction:

1. Enclosures shall be weatherproof and in accordance with ANSI C57.12.28.
2. The medium- and low-voltage compartments shall be separated with a steel barrier that extends the full height and depth of the compartments.
3. The compartments shall be constructed of sheet steel (gauge to meet ANSI requirements) with bracing and with reinforcing gussets using jig welds to assure rectangular rigidity.
4. All bolts, nuts, and washers shall be zinc-plated steel.
5. Sufficient space shall be provided for equipment, cabling, and terminations within the compartments.
6. Affix transformer nameplate permanently within the low-voltage compartment. Voltage and kVA rating, connection configuration, impedance, date of manufacture, and serial number shall be shown on the nameplate.

B. Doors:

1. Provide a separate door for each compartment with provisions for a single padlock to secure all doors. Provide each compartment door with open-position doorstops and corrosion-resistant tamperproof hinges welded in place. The medium-voltage compartment door shall be mechanically prevented from opening unless the low-voltage compartment door is open.
2. The secondary compartment door shall have a one-piece steel handle and incorporate three-point locking mechanisms.

2.03 BIL RATING

A. 15 kV class equipment shall have a minimum 95 kV BIL rating.//

2.04 TRANSFORMER FUSE ASSEMBLY

A. The primary fuse assembly shall be a combination of externally replaceable Bay-O-Net liquid-immersed fuses in series with liquid-immersed current-limiting fuses.

2.05 PRIMARY CONNECTIONS

A. Primary connections shall be 200 A dead-front loadbreak and inserts for cable sizes shown on the drawings.

B. Surge Arresters: Distribution class, one for each primary phase, complying with IEEE C62.11 and NEMA LA 1, supported from tank wall.

2.06 MEDIUM-VOLTAGE SWITCH

A. The transformer primary disconnect switch shall be an oil-immersed, internal, gang-operated, load-interrupter type, rated at ampacity and system voltage as shown on the drawings, with a
minimum momentary withstand rating of not less than the calculated available fault current shown on the drawings.

2.07 MEDIUM-VOLTAGE TERMINATIONS

A. Terminate the medium-voltage cables in the primary compartment with 200 A loadbreak premolded rubber elbow connectors, suitable for submersible applications. Elbow connectors shall have a semi-conductive shield material covering the housing. The separable connector system shall include the loadbreak elbow, the bushing insert, and the bushing well. Separable connectors shall comply with the requirements of IEEE 386, and shall be interchangeable between suppliers. Allow sufficient slack in medium-voltage cable, ground, and drain wires to permit elbow connectors to be moved to their respective parking stands.///

B. Ground metallic cable shield with a cable shield grounding adapter, consisting of a solderless connector enclosed in watertight rubber housing covering the entire assembly, bleeder wire, and ground braid.

2.08 LOW-VOLTAGE EQUIPMENT

A. Mount the transformer hot stick in the low-voltage compartment.

B. The low-voltage leads shall be brought out of the tank by epoxy pressure tight bushings, and shall be standard arrangement.

C. Tin-plate the low-voltage neutral terminal and isolate from the transformer tank. Provide a removable ground strap sized in accordance with the NEC and connect between the secondary neutral and ground pad.

2.09 TRANSFORMERS

A. Transformer ratings shall be as shown on drawings. kVA ratings shown on the drawings are for continuous duty without the use of cooling fans.

B. Temperature rises shall not exceed the NEMA TR 1 standards of 65°C (149°F) by resistance.

C. Transformer insulating material shall be less flammable, edible-seed-oil based, and UL listed as complying with NFPA 70 requirements for fire point of not less than 300°C (600°F) when tested according to ASTM D 92. Liquid shall be biodegradable and nontoxic.///

D. Transformer impedance shall be not less than 4-1/2% for sizes 150 kVA and larger. Impedance shall be as shown on the drawings.

E. Sound levels shall conform to NEMA TR 1 standards.

F. Primary and Secondary Windings for Three-Phase Transformers:

1. Primary windings shall be delta-connected.
2. Secondary windings shall be wye-connected, except where otherwise indicated on the drawings. Provide isolated neutral bushings for secondary wye-connected transformers.
3. Secondary leads shall be brought out through pressure-tight epoxy bushings.
G. Primary windings shall have four 2-1/2% full-capacity voltage taps; two taps above and two taps below rated voltage.

H. Core and Coil Assemblies:

1. Cores shall be grain-oriented, non-aging, silicon steel to minimize losses.
2. Core and coil assemblies shall be rigidly braced to withstand the stresses caused by rough handling during shipment, and stresses caused by any possible short-circuit currents.
3. Coils shall be continuous-winding type without splices except for taps. Material shall be copper.
4. Coil and core losses shall be optimum for efficient operation.
5. Primary, secondary, and tap connections shall be brazed or pressure type.
6. Provide end fillers or tiedowns for coil windings.

I. The transformer tank, cover, and radiator gauge thickness shall not be less than that required by ANSI.

J. Accessories:

1. Provide standard NEMA features, accessories, and the following:
   a. No-load tap changer. Provide warning sign.
   b. Lifting, pulling, and jacking facilities.
   c. Globe-type valve for oil filtering and draining, including sampling device.
   d. Pressure relief valve.
   e. Liquid level gauge and filling plug.
   f. A grounding pad in the medium- and low-voltage compartments.
   g. A diagrammatic nameplate.
   h. Dial-type liquid thermometer with a maximum reading pointer and an external reset.
   i. Hot stick. Securely fasten hot stick within low-voltage compartment.

2. The accessories shall be made accessible within the compartments without disassembling trims and covers.

K. Transformers shall meet the minimum energy efficiency per NEMA TP 1:

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PART 3 - EXECUTION

3.01 INSTALLATION

A. Install transformers outdoors, as shown on the drawings, in accordance with the NEC, and as recommended by the manufacturer.

B. Anchor transformers with rustproof bolts, nuts, and washers not less than 12 mm (1/2 inch) diameter, in accordance with manufacturer’s instructions, and as shown on drawings.

C. In seismic areas, transformers shall be adequately anchored and braced per details on structural contract drawings to withstand the seismic forces at the location where installed.

D. Mount transformers on pre-cast concrete slab. Unless otherwise indicated, the slab shall be at least 200 mm (8 inches) thick, reinforced with a 150 by 150 mm (6 by 6 inches) No. 6 mesh placed uniformly 100 mm (4 inches) from the top of the slab. Slab shall be placed on a 150 mm (6 inches) thick, well-compacted gravel base. The top of the concrete slab shall be approximately 100 mm (4 inches) above the finished grade. Edges above grade shall have 12-1/2 mm (1/2 inch) chamfer. The slab shall be of adequate size to project at least 200 mm (8 inches) beyond the equipment. Provide conduit turnups and cable entrance space required by the equipment to be mounted. Seal voids around conduit openings in slab with water- and oil-resistant caulking or sealant. Cut off and bush conduits 75 mm (3 inches) above slab surface.

E. Grounding:

1. Ground each transformer in accordance with the requirements of the NEC. Install ground rods per the requirements of Section 16170, GROUNDING AND BONDING, to maintain a maximum resistance of 5 ohms to ground.
2. Connect the ground rod to the ground pads in the medium- and low-voltage compartments.
3. Install and connect the cable shield grounding adapter per the manufacturer’s instructions. Connect the bleder wire of the cable shield grounding adapter to the loadbreak or deadbreak elbow grounding point with minimum No. 14 AWG wire, and connect the ground braid to the grounding system with minimum No. 6 AWG bare copper wire. Use soldered or mechanical grounding connectors listed for this purpose.

3.02 ACCEPTANCE CHECKS AND TESTS

A. Perform manufacturer’s required field tests in accordance with the manufacturer’s recommendations. In addition, include the following:

1. Visual Inspection and Tests:
   a. Compare equipment nameplate data with specifications and approved shop drawings.
   b. Inspect physical and mechanical condition. Check for damaged or cracked bushings and liquid leaks.
   c. Verify that control and alarm settings on temperature indicators are as specified.
   d. Inspect all field-installed bolted electrical connections, using the calibrated torque-wrench method to verify tightness of accessible bolted electrical connections, and perform thermographic survey after energization under load.
e. Vacuum-clean transformer interior. Clean transformer enclosure exterior.
f. Verify correct liquid level in transformer tank.
g. Verify correct equipment grounding per the requirements of Section 26 05 26, GROUNDING AND BONDING FOR ELECTRICAL SYSTEMS.
h. Verify the presence and connection of transformer surge arresters, if provided.
i. Verify that the tap-changer is set at rated system voltage.

3.03 FOLLOW-UP VERIFICATION

A. Upon completion of acceptance checks, settings, and tests, the Contractor shall demonstrate that the transformers are in good operating condition and properly performing the intended function.

3.04 SPARE PARTS

A. Deliver the following spare parts for the project to the College Representative two weeks prior to final inspection:

1. Six insulated protective caps.
2. One spare set of medium-voltage fuses for each size and type of fuse used in the project.

3.05 INSTRUCTION

A. The Contractor shall instruct maintenance personnel, for not less than one 2-hour period, on the maintenance and operation of the equipment on the date requested by the College Representative.

END OF SECTION
SECTION 16402 - UNDERGROUND ELECTRICAL WORK

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. PVC conduit

B. Moisture Sealing Material

1.02 APPLICABLE PUBLICATIONS: The publications listed below form a part of this Specification to the extent referenced. The publications are referred to in the text by the basic designation only.

A. American National Standards Institute, Inc. (ANSI) Publication:

B. State of California Administrative Codes:
   1. Title 24, Part 3, CCR, 2007 California Electrical Code

C. National Electrical Manufacturer's Association (NEMA) Publications:
   1. TC3-90 - PVC Fittings for Use with Rigid PVC Conduit and Tubing
   2. TC 10-93 - Duct for Underground Installation, PVC and ABS Plastic Communications

D. Underwriter's Laboratories Inc. (U.L.) Publications:
   1. 651-95 - Schedule 40 Rigid PVC Conduit

1.03 RELATED SECTIONS

A. Section 16010 - Electrical General Requirements, applies to this section, with the additions and modifications specified herein.

B. Section 16170 - Grounding and Bonding.

C. Section 16195 - Electrical Identification.

1.04 SUBMITTALS: The following information shall be submitted for approval:

A. Product Data: Provide for:
   1. Conduit/Duct (all types)
   2. Pullboxes (all types)
3. Conduit Bodies (all types)

B. Shop drawings: Provide for:

1. Precast Pullboxes: Indicate dimensions, reinforcement, size and locations of openings, and accessory locations for precast pullboxes.

1.05 QUALITY ASSURANCE: In each standard referenced to herein, consider the advisory provisions to be mandatory, as though the word "shall" has been substituted for "should" wherever it appears. Interpret references in these standards to "authority having jurisdiction," or other words of similar meaning, to mean District.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Deliver, store, protect, and handle Products to site under provisions of Sections 01600 and 16010. Inspect for damage.

B. Store and protect in accordance with manufacturer's instructions.

1.07 PROJECT CONDITIONS

A. The drawings are diagrammatic and shall not be scaled for exact locations. The location of existing underground utilities are based on District record drawings and casual field observations. The Contractor shall use reasonable care in excavating for the installation of new underground ducts and shall be responsible for damage to existing underground utilities. Field conditions and non-interference with other utilities and trades, shall determine exact locations of new underground electrical ducts.

B. Conduit routing is shown on Drawings in approximate locations unless dimensioned. Route as required to complete wiring system.

1.08 PROJECT RECORD DOCUMENTS

A. Submit under provisions of Section 01700.

B. Accurately record actual locations of exact routing of conduits indicating plan location and depths every 50 linear feet. Measure conduit locations from permanently fixed readily discernible landmarks such as building corners, columns, pullbox centerline, etc.

C. Accurately record actual locations of each in ground pullboxes.

PART 2 - PRODUCTS

2.01 MATERIALS AND EQUIPMENT: All materials and equipment shall be new and of high quality to give long life and reliable operation. All equipment shall be modern in design and shall not have been in prior service except as required by factory tests. Materials and equipment shall conform to the respective specifications and standards and to the specifications herein. Electrical ratings shall be as indicated.
2.02 CONDUIT:
   A. Rigid Plastic Conduit: NEMA TC2; Schedule 40 PVC.

2.03 FITTINGS AND OUTLET BOXES:
   A. PVC Fittings and Conduit Bodies: NEMA TC3.

2.04 PULL WIRE: Pull wire shall be nylon having a minimum tensile strength of 200 lbs in each empty duct. Minimum 48 inches of slack shall be left at each end of pull wires. Rod and clean all existing ducts to be used. Plug spares for future use.

PART 3 - EXECUTION

3.01 INSTALLATION: Underground cable installation shall conform to NFPA 70, Cal. P.U.C. G.O.128, and all other state and local codes.

3.02 CONCRETE: Concrete for electrical requirements shall be at least 2500 psi concrete with 3/4-inch maximum aggregate, unless otherwise noted.

3.03 UNDERGROUND CONDUIT LINES
   A. Underground Conduit Lines: Conduits shall have a continuous slope downward toward pullboxes and away from buildings. Sweep bends may be made up of one or more curved or straight sections or combinations thereof. Manufactured bends shall have a minimum radius of 36 inches for ducts of 3 inches in diameter and larger, and 48" for 4 inches in diameter and larger.

   1. Join nonmetallic duct using adhesive as recommended by manufacturer. Wipe nonmetallic duct dry and clean before joining. Apply full even coat of adhesive to entire area inserted in fitting.
   2. The joints of the conduits shall be staggered by rows and layers so as to provide a duct line having the maximum strength.
   3. During construction, partially completed duct lines shall be protected from the entrance of debris such as mud, sand and dirt by means of suitable conduit plugs.

   B. Conduit Termination to Pullboxes: Conduits shall terminate in end-bells at right angles with the wall, where duct lines enter manholes. As each section of a duct line is completed from manhole to manhole, a testing mandrel not less than 12 inches long with a diameter 1/4 inch less than the size of the conduit shall be drawn through each conduit, after which a brush having the diameter of the duct, and having stiff bristles shall be drawn through until the conduit is clear of all particles of earth, sand, of gravel; conduit plugs shall then be immediately installed.
3.04 PREPARATION FOR PULLING IN CONDUCTORS

A. Do not install crushed or deformed raceways. Avoid traps in raceways where possible. Take care to prevent the lodging of concrete, dirt, or trash in raceways, boxes, fittings, and equipment during the course of construction. Make raceways entirely free of obstructions or replace them. Ream all raceways, remove burrs, and clean raceway interior before introducing conductors or pull wires.

B. Immediately after installation, plug or cap all raceway ends with water-tight and dust-tight seals until the time for pulling in conductors.

3.05 GROUNDING: Grounding shall be in accordance with ANSI C2. All ground wire shall be copper. Refer to Section 16170 "Grounding and Bonding".

END OF SECTION
SECTION 16430 INTEGRATED SWITCHBOARD

PART 1 - GENERAL

1.1 SCOPE

A. The contractor shall provide and install dead-front distribution integrated NEMA 3R switchboard with integral panelboard, transformer and emergency lighting inverter as herein specified and as shown on related electrical drawings.

1.2 RELATED DOCUMENTS

A. All of the Contract Documents, including General and Supplementary Conditions and Division 1 General Requirements, apply to the work of this Section.

1.3 SUBMITTALS

A. Product Data: Submit manufacturer’s printed product data.

B. Drawings: Submit shop drawings for review. Include components with relative locations in equipment, material types, finishes, detailed plan view reflecting required conduit rough-in openings, elevation views, single line diagrams, schematic diagrams, circuit schedule with nameplate engravings when required, bill of material, anchors and accessories.

1.4 RELATED STANDARDS

A. The switchboard shall be designed, manufactured and tested according to the latest applicable version of the following standards:
   1. ANSI/NFPA 70 – National Electrical Code (NEC)
   2. NEMA PB2 – Deadfront Distribution Switchboards
   3. UL 891 – Deadfront Switchboards
   4. NEMA PB1-11 Panelboards
   5. UL 924 Emergency Lighting And Power Equipment.

B. Manufacturer Seismic Qualification: The low voltage switchboard(s) shall meet and be certified to seismic requirements specified in the CBC 2010 California Building Code.
   1. The low voltage switchboard(s) shall be compliant with IBC 2009 parameters:
      a. Seismic Design Category: E.

1.5 QUALITY ASSURANCE

A. Manufacturer: For equipment specified herein, provide an integrated product which is the responsibility of one manufacturer.

B. Performance Requirements: Provide switchboards manufactured in accordance with Article 408 of the latest National Electrical Code and applicable portions of the NEMA PB2, UL 891 and NFPA 70, the National Electrical Code.

1.6 DELIVERY, STORAGE AND HANDLING

A. Deliver materials and products in factory labeled packages. Store and handle in strict compliance with manufacturer’s instructions and recommendations. Protect from damage from weather, excessive temperatures and construction operations.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Provide switchboard by Siemens or pre-approved equal.
B. For the equipment specified herein, the manufacturer shall be ISO 9000, 9001 or 9002 certified.

C. The manufacturer of this equipment shall have produced similar electrical equipment for a minimum of ten (10) years.

D. Intent: In the following specifications, products of Siemens are used to provide a standard of quality and performance for the work of this section.

2.2 GENERAL REQUIREMENTS

A. Construction

1. Switchboard shall be of the modular type construction, constructed in accordance with the latest NEMA PB-2 and UL 891 standards, with the required number of vertical sections bolted together to form one or metal enclosed rigid integrated switchboard. The sides, top and rear shall be covered with removable screw-on code gauge steel plates. Integrated switchboard shall include all protective devices and equipment as listed on drawings with necessary interconnections, instrumentation and control wiring. All groups of control wires leaving the integrated switchboard shall be provided with terminal blocks with suitable numbering strips. Service entrance integrated switchboard shall be suitable only for use as service equipment and be labeled in accordance with UL requirements. System voltage, amperage and interrupting capacity shall be as indicated on the drawings. Enclosure construction shall be NEMA 3R outdoor.

B. Bus Requirements

1. The bus shall be [of sufficient size to limit the temperature rise to 65 degree C, based on UL test and shall be fully rated the entire length of the switchboard. The bus shall be braced and supported to withstand mechanical forces exerted during a short circuit from a power source having the available short circuit current as indicated on the drawings. Provide a full capacity neutral where a neutral is indicated on the drawings. The through bus on the end section shall be extended and pre-drilled to allow the addition of future sections. Ground bus and grounding conductor lug shall be furnished. Ground bus shall extend the entire length of the switchboard and shall be firmly secured to each vertical section. Bus material shall silver-plated copper.

C. Incoming Service

1. Underground Service
   a. To isolate incoming underground service conductors, an underground cable pull or auxiliary section shall be used when shown on the drawings. This section shall be of the bussed type]

D. Main Protective Device:

1. Molded Case Circuit Breaker
   a. Molded case circuit breaker shall be of the quick-make, quick-break, trip-free, [thermal magnetic] [solid state] type. When solid state breakers are used, the continuous current rating shall be adjustable from 20 to 100% without the need for a rating plug. Solid state breakers shall be Siemens Sensitrip III or Siemens VL or equivalent design. Solid state breaker trip functions shall include adjustments for continuous amperage, long time pickup and delay, instantaneous [short time pickup and delay] [ground fault pickup and delay] [zone selective interlocking for short time and ground fault]. Breaker ratings shall be as shown on the drawings. ]

E. Distribution Sections

1. Panel-Mounted, Front Accessible
   a. Individual sections shall be front accessible, not less than 20" deep and the rear of all sections shall align. Incoming line termination, main device connection and all bolts used to join current-carrying parts shall be installed so as to permit servicing from the front only so that no rear access is required. The branch devices shall be front removable and panel mounted with line and load side connections front
accessible. The interior shall be capable of accepting panel mounted molded case
circuit breakers or fusible switches up to 1200 A rating. Construction shall be
Siemens SB type, or approved equal.

F. Distribution Section Branch Protective Devices
   1. Molded Case Circuit Breakers
      a. Molded case circuit breakers shall be of quick-make, quick-break, trip-free [thermal
         magnetic] [solid-state – 150 amp frame, 30 amp trip and above] type with frame,
         trip and voltage ratings, as indicated on the drawings. The switchboard shall have
         space or fully equipped provisions for future units as shown on the drawings.

G. Other Integrated Equipment
   1. Integrated Panelboard
      a. Lighting Panelboards shall be supplied with a trim with hinged lockable door,
         securely fastened to switchboard frame. Door edges shall be free of all sharp
         edges. Lighting panelboards shall be supplied with a hinged deadfront complete
         with a hinged lockable door over panel. Screws used to secure hinged deadfront
         shall be captive. Trim door shall be free of all sharp edges.
      b. Integrated panelboards shall be pre-wired from the associated feeder device
         located within the switchboard distribution section. Where pre-wiring is performed
         by the manufacturer, panelboards served by circuit protective devices within
         separate shipping splits shall have conductors terminated to the circuit protective
         device and coiled within the shipping split with the circuit protective device and
         secured for shipment. Adequate cable lengths and cable supports shall be
         provided for ease of installation by the installation contractor.
      c. Where compression wire connectors are used, the installation contractor shall be
         responsible for terminating compression wire connectors.
      d. Integral power conductors are installed within the integrated switchboard
         conductors shall be sized in accordance with the contract drawings, specifications
         and applicable UL and National Electrical Code requirements.
      e. Where the panelboard is served by an external source provide adequate pull and
         wire bending space and sufficient conduit openings for installation of external
         source conductors.
      f. Sections and/or panelboard compartments served by an externally supplied power
         source, internal transformer, or adjacent distribution section shall be isolated from
         adjacent sections and/or compartments by internal grounded metal barriers or
         insulated barriers.
   2. Dry-Type Transformer
      a. The transformers indicated on the contract drawings shall be integrated into the
         switchboard. The transformers shall be Siemens Sentron series in compliance
         with specification Section 16461 Installation of transformers shall in no way reduce
         the integrity of the vertical switchboard section.
      b. Adequate ventilation shall be provided such that the switchboard structural
         temperature is maintained per UL 891, section 31.
      c. The primary terminations of the integrated transformers shall be pre-wired from the
         associated feeder device located within the switchboard distribution section. Where
         pre-wiring is performed by the manufacturer, transformers served by circuit
         protective devices within separate shipping splits shall have conductors terminated
         to the circuit protective device and coiled within the shipping split with the circuit
         protective device and secured for shipment. Adequate cable lengths and cable
         supports shall be provided for ease of installation by the installation contractor.
         Transformers feed by an external source is the responsibility of the electrical
         contractor.
      d. The secondary terminations of the integrated transformers shall be pre-wired to
         the associated integrated load device or panelboard located within the integrated
switchboard. Where pre-wiring is performed by the manufacturer, transformers served by circuit protective devices within separate shipping splits shall have conductors terminated to the transformer and coiled within the shipping split with the transformer and secured for shipment. Adequate cable lengths and cable supports shall be provided for ease of installation by the installation contractor. Secondary connections external to the integrated switchboard shall be the responsibility of the electrical contractor.

e. Where compression wire connectors are used, the installation contractor shall be responsible for terminating compression wire connectors.

f. Integral power conductors installed within the integrated switchboard shall be sized in accordance with the contract drawings, specifications and applicable UL and National Electrical Code requirements.

g. Transformer sections and/or compartments shall be isolated from adjacent sections and/or compartments by internal grounded metal barriers or insulated barriers.

3. Emergency Lighting Inverter

a. The emergency lighting inverter shall be a Lithonia ISSM 375 watt compact emergency interruptable AC power system or approved equal and shall be integrated into the switchboard and pre-wired by the switchboard manufacturer.

H. Finish

1. The complete switchboard shall be phosphatized and finished with ANSI 61 light gray polyester powder paint.

I. Markings

1. Each switchboard section shall have a label permanently affixed to it, listing the following information: Name of manufacturer, system voltage, ampacity, type, manufacturer’s shop order number and date.

2. Each section of switchboard shall bear a UL listing mark, where qualified and a short circuit rating label.

3. Front, side, rear and top of each switchboard section will have a DANGER label in accordance with NEMA Standard PB-2.

J. Additional Item:

1. Provide Transient Voltage Surge Suppression Device for Low Voltage Circuits.

PART 3 - EXECUTION

3.1 INSTALLATION

O. Examine substrates and conditions in which units will be installed. Check for clearance that will be required before, during and after equipment installation. Do not proceed with installation until unsatisfactory conditions are corrected.

P. Strictly comply with manufacturer’s instructions and recommendations and NEMA PB 2.1. Coordinate installation with adjacent work to ensure proper sequence of construction, clearances and support.

Q. Install units plumb, level and rigid without distortion to the switchboard cubicle(s).

R. Where integral factory power wiring is provided, the Division 16 contractor shall install power wiring connections between shipping splits per integrated switchboard manufacturer’s drawings. Where interconnecting power wiring is required between devices and equipment within the integrated switchboard and is not indicated as provided by the switchboard manufacturer on the manufacturer’s drawings, provide and install power wiring as indicated on the drawings and as required to provide a complete and operating system.

3.2 ADJUSTING AND CLEANING
O. Clean exposed surfaces using manufacturer recommended materials and methods.

P. Touch-up damaged coatings and finishes using non-abrasive materials and methods recommended by manufacturer. Eliminate all visible evidence of repair.

3.3 TESTING

O. Perform factory and installation tests in accordance with applicable NEC, NEMA and UL requirements.

3.4 WARRANTY

O. Equipment manufacturer warrants that all goods supplied are free of non-conformities in workmanship and materials for one year from date of initial operation, or up to eighteen months from date of shipment.

END OF SECTION
SECTION 16461 LOW-VOLTAGE DISTRIBUTION TRANSFORMERS

PART 1 - GENERAL

1.1 SCOPE

A. This section defines low voltage, ultra low loss transformers designed to provide 25% lower losses than NEMA TP-1 or CSA C802.2 & Energy Star efficiencies under Linear load and NEMA TP1, EnergyStar or CSA C802.2 under non-linear loading (K-factor 13 load profile). The transformers shall be designed, constructed and 'K-rated' in accordance with UL, CSA and NEMA standards as per their temperature capability.

1.2 RELATED DOCUMENTS

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

1.3 SUBMITALS

A. Submittals shall include the following information:

1. Submit shop drawing and product data for approval and final documentation in the quantities listed according to the Conditions of the contract. Customer name, customer location and customer order number shall identify all transmittals.

2. Product Data including kVA rating, average winding temperature rise, detailed enclosure dimensions, primary & secondary nominal voltages, primary voltage taps, no load & full load losses per CSA C9 or ANSI C57.12.01, impedances, unit weight, warranty.

3. Efficiency data under linear load @ 35%, 50%, 65% of nameplate rating.

4. Efficiency data under load profile up to K13 at 35% and 50% of nameplate rating.

5. EMF test result at full rated current.

1.4 RELATED STANDARDS

A. Meet the following recognized standards:

1. ANSI C57.12.01/NEMA ST-20 Dry-Type Transformer For General Applications


3. UL, CSA

4. NEMA TP1, CSA 802.2, EPA EnergyStar

5. UL-506, CSA C9, CSA 22.2

6. Non Linear Loads Definition


A. Manufacturer Seismic Qualification: The low voltage general purpose dry type transformer shall meet and be certified to seismic requirements specified in the CBC 2010 California Building Code.

1. The low voltage transformer shall be compliant with IBC 2009 parameters:

a. Seismic Design Category: E

B.

1.5 QUALITY ASSURANCE

A. Manufacturers Qualifications: The manufacturer of this equipment shall have a minimum of 5 years experience producing similar electrical products.

1. Production tests. Test each unit according to:

a. NEMA ST20

b. CSA C9

c. NEMA TP2
1.6 DELIVERY, STORAGE AND HANDLING

A. Store and handle in strict compliance with manufacturer's instructions and recommendations. Protect from potential damage from weather and construction operations. Store so condensation will not form on or in the transformer housing and if necessary, apply temporary heat where required to obtain suitable service conditions.

B. Handle transformer using proper equipment for lifting and handling, use when necessary lifting eye and/or brackets provided for that purpose.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. The transformer shall be Siemens or pre-approved equal.

B. Substitutions shall be permitted, subject to meeting all requirements of this specification.

2.2 GENERAL CONSTRUCTION

A. Single phase transformers 9kVA or below and three-phase transformers 15kVA and larger, shall be ventilated type. All three-phase transformers shall be constructed with three windings and a single core. The primary side taps of each transformer shall be provided with taps that meet or exceed NEMA standards.

B. Wiring terminations: Bring out primary and secondary terminations to terminals on the same side of the transformer mounted on insulated support. Provide mechanical lugs on primary, secondary and neutral (double) for customer terminations.

C. Provide ground bar kit and neutral to ground bond jumper terminated at ground bar. Provide mechanical lugs mounted on the ground bar for input ground bond, output ground bond and external ground.

D. If shipping to Europe, transformer will also have to be manufactured in accordance to CE standards and carry a CE mark.

2.3 GENERAL REQUIREMENTS

A. Voltage And KVA Requirements
   1. Primary Voltage: As shown on drawings.
   2. Secondary Voltage: As shown on drawings.
   3. KVA Rating: As shown on drawings.
   4. System Frequency: 60 Hz.
   5. Typical impedance at 60Hz: 1.8% to 4.5%.

B. Noise Levels
   1. Noise levels shall be 3 dB lower than NEMA ST-20
   2. EMF level, not to be higher than 10mG top, 10mG side and 10mG at one meter

C. Type:
   1. ANN, convection air cooled

D. Insulation Class:
   1. 200°C system

E. Temperature Rise (under linear loading):
   1. 150°C
   2. 

F. Secondary Neutral Conductor:
   1. Rating shall be 100% of the secondary phase conductor ampacity.

G. Taps:
1. \(2 \times 2.5\% (2\text{FCAN}, 2\text{FCBN})\)

H. Core Construction:
   1. High grade non-aging, fully processed silicon steel laminations or better.

I. Coil Conductors:
   1. Continuous copper windings, with terminations brazed or welded up to 75kVA and bolted
      112.5 kVA and up.

J. Impregnation:
   1. Vacuum impregnated polyester resin.

K. Inrush Current:
   1. 10 times full load rating (max.)

L. Excitation Current:
   1. 5% of full load current rating (max.)

M. Enclosure:
   1. Ventilated NEMA 1 enclosure designed to prevent hand or rod contact with live parts.
      Finish:
      a. ANSI 61 Grey.

N. Anti-Vibration Pads:
   1. Shall be used between the core and the enclosure

O. Core & Coil Assembly
   1. Shall be grounded to the enclosure with a flexible copper grounding strap or equivalent.

P. Mounting:
   1. Ventilated units up to 750 lbs.:
      a. Suitable for wall, floor or ceiling mounting with required drip plate.
   2. Ventilated units over 750 lbs.:
      a. Suitable for floor mounting only.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Install per manufacturer's recommendations and contract documents.
   1. The installing contractor shall install the Siemens TP1S Super Energy Efficient K-Factor
      transformer per the manufacturers recommended installation practices as found in the
      installation, operation, and maintenance manual and comply with all applicable codes.
   2. Make sure that the transformer is level.
   3. Check for damage and loose connections.
   4. Mount transformer to comply with all applicable codes.
   5. Install seismic restraint where indicated on the drawing.
   6. Coordinate all work in this section with all work of other sections.
   7. Perform insulation resistance testing on all windings; HV to LV, HV to Grd, LV to Grd.
   8. Perform turns ratio testing to ensure transformer is fully functional.
   9. Prior to energizing transformer for service, verify primary incoming voltage and if
      necessary adjust primary taps to match system voltage.
   10. Provide a certified test report for all testing done in items G, H, and I.

3.2 ADJUSTING AND CLEANING

A. On completion of installation, inspect components. Remove paint splatters and other spots, dirt
   and debris. Repair scratches and mars on finish to match original finish. Clean components
   internally using methods and materials recommended by manufacturer.
B. Adjust transformer taps to provide optimum voltage conditions at utilization equipment throughout normal operating cycle of facility. Record primary and secondary voltages and tap settings and submit with test results.

3.3 TESTING

A. Include the following minimum inspections and tests according to manufacturer's written instructions. Comply with IEEE C57.12.91 for test methods and data correction factors.

B. Inspect accessible components for cleanliness, mechanical and electrical integrity and damage or deterioration. Verify that temporary shipping bracing has been removed. Include internal inspection through access panels and covers.

C. Inspect bolted electrical connections for tightness according to manufacturer's published torque values or, if not available, those specified in UL 486A and UL 486B.

3.4 WARRANTY

A. The transformer shall carry a 10 year limited warranty.

B. Detailed warranty information shall be available in the manufacturer's published warranty.

END OF SECTION
SECTION 16500 – SITE LIGHTING

PART 1 – GENERAL

1.1 SUMMARY
A. Work covered by this section of the specifications shall conform to the contract documents, engineering plans as well as state and local codes.

B. The purpose of these specifications is to define the performance and design standards for Rio Hondo College, Whittier, CA. The manufacturer / contractor shall supply lighting equipment to meet or exceed the standards set forth in these specifications.

C. The sports lighting will be for the following fields:
   1. Soccer
   2. Walking track

D. The primary goals of this sports lighting project are:
   1. Guaranteed Light Levels: Selection of appropriate light levels impact the safety of the players and the enjoyment of spectators. Therefore light levels are guaranteed for a period of 25 years.
   2. Life-cycle Cost: In order to reduce the operating budget, the preferred lighting system shall be energy efficient and cost effective to operate. All maintenance costs shall be eliminated, and the field(s) should be proactively monitored to detect fixture outages over a 25 year life-cycle. To allow for optimized use of labor resources and avoid unneeded operation of the facility, customer requires a remote on/off control system for the lighting system.
   3. Control and Monitoring: To allow for optimized use of labor resources and avoid unneeded operation of the facility, customer requires a remote on/off control system for the lighting system. Field(s) should be proactively monitored to detect fixture outages over a 25 year life-cycle.

1.2 LIGHTING PERFORMANCE
A. PERFORMANCE REQUIREMENTS: PLAYING SURFACES SHALL BE LIT TO AN AVERAGE CONSTANT LIGHT LEVEL AND UNIFORMITY AS SPECIFIED IN THE CHART BELOW. LIGHT LEVELS SHALL BE HELD CONSTANT FOR 25 YEARS. LIGHTING CALCULATIONS SHALL BE DEVELOPED AND FIELD MEASUREMENTS TAKEN ON THE GRID SPACING WITH THE MINIMUM NUMBER OF GRID POINTS SPECIFIED BELOW. AVERAGE ILLUMINATION LEVEL SHALL BE MEASURED IN ACCORDANCE WITH THE IESNA LM-5-04. LIGHT LEVELS SHALL BE GUARANTEED FROM THE FIRST 100 HOURS OF OPERATION FOR THE MAXIMUM WARRANTY PERIOD.

<table>
<thead>
<tr>
<th>Area of Lighting</th>
<th>Average Constant Light Levels</th>
<th>Max to Mini Uniformity Ratio</th>
<th>Grid Points</th>
<th>Grid Spacing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Soccer - High</td>
<td>75 footcandles</td>
<td>2.0:1.0</td>
<td>96</td>
<td>30' x 30'</td>
</tr>
<tr>
<td>Soccer - A</td>
<td>35 footcandles</td>
<td>3.0:1.0</td>
<td>96</td>
<td>30' x 30'</td>
</tr>
<tr>
<td>Soccer - B</td>
<td>25 footcandles</td>
<td>2.5:1.0</td>
<td>96</td>
<td>30' x 30'</td>
</tr>
<tr>
<td>Walking Track</td>
<td>5 footcandles</td>
<td>20.0:1.0</td>
<td>50</td>
<td>30' x 30'</td>
</tr>
</tbody>
</table>

1. Lumen maintenance control strategy: A constant light system shall use automatic power adjustments to achieve a lumen maintenance control strategy as described in the IESNA Lighting Handbook 10th Edition, Lighting Controls Section, page 16-8: "Lumen maintenance involves adjusting lamp output over time to maintain constant light output as lamps age, and dirt accumulation reduces luminaire output. With lumen maintenance control, either lamps are dimmed when new, or the lamp's current is increased as the system ages."
2. Independent Test Report: Manufacturers bidding any form of a constant light system must provide an independent test report certifying the system meets the lumen maintenance control strategy above and verifying the field performance of the system for the duration of the useful life of the lamp based on lamp replacement hours. Report shall be signed by a licensed professional engineer with outdoor lighting experience. If report is not provided at least 10 days prior to bid opening, the manufacturer shall provide the initial and maintained designs called for in this specification under Alternate Manufacturers, section 1.7.

3. Project References: Manufacturers bidding any form of a constant light system must provide a minimum of five (5) project references within the state of California that have been completed within the last calendar year utilizing this exact technology. Manufacturer will include project name, project city, and if requested, contact name and contact phone number for each reference.

B. Mounting Heights: To ensure proper aiming angles for reduced glare and to provide better playability, the pole mounting heights from the playing field surface shall be 80'.

1.3 **LIFE-CYCLE COSTS**

A. Energy Consumption: The average kW consumption for the field lighting system shall be 130kW or less.

B. Complete Lamp Replacement: Manufacturer shall include all group lamp replacements required to provide 25 years of operation based upon 450 usage hours per year.

C. Preventative and Spot Maintenance: Manufacturer shall provide all preventative and spot maintenance, including parts and labor for 25 years from the date of equipment shipment. Individual lamp outages shall be repaired when the usage of any field is materially impacted. Owner agrees to check fuses in the event of a luminaire outage.

D. Remote Monitoring System: System shall monitor lighting performance and notify manufacturer if individual luminaire outage is detected so that appropriate maintenance can be scheduled. The manufacturer shall notify the owner of outages within 24 hours, or the next business day. The controller shall determine switch position (Manual or Auto) and contactor status (open or closed).

E. Remote Lighting Control System: System shall allow owner and users with a security code to schedule on/off system operation via a web site, phone, fax or email up to ten years in advance. Manufacturer shall provide and maintain a two-way TCP/IP communication link. Trained staff shall be available 24/7 to provide scheduling support and assist with reporting needs.

The owner may assign various security levels to schedulers by function and/or field. This function must be flexible to allow a range of privileges such as full scheduling capabilities for all fields, to only having permission to execute "early off" commands by phone.

Controller shall accept and store 7-day schedules, be protected against memory loss during power outages, and shall reboot once power is regained and execute any commands that would have occurred during outage.

F. Management Tools: Manufacturer shall provide a web-based database of actual field usage and provide reports by facility and user group.

a. Hours of Usage: Manufacturer shall provide a means of tracking actual hours of usage for the field lighting system that is readily accessible to the owner.

i. Cumulative hours: shall be tracked to show the total hours used by the facility
ii. Current lamp hours: shall be tracked separately to reflect the amount of hours on the current set of lamps being used, so relamping can be scheduled accurately

G. Communication Costs: Manufacturer shall include communication costs for operating the controls and monitoring system for a period of 25 years.

H. 25-Year Life-cycle Cost: Manufacturer shall submit 25-year life-cycle cost calculations as follows. Equipment price and total life-cycle cost shall be entered separately on bid form.
WARRANTY AND GUARANTEE

A. 25-Year Warranty: Each manufacturer shall supply a signed warranty covering the entire system for 25 years OR for the maximum hours of coverage based on the estimated annual usage, whichever occurs first. Warranty shall guarantee light levels; lamp replacements; system energy consumption; monitoring, maintenance and control services, spill light control, and structural integrity. Manufacturer shall maintain specifically-funded financial reserves to assure fulfillment of the warranty for the full term. Warranty may exclude fuses, storm damage, vandalism, abuse and unauthorized repairs or alterations. Group lamp replacements for constant light systems must occur in accordance with the independent test report provided by the manufacturer; alternate systems must relamp every 2100 hours.

DELIVERY TIMING

A. Equipment On-Site: The equipment must be on-site 4-6 weeks (12-14 weeks for required seam weld inspection) after the owner's receipt of California Division of State Architect (D.S.A.) stamped plan approval, and manufacturer's submittal has been approved. Owner must provide contact person for DSA inspection services to be completed at manufacturer's production facility on or before submittal approval date. DSA inspection services must be in place and available to coordinate with manufacturer's planned delivery time frame.

PRE-BID SUBMITTAL REQUIREMENTS

A. Approved Product: Musco’s Green Generation Lighting® sports lighting system is the approved product. All substitutions must provide a complete submittal package for approval as outlined in Submittal Information at the end of this section at least 10 days prior to bid. Special manufacturing to meet the standards of this specification may be required. An addendum will be issued prior to bid listing any other approved lighting manufacturers and designs.

B. Design Approval: The owner / engineer will review pre-bid shop drawings from the manufacturers to ensure compliance to the specification. If the design meets the design requirements of the specifications, a letter will be issued to the manufacturer indicating approval for the specific design submitted.

ALTERNATE SYSTEM REQUIREMENTS

A. Compliance to Specifications: Acceptance of a bid alternate does not negate the contractor and lighting manufacturer's responsibility to comply fully with the requirements of these specifications. Any exceptions to the specifications must be clearly stated in the prior approval submittal documents.
B. Light Level Requirements: Manufacturer shall provide computer models guaranteeing light levels on the field over 25 years. If a constant light level cannot be provided, the specified maximum Recoverable Light Loss Factor and maintenance/group relamping schedule shall be provided in accordance with recommendations in the Pennsylvania State University report "Empirical Light Loss Factors for Sports Lighting", presented at the 2009 IESNA Annual Conference.

<table>
<thead>
<tr>
<th>Lamp Replacement Interval (hours)</th>
<th>Recoverable Light Loss Factor (RLLF)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2100</td>
<td>0.69</td>
</tr>
</tbody>
</table>

For alternate systems, scans for both initial and maintained light levels are required.

<table>
<thead>
<tr>
<th>Area of Lighting</th>
<th>Average Initial Light Levels</th>
<th>Average Target/Maintained Light Levels</th>
<th>Max to Min Uniformity Ratio</th>
<th>Grid Points</th>
<th>Grid Spacing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Soccer – High</td>
<td>108 footcandles</td>
<td>75 footcandles</td>
<td>2.0:1.0</td>
<td>96</td>
<td>30’ x 30’</td>
</tr>
<tr>
<td>Soccer - A</td>
<td>50 footcandles</td>
<td>35 footcandles</td>
<td>3.0:1.0</td>
<td>96</td>
<td>30’ x 30’</td>
</tr>
<tr>
<td>Soccer - B</td>
<td>50 footcandles</td>
<td>35 footcandles</td>
<td>2.5:1.0</td>
<td>96</td>
<td>30’ x 30’</td>
</tr>
<tr>
<td>Walking Track</td>
<td>7 footcandles</td>
<td>5 footcandles</td>
<td>20.0:1.0</td>
<td>50</td>
<td>30’ x 30’</td>
</tr>
</tbody>
</table>

C. Revised Electrical Distribution: Manufacturer shall provide revised electrical distribution plans to include changes to service entrance, panel, and wire sizing.

PART 2 – PRODUCT

2.1 LIGHTING SYSTEM CONSTRUCTION

A. System Description: Lighting system shall consist of the following:

1. Galvanized steel poles and crossarm assembly

2. Pre-stressed concrete base embedded in concrete backfill allowed to cure for 12-24 hours before pole stress is applied. Alternate may be an anchor bolt foundation designed such that the steel pole and any exposed steel portion of the foundation is located a minimum of 18 inches above final grade. The concrete for anchor bolt foundations shall be allowed to cure for a minimum of 28 days before the pole stress is applied.

3. All luminaires shall be constructed with a die-cast aluminum housing or external hail shroud to protect the luminaire reflector system.

4. Manufacturer will remove all ballasts and supporting electrical equipment in aluminum enclosures mounted approximately 10’ above grade. The enclosures shall include ballast, capacitor and touch-safe fusing to indicate when a fuse is to be replaced for each luminaire. Safety disconnect per circuit for each pole structure will be located in the enclosure.

5. Wire harness complete with an abrasion protection sleeve, strain relief and plug-in connections for fast, trouble-free installation.

6. Controls and Monitoring Cabinet to provide on-off control and monitoring of the lighting system, constructed of NEMA Type 4 aluminum. Communication method shall be provided by manufacturer. Cabinet shall contain custom configured contactor modules for 30, 60, and 100 amps, labeled to match field diagrams and electrical design. Manual Off-On-Auto selector switches shall be provided.

B. Manufacturing Requirements: All components shall be designed and manufactured as a system. All luminaires, wire harnesses, ballast and other enclosures shall be factory assembled, aimed, wired and tested.
C. Durability: All exposed components shall be constructed of corrosion resistant material and/or coated to help prevent corrosion. All exposed carbon steel shall be hot dip galvanized per ASTM A123. All exposed aluminum shall be powder coated with high performance polyester or anodized. All exterior reflective inserts shall be anodized, coated, and protected from direct environmental exposure to prevent reflective degradation or corrosion. All exposed hardware and fasteners shall be stainless steel of 18-8 grade or better, passivated and coated with aluminum-based thermosetting epoxy resin for protection against corrosion and stress corrosion cracking. Structural fasteners may be carbon steel and galvanized meeting ASTM A153 and ISO/EN 1461 (for hot dipped galvanizing), or ASTM B695 (for mechanical galvanizing). All wiring shall be enclosed within the crossarms, pole, or electrical components enclosure.

D. Lightning Protection: Manufacturer shall provide integrated lightning grounding via concrete encased electrode grounding system as defined by NFPA 780 and be UL Listed per UL 96 and UL 96A.

If grounding is not integrated into the structure, the Manufacturer shall supply grounding electrodes, copper down conductors and exothermic weld kits. Electrodes and conductors shall be sized as required by NFPA 780. The grounding electrode shall be not less than 5/8 inch diameter and 8 feet long, with a minimum of 10 feet embedment. Grounding electrode shall be connected to the structure by a grounding electrode conductor with a minimum size of 2 AWG for poles with 75 feet mounting height or less, and 2/0 AWG for poles with more than 75 feet mounting height.

E. Safety: All system components shall be UL Listed for the appropriate application.

F. Electric Power Requirements for the Sports Lighting Equipment:

1. Electric power: 480 Volt, 3 Phase

2. Maximum total voltage drop: Voltage drop to the disconnect switch located on the poles shall not exceed three (3) percent of the rated voltage.

2.2 STRUCTURAL PARAMETERS

A. Support Structure Wind Load Strength: Poles and other support structures, brackets, arms, bases, anchorages and foundations shall be determined based on the 2010 CBC Building Code, wind speed of 85MPH, exposure category C and an importance factor of 1.0. Luminaire, visor, and crossarm shall withstand 150 mph winds and maintain luminaire aiming alignment.


C. Soil Conditions: The design criteria for these specifications are based on soil design parameters as outlined in the geotechnical report. If no geotechnical report is provided by the owner, the foundation design shall be based on soils that meet or exceed those of a Class 5 material as defined by 2010 CBC.

It shall be the contractor’s responsibility to notify the owner if soil conditions exist other than those on which the foundation design is based, or if the soil cannot be readily excavated. Contractor may issue a change order request / estimate for the owner’s approval / payment for additional costs associated with:

a) Providing engineered foundation embedment design by a registered engineer in the State of California
b) Additional materials required to achieve alternate foundation.

c) Excavation and removal of material/s other than normal soils, such as rock, caliche, etc.

D. Foundation Drawings: Project specific foundation drawings stamped by a registered engineer in the state where the project is located are required. The foundation drawings must list the moment, shear (horizontal) force, and axial (vertical) force at ground level for each pole. These drawings must be submitted at time of bid to allow for accurate pricing.
PART 3 – EXECUTION

3.1 FIELD QUALITY CONTROL

A. Illumination Measurements: Upon substantial completion of the project and in the presence of the Contractor, Project Engineer, Owner's Representative, and Manufacturer's Representative, illumination measurements shall be taken and verified. The illumination measurements shall be conducted in accordance with IESNA LM-5-04.

B. Correcting Non-Conformance: If, in the opinion of the Owner or his appointed Representative, the actual performance levels including footcandles, uniformity ratios, and maximum kilowatt consumptions are not in conformance with the requirements of the performance specifications and submitted information, the Manufacturer shall be liable to any or all of the following:

1. Manufacturer shall at his expense provide and install any necessary additional fixtures to meet the minimum lighting standards. The Manufacturer shall also either replace the existing poles to meet the new wind load (EPA) requirements or verify by certification by a licensed structural engineer that the existing poles will withstand the additional wind load.

2. Manufacturer shall minimize the Owner's additional long term fixture maintenance and energy consumption costs created by the additional fixtures by reimbursing the Owner the amount of $1,000.00 (one thousand dollars) for each additional fixture required.

3. Manufacturer shall remove the entire unacceptable lighting system and install a new lighting system to meet the specification.
### REQUIRED SUBMITTAL INFORMATION FOR ALTERNATE SYSTEM

**Design Submittal Data Checklist and Certification for Alternate System Bids**

All items listed below are mandatory, shall comply with the specification and be submitted according to pre-bid submittal requirements.

<table>
<thead>
<tr>
<th>Tab</th>
<th>Item</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Letter/Checklist</td>
<td>Listing of all information being submitted must be included on the table of contents. List the name of the manufacturer's local representative and his/her phone number. Signed submittal checklist to be included.</td>
</tr>
<tr>
<td>B</td>
<td>Equipment Layout</td>
<td>Drawing(s) showing field layout with poles identified.</td>
</tr>
</tbody>
</table>
| C   | On Field Lighting Design | Lighting design drawing(s) showing:  
   a. Field Name, date, file number, prepared by, and other pertinent data  
   b. Outline of field(s) being lighted, as well as pole locations referenced to the center of the field (x & y),  
   c. Pole height, number of fixtures per pole, as well as luminaire information including wattage, lumens and optics  
   d. Height of light test meter above field surface  
   e. Summary table showing the number and spacing of grid points; average, minimum and maximum illuminance levels in foot candles (fc); uniformity including maximum to minimum ratio, coefficient of variance and uniformity gradient; number of luminaries, total kilowatts, average tilt factor; light loss factor.  
   f. Alternate manufacturers shall provide both initial and maintained light scans using a maximum Recoverable Light Loss Factor (RLLF) as specified in section 1.7. |
| D   | Life-cycle Cost Calculation | Document life-cycle cost calculations as defined in the specification. Identify energy costs for operating the luminaires, maintenance cost for the system including spot lamp replacement, and group relamping costs. All costs should be based on 25 Years. |
| E   | Luminaire Aiming Summary | Document showing each luminaire's aiming angle and the poles on which the luminaries are mounted. Each aiming point shall identify the type of luminaire. |
| F   | Structural Calculations | Pole structural calculations and foundation design showing foundation shape, depth backfill requirements, rebar and anchor bolts (if required). Pole base reaction forces shall be shown on the foundation drawing along with soil bearing pressures. Design must be stamped by a structural engineer in the state of California, if required by owner. (May be supplied upon award). |
| G   | Control & Monitoring System | Manufacturer shall provide written definition and schematics for automated control system to include monitoring. They will also provide examples of system reporting and access for numbers for personal contact to operate the system. |
| H   | Electrical Distribution Plans | If bidding an alternate system, manufacturer must include a revised electrical distribution plan including changes to service entrance, panels and wire sizing, signed by a licensed Electrical Engineer in the state of California. |
| I   | Performance Guarantee | Provide performance guarantee including a written commitment to undertake all corrections required to meet the performance requirements noted in these specifications at no expense to the owner. Light levels must be guaranteed per specification for 25 years. |
| J   | Warranty | Provide written warranty information including all terms and conditions. |
| K   | Independent Testing Report | Manufacturer bidding any form of a constant light system is to provide an independent test report certifying the system meets the luminaire maintenance control strategy defined in Section 1.2.A.1, verifying the field performance of the system for the duration of the useful life of the lamp based on lamp replacement hours. Report shall be signed by a licensed professional engineer with outdoor lighting experience. |
| L   | Project References | Manufacturer to provide a list of projects where the technology proposed for this project has been installed in the state of California. If any form of a constant light system is bid, a minimum of 5 project references completed within the last calendar year is required. For a depreciating light system a full list of projects completed within the past 3 years is required. Reference list will include project name, project city, and if requested, contact name and contact phone number. |
| M   | Product Information | Complete set of product brochures for all components, including a complete parts list and UL Listings. |
| N   | Delivery | Manufacturer shall supply an expected delivery timeframe from receipt of approved submittals and complete order information. |
| O   | Non-Compliance | Manufacturer shall list all items that do not comply with the specifications. If in full compliance, tab may be omitted. |

The information supplied herein shall be used for the purpose of complying with the specifications for Rio Hondo College Soccer. By signing below I agree that all requirements of the specifications have been met and that the manufacturer will be responsible for any future costs incurred to bring their equipment into compliance for all items not meeting specifications and not listed in the Non-Compliance section.
## SOILS

### 1. GENERAL:

<table>
<thead>
<tr>
<th>Test or Special Inspection</th>
<th>Type</th>
<th>Performed By</th>
<th>Code Reference and Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. Verify that:</td>
<td>Periodic</td>
<td>GE*</td>
<td>By geotechnical engineer or his or her qualified representative</td>
</tr>
<tr>
<td>- site has been prepared properly prior to placement of controlled fill and/or excavations for foundations,</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- foundation excavations are extended to proper depth and have reached proper material, and</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- materials below footings are adequate to achieve the design bearing capacity.</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### 2. COMPACTED FILLS:

<table>
<thead>
<tr>
<th>Test or Special Inspection</th>
<th>Type</th>
<th>Performed By</th>
<th>Code Reference and Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. Perform qualification testing of fill materials.</td>
<td>Test</td>
<td>Lab*</td>
<td>Under the supervision of the geotechnical engineer</td>
</tr>
<tr>
<td>b. Verify use of proper materials and inspect lift thicknesses, placement, and compaction during placement of fill</td>
<td>Continuous</td>
<td>GE*</td>
<td>By geotechnical engineer or his or her qualified representative</td>
</tr>
<tr>
<td>c. Test compaction of fill.</td>
<td>Test</td>
<td>Lab*</td>
<td>Under the supervision of the geotechnical engineer</td>
</tr>
</tbody>
</table>

## CONCRETE

### 7. CAST IN PLACE CONCRETE

**Material Verification and Testing:**

<table>
<thead>
<tr>
<th>Test or Special Inspection</th>
<th>Type</th>
<th>Performed By</th>
<th>Code Reference and Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. Verify use of required design mix.</td>
<td>Periodic</td>
<td>SI &amp; PI*</td>
<td>To be performed by batch-plant special inspector and project inspector</td>
</tr>
<tr>
<td>b. Test reinforcing steel.</td>
<td>Test</td>
<td>Lab</td>
<td>ASTM A370, See IR 17-10</td>
</tr>
<tr>
<td>c. Perform slump, temperature, and (where required) air content tests.</td>
<td>Test</td>
<td>Lab</td>
<td>ASTM C172, ASTM C31</td>
</tr>
</tbody>
</table>

**Inspection:**

<table>
<thead>
<tr>
<th>Test or Special Inspection</th>
<th>Type</th>
<th>Code Reference and Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. Inspect batching of concrete.</td>
<td>Continuous</td>
<td>1704A.4.2, see 1704A.4.3, option 2 for waiver based on design parameters</td>
</tr>
</tbody>
</table>

**Notes:** All references to the California Building Code (CBC) are to the 2010 edition.
### Statement of Structural Tests and Special Inspections

**2010 CBC**

<table>
<thead>
<tr>
<th>X</th>
<th>f. Inspect placement of formwork, reinforcing steel, embedded items and concrete. Inspect curing and form removal.</th>
<th>Continuous</th>
<th>Pl*</th>
<th>* May be performed by a special inspector when specifically approved by DSA</th>
</tr>
</thead>
<tbody>
<tr>
<td>-</td>
<td>11. POST-INSTALLED ANCHORS:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>X</td>
<td>a. Inspect installation of post-installed anchors</td>
<td>Continuous</td>
<td>Pl</td>
<td>Table 1704A.4</td>
</tr>
<tr>
<td>X</td>
<td>b. Test post-installed anchors</td>
<td>Test</td>
<td>Lab</td>
<td>1916A.7 (1916.1.11).</td>
</tr>
</tbody>
</table>

**+ MASONRY**

| Table 1704A.5.3 |

**- STEEL**

| Table 1704A.3 |

**- 17. STRUCTURAL STEEL AND COLD-FORMED STEEL USED FOR STRUCTURAL PURPOSES**

**Material Verification:**

<table>
<thead>
<tr>
<th>X</th>
<th>a. Verify that all materials are appropriately marked and that:</th>
<th>Periodic</th>
<th></th>
<th>* By special inspector when performed off-site; by project inspector for steel shipped directly to project site without welding or fabrication</th>
</tr>
</thead>
<tbody>
<tr>
<td>-</td>
<td>• Mill certificates indicate material properties that comply with requirements.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>X</td>
<td>• Material sizes, types and grades comply with requirements.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>X</td>
<td>b. Test unidentified materials</td>
<td>Test</td>
<td>Lab</td>
<td>2293A.1 (2293.1&quot;) ASTM A370.</td>
</tr>
<tr>
<td>X</td>
<td>c. Examine seam welds of structural tubes and pipes</td>
<td>Periodic</td>
<td>SI*</td>
<td>* See DSA IR 17-3.</td>
</tr>
</tbody>
</table>

**Inspection:**

<table>
<thead>
<tr>
<th>X</th>
<th>d. Verify member locations, bracing and all details constructed in the field</th>
<th>Continuous</th>
<th>Pl</th>
</tr>
</thead>
<tbody>
<tr>
<td>X</td>
<td>e. Verify stiffener locations, connection tab locations and all construction details fabricated in the shop.</td>
<td>Periodic</td>
<td>SI</td>
</tr>
</tbody>
</table>

**- 19. WELDING:**

**Verification of Materials, Equipment, Welders, etc.**

<table>
<thead>
<tr>
<th>X</th>
<th>a. Verify weld filler material identification markings per AWS designation listed on the DSA approved documents and the WPS.</th>
<th>Periodic</th>
<th>SI</th>
</tr>
</thead>
<tbody>
<tr>
<td>X</td>
<td>b. Verify weld filler material manufacturer's certificate of compliance.</td>
<td>Periodic</td>
<td>SI</td>
</tr>
</tbody>
</table>

**19.1 SHOP WELDING:**

| X | b. Inspect single-pass fillet welds ≤ 5/16" | Periodic | SI | Per AISC 360 (and AISC 341 as applicable). See DSA IR 17-3 |

**19.2 FIELD WELDING:**

| X | b. Inspect single-pass fillet welds ≤ 5/16" | Periodic | SI | Per AISC 360 (and AISC 341 as applicable). See DSA IR 17-3 |

**+ WOOD**

**- OTHER**

| Section 1704A.15 |

| X | 27. Grounding Test | Test | Lab |

---

**DS-103 (rev 03-19-12)**

*In the CODE REFERENCE AND NOTES column indicates DSA-SS/CC sections that can be used by community colleges, per 2010 CBC Sec. 1922*
### Summary of Verified Reports Required:

Note: Project Inspector, contractor, architect, and engineer verified reports are always required (Form DSA-6 or DSA-6A/E as applicable).

1. Soils testing and Inspection: Geotechnical Verified Report - Form DSA-293
2. All Structural Testing: Laboratory Verified Report - Form DSA-291
3. Concrete Batch Plant Inspection: Special Inspection Verified Report - Form DSA-292
4. Shop Welding Inspection: Special Inspection Verified Report - Form DSA-292
5. Field Welding Inspection: Special Inspection Verified Report - Form DSA-292

### KEY to Columns

<table>
<thead>
<tr>
<th><strong>1</strong></th>
<th><strong>2</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>1. <strong>Continuous</strong> - Indicates that a continuous special inspection is required</td>
<td><strong>GE</strong> - Indicates that the special inspection is to be performed by a registered geotechnical engineer or his or her authorized representative</td>
</tr>
<tr>
<td>2. <strong>Periodic</strong> - Indicates that a periodic special inspection is required</td>
<td><strong>Lab</strong> - Indicates that the test is to be performed by a testing laboratory accepted in the DSA laboratory Evaluation and Acceptance (LEA) Program</td>
</tr>
<tr>
<td>3. <strong>Test</strong> - Indicates that a test is required</td>
<td><strong>PI</strong> - Indicates that the special inspection is to be performed by the project inspector</td>
</tr>
<tr>
<td>(Note: The difference between &quot;tests&quot; and &quot;special inspections&quot; is addressed in IR 17-4)</td>
<td><strong>SI</strong> - Indicates that the special inspection is to be performed by a special inspector</td>
</tr>
</tbody>
</table>

---

**Identification Stamp**

DIV OF THE STATE ARCHITECT
APP. # 03-115542

<table>
<thead>
<tr>
<th>AC</th>
<th>N/A</th>
<th>F/LS</th>
<th>N/A</th>
<th>SS</th>
<th>FK</th>
</tr>
</thead>
</table>

**Date of Inspection:** 8/26/2014

**Architectural and Structural Engineer Stamp**

**Date:** 8/25/14

**Name of Architect or Engineer in general responsible charge:**

**JOSEPH E. STEWART**

(When structural design has been delegated)

**Signature of Architect or Structural Engineer:**

8/25/14

---

*In the CODE REFERENCE AND NOTES column indicates DSA SS/CC sections that can be used by community colleges, per 2010 CBC Sec 1922.*
October 5, 2012
4953-12-0022

Mr. Jim Sinsheimer
Rio Hondo Project Management Team
c/o Rio Hondo College
3600 Workman Mill Road, HS-6
Whittier, California 90601

Subject: Report of Geotechnical Consultation
     Proposed Soccer Field
     Rio Hondo College
     3600 Workman Mill Road
     Whittier, California

Dear Mr. Sinsheimer:

This letter presents the results of our geotechnical consultation in support of the proposed soccer field project to be constructed on the campus of Rio Hondo College in Whittier, California. This consultation has been performed in general conformance with our proposal dated September 11, 2012.

The location of the project site is shown on Figure 1, Site Vicinity Map. The locations and features of the proposed project and our nearby previous exploration borings are shown on Figure 2, Plot Plan.

We have previously performed numerous geotechnical investigations on the Rio Hondo College campus near the project site, including the original investigation for the campus, the results of which were submitted in the following reports:

- Report of Geotechnical Investigation: Proposed Retaining Structures; Rio Hondo College, 3600 Workman Mill Road, Whittier, California; for Rio Hondo College; our Project No. 4953-05-0514; report dated December 21, 2005 (submitted under the name of MACTEC Engineering and Consulting, Inc., an AMEC legacy company).

- Report of Geotechnical Investigation: Proposed Retaining Walls and Baseball Field Netting Poles; Rio Hondo College, 3600 Workman Mill Road, Whittier, California; for Rio Hondo College; our Project No. 4953-05-0514; report dated October 11, 2007 (submitted under the name of MACTEC Engineering and Consulting, Inc., an AMEC legacy company).

- Report of Geotechnical Investigation: Proposed Retaining Walls; Rio Hondo College, 3600 Workman Mill Road, Whittier, California; for Rio Hondo College; our Project No. 4953-08-1701; report dated December 10, 2008 (submitted under the name of MACTEC Engineering and Consulting, Inc., an AMEC legacy company).

Correspondence:
AMEC
6001 Rickenbacker Road
Los Angeles, CA 90040
Tel: (323) 889-5300
Fax: (323) 721-6700
In addition, we also provided geotechnical inspection and testing services during the original grading of the campus. We presented the results of our inspection and testing of compacted fill on the campus in reports dated December 30, 1964 and July 6, 1966 (our Job Nos. B-64006 and B-65052). We acknowledge that we have reviewed the reports by MACTEC Engineering and Consulting, Inc. and LeRoy Crandall and Associates and we concur with the data and findings contained therein.

This consultation was authorized to review our previous subsurface data and perform engineering analyses to provide recommendations for design of foundations and retaining walls, for support of paving and curb and gutter, and for earthwork. No additional project-specific explorations were performed as part of our services.

Our recommendations are based on the results of our previous field explorations, laboratory tests, and appropriate engineering analyses. The results of the nearby previous field explorations and laboratory tests, which form the basis of our recommendations, are presented in the Appendix.

Our professional services have been performed using that degree of care and skill ordinarily exercised, under similar circumstances, by reputable geotechnical consultants practicing in this or similar localities. No other warranty, express or implied, is made as to the professional advice included in this report.

PROJECT DESCRIPTION AND SITE CONDITIONS

It is proposed to renovate the existing track and soccer/football field, which is located at the southeast corner of Workman Mill Road and the main entry drive for the campus (College Drive). The renovation is to consist of a new artificial turf soccer field, new bleachers, new hardscape, a new parking lot to accommodate 50 vehicles, and the widening of the entry drive to the field off of College Drive, which may require short retaining walls (less than about 5 feet in height).

The majority of the project site is covered by the existing track and field. There is an existing retaining wall along the north and west sides of the site, which varies between approximately 1 and 6 feet in height. The existing retaining wall is located at the top of an approximately 40-foot high slope which extends downward to Workman Mill Road to the west and College Drive to the north. Based on our records, this slope consists primarily of fill placed during the original rough grading of the campus, has an average inclination of 1½:1 (horizontal to vertical), and is heavily vegetated. Ascending slopes are located to the south and east of the project site. However, the area of the existing and proposed field and parking lot is relatively flat, with a difference in elevation of less than about four feet across the site.

SOIL CONDITIONS

Our inspection records indicate that the project site is underlain by up to about 40 feet of fill soils on the western portion of the site. The fill is anticipated to decrease in thickness toward the east, with little or no fill anticipated along the eastern edge of the site. The fill
soils consist of silty sand, sandy silt, silt, and some clay. Based on our previous experience on the campus, the clayey fill soils may be moderately expansive and may shrink and swell with fluctuations in moisture content. Over the majority of the project site, as shown on Figure 2, the fill soils were inspected, tested, and documented by our firm during their placement. The fill soils are underlain by alluvial soils consisting of sandy silt, sand, silty sand, and clayey sand.

Bedrock was not encountered within the 50-foot maximum depth explored by our nearby previous borings; however, the underlying bedrock encountered elsewhere on the project site consists of moderately weathered massive to poorly bedded siltstone bedrock with minor sandstone interbeds.

Groundwater was not encountered within the 50-foot maximum depth explored by our nearby previous explorations.

Previous chemical tests indicate that the on-site soils are severely corrosive to ferrous metals, non-aggressive to copper, and that the potential for sulfate attack on portland cement concrete is considered negligible.

**RECOMMENDATIONS**

Our inspection records indicate that up to 40 feet of fill soils underlie the project site. These fill soils were previously inspected and tested by our firm. These fill soils were compacted to at least 90% of the maximum dry density obtainable by the ASTM Designation D698 method of compaction (Three-Layer Method). Although the fill soils were not compacted to the current standard of at least 90% of the maximum dry density obtainable by the ASTM Designation D1557 method of compaction (Five-Layer Method), in our opinion, these soils will be adequate for support of the proposed soccer field, minor retaining walls (supported on conventional spread/continuous footings), pavement, and curb and gutter. Outside of the area of our inspection of the existing fill, we recommend that any fill soils be removed and replaced as properly compacted fill to provide proper support for the proposed retaining walls, pavement, curb and gutter, and other minor structures, such as the bleachers for the soccer field.

Given the age of the existing fill soil that was placed during the original grading of the campus, the large majority of settlement would have occurred by now. However, the potential for additional settlement should not be ruled out, particularly if additional moisture is introduced into the fill soils. Accordingly, there will be a potential for greater than normal total and differential settlement that could result in cracking of the proposed retaining walls if supported on conventional spread/continuous footings underlain by the existing inspected fill. Some minor cracking of the pavement supported on this existing fill may occur and additional maintenance may be required. To reduce the impact of the potential total and differential settlement of these existing fill soils, we recommend that joints be located along retaining walls at spacings less than would ordinarily be specified for similar retaining walls (on the order of 10 to 15 feet). The potential for settlement of the existing fill should also be discussed with the artificial turf manufacturer to verify that such settlement will not impact the warranty for the field turf products.
Based on the current plans, the existing retaining wall in the northern corner of the site will be at least 10 feet away from the proposed parking lot. Since the maximum height of the wall is only about 6 feet, the surcharge pressure imposed on the wall by the new parking lot will be negligible. However, cracks, up to about ½ inch in width, were observed near the northern corner of the wall during our recent site visit. No noticeable tilting or other signs of distress were observed. However, water staining was observed along the entire height of the wall, suggesting that stormwater was previously allowed to flow over the top of the wall. We understand that the current project includes the construction of a drainage swale at the top of the wall, which should remediate this observed condition. We suggest that a structural engineer evaluate the retaining wall in light of the observed cracking.

**FOUNDATIONS**

**Bearing Value**

As previously stated, the existing inspected fill soils were not compacted to current standards; nevertheless, the fill is adequate for a bearing value of 1,500 pounds per square foot (psf). Therefore, spread/continuous footings underlain by the existing inspected fill or new properly compacted fill and/or undisturbed natural soils and carried at least 2 feet below the lowest adjacent grade may be designed to impose a net dead-plus-live load pressure of 1,500 psf. The excavations should be observed by a representative of our firm to confirm that suitable materials are present at the design footing elevation and the excavations should be deepened as necessary to extend into satisfactory soils.

A one-third increase may be used for wind or seismic loads. The recommended bearing value is a net value, and the weight of concrete in the footings may be taken as 50 pounds per cubic foot; the weight of soil backfill may be neglected when determining the downward loads.

**Settlement**

Although the settlement is difficult to quantify due to the nature of the existing fill soils, settlement of up to 2 inches could occur beneath spread/continuous footings supported on the existing inspected fill. For footings supported on new properly compacted fill and/or undisturbed natural soils, we estimate that the settlement will be on the order of ½ inch or less.

**Lateral Resistance**

Lateral loads may be resisted by soil friction and by the passive resistance of the soils. A coefficient of friction of 0.4 may be used between the footings and the supporting soils. The passive resistance of the existing inspected fill soils and new properly compacted fill soils may be assumed to be equal to the pressure developed by a fluid with a density of 250 pounds per cubic foot. A one-third increase in the passive value may be used for wind or seismic loads. The frictional resistance and the passive resistance of the soils may be combined without reduction in determining the total lateral resistance.
SEISMIC DESIGN PARAMETERS

We have determined the seismic site coefficients in accordance with the 2010 California Building Code (CBC) and ASCE 7-05 Standard (ASCE, 2005) using the United States Geological Survey (USGS, 2011) Earthquake Motion Parameters, Version 5.1.0, program. The seismic design parameters are presented in the table below:

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>$S_S$ (0.2 second period, Site Class B)</td>
<td>2.06g</td>
</tr>
<tr>
<td>$S_1$ (1.0 second period, Site Class B)</td>
<td>0.73g</td>
</tr>
<tr>
<td>Site Class</td>
<td>D</td>
</tr>
<tr>
<td>$F_a$</td>
<td>1.0</td>
</tr>
<tr>
<td>$F_v$</td>
<td>1.5</td>
</tr>
<tr>
<td>$S_{MS} = F_a S_S$ (0.2 second period)</td>
<td>2.06g</td>
</tr>
<tr>
<td>$S_{M1} = F_v S_1$ (1.0 second period)</td>
<td>1.10g</td>
</tr>
<tr>
<td>$S_{DS} = 2/3 x S_{MS}$ (0.2 second period)</td>
<td>1.37g</td>
</tr>
<tr>
<td>$S_{D1} = 2/3 x S_{M1}$ (1.0 second period)</td>
<td>0.73g</td>
</tr>
</tbody>
</table>

LATERAL EARTH PRESSURES

Static Lateral Earth Pressure

For design of cantilevered retaining walls, where the surface of the backfill is level, it may be assumed that drained soils will exert a lateral pressure equal to that developed by a fluid with a density of 35 pounds per cubic foot.

In addition to the recommended earth pressures, walls adjacent to areas subject to vehicular traffic should be designed to resist a uniform lateral pressure of 100 pounds per square foot, acting as a result of an assumed 300 pounds per square foot surcharge behind the walls due to normal vehicular traffic. If the traffic is kept back at least 10 feet from the walls, the traffic surcharge may be neglected.

Seismic Lateral Earth Pressure

Based on the height of the proposed retaining walls and the cohesive nature of the on-site materials, the seismic lateral earth pressure is anticipated to be negligible.

Drainage

Retaining walls should be designed to resist hydrostatic pressures or be provided with a drain pipe or weepholes. The drain could consist of a 4-inch-diameter perforated pipe placed with perforations down at the base of the wall. The pipe should be sloped at least 2 inches in 100 feet and surrounded by one square foot of ¾-inch crushed rock or gravel separated from the on-site soils by an appropriate filter fabric. The crushed rock or gravel should have less than 5% passing a No. 200 sieve. Weepholes could be spaced at about
15 feet on centers and surrounded by one cubic foot of crushed rock separated from the surrounding soils by an appropriate filter fabric.

PAVING

To provide support for paving, the subgrade soils should be prepared as recommended in the following section on grading. Compaction of the subgrade, including trench backfills, to at least 90%, and achieving a firm, hard, and unyielding surface will be important for paving support. The preparation of the paving area subgrade should be performed immediately prior to placement of the base course. Proper drainage of the paved areas should be provided since this will reduce moisture infiltration into the subgrade and increase the life of the paving.

Paving sections and recommendations are provided below for asphalt concrete and portland cement concrete paving to support vehicular traffic. The following pavement thicknesses are based on our review of our previous nearby explorations and laboratory testing. Based on R-value testing from our previous borings on the campus, an R-value of 10 was assumed for design. This R-value should be confirmed during grading.

For support of concrete walks and slabs on grade that will not support vehicular traffic and for support of curbs and gutters, we recommend that at least the upper foot beneath the sidewalk section or curb/gutter consist of relatively non-expansive properly compacted fill soil.

Asphalt Concrete Paving

The required paving and base thicknesses will depend on the expected wheel loads and volume of traffic (Traffic Index or TI). Assuming that the paving subgrade will consist of the on-site or comparable soils compacted to at least 90% as recommended, the minimum recommended paving thicknesses are presented in the following table.

<table>
<thead>
<tr>
<th>Assumed Traffic Index</th>
<th>Asphalt Concrete (Inches)</th>
<th>Base Course (Inches)</th>
</tr>
</thead>
<tbody>
<tr>
<td>4 (Automobile Parking)</td>
<td>3</td>
<td>6</td>
</tr>
<tr>
<td>5 (Driveways with Light Truck Traffic)</td>
<td>3</td>
<td>9</td>
</tr>
<tr>
<td>6 (Driveways with Heavy Truck Traffic)</td>
<td>4</td>
<td>10</td>
</tr>
</tbody>
</table>

The asphalt paving sections were determined using the Caltrans design method. Careful inspection is recommended to verify that the recommended thicknesses or greater are achieved, and that proper construction procedures are followed.

Portland Cement Concrete Paving

Portland cement concrete paving sections were determined in accordance with procedures developed by the Portland Cement Association. Concrete paving sections for a range of Traffic Indices are presented in the following table. We have assumed that the
Portland cement concrete will have a compressive strength of at least 3,000 pounds per square inch.

<table>
<thead>
<tr>
<th>Assumed Traffic Index</th>
<th>Concrete Paving (Inches)</th>
<th>Base Course (Inches)</th>
</tr>
</thead>
<tbody>
<tr>
<td>4 (Automobile Parking)</td>
<td>8</td>
<td>4</td>
</tr>
<tr>
<td>5 (Driveways with Light Truck Traffic)</td>
<td>8</td>
<td>4</td>
</tr>
<tr>
<td>6 (Driveways with Heavy Truck Traffic)</td>
<td>8½</td>
<td>4</td>
</tr>
</tbody>
</table>

The paving should be provided with expansion joints at regular intervals no more than 15 feet in each direction. Load transfer devices, such as dowels or keys, are recommended at joints in the paving to reduce possible offsets. The paving sections in the above table have been developed based on the strength of unreinforced concrete. Steel reinforcing may be added to the paving to reduce cracking and to prolong the life of the paving.

**Base Course**

The base course for both asphaltic and concrete paving should meet the specifications for Class 2 Aggregate Base as defined in Section 26 of the latest edition of the State of California, Department of Transportation, Standard Specifications. Alternatively, the base course could meet the specifications for untreated base as defined in Section 200-2 of the latest edition of the Standard Specifications for Public Works Construction. The base course should be compacted to at least 95%.

**GRADING**

As previously stated, the existing inspected fill soils were not compacted to current standards; however, in our opinion, these soils will be adequate for support of the proposed soccer field, minor retaining walls (supported on conventional spread/continuous footings), pavement, and curb and gutter.

All required fill should be uniformly well compacted and observed and tested during placement. The on-site soils may be used in any required fill, except as noted herein. The grades should be sloped to prevent ponding of water.

**Site Preparation**

After the site is cleared, the exposed fill soils should be observed and proof-rolled to identify any expansive or soft soils or other unsuitable deposits that require removal. Trench bottoms should also be observed for the removal of soft/unsuitable deposits. Next, the exposed soils should be scarified to a depth of 6 inches, brought to near-optimum moisture content, and rolled with appropriate compaction equipment. At least the upper 6 inches of the exposed soils, including trench bottoms, should be compacted to at least 90% of the maximum dry density obtainable by the ASTM Designation D1557 method of compaction.
Excavations and Temporary Slopes

Where excavations are deeper than about 4 feet, the sides of the excavations should be
sloped back at 1:1 (horizontal to vertical) or shored for safety. We would be pleased to
present data for design of shoring if required.

Excavations should be observed by personnel of our firm so that any necessary
modifications based on variations in the soil conditions can be made. All applicable safety
requirements and regulations, including OSHA regulations, should be met.

Compaction

Any required fill should be placed in loose lifts not more than 8-inches-thick and
compacted. The fill should be compacted to at least 90% of the maximum density
obtainable by the ASTM Designation D1557 method of compaction. The moisture content
of the on-site sandy soils at the time of compaction should vary no more than 2% below or
above optimum moisture content. The moisture content of the on-site clayey soils at the
time of compaction should be between 2% and 4% above optimum moisture content.

Trench Backfill

All required trench backfill should be mechanically compacted in layers; flooding or jetting
should not be permitted. Proper compaction of backfill will be necessary to minimize
settlement of the backfill and to reduce settlement of overlying slabs and paving. Bedding
and pipe zone backfill material should have a minimum sand equivalent of 30 as
determined by ASTM D2419 and should be compacted by vibration. Backfill should be
compacted to at least 90% of the maximum dry density obtainable by the ASTM
Designation D1557 method of compaction. The on-site soils may be used in the
compacted backfill, except as noted above. As an alternative, a sand-cement slurry,
consisting of 1½ sacks of cement per cubic yard, may be used.

Material for Fill

The on-site soils, less any debris or organic matter, may be used in required fills, excepts
as noted herein. Cobbles larger than 4 inches in diameter should not be used in the fill.
Any required import material should consist of relatively non-expansive soils with an
expansion index of less than 35. The imported materials should contain sufficient fines
(binder material) so as to be relatively impermeable and result in a stable subgrade when
compacted. All proposed import materials should be approved by our personnel prior to
being placed at the site.
GEOTECHNICAL OBSERVATION

The reworking of the upper soils and the compaction of all required fill should be observed and tested during placement by a representative of our firm. This representative should perform at least the following duties:

- Observe the clearing and grubbing operations for proper removal of all unsuitable materials.
- Observe the exposed subgrade in areas to receive fill and in areas where excavation has resulted in the desired finished subgrade. The representative should also observe proofrolling and delineation of areas requiring overexcavation.
- Evaluate the suitability of on-site and import soils for fill placement; collect and submit soil samples for required or recommended laboratory testing where necessary.
- Observe the fill and backfill for uniformity during placement.
- Test backfill for field density and compaction to determine the percentage of compaction achieved during backfill placement.

The governmental agencies having jurisdiction over the project should be notified prior to commencement of grading so that the necessary grading permits can be obtained and arrangements can be made for required inspection(s). The contractor should be familiar with the inspection requirements of the reviewing agencies.

BASIS FOR RECOMMENDATIONS

The recommendations provided in this report are based upon our understanding of the described project information and on our interpretation of the data collected during our previous subsurface explorations. We have made our recommendations based upon experience with similar subsurface conditions under similar loading conditions. The recommendations apply to the specific project discussed in this report; therefore, any change in the project features, location, or the site grades should be provided to us so that we can review our conclusions and recommendations and make any necessary modifications.

The recommendations provided in this report are also based upon the assumption that the necessary geotechnical observations and testing during construction will be performed by representatives of our firm. The field observation services are considered a continuation of the geotechnical investigation and essential to verify that the actual soil conditions are as expected. This also provides for the procedure whereby the client can be advised of unexpected or changed conditions that would require modifications of our original recommendations. In addition, the presence of our representative at the site provides the client with an independent professional opinion regarding the geotechnically related construction procedures. If another firm is retained for the geotechnical observation
services, our professional responsibility and liability would be limited to the extent that we would not be the geotechnical engineer of record.

It has been a pleasure to be of professional service to you. Please contact us if you have any questions or if we can be of further assistance.

Sincerely,

AMEC Environment & Infrastructure, Inc.

Mark A. Murphy
Associate Engineer - Geotechnical
Project Manager

Perry A. Maljian
Principal Engineer - Geotechnical

(5 copies submitted)

Attachments: Figure 1, Vicinity Map
Figure 2, Plot Plan
Appendix, Previous Explorations and Laboratory Test Results