

PROJECT MANUAL FOR

**MERCED COLLEGE
HERMIONE ISAKOW PLAZA**

PATH OF TRAVEL IMPROVEMENTS

MERCED COLLEGE
3600 M. STREET
MERCED, CA 95348-2898

PREPARED BY:

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ARCHITECT:

CIVIL ENGINEER:

LANDSCAPE ARCHITECT:

ELECTRICAL ENGINEER:

**FOR BIDDING ONLY. DOCUMENT IS A
CONDENSED SET OF THE ORIGINAL DSA
APPROVED SPECIFICATIONS WITH SECTIONS
NOT PERTAINING TO THE CURRENT PATH OF
TRAVEL IMPROVEMENT PROJECT REMOVED.
THE FULL SET WILL BE PROVIDED TO THE
CONTRACTOR FOLLOWING AWARD.**

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TO BE PROVIDED BY DISTRICT

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SECTION 002213.03 – SUPPLEMENTARY INSTRUCTIONS TO BIDDERS

PART 1 - GENERAL

1.1 SUMMARY

- A. This Section includes the following:
 - 1. Supplementary Instructions to Bidders consisting of procedures and conditions for the use of documents of various types and formats for bidding of this project.
- B. Related Sections: The following Project Manual Sections contain requirements that relate to this section:
 - 1. ALL DIVISION 00 SPECIFICATION SECTIONS.
 - 2. ALL DIVISION 01 SPECIFICATION SECTIONS.
 - 3. ALL SPECIFICATION SECTIONS IN THE FACILITY SERVICES SUBGROUP.
 - 4. ALL SPECIFICATION SECTIONS IN THE SITE AND INFRASTRUCTURE SUBGROUP.

1.2 DEFINITIONS

- A. Hard Copy Format: Documents printed on paper medium.
- B. Electronic Image Format: Electronic Files consisting of Bid Documents in an image format such as PDF's, TIFF's and etc. These files are to be READ ONLY.

1.3 SUBMITTALS

- A. Submit in accordance with the following:
 - 1. Bidder's Usage Agreement for Bid Documents:
 - a. Hard Copy Format Form.
 - b. Hard Copy and Electronic Image Format Form.
 - 2. Bidder's Usage Agreement for Partial Documents.
 - a. Partial Bid Documents Form.

PART 2 - PRODUCTS
(NOT APPLICABLE)

PART 3 - EXECUTION

3.1 SCHEDULES:

- A. BIDDER'S USAGE AGREEMENT FOR BID DOCUMENTS:

SUPPLEMENTARY
INSTRUCTIONS TO BIDDERS

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1. HARD COPY FORMAT: When the Bid Documents are being issued in a printed medium, the HARD COPY FORMAT FORM shall be used.
 - a. This form shall be submitted and signed as a condition of receiving Bid Documents.
 2. HARD COPY AND ELECTRONIC IMAGE FORMAT: When the Bid Documents are being issued electronically, the HARD COPY AND ELECTRONIC IMAGE FORMAT FORM shall be used.
 - a. This form shall be submitted and signed as a condition of receiving Bid Documents.
- B. BIDDER'S USAGE AGREEMENT FOR PARTIAL BID DOCUMENTS.
1. When the Bidder is requesting additional documents which are part of the Bid Documents, the PARTIAL BID DOCUMENTS FORM shall be used.
 - a. This form shall be submitted and signed as a condition of receiving Partial Bid Documents.

3.2 BIDDER'S USAGE AGREEMENT FOR BID DOCUMENTS HARD COPY FORMAT

Project Name: _____

DA Project No.: _____

I, _____, as duly authorized agent of _____ ("Bidder") as prospective bidder on the above named project ("Project") is requesting a copy of the project BID DOCUMENTS (bidding requirements, contract requirements, specifications, contract drawings, resource drawings if any, and addenda to date).

- A. Bidder is being provided copies of Bid Documents for the Project in a Hard Copy Format, acknowledges that Bid Documents are being provided as the official record set of documents issued for bidding. It is the Bidder's responsibility to review and obtain all information from the Bid Documents necessary for a complete and accurate bid. This request is subject to the following conditions, which the Bidder hereby agrees to abide by:
- B. Bidder shall pay a refundable deposit for the Bid Documents in the amount of \$_____ per set. In the event the Bidder is not the successful bidder, the bidder agrees to return all Bid Documents within 15 calendar days after the bid date. If the Bid Documents are not returned within 15 calendar days after the bid date, the Bidder will forfeit the deposit.
- C. Bidder acknowledges that these Bid Documents will be re-issued as Construction Documents following the bid. The Bidder agrees to return all Bid Documents in "Good Condition" with all the sheets unmarked and in their original order. The returned Bid Documents will be reviewed and the condition of the Bid Documents will be determined. If the Bid Documents are determined to be in "Good Condition", the Bidder's Deposit will be returned.
- D. In the event that the Bid Documents are returned and are not in "Good Condition", the Bidder understands that the Architect and Architect's Consultants will incur certain costs in replacement of missing items and to repair the Bid Documents to their original condition, in order to be issued as Construction Documents. The bidder agrees to pay the Design Team a service fee of \$105.00 an hour (with a two-hour minimum of \$210.00). The service fee will be deducted from the Bidder's deposit, and the remainder refunded to the Bidder.
- E. Bidder understands and agrees the Bid Documents are instruments of Architect's and Architect's Consultants' ("**Design Team**") professional service and are intended for one-time use by Bidder in the bidding of the Project. All information contained in the Bid Documents are and shall remain the property of the Design Team, who is deemed to be the author of the drawings and data, and the Design Team shall retain all common law, statutory law, and all other rights, including copyrights, with respect to Bidder.
- F. The Bidder shall indemnify and hold harmless, the Design Team, its officers, directors, employees or subcontractors, to the fullest extent permitted by law, against all claims, liabilities, losses, damages, and costs, including but not limited to attorney's fees and defense costs arising out of or resulting from Bidder or any other person or entity that gains information from the Bid Documents or copies any part of the Bid Documents, or uses the Bid Documents or copies any part of the Bid Documents, for purposes other than the bidding of this project, and will be liable to the Design Team for fees equal to the fees paid by the client pursuant to developing the documents for this project.

SUPPLEMENTARY
INSTRUCTIONS TO BIDDERS

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DARDEN ARCHITECTS, INC.

Number of Sets Requested: _____

Print Name (Bidder)

Title

Signature

Date:

SUPPLEMENTARY
INSTRUCTIONS TO BIDDERS

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3.3 BIDDER'S USAGE AGREEMENT FOR BID DOCUMENTS HARD COPY AND
ELECTRONIC IMAGE FORMAT

Project Name: _____

DA Project No.: _____

I, _____, as duly authorized agent of
_____ ("Bidder") as prospective bidder on the above named
project ("Project") is requesting a copy of the project BID DOCUMENTS (bidding requirements, contract
requirements, specifications, contract drawings, resource drawings if any, and addenda to date).

- A. Bidder is being provided copies of Bid Documents for the Project, which consists of two parts. One part of the Bid Documents is in the Hard Copy Format ("HCF") and the other part is in the Electronic Image Format ("EIF") on CD-ROM. Bidder acknowledges that HCF Documents and the EIF Documents are being provided as the official record set of documents issued for bidding. It is the Bidder's responsibility to review and obtain all information from both the HCF and the EIF documents necessary for a complete and accurate bid. This request is subject to the following conditions, which the Bidder hereby agrees to abide by:
- B. Bidder shall pay a non-refundable deposit for the Bid Documents in the amount of \$ _____. In the event the Bidder is not the successful bidder, the bidder agrees to permanently dispose of the HCF and EIF on the Project CD-ROM.
- C. Bidder acknowledges that neither the EIF documents nor the CD-ROM will be updated by the Design Team. The CD-ROM contains the original documents and will not be updated regardless of when Bidder obtains the CD-ROM. Any changes to the contract documents will be issued as a separate document.
- D. Bidder is further warned that while the EIF information appears to be extremely accurate, this apparent accuracy is an artifact of the techniques used to generate it and is no way intended to imply actual accuracy. The Bidder acknowledges and takes full responsibility for the accuracy, correctness of measurements, areas, inventories derived, conclusions drawn, and information extracted from the EIF documents.
- E. Bidder understands and agrees the HCF and EIF documents are instruments of Architect's and Architect's Consultants' ("**Design Team**") professional service and are intended for one-time use by Bidder in the bidding of the Project. All HCF and EIF documents are and shall remain the property of the Design Team, who is deemed to be the author of the drawings and data, and the Design Team shall retain all common law, statutory law, and all other rights, including copyrights, with respect to Bidder.
- F. The Bidder shall indemnify and hold harmless, the Design Team, its officers, directors, employees or subcontractors, to the fullest extent permitted by law, against all claims, liabilities, losses, damages, and costs, including but not limited to attorney's fees and defense costs arising out of or resulting from Bidder or any other person or entity that gains information from the Bid Documents or copies any part of the Bid Documents, or uses the Bid Documents or copies any part of the Bid Documents, for purposes other than the bidding of this project, and will be liable to the Design Team for fees equal to the fees paid by the client pursuant to developing the documents for this project.

SUPPLEMENTARY
INSTRUCTIONS TO BIDDERS

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DARDEN ARCHITECTS, INC.

Description of the HCF Documents and the EIF Documents on CD-ROM, provided:

Print Name (Bidder)

Title

Signature

Date:

3.4 BIDDER'S USAGE AGREEMENT FOR PARTIAL BID DOCUMENTS

Project Name: _____

DA Project No.: _____

I, _____, as duly authorized agent of _____ ("Bidder") as prospective bidder on the above named project ("Project"). The Bidder acknowledge having received at least one (1) complete set of the Bid Documents for the subject project and all Addenda issued to date in either Hard Copy Format ("HCF") and/or an Electronic Image Format ("EIF").

- A. The Bidder is requesting partial copies of the Bid Documents ("Partial Documents") in the format originally issued and that was prepared by the Architect and/or Architect's Consultants ("Design Team") on the subject Project, so that the information therein may be utilized in the Bidder's work on the same project. The Partial Documents are strictly intended for the Bidder's convenience and are not recognized as part of the official record set of Bid Documents issued for bidding. This request is subject to the following conditions, which the Bidder hereby agrees to abide by:
- B. The Bidder shall pay for all costs in reproducing the requested Partial Documents directly to the Printers. In the event that the Bidder is not the successful bidder, the Bidder agrees to permanently dispose of the Partial Documents.
- C. The Bidder recognizes that the value of the Partial Documents far exceeds the cost of printing. The Bidder further agrees that the Bidder will make no other copies of the Partial Documents. Any copying, and/or reuse of the Partial Documents without written authorization of Darden Architects, Inc. is prohibited.
- D. The Bidder understands that the accuracy of the information is an artifact of the techniques used to generate it and is in no way intended to imply actual accuracy. The Bidder agrees that by using these Partial Documents, the Bidder is in no way relieved of the responsibility to review and obtain all information from the complete set of the Bid Documents necessary for a complete and accurate bid.
- E. The Bidder understands and agrees to that any documents provided are instruments of the professional service by the Design Team and are intended for one-time use solely in the bidding of this Project. They shall remain the property of the Architect or the Architect's Consultants, who is deemed to be the author of the documents and who shall retain all common law, statutory law, and all other rights, including copyrights, with respect to the Bidder.
- F. The Bidder shall indemnify and hold harmless, the Design Team, its officers, directors, employees or subcontractors, to the fullest extent permitted by law, against all claims, liabilities, losses, damages, and costs, including but not limited to attorney's fees and defense costs arising out of or resulting from Bidder or any other person or entity that gains information from the Partial Documents or copies the Partial Documents, or uses the Partial Documents or copies the Partial Documents, for purposes other than the bidding of this project, and will be liable to Design Team for fees equal to the fees paid by the client pursuant to developing the documents for this project.

SUPPLEMENTARY
INSTRUCTIONS TO BIDDERS

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- G. In the event that the Bidder is a successful bidder, the Bidder agrees that all Bid Documents issued to the Bidder, and Partial Documents obtained by the Bidder, along with any other documents utilized by the Bidder in preparing the bid, will be included in the Escrow Bid Documents when required by the General Conditions. Any and all documents prepared and issued by the Design Team, which are included as part of the Escrow Bid Documents, will be returned to Darden Architects, Inc. at the close of escrow.

DARDEN ARCHITECTS, INC.

Description of the requested documents:

Print Name, (Bidder)

Title

Signature

Dated:

END OF SECTION

SECTION 011113 – SUMMARY OF WORK

PART 1 - GENERAL

1.1 SUMMARY

PATH OF TRAVEL IMPROVEMENTS

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- A. Work included: Construction of the work for Merced College Hermione Isakow Plaza, Merced, California. The work is defined as all material, labor, equipment and services necessary to do all work shown on the drawings and called for in the Specifications. The Work shall be as indicated on the Contract Documents.
- B. This Section includes the following:
1. Summarizes the Work of the Contract.
 2. Establishes requirements governing the Work.
 3. Identifies the Work that will be performed under separate contracts and the coordination.
 4. Project Site access.
 5. Restrictions under which the project will be constructed.
- C. Related Sections: The following Project Manual Sections contain requirements that relate to this section:
1. ALL DIVISION 00 SPECIFICATION SECTIONS.
 2. ALL DIVISION 01 SPECIFICATION SECTIONS.
 3. ALL SPECIFICATION SECTIONS IN THE FACILITY CONSTRUCTION SUBGROUP.
 4. ALL SPECIFICATION SECTIONS IN THE FACILITY SERVICES SUBGROUP.
 5. ALL SPECIFICATION SECTIONS IN THE SITE AND INFRASTRUCTURE SUBGROUP.

1.2 DEFINITIONS

- A. The words "OWNER" and "DISTRICT" are synonymous and interchangeable, when used throughout this Project Manual.

1.3 SUBMITTALS

- A. Submit in accordance with Specification Section - SUBMITTAL PROCEDURES.
1. Quality Assurance/Control Submittals:
 - a. Certificates:
 - 1) Submit three (3) copies of certificates indicating compliance with the Asbestos Hazard Emergency Regulations Act.

1.4 QUALITY ASSURANCE

- A. Qualifications:
1. Contractor's Qualifications:
 - a. Contractor shall have experience and have successfully completed three (3) projects of similar scope and size to that indicated for this project.

- b. Contractor shall have demonstrated that they have the resources to perform all of the requirements of this project.
- B. Regulatory Requirements:
 - 1. Comply with codes, ordinances, rules, regulations, orders and other legal requirements of public authorities which bear on performance of Work, and in accordance with Specification Section - REGULATORY REQUIREMENTS:
 - a. CARB Materials and equipment used for this Project shall comply with the current applicable regulations of the California Air Resources Board (CARB) and the Environmental Protection Agency (EPA), in the area where the Project is located.
- C. Certifications:
 - 1. The Contractor shall certify in writing that no materials containing Asbestos are incorporated in the work, in accordance with the Asbestos Hazard Emergency Regulations Act.
- D. Contractor's Duties:
 - 1. Except as specifically noted, provide and pay for:
 - a. Labor, material and equipment.
 - b. Tools, construction equipment and machinery.
 - c. Heat and utilities required for construction. See Specification Section - TEMPORARY FACILITIES AND CONTROLS.
 - d. Other facilities and services necessary for proper execution and completion of Work.
 - 2. Pay legally required sales, consumer and use taxes.
 - 3. Secure and pay for all site specific as necessary for proper execution and completion of Work.
 - a. Licenses.
 - b. Permits and Fees.
 - c. Government Fees.
 - d. Royalties.
 - 4. Give required notices.
 - 5. Promptly submit written notice to Architect of observed variance.
 - 6. Enforce strict discipline and good order among employees. Do not employ on Work:
 - a. Unfit persons.
 - b. Persons not skilled in assigned task.

1.5 WORK UNDER OTHER CONTRACTS

- A. General Requirements:
 - 1. Work under separate contracts will occur throughout the duration of the project. The work being installed under separate contracts will occur around adjacent to the Contract project site.
 - 2. Contractor shall coordinate its work with the work under separate Contracts and shall cooperate with the Contractors of these separate Contracts as they occur.
 - 3. Should the Contractor damage and/or otherwise alter work installed under separate contracts, the Contractor is responsible for the repair and/or correction of installed work.
 - 4. Prior to the installation of the Work, coordinate the work installed or to be installed by separate contracts relative to this project scope of work.

B. Work Under Separate Contracts by Others:

1. General: Cooperate fully with separate contractors so work on those contracts may be carried out smoothly, without interfering with or delaying work under this Contract or other contracts. Coordinate the work of this Contract with work performed under separate contracts.
2. Concurrent Work: Owner will award a separate contract for the fabrication and installation of the Baobab Tree Sculpture. The installation of the sculpture will be conducted simultaneously with work under this Contract.
 - a. The approximate boundary needed for the Baobab Tree Sculpture Artist to access and install the sculpture is as indicated in the drawings.
 - 1) Contractor shall provide unrestricted access and use within the boundary for (5) consecutive Working Days to allow for the installation of the sculpture.
 - a) Duration shall start no earlier than (10) Calendar Days following the date the Sculpture Housekeeping Pad concrete is poured.
 - b) Contractor shall coordinate with the Owner and the Owner's Baobab Tree Sculpture Artist to confirm the schedule for the sculpture installation. Confirmation of schedule by all parties shall occur no later than (14) Calendar Days prior to the first day of the sculpture installation unless otherwise agreed upon.
 - 2) Clearing and Demolition.
 - 3) Rough Grading.
 - 4) Electrical conduit under and through the Sculpture Housekeeping Pad.
 - 5) All work as needed to fully install the Sculpture Housekeeping Pad and related components so the pad is ready to receive the sculpture.
 - b. The following Improvements are to be complete prior to the installation of the sculpture. Further improvements, unless noted otherwise, within the approximate boundary, prior to, or during the installation of the sculpture will need to be verified with the Owner and the Owner's Baobab Tree Sculpture Artist prior to installation.
 - 1) Clearing and Demolition.
 - 2) Rough Grading.
 - 3) Electrical conduit under and through the Sculpture Housekeeping Pad.
 - 4) All work as needed to fully install the Sculpture Housekeeping Pad and related components so the pad is ready to receive the sculpture.
 - c. The following Improvements within the approximate boundary are optional to be complete prior to the installation of the sculpture
 - 1) Circular Concrete Planter Wall, excluding the fabricated steel ring above the wall.

1.6 PROJECT CONDITIONS OR SITE CONDITIONS

A. Access to Site:

1. General: Contractor shall have full use of Project site for construction operations during construction period. Contractor's use of Project site is limited only by Owner's right to perform work or to retain other contractors on portions of the Project.
2. Contractor shall be responsible for coordinating access to and from the site throughout the duration of the project. Access to and from the site may vary, based upon timing and duration of separate contracts.

B. Contractor Use of Premises:

1. Confine operations at sites to areas permitted by:
 - a. Laws.
 - b. Ordinances.
 - c. Permits.
 - d. Contract Documents.

2. Do not unreasonably encumber site with materials or equipment.
3. Assume full responsibility for protection and safekeeping of Contractor's and Owner's material stored on premises, and keep the site and building secure at all times.
4. Obtain and pay for use of additional storage Work areas needed for operations.
5. Limit use of Site Work and storage.

1.7 SCHEDULING

- A. The Work of this Project will be constructed under multiple contracts.
 1. It is anticipated that the start of construction will be around the middle of October 2022 and be completed around the middle of December 2022.

PART 2 - PRODUCTS

NOT APPLICABLE

PART 3 - EXECUTION

NOT APPLICABLE

END OF SECTION

SECTION 012300 – ALTERNATES

PART 1 - GENERAL

1.1 SUMMARY

- A. This Section includes the following:
 - 1. Provide all material, labor, equipment and services necessary to completely install or remove all materials, accessories and other related items necessary to add or delete from the Project as indicated by the alternates in the Contract Documents.
 - a. Any services such as utilities that are meant to pass thru the Alternate areas that serve other areas not involved shall be maintained as part of the Base Bid whether indicated or not.
- B. Related Sections: The following Project Manual Sections contain requirements that relate to this section:
 - 1. ALL DIVISION 00 SPECIFICATION SECTIONS.
 - 2. ALL DIVISION 01 SPECIFICATION SECTIONS.
 - 3. ALL SPECIFICATION SECTIONS IN THE FACILITY CONSTRUCTION SUBGROUP.
 - 4. ALL SPECIFICATION SECTIONS IN THE FACILITY SERVICES SUBGROUP.
 - 5. ALL SPECIFICATION SECTIONS IN THE SITE AND INFRASTRUCTURE SUBGROUP.

1.2 DEFINITIONS

- A. Alternate: An amount proposed by bidders and stated on the BID FORM for certain work defined in the Bidding Requirements that may be added to or deducted from the Base Bid amount if the Owner decides to accept a corresponding change either in the amount of construction to be completed or in the products, materials, equipment, systems, or installation methods described in the Contract Documents.
 - 1. The cost or credit for each alternate is the net addition to or deduction from the Contract Sum to incorporate alternate into the work. No other adjustments are made to the Contract Sum.

1.3 SUBMITTALS

- A. Submit in accordance with Specification Section - SUBMITTAL PROCEDURES:
 - 1. Quality Assurance/Control Submittals:
 - a. Notification Letter:
 - 1) Submit three (3) copies of Notification Letter to all concerned on the status of all ALTERNATES.

1.4 QUALITY ASSURANCE

- A. Procedures:

ALTERNATES

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1. Coordination: Modify or adjust affected adjacent work as necessary to completely integrate work of the alternate into the Project.
 - a. Include as part of each alternate, miscellaneous devices, accessory objects, and similar items incidental to or required for a complete installation whether or not indicated as part of alternate.
 - b. Provide Lump Sum Price (and all itemized prices) for construction of the Base Bid and each Alternate Bid on the BID FORM.
2. Notification: Immediately following award of the Contract, notify each party involved, in writing, of the status of each alternate. Indicate if alternates have been accepted, rejected, or deferred for later consideration. Include a complete description of negotiated modifications to alternates.
3. Execute accepted alternate under the same conditions as other work of the Contract.
4. Schedule: A schedule of Alternates is included at the end of this Section.

PART 2 - PRODUCTS

NOT APPLICABLE

PART 3 - EXECUTION

3.1 SCHEDULE OF ALTERNATES

- A. General: All Alternate descriptions are general in nature. Refer to the contract drawings for specific scope of work.

- 01
- B. ALTERNATE BID NO. 1: Additional Site Improvement Area.
1. Alternate includes demolition and new improvements at the South East area of the Site as identified in the drawings.
- C. ALTERNATE BID NO.2: Synthetic Turf Islands.
1. Alternate includes (2) synthetic turf islands and their 6" wide perimeter concrete mowstrips.
- D. ALTERNATE BID NO. 3: Decorative Perforated Screen Wall Assembly.
1. Alternate includes all components of the assembly including steel perforated screen, steel screen base ring, and ring anchors & anchor plates.

END OF SECTION

SECTION 012500 – SUBSTITUTION PROCEDURES

PART 1 - GENERAL

1.1 SUMMARY

- A. This Section includes the following:
1. Work that is substituted for Work specified in DIVISIONS 02 through 49 shall meet the requirements of this Section.
 2. Provide all material, labor, equipment and services necessary to completely install all approved substituted materials, accessories and other related items necessary to complete the Project as indicated by the Contract Documents.
 3. See the INSTRUCTIONS TO BIDDERS or the GENERAL CONDITIONS for any time limits set for the submittal of substitutions.
 4. Substitutions can be requested in two ways: a. "Prior to Bid Opening", and b. "After Award of the Contract":
 - a. "Prior to Bid Opening": The Contractor or Bidder must insure that proposed substitutions of materials by the Contractor or Bidder are submitted to the Architect's office no later than fourteen (14) calendar days prior to the Bid Opening for review and possible approval of any equipment or materials thought to be equal to or better than those specified in the drawings or specifications. An Addendum will be issued no later than three (3) calendar days prior to Bid Opening including all equipment and materials deemed equivalent to those specified and approved by the Architect.
 - b. "After Award of the Contract": In accordance with the provisions of Section 3400 of the California Public Contract Code, the Contractor awarded the Contract will be provided a period of thirty-five (35) calendar days after the award of the Contract for submission of data substantiating a request for a substitution of "an equal" item or items.
- B. Related Sections: The following Project Manual Sections contain requirements that relate to this section:
1. ALL DIVISION 00 SPECIFICATION SECTIONS.
 2. ALL DIVISION 01 SPECIFICATION SECTIONS.
 3. ALL SPECIFICATION SECTIONS IN THE FACILITY CONSTRUCTION SUBGROUP.
 4. ALL SPECIFICATION SECTIONS IN THE FACILITY SERVICES SUBGROUP.
 5. ALL SPECIFICATION SECTIONS IN THE SITE AND INFRASTRUCTURE SUBGROUP.

1.2 DEFINITIONS

- A. Claimant: Bidder, Sub-Contractor, Contractor, Distributor, Supplier, Manufacturer or other entity that is submitting a claim for a substitution.

- B. Substitutions: Substitutions are not a part of the Submittal Process described in Specification Section – SUBMITTAL PROCEDURES. Substitution Requests by a claimant must be reviewed and approved by the Architect before any submittal will be accepted. It is the claimant's responsibility to provide clear and concise documentation to expedite the Architect's review. If the Substitution Request requires re-submission(s) due to the Claimant's inadequate documentation, no time extension will be allowed.
- C. "Or Equal" / "Or Approved Equivalent": Claimant shall request a substitution in accordance with this Specification Section – SUBSTITUTION PROCEDURES.
- D. The Project Manual employs the following methods of specifying products. Claimant shall conform to the directives below for this Project:
1. Product, system or design specified only by reference standards:
 - a. Select any product, system or design meeting reference standards.
 2. Product, system or design specified by naming several products, systems, designs and/or manufacturers:
 - a. Select any product, system, design and/or manufacturer named.
 3. Product, system or design specified by naming several products, systems and/or manufacturers and reference standards:
 - a. Products, systems, designs and/or manufacturer names indicate products, systems, designs and/or manufacturers that (in the Architect's opinion) meets the reference standards.
 - b. Select any of the named manufacturer's products, systems or designs meeting the reference standards.
 4. Product, system or design specified by naming one or more products, systems, designs and stating "or equal to," "or approved equivalent," with the specified products, systems or designs:
 - a. Select product, system or design specified, "or approved equivalent."
 5. Product, system or design specified by naming only one product, system or design:
 - a. Select product, system or design specified, "or approved equivalent."
 6. Product, system or design specified by naming only one product, system or design and followed by the statement "DISTRICT STANDARD – NO SUBSTITUTIONS":
 - a. Provide product, system or design specified. No substitutions allowed.
- E. Cost to Claimant for review of Substitution Request:
1. Each review of a Substitution Request by the Architect and/or it's Consultant(s) will be billed to the Claimant at an hourly rate of **\$212.00** an hour, two hour minimum for each review, whether approved or rejected.
 - a. Waiver of review fees:
 - 1) When the product has been discontinued or is unavailable.
 - a) EXCEPTION: Where the claimant has failed to order in a timely manner and waits until the last minute, no consideration of the waiver of fees will be allowed; no time extensions will be allowed.
 - 2) When the Owner has requested a substitution.

1.3 SUBMITTALS

- A. Submit in accordance with Specification Section - INSTRUCTIONS TO BIDDERS:

B. Content of Request:

1. Check made payable to DARDEN ARCHITECTS, INC. for the minimum two hour review period for **\$424.00**, non-refundable.
 - a. When additional time is required to review a substitution request beyond the first two hours, the Architect or its consultants will bill the claimant for the time expended in the review process.
2. Complete the attached **SUBSTITUTION REQUEST FORM** substantiating compliance of proposed substitution with Contract Documents. **NO OTHER FORMS WILL BE ACCEPTED.**
3. Attach to the SUBSTITUTION REQUEST FORM an itemized comparison of proposed substitution with product, system or design specified.
4. For products or systems, attach to the SUBSTITUTION REQUEST FORM:
 - a. Product, system or design identification, including manufacturer's name and address.
5. Manufacturer's product information: **MUST BE HIGHLIGHTED AND PROJECT SPECIFIC. SUBMITTALS NOT ADEQUATELY MARKED-UP ACCORDING TO PROJECT SPECIFICS WILL BE REJECTED:**
 - a. Literature including product, system or design description, performance and test data and reference standards.
 - b. Samples.
 - c. Warranties.
6. For construction methods, attach to the SUBSTITUTION REQUEST FORM:
 - a. Detailed description of proposed methods.
 - b. Drawings illustrating methods.

C. Submit three (3) copies of Substitution Request including all attached data.

1.4 QUALITY ASSURANCE

A. Qualifications:

1. Product, system or design qualifications:
 - a. In making a request for substitution, Claimant certifies that:
 - 1) Claimant has personally investigated proposed product, system or design, and determined that it is equal or superior in all respects to that specified.
 - 2) Claimant shall provide the same guarantee or warranty for substitution as for product, system or design specified.
 - 3) Claimant shall coordinate installation of accepted substitution into the Project, making such changes as may be required for the Project to be complete in all respects.
 - 4) Claimant waives all claims for additional costs related to substitution which subsequently become apparent for integrating the substituted product, system or design into the Project.
 - 5) Claimant waives all claims for time extension(s) due to improper documentation requiring re-submission(s) of a Substitution Request Review.

B. Regulatory Requirements:

1. In accordance with Specification Section - REGULATORY REQUIREMENTS, and the following:

- a. Products (and installation standards), systems or methods used for this Project shall comply with CARB standards in effect at the Project Site, and at the time of installation.
- C. Acceptance of Substitutions:
 - 1. Procedures:
 - a. The Contract is based on products, systems or designs described in the Contract Documents.
 - b. Architect will consider proposals submitted in accordance with time limits set within the Specification Section - INSTRUCTIONS TO BIDDERS.
 - c. Architect is solely responsible for judging the acceptance of substitutions.
 - 1) Acceptance of a substitution does not waive the product manufacturer's responsibility for product liability. The Architect will judge (based on the substitution submission data) for function and use – product liability shall remain the responsibility of the product manufacturer.
 - d. Substitute products, systems or designs shall not be used unless the substitutions have been specifically approved for this Project by the Architect.
 - 1) Substitute products, systems or designs that are related to structural, fire and life safety or access compliance shall not be used unless such substitution have been specifically approved for this Project by the Architect and the appropriate authority having jurisdiction.
 - 2. Substitutions will not be considered if:
 - a. They are indicated or implied on product submittals in accordance with Specification Section - SUBMITTAL PROCEDURES. Substitutions are not Submittals, and must be reviewed and approved prior to being submitted as a Submittal.
 - b. Acceptance will require substantial revision of Contract Documents.
 - c. They are submitted after the date set for substitutions within this Contract, unless:
 - 1) The specified or drawing item that has been verified to be discontinued or is otherwise unavailable.
 - 2) The Owner proposes a cost savings for the product, system or method.
 - 3) The Owner proposes early occupancy, and the proposed substitution allows for that convenience.

PART 2 - PRODUCTS
NOT APPLICABLE

PART 3 - EXECUTION

3.1 SCHEDULES

- A. Substitution Request Form:
 - 1. See the form attached to the end of this section.
 - 2. The attached form will be reproduced (and sequentially numbered by the Contractor after the award of the Contract) by the Claimant for any and all proposed substitutions.
 - 3. **NO OTHER FORMS WILL BE ACCEPTED.**

(Attachment)
SUBSTITUTION REQUEST FORM

TO: DARDEN ARCHITECTS, INC. _____ Check attached for minimum review \$400.00.
 6790 N. West Avenue
 Fresno, CA 93711

CHECK APPROPRIATE LINE:

_____ Substitution Request Prior to Bid (During Bid Period)
 _____ Product or System Substitution
 _____ Design Change Substitution

_____ Substitution Request After Award of the Contract
 _____ Product or System Substitution
 _____ Design Change Substitution

The Contractor Awarded the Contract for this Project shall assign sequential Substitution Request # below.

Leave blank if submitted during the Bid Period.

SUBSTITUTION REQUEST # _____

WE HEREBY SUBMIT FOR YOUR CONSIDERATION THE FOLLOWING PRODUCT OR METHOD AS SUBSTITUTION FOR THE SPECIFIED OR DRAWING ITEM FOR THIS PROJECT:

PROJECT: _____

SPECIFIED ITEM: _____

Specification Section #	Page #	Paragraph #	Description
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OR

DRAWING ITEM: _____

Drawing #	Detail Cut #	Description
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PROPOSED CREDIT IF ANY: _____

PROPOSED SUBSTITUTION:

Attached data includes product description, specifications, drawings, photographs, performance and test data adequate for evaluation of the request; applicable portions of the data are clearly identified.

Attached data also includes a description of changes to the Contract Documents to which the proposed substitution will require for its proper installation.

The undersigned claimant certifies: (Modifications by the claimant to the following list is cause for automatic rejection without further review)

1. The proposed substitution does not affect dimensions shown on drawings or code requirements indicated.
2. The undersigned claimant shall compensate the Architect at a rate of **\$212.00** an hour, two hour minimum for each review (check for **\$424.00** must be attached to this form), for investigation and comments whether or not the request is approved for changes required to the building design, including engineering design, detailing, and construction costs caused by the requested substitution. The Architect is herein defined as any of those firms or individuals listed by reference on the Drawings, including all Consultants identified herein.
3. The proposed substitution will have no adverse affect on other trades, the construction schedule, or specified warranty requirements.
4. Maintenance and service parts will be locally available for the proposed substitution.
5. Attach information for a minimum of three projects where the substitution has been used locally within a 200 mile distance of this project, including names, addresses and telephone numbers of Owners who have accepted this product into their projects.
6. Attach all cost data with explanations if different from Specified or Drawing item. Include in that explanation a discussion on quality of proposed substitution and cost differential.
7. The undersigned claimant shall pay for any subsequent changes in incorporating the proposed substitution that were not apparent at the time of approval into the Work, including compensation to the Architect as described in item 2 above.

The undersigned Claimant(s) declares under penalty of perjury per the California Government Code Section 12650, et seq., that the claim of function, appearance and quality are equivalent or superior to the specified or drawing item, and further know and understand that submission for certification of a false claim may lead to fines, imprisonment and/or other severe legal consequences.

SUBMITTED BY CLAIMANT:

ADDITIONAL CLAIMANT SIGNATURE REQUIRED:

Signature_____

Firm_____

Address_____

Date_____

Telephone_____

**The Contractor or Construction Manager
if submitted after the Award:**

Signature_____

Firm_____

DESIGN CONSULTANT USE ONLY:

☐ Check Not Attached - Not Accepted

☐ Accepted

☐ Accepted as Noted

☐ Not Accepted

☐ Received Past Time Period Allowed by Public Contract Code #3400.

By _____ Date _____

Remarks_____

END OF SECTION

SECTION 012973 – SCHEDULE OF VALUES

PART 1 - GENERAL

1.1 SUMMARY

- A. This section includes the administrative and procedural requirements necessary to prepare and process the Schedule of Values, and Application for Payment.
- B. Related Sections: The following Project Manual Sections contain requirements that relate to this section:
 - 1. ALL DIVISION 00 SPECIFICATION SECTIONS.
 - 2. ALL DIVISION 01 SPECIFICATION SECTIONS.
 - 3. ALL SPECIFICATION SECTIONS IN THE FACILITY CONSTRUCTION SUBGROUP.
 - 4. ALL SPECIFICATION SECTIONS IN THE FACILITY SERVICES SUBGROUP.
 - 5. ALL SPECIFICATION SECTIONS IN THE SITE AND INFRASTRUCTURE SUBGROUP.

1.2 DEFINITIONS

- A. Schedule of Values: A statement furnished by the Contractor allocating portions of the Contract Sum to various portions of the Work. The statement shall be used as the basis for reviewing the Contractor's Application for Payment.

1.3 SUBMITTALS

- A. Submit the following in accordance with Specification Section - SUBMITTAL PROCEDURES.
 - 1. Schedule of Values.
 - a. Initial Schedule of Values.
 - b. Complete Schedule of Values.
 - c. Updated Schedule of Values.
 - 2. Application for Payment.
 - a. Application for Payment Forms.
 - b. Initial Application for Payment.
 - c. Progress of Work Application for Payment.
 - d. Substantial Completion Application for Payment.
 - e. Final Application for Payment

1.4 SCHEDULE OF VALUES

- A. Coordination: Coordinate preparation of the Schedule of Values with preparation of the Contractor's Construction Schedule.
 - 1. Correlate line items in the Schedule of Values with other required administrative forms and schedules, including, but not limited to, the following:

- a. Application for Payment forms with continuation sheets.
 - b. Submittals Schedule.
 - c. Items required to be indicated as separate activities in the Contractor's Construction Schedule.
2. Submit the Schedule of Values to Architect at the earliest possible date, but no later than 15 days prior to the date scheduled for submittal of the initial Application for Payment.
 - a. Revise Schedule as required by Architect's review.
 - b. Submit schedule in Hard Copy format and Electronic File Format via Compact Disk.
 - 1) Hard Copy Format: 8-1/2" x 11" minimum.
 - 2) Electronic Compact Disk Format: Microsoft®Excel (Current Version).
 - c. No payment will be made without the Architect's review and acceptance of the Schedule of Values.
 3. Sub-schedules for Separate Elements of Work: Provide sub-schedules showing values correlated with each separate element of the Work.
 - a. General Requirements: Detail cost breakdown of all cost items that are directly related to Division 00 Conditions of the Contract and Division 01 General Requirements.
 - b. Project Site Costs: Detailed cost breakdown of all cost items that are directly related to the Project Site.
 - 1) When the Project Site is of sufficient size to warrant, break the site costs down into areas of work compatible with the Contractor's Means and Methods for construction sequences.
- B. Format and Content: Use the Project Manual Table of Contents as a guide to establish line items for the Schedule of Values. Provide at least one line item for each Specification Section.
1. Identification: Include the following Project Identification on the Schedule of Values:
 - a. Project Name and Location.
 - b. Owner Name.
 - c. Architect's Project Number.
 - d. Contractor's Name and Address.
 - e. Submittal Date.
 2. Arrange the Schedule of Values in tabular form with separate columns to indicate the following for each item listed:
 - a. Construction Schedule Activity Identification.
 - b. Related Specification Section.
 - c. Description of the Work.
 - d. Subcontractor Name.
 - e. Manufacturer or Fabricator Name.
 - f. Supplier Name.
 - g. Change Orders:
 - 1) Detailed cost breakdown of all cost items that are directly related to the Project per Change Order.
 - h. Dollar Value for the following as a percentage of the Contract Sum:
 - 1) Labor.
 - 2) Materials.
 - 3) Equipment.

3. Provide breakdown of the Contract Sum that is compatible with the Contractor's Means and Methods for Construction in enough detail to facilitate continued evaluation of Application for Payment and Progress Reports. Coordinate with the Project Manual's Table of Contents. Provide multiple line items for principle subcontract amounts in excess of 1/2 of 1 percent of Contract Sum.
4. Round amounts to the nearest dollar. Totals shall equal the Contract Sum.
5. Provide a separate line-item for each part of the Work where Applications for Payment may include materials or equipment purchased or fabricated and stored, but not yet installed.
 - a. Differentiate between items stored On-Site and Off-Site.
 - 1) When stored Off-Site, include evidence of insurance or Bonded Warehousing.
6. Provide separate line-items in the Schedule of Values for initial cost of materials for each subsequent stage of completion and for the total installed value of that part of the Work.
7. Allowances: Provide a separate line-item in the schedule of values for each allowance.
 - a. Show line-item values of unit price allowances, as a product of the unit price, multiplied by measured quantity. Use information indicated in the Contract Documents to determine quantities.
8. Purchase Contracts: Provide separate item in the Schedule of Values for each Purchase Contract. Show line-item value of Purchase Contract. Indicate Owner payments or deposits, if any, and balance to be paid by the Contractor.
9. Each item in the Schedule of Values and Applications for Payment shall be complete. Include total cost and proportional share of general overhead and profit for each item.
 - a. Principle Subcontractor Costs: Provide total costs of principle subcontractors, whose work relates to the FACILITIES SERVICES SUBGROUP and SITE AND INFRASTRUCTURE SUBGROUP, excluding Contractor's overhead and profit.
 - 1) Total costs include proportional share of the principle subcontractors overhead and profit for each.
10. Temporary Facilities and other major cost items that are not direct cost of actual work-in-place shall be shown as separate line-items. Such items shall be, but not limited to, the following:
 - a. Performance and Labor and Material Bonds.
 - b. Field Supervision and Layout.
 - c. Temporary Facilities.
 - d. Project Closeout:
 - 1) Include separate line-items for Operation and Maintenance Manuals, Punch List Activities, Project Record Documents, and Demonstration and Training.
11. Schedule Updating: Update and submit the Schedule of Values before the next Application for Payment when Change Orders result in a change in the Contract Sum.
 - a. Separate Sheets for each Change Order shall be included and the form and content of each Change Order shall be in accordance with this specification section.

1.5 REQUEST FOR PAYMENTS

- A. Coordination: Coordinate the preparation of the Application for Payment with the preparation of the Schedule of Values.
 1. Entries shall match data on the Schedule of Values and Contractor's construction schedule. Use updated schedules if revisions were made.

2. Application for Payment Forms: Use forms approved by the Architect and Owner for Applications for Payment.
 - a. Submit for approval with initial submittal of Schedule of Values.
 3. Application Preparation: Complete every entry on form. Notarize and execute by a person authorized to sign legal documents on behalf of the Contractor. Project Inspector or Architect will return incomplete applications without action.
 4. Transmittal: Use signed and notarized original copies of each Application for Payment to Architect by a method ensuring receipt. One copy shall include Waivers of Lien and similar attachments if required.
- B. Format and Content: Use the Schedule of Values as a guide to establish line items for the Application for Payment.
1. Identification: Include the following Project Identification on the Application for Payment:
 - a. Project Name and Location.
 - b. Owner Name.
 - c. Architect's Project Number.
 - d. Contractor Name and Address.
 - e. Application Date.
 2. Arrange the Application for Payment in tabular form with separate columns to indicate the following for each item listed:
 - a. Related Specification Section.
 - b. Description of Work.
 - c. Dollar Value.
 - d. Percentage of Completion.
 - e. Dollar Value to Date: Include amounts for work completed following previous Application for Payment, whether or not payment has been received.
 - f. Dollar Value this Period: Include only amounts for work completed at the time of Application for Payment.
 - g. Estimate of Dollar Value to Completion.
 - h. Dollar Value of Retention.
 - i. Include amounts of Change Orders issued before last day of construction period covered by application.
 - j. Indicate separate amounts for work being carried out under Owner-requested project acceleration.
 3. Stored Materials: Include in Application for Payment amounts applied for materials or equipment purchased or fabricated and stored, but not yet installed. Differentiate between items stored on-site and items stored off-site.
 - a. Provide certificate of insurance, evidence of transfer of title to Owner, and consent of surety to payment, for stored materials.
 - b. Provide supporting documentation that verifies amount requested, such as paid invoices. Match amount requested with amounts indicated on documentation; do not include overhead and profit on stored materials.
 - c. Provide summary documentation for stored materials indicating the following:
 - 1) Materials previously stored and included in previous Applications for Payment.
 - 2) Work completed for this Application utilizing previously stored materials.
 - 3) Additional materials stored with this Application.
 - 4) Total materials remaining stored, including materials with this Application.
 4. Waivers of Mechanic's Lien: With each Application for Payment, submit Waivers of Mechanic's Liens from subcontractors, sub-subcontractors, and suppliers for construction period covered by the previous application.

- a. Submit partial waivers on each item for amount requested in previous application, after deduction for retainage, on each item.
 - b. When an Application shows completion of an item, submit conditional final or full waivers.
 - c. Owner reserves the right to designate which entities involved in the Work must submit waivers.
 - d. Submit final Application for Payment with or preceded by conditional final waivers from every entity involved with performance of the Work covered by the application who is lawfully entitled to a lien.
 - e. Waiver Forms: Submit waivers of lien on forms, executed in a manner acceptable to Owner.
- C. Initial Application for Payment: Administrative actions and submittals that must precede or coincide with submittal of first Application for payment include the following:
1. List of Subcontractors.
 2. Schedule of Values.
 3. Contractor's Construction Schedule (preliminary if not final).
 4. Products List (preliminary if not final).
 5. Submittal Schedule (preliminary if not final).
 6. List of Contractor's Staff Assignments.
 7. List of Contractor's Principal Consultants.
 8. Copies of authorizations and licenses from authorities having jurisdiction for performance of the Work.
 9. Initial Progress Report.
 10. Report of Preconstruction Conference.
- D. Application for Payment for Progress of Work:
1. Each Application for Payment shall be consistent with previous applications and payments as certified by the Project Inspector, Architect, and paid for by the Owner.
 2. Progress payments shall be submitted to the Architect by the date established by the Owner. The maximum time period covered by each Application for Payment is for one month.
- E. Application for Payment at Substantial Completion: After issuing the Certificate of Substantial Completion, submit an Application for Payment showing 100 percent completion for portion of the Work claimed as substantially complete.
1. Include documentation supporting claim that the Work is substantially complete and a statement showing an accounting of changes to the Contract Sum.
 2. This application shall reflect Certificates of Partial Substantial Completion issued previously for Owner occupancy of designated portions of the Work.
- F. Final Application for Payment: Submit Final Application for Payment with releases and supporting documentation not previously submitted and accepted, including, but not limited, to the following:
1. Evidence of completion of Project closeout requirements.
 2. Insurance certificates for products and completed operations where required and proof that taxes, fees, and similar obligations were paid.
 3. Updated final statement, accounting for final changes to the Contract Sum.
 4. "Contractor's Affidavit of Payment of Debts and Claims."
 5. "Contractor's Affidavit of Release of Liens."
 6. "Consent of Surety to Final Payment."
 7. Evidence that claims have been settled.

8. Final liquidated damages settlement statement.

PART 2 - PRODUCTS

(NOT APPLICABLE)

PART 3 - EXECUTION

END OF SECTION

SECTION 013113 – CONTRACTOR'S "PROJECT MANAGEMENT" AND COORDINATION

PART 1 - GENERAL

1.1 SUMMARY

- A. This Section includes the following:
 - 1. Provide all material, labor, equipment and services necessary to completely manage and coordinate the Project as necessary to construct and complete the Project as indicated by the Contract Documents.
- B. Related Sections: The following Project Manual Sections contain requirements that relate to this section:
 - 1. ALL DIVISION 00 SPECIFICATION SECTIONS.
 - 2. ALL DIVISION 01 SPECIFICATION SECTIONS.
 - 3. ALL SPECIFICATION SECTIONS IN THE FACILITY CONSTRUCTION SUBGROUP.
 - 4. ALL SPECIFICATION SECTIONS IN THE FACILITY SERVICES SUBGROUP.
 - 5. ALL SPECIFICATION SECTIONS IN THE SITE AND INFRASTRUCTURE SUBGROUP.

1.2 DESCRIPTION:

- A. Manage and Coordinate scheduling, submittals, and work of the various sections of the Project Manual to assure efficient and orderly sequence of installation of construction elements with provisions for accommodating items to be installed later.
 - 1. Coordinate sequence of Work to accommodate Owner Occupancy as specified in the Conditions of the Contract in Division 00 and the General Requirements in Division 01.
 - 2. The Contractor shall set up control procedures so that "approved schedules" are adhered to. Contractor's responsibility is to correctly notify Owner's Representative of anticipated and actual time delays.
 - 3. Contractor's job superintendent shall be on site at all times that the Work is in progress. Superintendent shall not perform other functions such as trade work or parts pick-up.
 - 4. Interruption of Services:
 - a. Adequate advance written notice (a minimum of fourteen (14) days) shall be given to the Owner's Representative when interruptions of utility services, or interference with the use of existing building and roads are anticipated.
 - b. Any interruption of utility services shall be made by the Contractor with the Owner's Representative in attendance. Contractor shall not interrupt any utility services without the Owner's Representative present.
 - 5. Planned utility service shutdowns shall be accomplished during periods of minimum usage.
 - a. In some cases, this may require work outside of normal (7:00 am to 5:00 pm) work hours, at no additional cost to the Owner.
 - b. The Contractor shall program its work so that service will be restored in the minimum possible time, and shall cooperate with the Owner's Representative in reducing shutdowns of utility system.

- c. Adequate advance written notice (a minimum of fourteen (14) days) shall be given to the Owner's representative before interruptions to utility services and other interference to the use of, or access to existing buildings and facilities.
 - d. Required access ways shall be kept open at all times; the use of one way traffic and detours shall be held to a minimum.
- 6. Coordinate the Work and do not delegate the responsibility for coordination to any sub-contractor.
- 7. Anticipate the interrelationship of all sub-contractors, and their relationships to one another.
- 8. Resolve differences or disputes between sub-contractors concerning coordination, interference, or extent of Work.

1.3 SUBMITTALS

- A. Schedule and coordinate submittals specified in Specification Section - SUBMITTAL PROCEDURES, and in Specification Section - PROJECT CLOSEOUT.
 - 1. Coordinate work of various Sections having interdependent responsibilities for installing, connecting to, and placing in service, such equipment.
 - 2. Coordinate requests for substitutions to assure compatibility of space, of operating elements, and effect on work of other sections.

1.4 QUALITY ASSURANCE

- A. Coordination of Space:
 - 1. Coordinate use of Project space and sequence of installation of mechanical work, and electrical work, which is indicated diagrammatically on the Drawings. Follow routings shown for pipes, ducts, and conduits as closely as practicable, with due allowance for available physical space.
 - a. Utilize space efficiently to maximize accessibility for other installations, for maintenance, and for repairs.
 - 2. In finished areas, except as otherwise shown, conceal pipes, ducts, and wiring in the construction.
 - a. Coordinate locations of fixtures and outlets with finished elements.
 - 3. Site Utility Coordination:
 - a. Provide 1"=20' scaled and dimensioned Utility Coordination Drawing showing all existing and proposed underground and surface utility improvements including gas, domestic water, fire water, chilled water, hot water, irrigation, storm sewer, sanitary sewer, electrical power, and communications. No site improvements shall be installed prior to Architect's and Owner's review of coordination drawing. Architect's and Owner's review is only for general conformance with the Contract Documents.
- B. Coordination of Project Closeout:
 - 1. Coordinate completion and cleanup of work of separate sections in preparation for Owner occupancy.
 - 2. After Owner occupancy of premises, coordinate access to site by various sections for correction of defective work and work not in accordance with Contract Documents, to minimize disruption of Owner's activities.

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- 3. Assemble and coordinate closeout submittals specified in Specification Section - PROJECT CLOSEOUT.
- C. Regulatory Requirements:
 - 1. In accordance with Specification Section - REGULATORY REQUIREMENTS.
- D. Meetings:
 - 1. Hold coordination meetings and pre-installation meetings with requisite personnel to assure coordination of Work.

PART 2 - PRODUCTS

NOT APPLICABLE

PART 3 - EXECUTION

NOT APPLICABLE

END OF SECTION

INTENTIONALLY LEFT BLANK

SECTION 013216.03 – CONSTRUCTION SCHEDULES

PART 1 - GENERAL

1.1 SUMMARY

- A. This Section includes the following:
 - 1. Provide all material, labor, equipment and services necessary to completely provide Construction Schedules and other related items necessary to complete the Project as indicated by the Contract Documents.
 - 2. Provide projected Construction Schedule for entire Work and revise periodically.
 - 3. Provide separate sub-schedule, showing all submittal information and the time frames in which they are to be submitted, that include the following:
 - a. Coordination Drawings (If applicable).
 - b. Product Data (If applicable).
 - c. Shop Drawings (If applicable).
 - d. Samples (If applicable).
 - e. Quality Assurance/Control Submittals (If applicable).
 - f. Closeout Submittals (If applicable).
 - 4. Provide sub-schedules to define critical portions of entire schedule.
- B. Related Sections: The following Project Manual Sections contain requirements that relate to this section:
 - 1. ALL DIVISION 00 SPECIFICATION SECTIONS.
 - 2. ALL DIVISION 01 SPECIFICATION SECTIONS.

1.2 SUBMITTALS

- A. Submit in accordance with Specification Section - SUBMITTAL PROCEDURES:
 - 1. Quality Assurance/Control Submittals:
 - a. Submit the Contractor's Construction Schedule and Submittal Sub-Schedule within 21 calendar days after the Award of Contract date, unless otherwise stated in the General Conditions.
 - b. Submit updated schedules as required by change in Work Progress.

1.3 QUALITY ASSURANCE

- A. Meetings:
 - 1. Progress Meetings: Scheduled by the Contractor for the proper performance of the work.
 - a. Minimum agenda shall be to review the work progress, and the following:
 - 1) Discuss field observations, problems, and decisions;
 - 2) Identification of any potential problems which may impede planned progress;
 - 3) Corrective measures to regain projected schedules;
 - 4) Maintenance of quality and work standards in accordance with manufacturer's warranty requirements.

2. Participants (or designated representative of) invited to attend each of the above meetings shall be as follows:
 - a. Contractor.
 - b. Owner.
 - c. Architect.
 - d. Project Inspector.
 - e. Installer.
 - f. Material Manufacturer(s).
 - g. Subcontractors, as appropriate (including any accessory subcontractors).

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Contractor's Construction Schedule Form:
 1. Prepare in form of horizontal bar chart.
 - a. Provide separate horizontal-box-column for each trade or operation.
 - b. Order: Chronological order of beginning of each item of Work.
 - c. Identify each column.
 - 1) By specification section number.
 - 2) By distinct graphic delineation.
 - d. Horizontal time scale: Identify first workday of each week.
 - e. Scale and spacing to allow space for updating.
 2. Sheet size and type: 24" x 36", transparency.
 3. Content of Contractor's Construction Schedule Form.
 - a. Provide complete sequence of construction by activity.
 - b. Identify Work of separate, logically grouped activities.
- B. Submittal Sub-Schedule Form:
 1. Prepare separate Submittal Sub-Schedule, as called for in Specification Section - SUBMITTAL PROCEDURES.

PART 3 - EXECUTION

3.1 SCHEDULES

- A. Architect will review schedules and return within Ten (10) days after receipt.
 1. Resubmit within Seven (7) days after return of review copy.
- B. Updating:
 1. As a condition of Application Payments (Progress Payments), the Contractor shall show all changes occurring since previous submission of updated schedules, or certify in writing that no changes have occurred. Failure to provide an updated schedule or certification could cause the Architect and Project Inspector to recommend that no payments by the Owner be made until the Contractor has complied with the conditions required for payments.
 2. Indicate progress of each activity and show completion dates.

- C. Distribution:
1. Print copies of schedules for distribution.
 2. Distribute copies of reviewed schedules to:
 - a. Job site file.
 - b. Project Inspector.
 - c. Architect.
 - d. Sub-contractors.
 - e. Other concerned parties.
 3. Instruct recipients to report any inability to comply and provide detailed explanation with suggested remedies.

END OF SECTION

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SECTION 013226 – FORMS AND REPORTS

PART 1 - GENERAL

1.1 SUMMARY

- A. This Section includes the following:
 - 1. Contractor to provide all Forms and Reports as required by the Architect for Administrative Procedures and other related items necessary to document the Project as required by the Contract Documents, including but not limited to those forms provided under this specification section.
 - 2. CalGREEN Forms:
 - a. Contractor shall provide all California Green Building Standards Code Certification Worksheets and other related items necessary to document the Project as required by the AHJ, including, but not limited to, those forms provided under this specification section.
 - 1) Obtain the latest documents from the California Building Standards Commission; revisions may have been made since the publication of this Project Manual.
- B. Related Sections: The following Project Manual Sections contain requirements that relate to this section:
 - 1. ALL DIVISION 00 SPECIFICATION SECTIONS.
 - 2. ALL DIVISION 01 SPECIFICATION SECTIONS.
 - 3. ALL SPECIFICATION SECTIONS IN THE FACILITY CONSTRUCTION SUBGROUP.
 - 4. ALL SPECIFICATION SECTIONS IN THE FACILITY SERVICES SUBGROUP.
 - 5. ALL SPECIFICATION SECTIONS IN THE SITE AND INFRASTRUCTURE SUBGROUP.

1.2 SUBMITTALS

- A. Submit in accordance with Specification Section - SUBMITTAL PROCEDURES:
 - 1. Forms and Reports as attached to this section when required by the Architect.

1.3 QUALITY ASSURANCE

- A. Regulatory Requirements:
 - 1. In accordance with Specification Section - REGULATORY REQUIREMENTS.

PART 2 - PRODUCTS

NOT APPLICABLE

PART 3 - EXECUTION

3.1 SCHEDULES

- | A. | Listing of Architect required Forms and Reports | No. of Pages: |
|-----|--|---------------|
| 1. | 01 32 26.01-DAILY SUPERINTENDENT'S REPORT | 2 |
| 2. | 01 32 26.02-SUBCONTRACTOR'S DAILY REPORT | 1 |
| 3. | 01 32 26.03-SHOP DRAWING AND SUBMITTAL TRANSMITTAL | 1 |
| 4. | 01 32 26.04-REQUEST FOR INFORMATION (RFI) | 1 |
| 5. | 01 32 26.05-SUPPLEMENTAL INSTRUCTIONS (SI) | 1 |
| 6. | 01 32 26.06-REQUEST FOR PROPOSAL (RFP) | 1 |
| 7. | 01 32 26.07-CONSTRUCTION CHANGE DIRECTIVE (CCD) | 1 |
| 8. | 01 32 26.08-CHANGE ORDER REQUEST REVIEW (COR) | 2 |
| | a. (Review form provided by the Contractor is subject to review and comments by the Owner and Architect). | |
| 9. | 01 32 26.09-CHANGE ORDER (CO) | 1 |
| 10. | 01 32 26.10-FRAGNET SUBMITTAL FORM | 1 |
| 11. | 01 32 26.11-APPLICATION FOR PAYMENT (AP) | 1 |
| 12. | 01 32 26.12-CONTRACTOR'S TESTING / INSPECTION REQUEST FORM | 1 |
| 13. | 01 32 26.13-CONTRACTOR'S "DEVIATION NOTICE" INSPECTION REPORT FORM | 1 |
| 14. | 01 32 26.14-CONTRACTOR'S FINAL INSPECTION REQUEST FORM | 1 |
| 15. | 01 32 26.15-CONTRACTOR'S PUNCHLIST INSPECTION REQUEST FORM | 1 |
| 16. | 01 32 26.16-CONTRACTOR'S PUNCHLIST | 1 |
| 17. | Periodic field reports issued by the Architect and Engineers. | |
| 18. | Contractor's Punch List Response and Correction form is required for each Punch List Review report, citing the issuing Punch List Review format number(s). | |
| 19. | Completed Contractor's Punch List and Final Inspection Reports issued by the Architect, Engineers and the Owner. | |
| 20. | See the attached Forms and Reports suitable for reproduction by the Contractor or Subcontractor. | |
| | | |
| B. | Listing of California Green Building Standards Code Certification Worksheets: | |
| 1. | WORKSHEET (WS-1) BASELINE WATER USE. | |
| 2. | WORKSHEET (WS-2) WATER USE REDUCTION. | |
| 3. | CONSTRUCTION WASTE MANAGEMENT (CWM) PLAN (Sample). | |
| 4. | CONSTRUCTION WASTE MANAGEMENT (CWM) WORKSHEET (Sample). | |
| 5. | CONSTRUCTION WASTE MANAGEMENT (CWM) ACKNOWLEDGMENT (Sample). | |

END OF SECTION

(Attachments)

**GENERAL CONTRACTOR'S
DAILY SUPERINTENDENT'S REPORT**

(JOB NO./REPORT NO.)

(DATE/DAY)

(JOB NAME)

WEATHER DESCRIPTION

(WORK SHIFT) / FROM / TO

(PROJECT MANAGER/SUPERINTENDENT)

PM/ SUPT	ENGR/ TK	CARPENTERS			LABORERS		CEM FINISHERS			OPER ENGR			
		FMAN	JRMAN	APP	FMAN	LAB	FMAN	JRMAN	APP	JRMAN	APP	OTHER	TOTAL

CONCRETE: CY TODAY: LOCATION: CY TO DATE:

WORK SUMMARY:

DELAYS / WORK RELEASED BY OWNER:

CHANGE ORDERS / EXTRA WORK ORDERS:

INSTRUCTIONS FROM ARCHITECT / OWNER:

MATERIALS / EQUIP. DELIVERED TO JOB:

INSPECTIONS / TESTS PERFORMED

SAFETY / ACCIDENTS:

MAJOR EQUIP. ON SITE:

BACKSIDE OF GENERAL CONTRACTOR'S REPORT

[illegible]

MAJOR EQUIPMENT ON SITE:

BACK CHARGES:

REMARKS:

**SUBCONTRACTOR'S
DAILY REPORT**

PROJECT:

DATE:

SHIFT TIME

FOREMAN:

WEATHER:

WORK DESCRIPTION AND LOCATION:

SUB-SUBCONTRACTOR	CREW SIZE	CRAFT	WORK DESCRIPTION / LOCATION

DELAYS:

CHANGE ORDERS / EXTRA WORK ORDERS:

INSTRUCTIONS RECEIVED FROM GC:

TESTS / INSPECTIONS PERFORMED:

MATERIAL / EQUIPMENT DELIVERIES:

MAJOR EQUIPMENT ON SITE:

SAFETY / ACCIDENTS:

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SHOP DRAWING AND SUBMITTAL TRANSMITTAL

DESCRIPTION:

SUBMITTAL NO.:

SPEC SECTION:

ARCHITECT:

Darden Architects

6790 N. West Ave

Fresno, California 93711

PROJECT:

CONTRACTOR:

SUPPLIER:

Substitution: Yes: ☐ DSA Approval Req'd

DATE RECEIVED: _____ **NO. RECEIVED:** _____ **DATE RETURNED:** _____

Contractor Remarks:

Other Required Information:

CPM Activity / Submittal Task No.: _____

Early Start (ES) Date: _____

Late Finish (LF) Date: _____

WARRANTY: ☐ O and M MANUALS ☐

Early Finish (EF) Date: _____

Scheduled Float Time: _____ 0

DESIGN CONSULTANT'S REVIEW:

TRANSMITTED BY ARCHITECT TO: _____ DATE RETURNED: _____

DATE SENT: _____

NO. SENT: _____

Consultants Remarks:

ACTION:

- ☐ NO EXCEPTION TAKEN RELATIVE TO DESIGN
- ☐ NO EXCEPTION TAKEN WITH MODIFICATION NOTED
- ☐ AMEND AS NOTED AND RESUBMIT
- ☐ REJECTED AND RESUBMIT
- ☐ SEE ATTACHED LETTER

ARCHITECT'S REVIEW:

Architects Remarks:

ACTION:

- ☐ NO EXCEPTION TAKEN RELATIVE TO DESIGN
- ☐ NO EXCEPTION TAKEN WITH MODIFICATION NOTED
- ☐ AMEND AS NOTED AND RESUBMIT
- ☐ REJECTED AND RESUBMIT

Approved Substitution ☐

COPIES TO:

DATE RETURNED: _____

Contractor:

Owner:

Inspector:

File:

Other:

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6790 N. West Avenue
Fresno, California 93711
Tel: 559.448.8051
Fax: 559.446.1765

www.dardenarchitects.com

REQUEST FOR INFORMATION

RFI No.:

To: **Darden Architects**
6790 N. West Ave
Fresno, California 93711

Date:
Respond By:

Attn:

Architect Project No.
Project:

DSA/HCAI Review
Required

Yes No Apprd
☐ ☐ ☐

INFORMATION REQUESTED:

Cost Impact: _____ Signature: _____
Schedule Impact: _____ Days Pages Attached: _____
Trade/Contractor: _____ Schedule Task No/Item: _____

The Work shall be carried out in accordance with the following supplemental instructions issued in accordance with the Contract Documents without change in the Contract Sum or Contract Time. Proceeding with the Work in accordance with these instructions indicates your acknowledgement that there will be no change in the Contract Sum or Contract Time.

If the Contractor considers that this supplemental instruction requires a change in the Contract Sum or Contract Time, the Contractor shall not proceed with this Work and shall promptly submit an itemized proposal to the Architect for doing this work. If your proposal is found to be satisfactory and in order, this supplemental instruction will be superseded by a Construction Change Directive.

Referred To: _____ Referred Date: _____ Return Date: _____

SUPPLEMENTAL INSTRUCTIONS:

Consultant : _____ Architect _____
Date: _____ Date _____

Copy: ☐ Owner ☐ Inspector ☐ Testing Lab ☐ Structural ☐ Mech. ☐ Elec ☐ File ☐ Other Pages Attached: _____

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SUPPLEMENTAL INSTRUCTIONS

PROJECT:

SUPPL. INST. NO.:

DATE OF ISSUANCE:

OWNER:

CONTRACT DATE:

CONTRACTOR:

NOTICE TO PROCEED:

Architect Project No.:

DSA Appl. No.:

DSA File No.:

OPSC Appl. No.:

HCAI No.:

The Work shall be carried out in accordance with the following supplemental instructions issued in accordance with the Contract Documents without change in the Contract Sum or Contract Time. Proceeding with the Work in accordance with these instructions indicates your acknowledgement that there will be no change in the Contract Sum or Contract Time.

If the Contractor considers that this supplemental instruction requires a change in the Contract Sum or Contract Time, the Contractor shall not proceed with this Work and shall promptly submit an itemized proposal to the Architect for doing this work. If your proposal is found to be satisfactory and in order, this supplemental instruction will be superseded by a Construction Change Directive.

Description:

Trade/Contractor:

Schedule Task No/Item:

Attachments:

Darden Architects, Inc.

Issued By:

Architect

☐ OWNER ☐ CONTRACTOR ☐ INSPECTOR ☐ TESTING LAB ☐ STRUCTURAL ☐ MECHANICAL ☐ ELECTRICAL ☐ OTHER

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REQUEST FOR PROPOSAL

PROJECT:

REQUEST FOR PROPOSAL NO.:

DATE OF ISSUANCE:

OWNER:

CONTRACT DATE:

NOTICE TO PROCEED:

CONTRACTOR:

Architect Project No.:

DSA Appl. No.:

DSA File No.:

OPSC Appl. No.:

HCAI No.:

Please submit an itemized proposal for change in the Contract Sum and Contract Time for proposed modifications to the Contract Documents described herein. Submit proposal promptly or notify the Architect in writing of the date on which you anticipate submitting your proposal.

This is not a Change Order, Construction Change Directive, or a direction to proceed with the Work described in the proposed modifications.

Description:

Attachments

Darden Architects, Inc.

ISSUED BY:

Architect

☐ OWNER ☐ CONTRACTOR ☐ ARCHITECT ☐ CONSULTANT ☐ INSPECTOR ☐ OTHER

INTENTIONALLY LEFT BLANK

CONSTRUCTION CHANGE DIRECTIVE

PROJECT:

DIRECTIVE NO.:

DATE OF ISSUANCE:

OWNER:

CONTRACT DATE:

NOTICE TO PROCEED:

CONTRACTOR:

Architect Project No.:

DSA Appl. No.:

DSA File No.:

OPSC Appl. No.:

HCAI No.:

You are hereby directed to make the following change(s) in this Contract:

CONTRACT ADJUSTMENT

1. The proposed basis of adjustment to the Contract Sum or Guaranteed Maximum Price is:

- ☐ Lump Sum
☐ Unit Price of
☐ As provided for in General Conditions and the Supplemental Conditions of the contract.
☐ As Follows:

2. The Contract Time is proposed to (be adjusted) . The proposed adjustment, if any, is increase of _____ days)

When signed by the Owner and Architect and received by the Contractor, this document becomes effective IMMEDIATELY as a Construction Change Directive (CCD), and the Contractor shall proceed with the change(s) described above.

Signature by the Contractor indicates the Contractor's agreement with the proposed adjustments in Contract Sum and Contract Time set forth in this Construction Change Directive.

ARCHITECT

OWNER

CONTRACTOR

Darden Architects

6790 N. West Ave

Fresno, California 93711

By:

By:

By:

Date:

Date:

Date:

☐ OWNER

☐ CONTRACTOR

☐ ARCHITECT

☐ CONSULTANT

☐ INSPECTOR

☐ OTHER

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6790 N. West Ave

Fresno, California 93711

Tel: 559.448.8051

Fax: 559.446.1765

www.dardenarchitects.com

CHANGE ORDER REQUEST REVIEW

PROJECT:

CHANGE ORDER REQUEST NO.:

DATE OF ISSUANCE:

OWNER:

CONTRACTOR:

Architect Project No.:

DSA Appl. No.:

DSA File No.:

OPSC Appl. No.:

HCAI No.:

DESCRIPTION OF PROPOSED CHANGE:

Requested By:

Scope:

Necessary for:

DESIGN CONSULTANT'S REVIEW:

Date Sent:

ACTION:

Referred To:

Date Returned:

- ☐ NO EXCEPTION TAKEN RELATIVE TO COST
☐ NO EXCEPTION TAKEN RELATIVE TO TIME
☐ AMEND AS NOTED AND RESUBMIT
☐ REJECTED

Consultants Remarks

ARCHITECT'S REVIEW:

Date Returned:

ACTION:

Architects Remarks:

- ☐ NO EXCEPTION TAKEN RELATIVE TO COST
☐ NO EXCEPTION TAKEN RELATIVE TO TIME
☐ AMEND AS NOTED AND RESUBMIT
☐ REJECTED

Attachments:

REVIEWED:

Darden Architects
6790 N. West Ave
Fresno, California 93711

APPROVED:

Darden Architects :

Date :

Owner :

Date :

The Architect is hereby directed to instruct the Contractor to make the above changes in the Project and to include these changes in a subsequent Change Order:

☐ OWNER ☐ CONTRACTOR ☐ INSPECTOR ☐ STRUCTURAL ☐ MECHANICAL ☐ ELECTRICAL ☐ OTHER

CHANGE ORDER REQUEST NO.

Project Architect's Project No.:

CHANGE ORDER REQUEST- BREAKDOWN WORKSHEET

WORK DELETED:

Contractor			
Materials	\$0.00		
Equipment	\$0.00		
Labor	\$0.00		
Material, Equipment, & Labor	\$0.00		
TOTAL:			\$0.00

ADDITIONAL WORK PERFORMED BY SUB-CONTRACTOR

Sub-Contractor			
Materials	\$0.00		
Equipment	\$0.00		
Labor	\$0.00		
Material, Equipment, & Labor	\$0.00		
Overhead	\$0.00		
Profit	\$0.00		
Sub Total:		\$0.00	
Contractor			
Overhead		\$0.00	
Profit		\$0.00	
TOTAL:			\$0.00

ADDITIONAL WORK PERFORMED BY CONTRACTOR

Contractor			
Materials	\$0.00		
Equipment	\$0.00		
Labor	\$0.00		
Material, Equipment, & Labor	\$0.00		
Overhead	\$0.00		
Profit	\$0.00		
TOTAL:			\$0.00

TOTAL COST:	\$0.00
-------------	---------------

TOTAL COST:	\$0.00
-------------	--------

TOTAL DAYS:	0
-------------	---

ARCHITECTURAL ADMINISTRATIVE FEES:

Proposal Request Administration	\$0.00
Construction Administration	\$0.00
TOTAL:	\$0.00
DSA Fees:	\$0.00

CHANGE ORDER

PROJECT:

CHANGE ORDER NO.:

DATE OF ISSUANCE:

OWNER:

CONTRACT DATE:

CONTRACTOR:

NOTICE TO PROCEED:

Architect Project No.:
DSA Appl. No.:
DSA File No.:
OPSC Appl. No.:
HCAI No.:

The Contract is changed as follows:

Description:

It is mutually agreed that the affixed signature to this Change Order is evidence that all compensation with respects to the changes defined herein have been satisfied with the execution of this document. Furthermore, no additional compensation either monetarily or via time extension to this contract will be sought in respect to this Change Order.

The Original Contract Sum and Contract Completion Date:

Net change (Contract Sum and Contract Time) by previous Change Orders: _____ days

Contract Sum and Contract Completion Date prior to this Change Order: _____

Contract Sum and Contract Time (increased or decreased) by this Change Order: _____ days

New Contract Sum and Contract Completion Date including this Change Order: _____

CONTRACTOR

ARCHITECT

OWNER

Darden Architects
6790 N. West Ave
Fresno, California 93711

By: _____

By: _____

By: _____

Date: _____

Date: _____

Date: _____

☐ OWNER ☐ CONTRACTOR ☐ ARCHITECT ☐ CONSULTANT ☐ INSPECTOR ☐ OTHER

INTENTIONALLY LEFT BLANK

FRAGNET SUBMITTAL FORM

Date: _____ Sheet _____ of _____

From: _____ Fragnet No.: _____

To: Darden Architects, Inc.

Description of Delay: By reference to attached schedule fragnet, the following delay occurred:

Continued on Sheets _____ of _____
Time Extension Requested: _____ wds, _____ cds.
Time Requested for Activity: _____ Time Requested for Project: _____

Related Documents: The following construction documents provide evidence of the delay event:

RFI Nos.: _____ SI Nos.: _____

CCD Nos: _____ RFP Nos.: _____

Daily Reports Dated: _____ and attached.

Project Correspondence Dated: _____ and attached.

Other Documentation: _____

Schedule-Related Information: By reference to the attached fragnet, provide the following:

Predecessor Activity to Fragnet:

Successor Activity to Fragnet:

Affected CPM Schedule Activities (list IDs and descriptions):

New CPM Schedule Activities (list IDs and descriptions):

END OF FORM

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APPLICATION FOR PAYMENT

To:
DARDEN ARCHITECTS, INC.
6790 N. West Avenue
Fresno, CA 93711

Project:

Bid Package No. _____

Pay Application No.: _____

Application Date: _____

Period Ending: _____

Distribution to:

Owner: _____

Architect: _____

Contractor: _____

Const Mgr.: _____

Inspector: _____

FROM _____

Prime Contractor

Address: _____

Phone: _____

CONTRACTOR'S APPLICATION FOR PAYMENT**CHANGE ORDER SUMMARY****APPROVED CHANGE ORDERS:**

Change Order No.:	Approved Date:	Amount:
		\$
		\$
		\$
		\$
		\$
		\$
		\$
		\$
		\$

TOTALS

Net change by Change Order	\$
----------------------------	----

The undersigned Contractor certifies that in the best of his knowledge, information, and belief the Work covered by this Application for Payment has been completed in accordance with the Contract Documents, that all amounts have been paid by the contractor for work for which previous Certificates for Payment were issued and payment received from the Owner and that current payment show herein is now due.

Contractor:

DATE: _____

The present status of the account for this Contract is as follows:

ORIGINAL CONTRACT SUM \$ _____

Net Change by Change Orders \$ _____

CONTRACT SUM TO DATE: \$ _____

TOTAL COMPLETE & STORED TO DATE: \$ _____

RETAINAGE: _____ %: \$ _____

TOTAL EARNED LESS RETAINAGE: \$ _____

LESS STOP NOTICE(S): \$ _____

LESS PREVIOUS PAYMENT: \$ _____

CURRENT PAYMENT DUE: \$ _____

This Certificate is not negotiable. This AMOUNT CERTIFIED is payable only to the Contractor named herein, issuance, payment and acceptance of payment, are without prejudice to any rights of the Owner or Contractor under this contract.

CONTRACTOR:

DATE: _____

CONSTRUCTION MANAGER:

DATE: _____

INSPECTOR:

DATE: _____

ARCHITECT:

DATE: _____

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CONTRACTOR'S TESTING / INSPECTION REQUEST FORM

PROJECT: _____
DATE RECEIVED: _____ (by Inspector)
TIME RECEIVED: _____ (by Inspector)

BUILDING: _____
SITE/OFFSITE: _____
CONSTRUCTION PHASE (1, 2, 3, etc.): _____
SPECIFICATION SECTION (No.): _____
PLAN SHEET AND DETAIL: _____
SCOPE OF WORK: _____
(concrete, electrical, etc.)

INSPECTION REQUESTED BY: _____
(contractor name)

LOCATION (bldg., room, floor, wall, ceiling, etc.) _____

TYPE OF INSPECTION (concrete, framing, welding, masonry, electrical, etc.) _____

INSPECTION REQUESTED ON: _____ at _____ am/pm
(date) (time)

Note 1: A Minimum Notice of 48 hours is Required to be Received by the Inspection Officer Prior to the Time the Testing / Inspection is Requested to Begin.

PRINT NAME AND TITLE OF PERSON REQUESTING INSPECTION

SIGNATURE OF PERSON REQUESTING INSPECTION

Note 2: Contractor Must Accompany Inspector on Inspection, if Requested.

PASSED: _____ FAILED: _____

Note 3: See Attached Sheet for Explanation if Inspection Failed. Re-inspection Required.

INSPECTOR SIGNATURE: _____ Date: _____

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CONTRACTOR'S "DEVIATION NOTICE" INSPECTION REQUEST FORM

PROJECT: _____
DATE RECEIVED: _____ (by Inspector)
TIME RECEIVED: _____ (by Inspector)

DEVIATION NOTICE(S) (No.): _____

BUILDING: _____
SITE/OFFSITE: _____
CONSTRUCTION PHASE (1, 2, 3, etc.): _____
SPECIFICATION SECTION (No.): _____
SCOPE OF WORK: _____
(concrete, electrical, etc.)

INSPECTION REQUESTED BY: _____
(contractor company name)

LOCATION(S) OF WORK FOR INSPECTION (be specific- bldg.(s), room(s), etc.)

INSPECTION REQUESTED ON: _____ at _____ am/pm
(date) (time)

Note 1: A Minimum Notice of 48 hours is Required to be Received by the Inspection Officer Prior to the Time the "Deviation Notice" Inspection is Requested to Begin.

PRINT NAME OF PERSON REQUESTING DEVIATION NOTICE INSPECTION

SIGNATURE OF PERSON REQUESTING DEVIATION NOTICE INSPECTION

Note 2: Contractor Must Accompany Project Inspector on "Deviation Notice" Inspection, if Requested.

Note 3: See Attached "Deviation Notice" for Inspector's Comments and/or Date Completed.

PASSED: _____ FAILED: _____

PROJECT INSPECTOR SIGNATURE: _____
DATE: _____

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CONTRACTOR'S FINAL INSPECTION REQUEST FORM

PROJECT: _____
DATE RECEIVED: _____ (by Inspector)
TIME RECEIVED: _____ (by Inspector)

BUILDING: _____
SITE/OFFSITE: _____
CONSTRUCTION PHASE (1, 2, 3, etc.): _____
SPECIFICATION SECTION (No.): _____
SCOPE OF WORK: _____
(concrete, electrical, etc.)

INSPECTION REQUESTED BY: _____
(contractor company name)

INSPECTION REQUESTED ON: _____ at _____ am/pm
(date) (time)

Note 1: A Minimum Notice of 48 hours is Required to be Received by the Inspection Officer Prior to the Time the Final Inspection is Requested to Begin. Contractor to be Notified by the Construction Manager in Regards to the Actual Date and Time of the Final Inspection.

PRINT NAME AND TITLE OF PERSON REQUESTING FINAL INSPECTION

SIGNATURE OF PERSON REQUESTING FINAL INSPECTION

Note 2: Contractor Must Accompany Project Inspector, Architect and/or Engineer(s) on Final Inspection, if Requested.

PASSED: _____ FAILED: _____

Note 3: If the Final Inspection Fails Re-Inspection is Required. See Attached Sheet for Comment(s).

PROJECT INSPECTOR SIGNATURE: _____
DATE: _____

PROJECT ARCHITECT SIGNATURE: _____
DATE: _____

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CONTRACTOR'S PUNCHLIST INSPECTION REQUEST FORM

PROJECT: _____
DATE RECEIVED: _____ (by Inspector)
TIME RECEIVED: _____ (by Inspector)

BUILDING: _____
SITE/OFFSITE: _____
CONSTRUCTION PHASE (1, 2, 3, etc.): _____
SPECIFICATION SECTION (No.): _____
SCOPE OF WORK: _____
(concrete, electrical, etc.)

INSPECTION REQUESTED BY: _____
(contractor company name)

LOCATION(S) OF WORK FOR INSPECTION: (be specific- bldg.(s), room(s), etc.)

DESCRIPTION OF WORK TO BE INSPECTED: (item number(s) from punchlist)

INSPECTION REQUESTED ON: _____ at _____ am/pm
(date) (time)

Note 1: A Minimum Notice of 48 hours is Required to be Received by the Inspection Officer Prior to the Time the Punchlist Inspection is Requested to Begin.

PRINT NAME OF PERSON REQUESTING PUNCHLIST INSPECTION

SIGNATURE OF PERSON REQUESTING PUNCHLIST INSPECTION

Note 2: Contractor Must Accompany Project Inspector on Punchlist Inspection, if Requested. Items Must Have Already Been Signed Off by Contractor.

Note 3: Attached Sheet for Contractor's Signoff and/or Inspector's Comments and/or Date Completed for the Specific Punchlist Items Noted Above.

Note 4: This Inspection is NOT A FINAL INSPECTION but Only an Acknowledgement That a Particular Item(s) is/are completed.

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PROJECT: _____ - CONTRACTOR'S PUNCHLIST
CONTRACTOR NAME: _____ Page _____ of _____

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SECTION 013300 – SUBMITTAL PROCEDURES

PART 1 - GENERAL

1.1 SUMMARY

- A. This Section includes the following:
 - 1. Provide all material, labor, equipment and services necessary to completely provide all required submittals and other related items necessary to complete the Project as indicated by the Contract Documents.
- B. Related Sections: The following Project Manual Sections contain requirements that relate to this section:
 - 1. ALL DIVISION 00 SPECIFICATION SECTIONS.
 - 2. ALL DIVISION 01 SPECIFICATION SECTIONS.
 - 3. ALL SPECIFICATION SECTIONS IN THE FACILITY CONSTRUCTION SUBGROUP.
 - 4. ALL SPECIFICATION SECTIONS IN THE FACILITY SERVICES SUBGROUP.
 - 5. ALL SPECIFICATION SECTIONS IN THE SITE AND INFRASTRUCTURE SUBGROUP.

1.2 SUBMITTALS

- A. Request for Electronic Files:
 - 1. Submit in accordance with the following:
 - a. Contractor's Usage Agreement for Electronic Files:
 - 1) See attachment.
- B. Contractor's responsibilities:
 - 1. The Contractor shall check, verify, and be responsible for all field measurements.
 - 2. The Contractor shall submit a schedule indicating when the required shop drawings and submittals will be submitted to the Architect.
 - a. Submit schedule within the amount of days as indicated in Specification Section - CONSTRUCTION SCHEDULES.
 - 3. Submit copies as scheduled below, checked and approved by the Contractor for all submittals required for the work of the various trades. Deliver submittals promptly to avoid delays in delivery of materials or execution of the work.
 - a. The Contractor (or Subcontractor) shall mark-up the submittals as to project specifics. If the specifications contains a schedule prepared by the Architect (i.e. paint symbols such as DW-1, M-1, CB-1, etc., or tile symbols such as CT-1,CT-2, or IWA, IWB, IWC, etc.), then the submittal will also contain those designations. Submittals without project specifics will be returned to the Contractor as not being properly prepared.
 - b. The Contractor shall stamp the Submittals utilizing any language requested by the Owner in the General Conditions and the following minimum language:

"This submittal has been reviewed by (Name of Contractor) and approved with respect to the means, methods, techniques, sequences, and procedures of construction, and safety precautions and programs

incidental thereto. The Contractor has reviewed and approved not only the field dimensions, but the construction criteria, and has also made written notation regarding any information in the Shop Drawings that does not conform to the Contract Documents. The Contractor has reviewed this submittal and coordinated with all other Shop Drawings received to date by the Contractor and this duty of coordination has not been delegated to subcontractors, material suppliers, the Architect, or the design consultants on this project. The Contractor shall also have indicated that it has not relied upon the dimensions shown on the drawings, specifications and schedules, and that the Contractor has double-checked all dimensions for accuracy and fit. (Name of Contractor) also warrants that this submittal complies with the Contract Documents and comprises no variation thereto."

By: _____ Contractor's Signature

_____ Contractor's Typed Name

Date: _____

- c. Substitutions on shop drawings or in product submittals will not be considered without prior approval in accordance with Specification Section - SUBSTITUTION PROCEDURES. Submittals containing unacceptable items will be rejected.
 - d. The Contractor shall make any corrections required by the Architect during the Architect's initial review, and re-submit the required corrected copies for final review and distribution.
- C. Architect's responsibilities:
 - 1. The Architect will make any desired corrections with reasonable promptness, and return the submittal to the Contractor.
 - 2. The Architect's review of such drawings or schedules shall not relieve the Contractor of responsibility for deviations from the drawings or specifications, unless he has, in writing, called the Architect's attention to such deviations at the time of submission, and secured written acceptance.
 - a. The Architect's review shall be for general conformance with the design concept for the project and general compliance with the information given in the Contract Documents.
 - b. The Architect's review shall not be construed as an "approval," or to relieve the Contractor(s) and material suppliers of responsibility for errors or omissions in the submitted documents.
 - c. Modifications or comments made on the submittals or shop drawings during this review do not relieve the Contractor from compliance with the requirements of the drawings and specifications.
 - d. Acceptance of a specific item does not include acceptance of the assembly of which the item is a component.
- D. The following list of items, definitions and required quantities is a minimum required for this project. Verify with FACILITY SERVICES SUBGROUP sections for additional quantities required within those divisions.
 - 1. Product Data: Illustrations, standard schedules, performance charts, instructions, brochures, diagrams, other product information, color choices and/or manufacturer's catalog sheets shall be specially prepared for the Project (marked-up with project specifics) and shall be submitted in sequential sets for each category of work:
 - a. Quantity:
 - 1) Unless otherwise indicated in the Contract Documents, provide Six (6) sets.

- b. Material Safety Data Sheets (MSDS): MSDS are not required, but it is recognized that applicable federal and state laws require the submission of these data sheets to an Owner. MSDS shall be turned over to the Owner (without review by the Architect or its consultants) in compliance with federal and state laws.
- 2. Shop Drawings: Newly prepared information, drawn to accurate scale, consisting of drawings, diagrams, schedules, and other data specifically prepared for the Project by the Contractor, a Subcontractor, manufacturer, supplier or distributor to illustrate some portion of the Project. Do not reproduce Contract Documents or copy Standard information as the basis of Shop Drawings. Standard information prepared without specific reference to the Project is not considered Shop Drawings.
 - a. Quantity: Provide One (1) reproducible original (vellum, sepiamylar or mylar) and Three (3) opaque (blue-line or black-line xerographic) prints for each sheet or detail.
 - 1) The contractor shall receive the marked-up reproducibles and copy the required number of sets to the subcontractor, manufacturer's and/or material suppliers.
 - b. Contractor's use of Architect's Electronic CAD Files.
 - 1) Upon written request by Contractor, copies of the Architect's electronic CAD files may be available for Contractor's use in connection with this Project.
 - a) Contractor's written request shall be on the Architect's "Contractor's Document Usage Agreement for Requested Documents" and may include an additional Architect's Consultant's Agreements, outlining conditions for providing files.
 - b) Contractor's request shall be limited to drawings directly applicable to the Shop Drawings the Contractor wishes to create for submittal.
 - c) Contractor shall pay the Architect for work incurred for providing the requested files. Payment shall be submitted with the request.
 - 2) The Architect's electronic CAD files are limited to files that already exist and that not all files may be available at the Architect's and Architect's Consultant's discretion.
 - 3) The Architect's electronic CAD files are not part of the Contract Documents and have limitations to the accuracy, incorporating modifications, CAD system formats, CAD entity attributes and layering.
 - 4) The Architect's electronic CAD files have restrictions on Contractor's use, transmittal and delivery of files.
- 3. Samples: Physical examples specially prepared for the Project (marked-up with project specifics) which illustrate materials, equipment, or workmanship and establish standards by which the Work will be judged.
 - a. Quantity:
 - 1) Unless otherwise indicated in the Contract Documents, provide Four (4) sets.
 - b. Color samples shall be submitted on 8-1/2" x 11" cards for all colors scheduling paint types specified utilizing the paint symbols designated by the Architect in the drawings and specifications.
 - c. Manufactured devices or equipment items:
 - 1) Quantity: One (1) sample, returned to supplier and which, when approved, may be incorporated into the Project.
- 4. Quality Assurance/Control submittals: Consists of design data, test reports, certificates, manufacturers instructions, and /or manufacturer's field reports.
 - a. Quantity:

- 1) Unless otherwise indicated in the Contract Documents, provide Six (6) sets.
5. Closeout submittals: Maintenance data, operating manuals, project documents, engineering calculations, and/or warranties shall be submitted when required in the various specification sections:
 - a. Quantity:
 - 1) Unless otherwise indicated in the Contract Documents, provide Two (2) sets.
6. Field Samples: Sample panels of in place construction, or selected area of completed substrates or work showing the anticipated compliance with specified characteristics in order to establish a standard of quality.
 - a. Quantity:
 - 1) See specific specification section requirements.
7. Mockups: Full-sized erected assemblies, used for coordination purposes or for testing in a laboratory, or required for approval in a finish form before the actual Project construction begins.
 - a. Quantity:
 - 1) See specific specification section requirements.
- E. Substitution, Dispute or Claim Submittals:
 1. Any substitution, dispute or claim submittals relating to this contract, or any Contract breach, which are not disposed of by agreement shall be promptly submitted in accordance with the GENERAL CONDITIONS, as a claim to and decided by the Architect who shall issue a written decision on the dispute.
 2. Adequate supporting data shall include, but is not limited; a statement of the reasons for the asserted entitlement, the certified payroll, invoice for material and equipment rental, and an itemized breakdown of any adjustment sought.
 3. If no "SUBMISSION UNDER PENALTY OF PERJURY" clause is provided within the GENERAL CONDITIONS, then the Contractor shall certify, at the time of submission of a substitution, dispute or claim, as follows:

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SUBMISSION UNDER PENALTY OF PERJURY

I _____, being the _____ (Must be an officer), declare under penalty of perjury under the laws of the State of California, and do personally certify and attest that: I have thoroughly reviewed the attached substitution, dispute or claim for additional compensation and/or extension of time, and know its contents, and said claim is made in good faith; the supporting data is truthful and accurate; that the amount required accurately reflects the contract adjustment for which the Contractor believes the Owner is liable; and further, that I am familiar with California Government Code Section 12650, et seq, pertaining to false claims, and further know and understand that submission of certification of a false claim may lead to fines, imprisonment and/or other severe legal consequences.

By: _____ Contractor's Signature

_____ Contractor's Typed Name

Date: _____

Submission of a substitution, dispute or claim, properly certified, with all required supporting documentation, and written rejection or denial of all or part of the claim by Owner, is a condition precedent to any action, proceeding, litigation, suit or demand for arbitration by Contractor.

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PART 2 - PRODUCTS

NOT APPLICABLE

PART 3 - EXECUTION

3.1 SCHEDULES

- A. Usage Agreement For Electronic Documents:
 - 1. Contractor's Usage Agreement for Electronic Files:
 - a. See attachment.
- B. The following schedule was prepared to assist the Contractor in knowing the required submittals for this project, but may not be complete. Specific submittal information as to what is required is contained within the individual specification sections and those individual sections shall govern in the event of a question.
- C. SUBMITTAL SCHEDULE
 - 1. 01 11 13 - SUMMARY OF WORK
 - a. QUALITY ASSURANCE/ CONTROL SUBMITTALS
 - 2. 01 25 00 - SUBSTITUTION PROCEDURES
 - a. SUBSTITUTION REQUEST FORMS
 - 3. 01 29 73 - SCHEDULE OF VALUES
 - a. SCHEDULE OF VALUES
 - 4. 01 32 16 - CONSTRUCTION SCHEDULES
 - a. CONSTRUCTION SCHEDULE, SHOP DRAWING SUBMITTAL SCHEDULE, CRITICAL PATH SCHEDULES, FRAGNETS.
 - 5. 01 32 26 - FORMS AND REPORTS
 - a. AS REQUIRED BY THIS SPECIFICATION SECTION AND OTHER SPECIFICATION SECTIONS.
 - 6. 01 33 00 - SUBMITTAL PROCEDURES
 - a. SHOP DRAWING AND SUBMITTAL SCHEDULE, COLOR SAMPLES OF ALL FINISH MATERIALS FOR COLOR BOARD SELECTION.
 - 7. 01 45 29 - TESTING LABORATORY SERVICES
 - a. TESTING SCHEDULE, TEST REPORTS
 - 8. 01 71 23 - FIELD ENGINEERING
 - a. COORDINATION DRAWINGS, QUALITY ASSURANCE/CONTROL SUBMITTALS, CLOSEOUT SUBMITTALS.
 - 9. 01 77 20 - PROJECT CLOSEOUT
 - a. ANOTATED CONTRACTOR'S AND ARCHITECT'S PUNCH LIST. ALL OPERATIONAL DATA, ALL MAINTENANCE MANUALS, ALL EXTRA MATERIALS.
 - 10. 01 78 36 - WARRANTIES
 - a. ALL GUARANTEES AND WARRANTIES
 - 11. 01 78 39 - PROJECT DOCUMENTS
 - a. PROJECT "AS-BUILT" DOCUMENTS, PROJECT "RECORD" DOCUMENTS AND PROJECT "CERTIFICATION" DOCUMENTS.

12. 03 11 01 - CONCRETE FORMWORK
 - a. PRODUCT DATA, SAMPLES, QUALITY ASSURANCE/CONTROL SUBMITTALS, CLOSEOUT SUBMITTALS.
13. 03 15 14 - DRILLED ANCHORS
 - a. PRODUCT DATA, ICC EVALUATION SERVICE REPORTS, DSA APPROVAL LETTERS.
14. 03 20 00 - REINFORCEMENT
 - a. SHOP DRAWINGS, QUALITY ASSURANCE/CONTROL SUBMITTALS, CLOSEOUT SUBMITTALS.
15. 03 30 00 - CAST-IN-PLACE CONCRETE
 - a. PRODUCT DATA, QUALITY ASSURANCE/CONTROL SUBMITTALS, CLOSEOUT SUBMITTALS.
16. 03 35 10 - POLISHED CONCRETE FINISHING
 - a. PRODUCT DATA, SHOP DRAWINGS, QUALITY ASSURANCE/ CONTROL SUBMITTALS, CLOSEOUT SUBMITTALS.
17. 05 30 00 - METAL DECK
 - a. PRODUCT DATA, SHOP DRAWINGS, QUALITY ASSURANCE/CONTROL SUBMITTALS, CLOSEOUT SUBMITTALS.
18. 10 05 00 - MISCELLANEOUS SPECIALTIES
 - a. PRODUCT DATA, COLORS AND SAMPLES (WHERE APPLICABLE) FOR ALL ITEMS.
19. 10 11 00 - VISUAL DISPLAY BOARDS
 - a. PRODUCT DATA AND SAMPLE COLORS.
20. DIV. 22 - PLUMBING SECTIONS
 - a. REFER TO APPROPRIATE SPECIFICATION SECTION REQUIREMENTS.
21. DIV. 23 -HEATING, VENTILATING AND AIR CONDITIONING SECTIONS
 - a. REFER TO APPROPRIATE SPECIFICATION SECTION REQUIREMENTS.
22. DIV. 25- INTEGRATED AUTOMATION SECTIONS
 - a. REFER TO APPROPRIATE SPECIFICATION SECTION REQUIREMENTS.
23. DIV. 26- ELECTRICAL SECTIONS
 - a. REFER TO APPROPRIATE SPECIFICATION SECTION REQUIREMENTS.
24. DIV. 27 -COMMUNICATIONS SECTIONS
 - a. REFER TO APPROPRIATE SPECIFICATION SECTION REQUIREMENTS.
25. DIV. 28- ELECTRONIC SAFETY AND SECURITY SECTIONS
 - a. REFER TO APPROPRIATE SPECIFICATION SECTION REQUIREMENTS.
26. 31 20 00 - EARTHWORK
 - a. PRODUCT DATA, SHOP DRAWINGS, QUALITY ASSURANCE/CONTROL SUBMITTALS, PROJECT RECORD DOCUMENTS, AND WARRANTIES, AND DRAWINGS SHOWING KNOWLEDGE OF THE EXTENT OF ENGINEERED PADS.
27. 31 31 00- SOIL TREATMENT
 - a. PRODUCT DATA, SHOP DRAWINGS, QUALITY ASSURANCE/CONTROL SUBMITTALS, PROJECT RECORD DOCUMENTS, AND WARRANTIES.

CONTRACTOR'S
USAGE AGREEMENT FOR ELECTRONIC FILES -
ELECTRONIC FILE REQUEST FORM

Project Name: _____

DA Project No.: _____

TO: DARDEN ARCHITECTS, INC.

6790 N. West Avenue

Fresno CA 93711

A. I _____ as a duly authorized agent of

_____, have a contract with the Owner to perform work on the above project in the following capacity:

- ___ Lease-Lease Back Agent
- ___ Construction Manager
- ___ General Contractor

B. We hereby submit for your consideration a request for Electronic Files on the behalf of

_____, and certify that they have a contract or subcontract to perform work on the above named project in the following capacity:

- ___ General Contractor
- ___ Sub-Contractor
- ___ Others under contract to a sub-contractor

C. I _____, certify the required attachments are included as follows:

- ___ Completed "Usage Agreement for Electronic Files Agreement• " along with appropriate related supplemental Agreements.
- ___ Files requested are specific and are not deemed vague or excessive and with individual sheet numbers identified, and the total number of sheets are correct.
- ___ The enclosed Payment is accurate (\$120 per sheet) and is made payable to Darden Architects, Inc..

Print Name,

Title

Signature

Date

**CONTRACTOR'S USAGE AGREEMENT
FOR ELECTRONIC FILES**

PROJECT NAME: _____

DA PROJECT NO.: _____

PROJECT ARCHITECT: _____

I _____, as a duly authorized agent of _____ - (Contractor) have a contract or subcontract to perform work on the above named project. The Contractor acknowledges having received at least one (1) complete set of Contract Documents for the project and has posted all Addenda and all other contract documents issued to date.

Contractor Document Usage Agreement

The Contractor is requesting the electronic CAD files of work prepared by the Architect and/or Architect's Consultants (Design Team) on the subject project, so that the information therein may be utilized in the Contractor's work on the same project. The Contractor understands that these files are being provided as a courtesy and they are strictly intended for the Contractor's sole convenience and they are not recognized Contract Documents. This request is subject to the following conditions, which the Contractor hereby agrees to abide by:

1. It is understood and agreed to that any files and/or documents provided are instruments of professional service by the Design Team and are intended for one-time use solely in the construction of this project. They are and shall remain the property of the Architect or the Architect's Consultants, who is deemed to be the author of the drawings and data, and who shall retain all common law, statutory law, and all other rights, including copyrights.
2. The Contractor shall indemnify and hold harmless, the Design Team, its officers, directors, employees or subcontractors, to the fullest extent permitted by law, against all claims, liabilities, losses, damages, and costs, including but not limited to attorney's fees and defense costs arising out of or resulting from contractor's use of these electronic files, or in any way connected with the modification, misinterpretation, misuse, or reuse by the Contractor or by others.
3. The Contractor agrees that by using these electronic files, the Contractor is in no way relieved of the duty to fully comply with the Contract Documents, including and without limitation, the need to check, confirm and coordinate all dimensions and other details, take field measurements, verify field conditions and coordinate with all other contractors for the project.
4. It is agreed to that these electronic files are not Contract Documents. Differences may exist between electronic files and corresponding hard-copy Contract documents. The Design Team makes no representation regarding the accuracy or completeness of the electronic files provided to the contractor. In the event that a conflict arises, the signed and sealed hard-copy Contract Documents shall govern. Contractor is responsible for determining if any conflict exists.
5. The Contractor understands that the Design Team makes no representation as to the compatibility of these files with Contractor's computer hardware or software. The Contractor understands that the accuracy of the information is an artifact of the techniques used to generate it and is in no way intended to imply actual accuracy. It is also understood that the automated conversion of information and data

from the system and format used by the Design Team to an alternate system or format cannot be accomplished without the possibility of introduction of inexactitudes, anomalies and errors.

6. Because information presented on the electronic files can be modified, unintentionally or otherwise, the Design Team reserves the right to edit the drawings to remove information deemed not necessary and/or remove all indications of ownership and/or involvement from each electronic display.
7. The Design Team will only furnish those drawings directly applicable to the shop drawings the contractor wishes to create. The Contractor understands that not all electronic files may be available at the Design Team's discretion.
8. The Contractor understands that the Architect's Consultants may have Additional Conditions for release of their electronic files or documents, and the Contractor hereby agree to abide by the Consultants conditions in addition to the stated conditions in this agreement. Additional Conditions (if any) are attached to this agreement.
9. The Contractor understands that the Architect and the Architect's Consultants will incur certain costs in providing the requested electronic files. The Contractor agrees to pay the Design Team a service fee of \$120.00 per sheet, per delivery, prior to any delivery of the electronic files to compensate the Design Team for the labor to prepare and transmit the files and for the additional risk that this transfer will occasion.
10. Under no circumstances shall delivery of the electronic files for use by the Contractor be deemed a sale by the Owner, the Design Team, or any member of the Design Team. The Design Team makes no warranties, either expressed or implied, of merchantability or fitness for any particular purpose. In no event shall the Design Team be liable for any loss of profit or any consequential damages as a result of Contractor's use or reuse of the electronic files.

Darden Architects, Inc.

Attachments:

☐ Civil ☐ Structural ☐ Mechanical ☐ Electrical ☐ Others

Description of the requested documents and/or CAD files:

Printed Name

Title

Signed

Dated

FOR USE BY ARCHITECT ONLY

☐ Check Not Attached – Not Accepted

☐ Accepted

☐ Accepted as Noted

☐ Not Accepted

By _____

Date _____

Remarks _____

END OF SECTION

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SECTION 014100 – REGULATORY REQUIREMENTS

PART 1 - GENERAL

1.1 SUMMARY

- A. This Section includes the following:
 - 1. Provide all material, labor, equipment and services necessary to completely install all materials, accessories and other related items necessary to complete the Project as indicated by the Contract Documents.
 - 2. Section 4-317 (c), Part 1, Title 24, CCR, requires the following:
 - a. "The intent of these drawings and specifications is that the work of the alteration, rehabilitation or reconstruction is to be in accordance with Title 24, California Code of Regulations. Should any existing conditions such as deterioration of non-complying construction be discovered which is not covered by DSA approved documents wherein the finished work will not comply with Title 24, California Code of Regulations, a construction change document, or a separate set of plans and specifications, detailing and specifying the required repair work shall be submitted to and approved by DSA before proceeding with the repair work."
- B. Related Sections: The following Project Manual Sections contain requirements that relate to this section:
 - 1. ALL DIVISION 00 SPECIFICATION SECTIONS.
 - 2. ALL DIVISION 01 SPECIFICATION SECTIONS.
 - 3. ALL SPECIFICATION SECTIONS IN THE FACILITY CONSTRUCTION SUBGROUP.
 - 4. ALL SPECIFICATION SECTIONS IN THE FACILITY SERVICES SUBGROUP.
 - 5. ALL SPECIFICATION SECTIONS IN THE SITE AND INFRASTRUCTURE SUBGROUP.

1.2 REFERENCES

- A. References to standards, codes, specifications, recommendations and regulations, refer to the latest edition or printing in effect at the date of issue shown in the Documents unless another date is implied by the suffix number of the Standards.
- B. Applicable portions of the Standards listed that are not in conflict with the Contract Documents shall be construed as specification for this work.
- C. General Standards:
 - 1. AFPA American Forest and Paper Association
 - 2. ANSI American National Standards Institute
 - 3. ASTM American Society for Testing and Materials
 - 4. CAL/OSHA California Occupational Safety and Health Administration
 - a. State of California Construction Safety Orders
 - 5. CS Commercial Standards of the US Department of Commerce
 - 6. EPA Environmental Protection Agency
 - 7. FMG Factory Mutual Group

- 8. NIBS National Institute of Building Sciences
- 9. NIST National Institute of Standards and Technology
- 10. NFPA National Fire Protection Association
- 11. OSHA Occupational Safety and Health Administration
 - a. Federal Construction Safety Orders
- 12. PS Product Standards of the US Department of Commerce
- 13. SS-CDOT "Standard Specification":
 - a. State of California Department of Transportation (CalTrans)
- 14. UL Underwriters Laboratory Incorporated
- 15. WH Warnock Hersey

1.3 SUBMITTALS

- 1. Submit in accordance with Specification Section - SUBMITTAL PROCEDURES:
- 2. Quality Assurance/Control Submittals:
 - a. Certificates:
 - 1) Submit three (3) copies of certificates written on the Contractor's Letterhead indicating that the required codes shall be present at the Job Site.

1.4 QUALITY ASSURANCE

A. Regulatory Requirements:

- 1. All codes, laws, ordinances, rules, regulations, orders and other legal requirements of City, County, State, Federal and other public authorities which bear on performances of Work shall be applicable to Project. Latest editions shall be applicable unless specified otherwise.
- 2. Relationship between Applicable Codes and Contract Documents. The Contract Documents have been developed with the intent to conform to the applicable codes. Nothing within the Contract Documents shall be construed to permit Work not conforming to the applicable codes.

B. Major Governing Codes And Regulations:

- 1. General: All work shall comply with the requirements of the following codes and regulations. Special reference in other Sections of the Specifications to a specific code will be by use of the abbreviation given in front of the Code.
 - a. Freestanding equipment (if applicable) shall be provided and installed in accordance with the seismic requirements where the Project is located.
- 2. NOTE: * -Indicates that a copy of these codes shall be at the job site at all times.
- 3. AUTHORITY HAVING JURISDICTION:
 - a. AHJ: Authority Having Jurisdiction
- 4. FEDERAL LAW:
 - a. ADA: Americans with Disabilities Act
- 5. CALIFORNIA CODE OF REGULATIONS (Previously known as the California Administrative Codes)
 - a. CCR-T5: California Code of Regulations, Title 5-Education.
 - b. CCR-T8: California Code of Regulations, Title 8-Industrial Safety
 - 1) Contains the California Elevator Safety Code.
 - c. CCR-T19: California Code of Regulations, Title 19-Public Safety.
 - d. CCR-T21: California Code of Regulations, Title 21-Public Works.

- e. *CCR-T24: California Code of Regulations, Title 24, Part 1-Administrative Regulations.
 - 6. CALIFORNIA BUILDING, ELECTRICAL, MECHANICAL, PLUMBING, ENERGY, FIRE, and REFERENCED CODES
 - a. *CBC: California Building Code 2019 California Code of Regulations, Title 24-Part 2, Volumes 1 and 2, CCR-T24, based on the 2018 edition of the IBC (International Building Code), with the latest California State Amendments.
 - b. *CEC: California Electrical Code 2019, California Code of Regulations, Title 24-Part 3, CCR-T24, based on the 2017 edition of the NEC (National Electrical Code), with the latest California State Amendments.
 - c. *CMC: California Mechanical Code 2019, California Code of Regulations, Title 24, Part 4, CCR-T24, based on the 2018 edition of the UMC (Uniform Mechanical Code), with the latest California State Amendments.
 - d. *CPC: California Plumbing Code 2019, California Code of Regulations, Title 24, Part 5, CCR-T24, based on the 2018 edition of the UPC (Uniform Plumbing Code) by IAPMO, with the latest California State Amendments.
 - e. *CENc: California Energy Code 2019, California Code of Regulations, Title 24, Part 6, CCR-T24, and the latest California State Amendments.
 - f. *CFC: California Fire Code 2019, California Code of Regulations, Title 24, Part 9, CCR-T24, based on the 2018 edition of the IFC (International Fire Code), with the latest California State Amendments.
 - 1) In addition to all other Chapters in the CFC to be followed, attention is specifically called out to comply with Chapter 33 - "Fire Safety During Construction and Demolition".
 - g. CBSC: California Building Standards Commission, California Code of Regulations, Title 24, Part 10, CCR-T24.
 - h. CGBSC: California Green Building Standards Code 2019, California Code of Regulations, Title 24-Part 11, CCR-T24 (CALGreen).
 - i. CRSC: California Referenced Standard Code 2019, Title 24, Part 12, CCR-T24, with the latest California State Amendments.
 - 7. DSA: DIVISION OF THE STATE ARCHITECT:
 - a. DSA: Regulations of the Division of the State Architect of the State of California:
 - 1) ACS: Access Compliance Section
 - 2) SSS: Structural Safety Section
 - 3) FLS: Fire and Life Safety Section
 - 4) IR: Interpretation of Regulations.
 - 8. OTHER STATE AGENCIES:
 - a. AQMCD: Air Quality Management Control District in the area where the project is located.
 - b. RWQCB: Regional Water Quality Control Board in the area where the project is located.
- C. Governing Authority:
- 1. DSA: Division of the State Architect.
 - a. The provisions of the State of California, Statutes of 1933, Chapter 59, Safety of Construction of Public School Buildings Act, and the latest regulation based thereon, of the Division of the State Architect of the State of California, shall be the governing authority and shall take precedence over other applicable codes.
 - b. The following shall be stamped and signed by the A/E on Record or Delegated Design Professional per CBC, Part 1, Section 4-317 (h), and the following:

- 1) Addenda or Bulletins per Sec. 4-338(b): All addenda or bulletins shall be signed and approved by the Division of State Architect.
- 2) Construction Changes per Sec. 4-338(c): All Construction Changes related to structural items, fire safety issues, life safety issues and accessibility compliance issues shall be reviewed and approved by the appropriate Division of the State Architect.
- 3) Substitutions (per DSA) shall be treated like Addenda, or Construction Changes per Sec. 4-338(c), and IR A-6: All substitution requests and substitutions related to structural items, fire safety issues, life safety issues and accessibility compliance issues shall be reviewed and approved by the appropriate Division of the State Architect prior to fabrication and installation.

PART 2 - PRODUCTS

NOT APPLICABLE

PART 3 - EXECUTION

NOT APPLICABLE

END OF SECTION

SECTION 014200 – REFERENCES

PART 1 - GENERAL

1.1 SUMMARY

- A. This Section includes the following:
 - 1. Provide all material, labor, equipment and services necessary to completely install all materials, accessories and other related items necessary to complete the Project as indicated by the Contract Documents.
 - a. The abbreviations, symbols and work meanings not defined in the Contract Documents are in accordance with building industry usage and convention. Questions which arise as to "meaning," or intent shall be referred to the Architect prior to bidding for interpretation.
 - b. Refer to drawings for additional abbreviations and symbols.
 - c. Refer to GENERAL and SPECIAL or SUPPLEMENTAL CONDITIONS and specific specification Sections for additional definitions.
- B. Related Sections: The following Project Manual Sections contain requirements that relate to this section:
 - 1. ALL DIVISION 00 SPECIFICATION SECTIONS.
 - 2. ALL DIVISION 01 SPECIFICATION SECTIONS.
 - 3. ALL SPECIFICATION SECTIONS IN THE FACILITY CONSTRUCTION SUBGROUP.
 - 4. ALL SPECIFICATION SECTIONS IN THE FACILITY SERVICES SUBGROUP.
 - 5. ALL SPECIFICATION SECTIONS IN THE SITE AND INFRASTRUCTURE SUBGROUP.

1.2 DEFINITIONS

- A. EXECUTE Perform what is required to install, apply, erect and otherwise incorporate products in to this Project.
- B. FURNISH Supply products required, deliver to Project, unload, store and install as required in location as directed by Contractor, Owner or Architect.
- C. GUARANTEE An assurance by the seller or installer that products or Work are as represented or will be as promised in compliance with Specifications. Synonymous and interchangeable with WARRANTY.
- D. INSTALL Incorporate into this Project.
- E. PRODUCTS The material, equipment, fixtures and other physical substances required to execute the Project.
- F. PROVIDE Furnish and Install into this Project.

- G. WARRANTY An assurance by the seller or installer that products or Work are as represented or will be as promised in compliance with Specifications. Synonymous and interchangeable with GUARANTEE.

PART 2 - PRODUCTS

NOT APPLICABLE

PART 3 - EXECUTION

NOT APPLICABLE

END OF SECTION

SECTION 014523 – TESTING AND INSPECTION SERVICES

PART 1 - GENERAL

1.1 SUMMARY

- A. This Section includes the following:
1. One Project Inspector (Owner's Inspector), including Special and/or Assistant Inspector(s) (minimum Class 1 Rating), as required, will be employed by the Owner in accordance with the requirements of CCR-Title 24, Part 1, CALIFORNIA ADMINISTRATIVE CODE, and the latest amendments, and will be assigned to the Project.
 - a. Duties of a Project Inspector are specifically defined in CCR-Title 24, Part 1, and the latest amendments.
 - b. Special Inspections (not within the Project Inspector's abilities) shall be performed by the Testing Laboratory or other Special Inspector as approved by the Owner and DSA.
 - 1) All Special Inspections shall be approved by DSA in accordance with CCR-T24, Part 1, Chapter 4, Group 1, Article 5, Section 4-335.1.
 2. The Project Inspector shall be employed by the Owner and approved by the Architect, Structural Engineer, and DSA.
 - a. See the Title Page of this Project Manual for the name of this Project.
 - b. Payment of the Project Inspector will be by the Owner.
 3. Provide all access, facilities and information required by the Project Inspector for the Project.
- B. Related Sections: The following Project Manual Sections contain requirements that relate to this section:
1. ALL DIVISION 00 SPECIFICATION SECTIONS.
 2. ALL DIVISION 01 SPECIFICATION SECTIONS.
 3. ALL SPECIFICATION SECTIONS IN THE FACILITY CONSTRUCTION SUBGROUP.
 4. ALL SPECIFICATION SECTIONS IN THE FACILITY SERVICES SUBGROUP.
 5. ALL SPECIFICATION SECTIONS IN THE SITE AND INFRASTRUCTURE SUBGROUP.

1.2 DEFINITIONS

- A. Responsibilities of the Project Inspector:
1. The Project Inspector will be required to provide inspection of the Work (including "Continuous Inspection") as required in CCR-T24, Part 1:
 - a. Educational Work: Chapter 4, Group 1, Article 6, 4-342 (b).
 2. The Project Inspector will report to the Owner, the Architect and DSA as required during the progress of the Work.
 3. The Project Inspector shall review all Pay Requests prior to submittal to the Architect.
- B. Responsibilities of the Contractor:

1. Written Statement of Responsibility to the Owner and the Authority Having Jurisdiction (DSA) per CBC Chapter 17A:
 - a. Provide a written Statement of Responsibility regarding the Contractor's understanding of the special inspection requirements and identifying individuals in their firm responsible for exercising control over the conformance to the construction documents.
2. Provide the Project Inspector free access to any and all parts of the Project at all times.
3. Provide the Project Inspector information necessary to keep him fully informed with respect to the progress, manner and character of Work.
4. Perform no Work in absence of the Project Inspector unless alternate arrangements have been made in advance and agreed to by the Owner, the Architect and DSA.
5. The Owner's "Inspection of Work" by the Project Inspector shall not relieve the Contractor from any conditions of this Contract.

1.3 SUBMITTALS

- A. Submit in accordance with Specification Section - SUBMITTAL PROCEDURES:
 1. Quality Assurance/Control Submittals:
 - a. Written Statement of Responsibility to the Owner and the Authority Having Jurisdiction per CBC Chapter 17A.
 - b. Project Inspector's Field Reports:
 - 1) Submit four (4) copies of reports.

1.4 QUALITY ASSURANCE

- A. Regulatory Requirements:
 1. In accordance with Specification Section - REGULATORY REQUIREMENTS.

PART 2 - PRODUCTS

NOT APPLICABLE

PART 3 - EXECUTION

NOT APPLICABLE

END OF SECTION

SECTION 014529 – TESTING LABORATORY SERVICES

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes the following:

1. The Owner's Testing Laboratory shall be employed by the Owner and approved by the Architect, Structural Engineer, and DSA.
 - a. Payment of the Owner's Testing Laboratory will be by the Owner.
 - b. The Owner shall pay for all initial testing indicated as paid for by Owner except as specified otherwise or in the schedule at the end of this section.
 - 1) Cost of re-testing (due to initial failures) shall be back-charged to the Contractor, and those excess costs will be deducted from the Contract Price.
 - 2) Cost of testing (due to shop fabrication or in-plant testing out of state and beyond a 75 mile radius of the Project Site) shall be back-charged to the Contractor, and those excess costs will be deducted from the Contract Price.
2. Provide all access, facilities and information required for the testing of the various portions of the Work as required by Regulatory Agencies, Planning, Agencies, Building Agencies, and other Governmental Inspectors, the Contract Documents and the Owner.

B. Related Sections: The following Project Manual Sections contain requirements that relate to this section:

1. ALL DIVISION 00 SPECIFICATION SECTIONS.
2. ALL DIVISION 01 SPECIFICATION SECTIONS.
3. ALL SPECIFICATION SECTIONS IN THE FACILITY CONSTRUCTION SUBGROUP.
4. ALL SPECIFICATION SECTIONS IN THE FACILITY SERVICES SUBGROUP.
5. ALL SPECIFICATION SECTIONS IN THE SITE AND INFRASTRUCTURE SUBGROUP.

1.2 DEFINITIONS

A. Responsibility of the Testing Laboratory:

1. Taking all specimens.
2. Performing Tests.
 - a. The Testing Laboratory's duties shall include all tests required by the DSA 103 Form prepared at the time of DSA Approvals, and any other testing as determined by authorities or the Project Inspector during the course of the work.
 - b. Special Inspections (not within the Project Inspector's abilities) shall be performed by the Testing Laboratory or other Special Inspector as approved by the Owner and DSA.
 - 1) All Special Inspections shall be approved by DSA in accordance with CCR-T24, Part 1, Chapter 4, Group 1, Article 5, Section 4-335.
3. Writing Test Reports
4. Review of "Continuous Inspection" reports by the Project Inspector.

- a. Portions of the Work requiring "Continuous Inspection" shall be performed by the Project Inspector (if qualified) and all reports will be reviewed by the Testing Laboratory.
- 5. Distribute Test Reports to the Owner, Architect, applicable Engineer, Contractor and to DSA.

B. Responsibilities of the Contractor:

- 1. Contractor shall provide a Testing Schedule that is in accordance with the following:
 - a. Format of the Testing Schedule shall be in accordance with Specification Section – CONSTRUCTION SCHEDULES.
 - b. Cooperates with the Testing Laboratory's schedule of required testing.
 - c. Contractor shall coordinate Construction Schedule and Testing Schedule.
 - 1) Format of testing schedule in accordance with Specification Section – CONSTRUCTION SCHEDULES.
- 2. Cooperation with testing laboratory:
 - a. Provide access to Work being tested.
 - b. Provide test samples as selected by testing laboratory.
 - c. Schedule Work so that there shall be no excessive inspection time.
 - 1) At times that an inspector is required, sufficient work shall be laid out and adequate personnel supplied so that the inspector's time shall be used to full advantage.
 - 2) If inspection costs become excessive because of poor shop or construction procedure, such excess costs will be paid for by the Owner, but deducted from the Contract Price.
 - d. Inspections and tests required by regulatory agencies shall be the responsibility of and shall be paid for by the Owner unless specified otherwise.
 - e. Inspections and testing performed exclusively for the Contractor's convenience shall be the sole responsibility of the Contractor.
 - f. Test Reports:
 - 1) Distribute test reports and related instruction to insure all required re-testing and/or replacement of materials.
 - g. Payment of Testing:
 - 1) All testing shall be paid for by the Owner.
- 3. Contractor shall be backcharged for re-testing, excessive distance from the Project Site, or extra testing required because of initial failures.

1.3 SUBMITTALS

A. Submit in accordance with Specification Section - SUBMITTAL PROCEDURES:

- 1. Quality Assurance/Control Submittals:
 - a. Test Reports:
 - 1) Submit four (4) copies of testing laboratory's report.

1.4 QUALITY ASSURANCE

A. Qualifications:

- 1. Testing Laboratory Qualifications:
 - a. In accordance with the latest Edition of ASTM E-329.

- B. Regulatory Requirements and Reference Standards:
 - 1. In accordance with Specification Section - REGULATORY REQUIREMENTS, and the following:
 - a. In accordance with regulatory agencies and appropriate ASTM Standards.

PART 2 - PRODUCTS

NOT APPLICABLE

PART 3 - EXECUTION

3.1 SCHEDULES

- A. Testing Schedule at the end of this section should be used as a guide only and it is not considered a complete list. Refer to regulatory agency requirements and specific specification section for complete testing requirements.
- B. TESTING SCHEDULE
 - 1. 03 15 14 - DRILLED ANCHORS
 - a. Tension Tests.
 - 1) Paid by Owner.
 - 2. 03 20 00 - REINFORCEMENT
 - a. Rebar Material per ACI 318, CBC TABLE 1705A.2.1, CBC Sections 1903A.1, 1905A, and 1910A.
 - 1) Paid by Owner
 - b. Continuous Inspection of Welds per ACI 318, CBC TABLE 1705A.2.1, CBC Sections 1903A.8, 1905A, and 1910A.
 - 1) Paid by Owner
 - 3. 03 30 00 - CAST-IN-PLACE CONCRETE
 - a. Cement Material per ACI 318, and CBC Sections 1903A, 1905A, and 1910A.
 - 1) Paid by Owner
 - b. Aggregate Material per ACI 318.
 - 1) Paid by Owner
 - c. Concrete Mix per ACI 318. CBC Sections 1903A and 1910A.
 - 1) Paid by Owner
 - d. Concrete Strength Tests per ACI 318.
 - 1) Paid by Owner
 - e. Concrete Compression Tests per ACI 318.
 - 1) Paid by Owner
 - 4. 05 12 00 - STEEL AND FABRICATIONS
 - a. Steel Material per CBC Section 1705A.2.
 - 1) Paid by Owner
 - b. High Strength Bolts and installation per CBC Section 1705A, and CBC Section 1705A.2.6.
 - 1) Paid by Owner
 - c. Inspection of Shop and Field Welding per CBC Section 1705A, and CBC Section 1705A.2.5.

- 1) Paid by Owner
 - 5. DIV. 26 - SERVICE AND DISTRIBUTION
 - a. Equipment Operation
 - 1) Paid by Contractor
 - b. Protective Systems
 - 1) Paid by Contractor
 - 6. DIV. 26 - LIGHTING
 - a. Equipment Operation
 - 1) Paid by Contractor
 - 7. DIV. 28 - FIRE SPRINKLER SYSTEM
 - a. All tests required by NFPA #13.
 - 1) Paid by Contractor
 - 8. 31 20 00 - EARTHWORK
 - a. Compaction Test
 - 1) Paid by Owner
 - b. Inspection of Excavations and Fills per CBC Table 1705A.6.
 - 1) Paid by Owner
 - c. Department of Toxic Substances Control (DTSC) Independent Testing of Imported soil
 - 1) Paid by Contractor
- C. Division of the State Architect "Statement of Structural Tests and Special "Inspections":
- 1. In addition to the TESTING SCHEDULE cited above, and elsewhere within the documents, DSA requires the Contractor to schedule and manage the following tests to be performed and reported as required for this Project.
 - 2. Failure to schedule these tests is grounds for reduction in Monthly Payment Request authorization, and may delay distribution of the Final Payment.
 - 3. Refer to the approved DSA 103-Listing of Structural Tests and Special Inspections Form.

END OF SECTION

DSA 103-19: LISTING OF STRUCTURAL TESTS & SPECIAL INSPECTIONS, 2019 CBC

Application Number:
02-120479
DSA File Number:
24-C1

School Name:
Merced College
Increment Number:

School District:
Merced Community College District
Date Created:
2022-10-14 16:02:20

2019 CBC

IMPORTANT: This form is only a summary list of structural tests and some of the special inspections required for the project. Generally, the structural tests and special inspections noted on this form are those that will be performed by the Geotechnical Engineer of Record, Laboratory of Record, or Special Inspector. The actual complete test and inspection program must be performed as detailed on the DSA approved documents. The appendix at the bottom of this form identifies work NOT subject to DSA requirements for special inspection or structural testing. The project inspector is responsible for providing inspection of all facets of construction, including but not limited to, special inspections not listed on this form such as structural wood framing, high-load wood diaphragms, cold-formed steel framing, anchorage of non-structural components, etc., per Title 24, Part 2, Chapter 17A (2019 CBC).

****NOTE:** Undefined section and table references found in this document are from the CBC, or California Building Code.

KEY TO COLUMNS

1. TYPE	2. PERFORMED BY
Continuous – Indicates that a continuous special inspection is required	GE – Indicates that the special inspection shall be performed by a registered geotechnical engineer or his or her authorized representative.
Periodic – Indicates that a periodic special inspection is required	LOR – Indicates that the test or special inspection shall be performed by a testing laboratory accepted in the DSA Laboratory Evaluation and Acceptance (LEA) Program. See CAC Section 4-335.
Test – Indicates that a test is required	PI – Indicates that the special inspection may be performed by a project inspector when specifically approved by DSA. SI – Indicates that the special inspection shall be performed by an appropriately qualified/approved special inspector.

DSA 103-19: LISTING OF STRUCTURAL TESTS & SPECIAL INSPECTIONS (SOILS), 2019 CBC

Table 1705A.6, Table 1705A.7, Table 1705A.8

Application Number: 02-120479	School Name: Merced College	School District: Merced Community College District
DSA File Number: 24-C1	Increment Number:	Date Created: 2022-10-14 16:02:20

Geotechnical Reports: Project does NOT have and does NOT require a geotechnical report

S1. GENERAL:				
	Test or Special Inspection	Type	Performed By	Code References and Notes
☒	a. Verify that: • Site has been prepared properly prior to placement of controlled fill and/or excavations for foundations. • Foundation excavations are extended to proper depth and have reached proper material. • Materials below footings are adequate to achieve the design bearing capacity.	See Notes	PI	Refer to specific items identified in the Appendix listing exemptions for limitations. Placement of controlled fill exceeding 12" depth under foundations is not permitted without a geotechnical report.

S2. SOIL COMPACTION AND FILL:				
	Test or Special Inspection	Type	Performed By	Code References and Notes
☒	a. Verify use of proper materials, densities and inspect lift thicknesses, placement and compaction during placement of fill.	Continuous	LOR*	* Under the supervision of a geotechnical engineer or LOR's engineering manager. Refer to specific items identified in the Appendix listing exemptions for limitations.
☒	b. Compaction testing.	Test	LOR*	* Under the supervision of a geotechnical engineer or LOR's engineering manager. Refer to specific items identified in the Appendix listing exemptions for limitations.

S3. DRIVEN DEEP FOUNDATIONS (PILES):				
	Test or Special Inspection	Type	Performed By	Code References and Notes
☐	a. Verify pile materials, sizes and lengths comply with the requirements.	Continuous	GE*	* By geotechnical engineer or his or her qualified representative.
☐	b. Determine capacities of test piles and conduct additional load tests as required.	Test	LOR*	* Under the supervision of the geotechnical engineer.

DSA 103-19: LISTING OF STRUCTURAL TESTS & SPECIAL INSPECTIONS (SOILS), 2019 CBC

Table 1705A.6, Table 1705A.7, Table 1705A.8

Application Number: 02-120479	School Name: Merced College	School District: Merced Community College District
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	Test or Special Inspection	Type	Performed By	Code References and Notes
☐	c. Inspect driving operations and maintain complete and accurate records for each pile.	Continuous	GE*	* By geotechnical engineer or his or her qualified representative.
☐	d. Verify locations of piles and their plumbness, confirm type and size of hammer, record number of blows per foot of penetration, determine required penetrations to achieve design capacity, record tip and butt elevations and record any pile damage.	Continuous	GE*	* By geotechnical engineer or his or her qualified representative.
☐	e. Steel piles.	Provide tests and inspections per STEEL section below.		
☐	f. Concrete piles and concrete filled piles.	Provide tests and inspections per CONCRETE section below.		
☐	g. For specialty piles, perform additional inspections as determined by the registered design professional in responsible charge.	*	*	* As defined on drawings or specifications.

	S4. CAST-IN-PLACE DEEP FOUNDATIONS (PIERS):			
	Test or Special Inspection	Type	Performed By	Code References and Note
☐	a. Inspect drilling operations and maintain complete and accurate records for each pier.	Continuous	PI	Continuous inspection to be provided by project inspector. Refer to specific items identified in the Appendix listing exemptions for limitations.
☐	b. Verify pier locations, diameters, plumbness and lengths. Record concrete or grout volumes.	Continuous	PI	Continuous inspection to be provided by project inspector. Refer to specific items identified in the Appendix listing exemptions for limitations.
☐	c. Concrete piers.	Provide tests and inspections per CONCRETE section below.		

DSA 103-19: LISTING OF STRUCTURAL TESTS & SPECIAL INSPECTIONS (SOILS), 2019 CBC

Table 1705A.6, Table 1705A.7, Table 1705A.8

Application Number: 02-120479	School Name: Merced College	School District: Merced Community College District
DSA File Number: 24-C1	Increment Number:	Date Created: 2022-10-14 16:02:20

	Test or Special Inspection	Type	Performed By	Code References and Notes
	S5. RETAINING WALLS:			
	Test or Special Inspection	Type	Performed By	Code References and Notes
☐	a. Placement, compaction and inspection of backfill.	Continuous	GE*	1705A.6.1. * By geotechnical engineer or his or her qualified representative. (See S2 above).
☐	b. Placement of soil reinforcement and/or drainage devices.	Continuous	GE*	* By geotechnical engineer or his or her qualified representative.
☐	c. Segmental retaining walls; inspect placement of units, dowels, connectors, etc.	Continuous	GE*	* By geotechnical engineer or his or her qualified representative. See DSA IR 16-3.
☐	d. Concrete retaining walls.	Provide tests and inspections per CONCRETE section below.		
☐	e. Masonry retaining walls.	Provide tests and inspections per MASONRY section below.		

	S6. OTHER SOILS:			
	Test or Special Inspection	Type	Performed By	Code References and Notes
☐	a. Soil Improvements	Test	GE*	Submit a comprehensive report documenting final soil improvements constructed, construction observation and the results of the confirmation testing and analysis to CGS for final acceptance. * By geotechnical engineer or his or her qualified representative.
☐	b. Inspection of Soil Improvements	Continuous	GE*	* By geotechnical engineer or his or her qualified representative.
☐	c.			

DSA 103-19: LISTING OF STRUCTURAL TESTS & SPECIAL INSPECTIONS (CONCRETE), 2019 CBC

Table 1705A.3; ACI 318-14 Sections 26.12 & 26.13

Application Number: 02-120479	School Name: Merced College	School District: Merced Community College District
DSA File Number: 24-C1	Increment Number:	Date Created: 2022-10-14 16:02:20

C1. CAST-IN-PLACE CONCRETE				
	Test or Special Inspection	Type	Performed By	Code References and Notes
☒	a. Verify use of required design mix.	Periodic	SI	Table 1705A.3 Item 5, 1910A.1.
☒	b. Identify, sample, and test reinforcing steel.	Test	LOR	1910A.2; ACI 318-14 Section 26.6.1.2; DSA IR 17-10. (See Appendix for exemptions.)
☒	c. During concrete placement, fabricate specimens for strength tests, perform slump and air content tests, and determine the temperature of the concrete.	Test	LOR	Table 1705A.3 Item 6; ACI 318-14 Sections 26.5 & 26.12.
☒	d. Test concrete (f'_c).	Test	LOR	1905A.1.15; ACI 318-14 Section 26.12.
☒	e. Batch plant inspection: Eliminated	See Notes	SI	Default of 'Continuous' per 1705A.3.3. If approved by DSA, batch plant inspection may be reduced to 'Periodic' subject to requirements in Section 1705A.3.3.1, or eliminated per 1705A.3.3.2. See IR 17-13. (See Appendix for exemptions.)
☐	f. Welding of reinforcing steel.	Provide special inspection per STEEL, Category S/A4(d) & (e) and/or S/A5(g) & (h) below.		

C2. PRESTRESSED / POST-TENSIONED CONCRETE (IN ADDITION TO SECTION C1):				
	Test or Special Inspection	Type	Performed By	Code References and Notes
☐	a. Sample and test prestressing tendons and anchorages.	Test	LOR	1705A.3.4, 1910A.3
☐	b. Inspect placement of prestressing tendons.	Periodic	SI	1705A.3.4, Table 1705A.3 Items 1 & 9.

DSA 103-19: LISTING OF STRUCTURAL TESTS & SPECIAL INSPECTIONS (CONCRETE), 2019 CBC

Table 1705A.3; ACI 318-14 Sections 26.12 & 26.13

Application Number: 02-120479	School Name: Merced College	School District: Merced Community College District
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	Test or Special Inspection	Type	Performed By	Code References and Notes
☐	c. Verify in-situ concrete strength prior to stressing of post-tensioning tendons.	Periodic	SI	Table 1705A.3 Item 11. Special inspector to verify specified concrete strength test prior to stressing.
☐	d. Inspect application of post-tensioning or prestressing forces and grouting of bonded prestressing tendons.	Continuous	SI	1705A.3.4, Table 1705A.3 Item 9; ACI 318-14 Section 26.13

	C3. PRECAST CONCRETE (IN ADDITION TO SECTION C1):			
	Test or Special Inspection	Type	Performed By	Code References and Notes
☐	a. Inspect fabrication of precast concrete members.	Continuous	SI	ACI 318-14 Section 26.13.
☐	b. Inspect erection of precast concrete members.	Periodic	SI*	Table 1705A.3 Item 10. * May be performed by PI when specifically approved by DSA.

	C4. SHOTCRETE (IN ADDITION TO SECTION C1):			
	Test or Special Inspection	Type	Performed By	Code References and Notes
☐	a. Inspect shotcrete placement for proper application techniques.	Continuous	SI	1705A.19, Table 1705A.3 Item 7, 1908A.6, 1908A.7, 1908A.8, 1908A.9, 1908A.11, 1908A.12. See ACI 506.2-13 Section 3.4, ACI 506R-16.
☐	b. Sample and test shotcrete (f'_c).	Test	LOR	1908A.5, 1908A.10.

DSA 103-19: LISTING OF STRUCTURAL TESTS & SPECIAL INSPECTIONS (CONCRETE), 2019 CBC

Table 1705A.3; ACI 318-14 Sections 26.12 & 26.13

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C5. POST-INSTALLED ANCHORS:				
	Test or Special Inspection	Type	Performed By	Code References and Notes
☐	a. Inspect installation of post-installed anchors	See Notes	SI*	1617A.1.19, Table 1705A.3 Item 4a (Continuous) & 4b (Periodic), 1705A.3.8 (See Appendix for exemptions). ACI 318-14 Sections 17.8 & 26.13. * May be performed by the project inspector when specifically approved by DSA.
☐	b. Test post-installed anchors.	Test	LOR	1910A.5. (See Appendix for exemptions.)

C6. OTHER CONCRETE:				
	Test or Special Inspection	Type	Performed By	Code References and Notes
☐	a.			

DSA 103-19: LISTING OF STRUCTURAL TESTS & SPECIAL INSPECTIONS (STEEL AND ALUMINUM), 2019 CBC

1705A.2.1, Table 1705A.2.1; AISC 303-16, AISC 341-16, AISC 358-16, AISC 360-16; AISI S100-16; RCSC 2014; AWS D1.1, AWS D1.2, AWS D1.3, AWS D1.4, AWS D1.8

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S/A1. STRUCTURAL STEEL, COLD-FORMED STEEL AND ALUMINUM USED FOR STRUCTURAL PURPOSES				
	Test or Special Inspection	Type	Performed By	Code References and Notes
☒	a. Verify identification of all materials and: • Mill certificates indicate material properties that comply with requirements. • Material sizes, types and grades comply with requirements.	Periodic	*	Table 1705A.2.1 Item 3a–3c. 2202A.1; AISI S100-16 Section A3.1 & A3.2, AISI S240-15 Section A3 & A5, AISI S220-15 Sections A4 & A6. * By special inspector or qualified technician when performed off-site.
☒	b. Test unidentified materials	Test	LOR	2202A.1.
☐	c. Examine seam welds of HSS shapes	Periodic	SI	DSA IR 17-3.
☒	d. Verify and document steel fabrication per DSA-approved construction documents.	Periodic	SI	Not applicable to cold-formed steel light-frame construction, except for trusses (1705A.2.4).
☐	e. Buckling restrained braces.	Test	LOR	Testing and special inspections in accordance with IR 22-4.

S/A2. HIGH-STRENGTH BOLTS:				
	Test or Special Inspection	Type	Performed By	Code References and Notes
☐	a. Verify identification markings and manufacturer's certificates of compliance conform to ASTM standards specified in the DSA-approved documents.	Periodic	SI	Table 1705A.2.1 Items 1a & 1b, 2202A.1; AISC 360-16 Section A3.3, J3.1, and N3.2; RCSC 2014 Section 1.5 & 2.1; DSA IR 17-8 & DSA IR 17-9.
☐	b. Test high-strength bolts, nuts and washers.	Test	LOR	Table 1705A.2.1 Item 1c, 2213A.1; RCSC 2014 Section 7.2; DSA IR 17-8.
☐	c. Bearing-type ("snug tight") connections.	Periodic	SI	Table 1705A.2.1 Item 2a, 1705A.2.6, 2204A.2; AISC 360-16 J3.1, J3.2, M2.5 & N5.6; RCSC 2014 Section 9.1; DSA IR 17-9.
☐	d. Pretensioned and slip-critical connections.	*	SI	Table 1705A.2.1 Items 2b & 2c, 1705A.2.6, 2204A.2; AISC 360-16 J3.1, J3.2, M2.5 & N5.6; RCSC 2014 Sections 9.2 & 9.3; DSA IR 17-9. * "Continuous" or "Periodic" depends on the tightening method used.

DSA 103-19: LISTING OF STRUCTURAL TESTS & SPECIAL INSPECTIONS (STEEL AND ALUMINUM), 2019 CBC

1705A.2.1, Table 1705A.2.1; AISC 303-16, AISC 341-16, AISC 358-16, AISC 360-16; AISI S100-16; RCSC 2014; AWS D1.1, AWS D1.2, AWS D1.3, AWS D1.4, AWS D1.8

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S/A3. WELDING:				
	Test or Special Inspection	Type	Performed By	Code References and Notes
☒	a. Verify weld filler material identification markings per AWS designation listed on the DSA-approved documents and the WPS.	Periodic	SI	1705A.2.5, Table 1705A.2.1 Items 4 & 5; AWS D1.1 and AWS D1.8 for structural steel; AWS D1.2 for Aluminum; AWS D1.3 for cold-formed steel; AWS D1.4 for reinforcing steel; DSA IR 17-3.
☒	b. Verify weld filler material manufacturer's certificate of compliance.	Periodic	SI	DSA IR 17-3.
☒	c. Verify WPS, welder qualifications and equipment.	Periodic	SI	DSA IR 17-3.

S/A4. SHOP WELDING (IN ADDITION TO SECTION S/A3):				
	Test or Special Inspection	Type	Performed By	Code References and Notes
☐	a. Inspect groove welds, multi-pass fillet welds, single pass fillet welds > 5/16", plug and slot welds.	Continuous	SI	Table 1705A.2.1 Items 5a.1-4; AISC 360-16 (and AISC 341-16 as applicable); DSA IR 17-3.
☐	b. Inspect single-pass fillet welds ≤ 5/16", floor and roof deck welds.	Periodic	SI	1705A.2.2, Table 1705A.2.1 Items 5a.5 & 5a.6; AISC 360-16 (and AISC 341-16 as applicable); DSA IR 17-3.
☐	c. Inspect welding of stairs and railing systems.	Periodic	SI	1705A.2.1; AISC 360-16 (and AISC 341-16 as applicable); AWS D1.1 & D1.3; DSA IR 17-3.
☐	d. Verification of reinforcing steel weldability other than ASTM A706.	Periodic	SI	1705A.3.1; AWS D1.4; DSA IR 17-3. Verify carbon equivalent reported on mill certificates.
☐	e. Inspect welding of reinforcing steel.	Continuous	SI	Table 1705A.2.1 Item 5b, 1705A.3.1, Table 1705A.3 Item 2, 1903A.8; AWS D1.4; DSA IR 17-3.

DSA 103-19: LISTING OF STRUCTURAL TESTS & SPECIAL INSPECTIONS (STEEL AND ALUMNINUM), 2019 CBC

1705A.2.1, Table 1705A.2.1; AISC 303-16, AISC 341-16, AISC 358-16, AISC 360-16; AISI S100-16; RCSC 2014; AWS D1.1, AWS D1.2, AWS D1.3, AWS D1.4, AWS D1.8

Application Number:

02-120479

School Name:

Merced College

School District:

Merced Community College District

DSA File Number:

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Increment Number:

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	Test or Special Inspection	Type	Performed By	Code References and Notes
	S/A5. FIELD WELDING (IN ADDITION TO SECTION S/A3):			
	Test or Special Inspection	Type	Performed By	Code References and Notes
☐	a. Inspect groove welds, multi-pass fillet welds, single pass fillet welds > 5/16", plug and slot welds.	Continuous	SI	Table 1705A.2.1 Items 5a.1–4; AISC 360-16 (AISC 341-16 as applicable); DSA IR 17-3.
☐	b. Inspect single-pass fillet welds ≤ 5/16".	Periodic	SI	Table 1705A.2.1 Item 5a.5; AISC 360-16 (AISC 341-16 as applicable); DSA IR 17-3.
☐	c. Inspect end-welded studs (ASTM A-108) installation (including bend test).	Periodic	SI	2213A.2; AISC 360-16 (AISC 341-16 as applicable); AWS D1.1; DSA IR 17-3.
☐	d. Inspect floor and roof deck welds.	Periodic	SI	1705A.2.2, Table 1705A.2.1 Item 5a.6; AISC 360-16 (AISC 341-16 as applicable); AWS D1.3; DSA IR 17-3.
☐	e. Inspect welding of structural cold-formed steel.	Periodic	SI*	1705A.2.5; AWS D1.3; DSA IR 17-3. The quality control provisions of AISI S240-15 Chapter D shall also apply. * May be performed by the project inspector when specifically approved by DSA.
☐	f. Inspect welding of stairs and railing systems.	Periodic	SI*	1705A.2.1; AISC 360-16 (AISC 341-16 as applicable); AWS D1.1 & D1.3; DSA IR 17-3. * May be performed by the project inspector when specifically approved by DSA.
☐	g. Verification of reinforcing steel weldability.	Periodic	SI	1705A.3.1; AWS D1.4; DSA IR 17-3. Verify carbon equivalent reported on mill certificates.
☐	h. Inspect welding of reinforcing steel.	Continuous	SI	Table 1705A.2.1 Item 5b, 1705A.3.1, Table 1705A.3 Item 2, 1903A.8; AWS D1.4; DSA IR 17-3.

DSA 103-19: LISTING OF STRUCTURAL TESTS & SPECIAL INSPECTIONS (STEEL AND ALUMNINUM), 2019 CBC

1705A.2.1, Table 1705A.2.1; AISC 303-16, AISC 341-16, AISC 358-16, AISC 360-16; AISI S100-16; RCSC 2014; AWS D1.1, AWS D1.2, AWS D1.3, AWS D1.4, AWS D1.8

Application Number:

02-120479

School Name:

Merced College

School District:

Merced Community College District

DSA File Number:

24-C1

Increment Number:

Date Created:

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	Test or Special Inspection	Type	Performed By	Code References and Notes
	S/A6. NONDESTRUCTIVE TESTING:			
	Test or Special Inspection	Type	Performed By	Code References and Notes
☐	a. Ultrasonic	Test	LOR	1705A.2.1, 1705A.2.5; AISC 341-16 J6.2, AISC 360-16 N5.5; ANSI/ASNT CP-189, SNT-TC-1A; AWS D1.1, AWS D1.8; DSA IR 17-2.
☐	b. Magnetic Particle	Test	LOR	1705A.2.1, 1705A.2.5; AISC 341-16 J6.2, AISC 360-16 N5.5; ANSI/ASNT CP-189, SNT-TC-1A; AWS D1.1, AWS D1.8; DSA IR 17-2.
☐	c.	Test	LOR	

	S/A7. STEEL JOISTS AND TRUSSES:			
	Test or Special Inspection	Type	Performed By	Code References and Notes
☐	a. Verify size, type and grade for all chord and web members as well as connectors and weld filler material; verify joist profile, dimensions and camber (if applicable); verify all weld locations, lengths and profiles; mark or tag each joist.	Continuous	SI	1705A.2.3, Table 1705A.2.3; AWS D1.1; DSA IR 22-3 for steel joists only. 1705A.2.4; AWS D1.3 for cold-formed steel trusses.

DSA 103-19: LISTING OF STRUCTURAL TESTS & SPECIAL INSPECTIONS (STEEL AND ALUMNINUM), 2019 CBC

1705A.2.1, Table 1705A.2.1; AISC 303-16, AISC 341-16, AISC 358-16, AISC 360-16; AISI S100-16; RCSC 2014; AWS D1.1, AWS D1.2, AWS D1.3, AWS D1.4, AWS D1.8

Application Number:

02-120479

School Name:

Merced College

School District:

Merced Community College District

DSA File Number:

24-C1

Increment Number:

Date Created:

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	Test or Special Inspection	Type	Performed By	Code References and Notes
	S/A8. SPRAY APPLIED FIRE-PROOFING:			
	Test or Special Inspection	Type	Performed By	Code References and Notes
☐	a. Examine structural steel surface conditions, inspect application, take samples, measure thickness and verify compliance of all aspects of application with DSA-approved documents.	Periodic	SI	1705A.14.
☐	b. Test bond strength.	Test	LOR	1705A.14.6.
☐	c. Test density.	Test	LOR	1705A.14.5.

	S/A9. ANCHOR BOLTS AND ANCHOR RODS:			
	Test or Special Inspection	Type	Performed By	Code References and Notes
☒	a. Anchor Bolts and Anchor Rods	Test	LOR	Sample and test anchor bolts and anchor rods not readily identifiable per procedures noted in DSA IR 17-11.
☐	b. Threaded rod not used for foundation anchorage.	Test	LOR	Sample and test threaded rods not readily identifiable per procedures noted in DSA IR 17-11.

	S/A10. Other Steel			
	Test or Special Inspection	Type	Performed By	Code References and Notes
☐	a.			

Appendix: Work Exempt from DSA Requirements for Structural Tests / Special Inspections

Application Number: 02-120479	School Name: Merced College	School District: Merced Community College District
DSA File Number: 24-C1	Increment Number:	Date Created: 2022-10-14 16:02:20

Exempt items given in DSA IR A-22 or the 2019 CBC (including DSA amendments) and those items identified below with a check mark by the design professional are NOT subject to DSA requirements for the structural tests / special inspections noted. **Items marked as exempt shall be identified on the approved construction documents.** The project inspector shall verify all construction complies with the approved construction documents.

	SOILS:
☒	1. Deep foundations acting as a cantilever footing designed based on minimum allowable pressures per CBC Table 1806A.2 and having no geotechnical report for the following cases: A) free standing sign or scoreboard, B) cell or antenna towers and poles less than 35'-0" tall (e.g., lighting poles, flag poles, poles supporting open mesh fences, etc.), C) single-story structure with dead load less than 5 psf (e.g., open fabric shade structure), or D) covered walkway structure with an apex height less than 10'-0" above adjacent grade.
☒	2. Shallow foundations, etc. are exempt from special inspections and testing by a Geotechnical Engineer for the following cases: A) buildings without a geotechnical report and meeting the exception item #1 criteria in CBC Section 1803A.2 supported by native soil (any excavation depth) or fill soil (not exceeding 12" depth per CBC Section 1804A.6), B) soil scarification/recompaction not exceeding 12" depth, C) native or fill soil supporting exterior non-structural flatwork (e.g., sidewalks, site concrete ramps, site stairs, parking lots, driveways, etc.), D) unpaved landscaping and playground areas, or E) utility trench backfill.

	CONCRETE/MASONRY:
☒	1. Post-installed anchors for the following: A) exempt non-structural components (e.g., mechanical, electrical, plumbing equipment - see item 7 for "Welding" in the Appendix below) given in CBC Section 1617A.1.18 (which replaces ASCE 7-16, Section 13.1.4) or B) interior nonstructural wall partitions meeting criteria listed in exempt item 3 for "Welding."
☒	2. Concrete batch plant inspection is not required for items given in CBC Section 1705A.3.3.2 subject to the requirements and limitations in that section.
☐	3. Non-bearing non-shear masonry walls may be exempt from certain DSA masonry testing and special inspection items as allowed per DSA IR 21-1.16. Refer to construction documents for specific exemptions accordingly for each applicable wall condition.
☐	4. Epoxy shear dowels in site flatwork and/or other non-structural concrete.

Appendix: Work Exempt from DSA Requirements for Structural Tests / Special Inspections

Application Number: 02-120479	School Name: Merced College	School District: Merced Community College District
DSA File Number: 24-C1	Increment Number:	Date Created: 2022-10-14 16:02:20

	CONCRETE/MASONRY:
☒	5. Testing of reinforcing bars is not required for items given in CBC Section 1910A.2 subject to the requirements and limitations in that section.

	WELDING:
☐	1. Solid-clad and open-mesh fences, gates with maximum leaf span of 10', and gates with a maximum rolling section of 10' all having an apex height less than 8'-0" above lowest adjacent grade. When located above circulation or occupied space below, these gates/fences are not located within 1.5x gate/fence height (max 8'-0") to the edge of floor or roof.
☒	2. Handrails, guardrails, and modular or relocatable ramps associated with walking surfaces less than 30" above adjacent grade (excluding post base connections per the 'Exception' language in Section 1705A.2.1); fillet welds shall not be ground flush.
☐	3. Non-structural interior cold-formed steel framing spanning less than 15'-0", such as in interior partitions, interior soffits, etc. supporting only self weight and light-weight finishes or adhered tile, masonry, stone, or terra cotta veneer no more than 5/8" thickness and apex less than 20'-0" in height and not over an exit way. Maximum tributary load to a member shall not exceed the equivalent of that occurring from a 10'x10' opening in a 15' tall wall for a header or king stud.
☐	4. Manufactured support frames and curbs using hot rolled or cold-formed steel (i.e., light gauge) for mechanical, electrical, or plumbing equipment weighing less than 2000# (equipment only) (connections of such frames to superstructure elements using welding will require special inspection as noted in selected item(s) for Sections S/A3, S/A4 and/or S/A5 of listing above).
☐	5. Manufactured components (e.g., Tolco, B-Line, Afcon, etc.) for mechanical, electrical, or plumbing hanger support and bracing (connections of such components to superstructure elements using welding will require special inspection as noted in selected item(s) for Sections S/A3, S/A4 and/or S/A5 of listing above).
☐	6. TV Brackets, projector mounts with a valid listing (see DSA IR A-5) and recreational equipment (e.g., playground structures, basketball backstops, etc.) (connections of such elements to superstructure elements using welding will require special inspection as noted in selected item(s) for sections S/A3, S/A4 and/or S/A5 located in the Steel/Aluminum category).
☐	7. Any support for exempt non-structural components given in CBC Section 1617A.1.18 (which replaces ASCE 7-16, Section 13.1.4) meeting the following: A) when supported on a floor/roof, <400# and resulting composite center of mass (including component's center of mass) ≤4' above supporting floor/roof, B) when hung from a wall or roof/floor, <20# for discrete units or <5 plf for distributed systems.

DSA 103-19: LISTING OF STRUCTURAL TESTS & SPECIAL INSPECTIONS(SIGNATURE), 2019 CBC

Application Number:

02-120479

School Name:

Merced College

School District:

Merced Community College District

DSA File Number:

24-C1

Increment Number:

Date Created:

2022-10-14 16:02:20

Name of Architect or Engineer in general responsible charge:

Name of Structural Engineer (When structural design has been delegated):

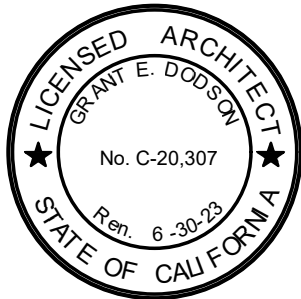
Signature of Architect or Structural Engineer:



Date:

10/14/2022

Note: To facilitate DSA electronic mark-ups and identification stamp application, DSA recommends against using secured electronic or digital signatures.



DSA STAMP

IDENTIFICATION STAMP
DIV. OF THE STATE ARCHITECT
APP: 02-120479 INC:
REVIEWED FOR
SS ☒ FLS ☒ ACS ☒
DATE: 10/19/2022

DSA 103-19: LIST OF REQUIRED VERIFIED REPORTS, CBC 2019

Application Number:

02-120479

DSA File Number:

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School Name:

Merced College

Increment Number:

School District:

Merced Community College District

Date Created:

2022-10-14 16:02:20

1. Structural Testing and Inspection: Laboratory Verified Report Form DSA 291

2. Shop Welding Inspection: Laboratory Verified Report Form DSA 291, or, for independently contracting SI, Special Inspection Verified Report Form DSA 292

**TEMPORARY FACILITIES AND
CONTROLS**

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SECTION 015000 – TEMPORARY FACILITIES AND CONTROLS

PART 1 - GENERAL

1.1 SUMMARY

- A. This Section includes the following:
 - 1. Provide all material, labor, equipment and services necessary to completely install all Temporary Utilities, Support Facilities, and Protection Facilities materials, accessories and other related items necessary to complete the Project as indicated by the Contract Documents.
- B. Related Sections: The following Project Manual Sections contain requirements that relate to this section:
 - 1. ALL DIVISION 00 SPECIFICATION SECTIONS.
 - 2. ALL DIVISION 01 SPECIFICATION SECTIONS.
 - 3. ALL SPECIFICATION SECTIONS IN THE FACILITY CONSTRUCTION SUBGROUP.
 - 4. ALL SPECIFICATION SECTIONS IN THE FACILITY SERVICES SUBGROUP.
 - 5. ALL SPECIFICATION SECTIONS IN THE SITE AND INFRASTRUCTURE SUBGROUP.

1.2 SUBMITTALS

- A. Submit in accordance with Specification Section - SUBMITTAL PROCEDURES:
 - 1. Shop Drawings:
 - a. Project Sign.
 - 2. Quality Assurance/Control Submittal:
 - a. Copy of Application to APCD for Dust Prevention and Control Plan.
 - b. Copy of approved Application to APCD for Dust Prevention and Control Plan.
 - c. Copy of Application to local City or County Engineer for Traffic Control.
 - d. Copy of approved Application to local City or County Engineer for Traffic Control.
 - e. Temporary Project Enclosure Plan.

1.3 QUALITY ASSURANCE

- A. Regulatory Requirements:
 - 1. In accordance with Specification Section - REGULATORY REQUIREMENTS, and the following:
 - a. CARB Materials and equipment used for this Project shall comply with the current applicable regulations of the California Air Resources Board (CARB) and the Environmental Protection Agency (EPA), in the area where the project is located.
 - b. CAL/OSHA California Division of Occupational Safety and Health Administration
 - c. CM County and City of Merced, Codes and Ordinances
 - d. EPA Environmental Protection Agency

**TEMPORARY FACILITIES AND
CONTROLS**

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B. Dust Prevention and Control Plan:

1. Prior to commencing the Work, prepare a Dust Prevention and Control Plan and obtain review and approval of the Air Pollution Control District (APCD) in the area where the project is located.
 - a. Prepare application and file with appropriate fees to APCD upon completion of Dust Prevention and Control Plan.
2. The Dust Prevention and Control Plan shall specify the methods of control that will be utilized, demonstrate the availability of needed equipment and personnel, and identify a responsible individual who, if needed, can authorize implementation of additional measures.
3. All construction shall comply with applicable elements of the APCD's regulations.
4. The Dust Prevention and Control Plan shall include, but not be limited to, the following:
 - a. Contractor's name and project identification information.
 - b. Procedures and measures to be implemented, but not be limited to:
 - 1) All material excavated or graded shall be sufficiently watered to prevent excessive amounts of dust.
 - 2) During periods of high winds, all clearing, grading, earth moving, or excavation shall cease when dust control measures are unable to avoid visible plumes.
 - 3) All dust producing material transported off site shall be either sufficiently watered or securely covered to prevent excessive amounts of dust.
 - 4) The area disturbed by clearing, earth moving, or excavation activities shall be minimized at all times.
 - 5) All watering of areas shall be only to the extent required to keep the soil particles in a moist condition and not to the extent that erosion of surface soil occurs.
 - 6) To control general fugitive dust, on-site vehicle speed shall be limited to 15 mph.
 - 7) All areas with vehicle traffic shall be watered periodically for stabilization of dust emissions.
 - 8) Periodically streets adjacent to the project site shall be cleaned as required to remove silts which may have accumulated from construction activities.

C. Temporary Project Enclosure Plan:

1. Prior to commencing the Work, prepare a Temporary Project Enclosure Plan indicating the protection of people, animals, and partial and fully completed work until occupancy by the Owner.
2. Identify temporary egress from existing occupied facilities and as required by authorities having jurisdiction.
3. The Temporary Project Enclosure Plan shall include, but not be limited to, the following:
 - a. Contractor's name and project identification information.
 - b. Indicate the duration of the proposed measures based on the completion of the work as a whole and if any phases of work are identified.
 - c. Indicate proposed temporary fencing and potential exit and entry paths.
 - 1) Show gate locations and indicate who has access.
 - d. Indicate proposed temporary roads and paved areas.

D. Copy of approved Fire Protection Program:

TEMPORARY FACILITIES AND CONTROLS

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1. Contractor shall be responsible for the development, implementation, and maintenance of a written plan establishing a fire prevention program at the project site applicable throughout all phases of the construction, repair, alteration, or demolition work in accordance with CFC Chapter 33, Section 3308 and sub-sections.
2. It is the Contractor's responsibility to contact local Fire Authority to discuss the plan.
 - a. A copy of the report should be made available to the Project Inspector and local Fire Authority.
3. Approval Required: Prior to commencing the Work, prepare a Fire Protection Program and obtain review and approval from the local Fire Authority in the area where the project is located.
4. Plan shall address at a minimum:
 - a. Each phase of the construction, repair, alteration, or demolition work.
 - b. Designate responsible program superintendent in accordance with CFC 3308.2.
 - c. Duties of staff.
 - d. Staff training requirements.
 - e. Prefire plans.
 - f. Fire protection devices.
 - g. Hot work operations.
 - h. Impairment of fire protection systems.
 - i. Temporary covering of fire protection devices.

1.4 PROJECT CONDITIONS

A. Environmental Requirements:

1. Dust control:
 - a. Perform work in a manner as to minimize the spread of dust and flying particles.
 - b. Thoroughly moisten all surfaces as required to prevent dust from being a nuisance to the public, neighbors and concurrent performance of other on-site work.
2. Burning: No burning will be allowed on-site.
3. Noise Control:
 - a. Stationary noise sources shall be of a low-noise emission design, consistent with the best available noise reduction technology.
 - b. The hours of operation of noise-generating equipment shall be restricted to 6:00 a.m. to 7:00 p.m. Monday through Friday, and to 8:00 a.m. to 6:00 p.m. on Saturday and Sunday.
 - c. Mufflers shall be required on all gas and diesel-powered equipment.

B. Existing Conditions:

1. Examine site and compare it with the drawings and specifications. Thoroughly investigate and verify conditions under which the work is to be performed. No allowance will be made for extra work resulting from negligence or failure to be acquainted with all available information concerning conditions necessary to estimate the difficulty or cost of the work.
2. Cultural Resources:
 - a. The Contractor is advised of the possibility that cultural resources may be discovered during project activities.

**TEMPORARY FACILITIES AND
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- b. If any cultural or paleontological materials are uncovered during project activities, work in the area or any area reasonably suspected to overlie adjacent remains shall be stopped and the Architect advised of the discovery. The Architect will notify the appropriate agency and the work shall remain stopped until professional cultural resources evaluation and/or data recovery excavation can be planned and implemented. Appropriate measures to protect remains from accidents, looting, and vandalism shall be implemented immediately on discovery.
- c. If human remains are discovered, the work in the area or any area reasonably suspected to overlie adjacent remains shall be stopped and the County Coroner and the Architect shall be notified immediately. Appropriate measures to protect remains from accidents, looting, and vandalism shall be implemented immediately on discovery. The work shall remain stopped until professional cultural resources evaluation and/or recovery excavation can be planned and implemented.

PART 2 - PRODUCTS**2.1 EQUIPMENT**

- A. Fire Protection During Construction:
 - 1. Provide Temporary Fire Protection per CFC Chapter 33 during demolition and construction.

PART 3 - EXECUTION**3.1 EXAMINATION**

- A. Site verification of conditions:
 - 1. Report unacceptable conditions to the Architect. Do not begin work until unacceptable conditions have been corrected.
 - 2. Execution of work under this specification section shall constitute acceptance of existing conditions.
 - 3. Obtain all necessary permits and authorizations by regulatory agencies required to perform the work under this section.

3.2 PREPARATION

- A. Coordination:
 - 1. Before proceeding, verify plans match existing conditions.
 - 2. Coordinate work under this specification with work specified under other sections to ensure proper and adequate interface of work.
- B. Protection:
 - 1. The Contractor shall verify and protect existing landscaping, asphalt area, concrete walkways, and other site improvements to remain on the site before proceeding with the Work.
 - 2. Prior to starting Work, hose bibbs, utility lines, etc., to be abandoned and removed within the construction area shall be stubbed off outside the limits of construction.

TEMPORARY FACILITIES AND CONTROLS

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3. Verify and protect utilities to remain within the construction area and provide special construction for their protection.

3.3 IMPLEMENTATION

A. General:

1. Perform Work and provide and maintain Temporary Utilities and Temporary Facilities in accordance with the requirements of all regulatory authorities having jurisdiction.
2. Contractors shall cooperate with other contractors and the Owner in the use of the site, Temporary Utilities, Temporary Facilities and shall adjust their operations to maintain harmonious relations and uninterrupted progress of the Work.
3. The Contractor shall assume all responsibility for the provision and maintenance of these Temporary Utilities and Temporary Facilities and for the provisions of public safety where the operations under this Contract interface with public areas.
4. Relocate and modify Temporary Utilities and Temporary Facilities, as required by progress of the Work.
5. Remove Temporary Utilities and Temporary Facilities upon completion of the Project.
6. Temporary Utilities and Temporary Facilities are to be provided and maintained from commencement of Work until final acceptance.
 - a. The Contractor shall pay all charges required of him for the duration of the project, including a 1 month period following the date of the Notice of Substantial Completion.

B. Temporary Utilities:

1. Install temporary service or connect to existing service.
 - a. Arrange with utility company, Owner, and existing users for time when service can be interrupted, if necessary, to make connections for temporary services.
 - 1) Minimum forty-eight (48) hours prior notice to any interruption.
2. Sewers:
 - a. Provide temporary service to remove effluent lawfully.
3. Storm Drainage:
 - a. Provide temporary service as necessary to remove storm water. Work shall be performed in accordance with the local authorities having jurisdiction requirements.
4. Water:
 - a. The Owner will pay for all water supply for all purposes of construction at a location to be designated at the site. Extensions within the site shall be provided by the Contractor and maintained in a safe and efficient manner.
5. Electrical:

01

- a. The Contractor shall provide and pay for all electrical facilities and services for all purposes of power and lighting for construction at a location to be designated at the site. Extensions within the site shall be provided by the Contractor and maintained in a safe and efficient manner.
 - 1) The Contractor shall pay for cost of electrical energy required in connection with the testing of such equipment as generators, transformers, power machinery, and similar equipment installed in the work.
- b. The Contractor will provide electrical energy to all subcontractors as required on or about the premises.

TEMPORARY FACILITIES AND CONTROLS

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- c. The Contractor will provide power outlets having adequate electrical characteristics and lighting of adequate intensity for the use of other contractors within reasonable distances from their needs and within a reasonable period of time after the other contractors have requested them.
- C. Temporary Facilities:
 - 1. Support Facilities:
 - a. Storage:
 - 1) Provide storage facilities located within the construction area.
 - 2) Protect materials, construction work and their operations from weather, vandalism, and theft.
 - b. Sanitary Facilities:
 - 1) Provide adequate, self-contained toilets as required for all persons employed on the Project.
 - 2) In no case shall the permanent plumbing fixtures of the Project be used for this purpose.
 - c. Temporary Roads and Paved Areas:
 - 1) Construct and maintain temporary roads and paved areas adequate for construction operations and fire protection during construction.
 - 2. Protection Facilities:
 - a. Existing Facilities:
 - 1) Protect existing vegetation, equipment, structures, utilities, and other improvements at project site and on adjacent properties, except those indicated to be removed or altered. Damage occurring during the course of construction shall be repaired to condition at the start of the Work.
 - b. Environmental:
 - 1) Provide protection, operate temporary facilities, and conduct construction as required to comply with environmental regulations and that minimize possible air, waterway, and subsoil contamination or pollution or other undesirable effects.
 - c. Project Enclosure:
 - 1) Implement procedures and measures outlined in Temporary Project Enclosure Plan.
 - 2) Project enclosure shall protect materials, construction work, and operations from vandalism, theft, and to exclude the intrusion of the public into the construction area.

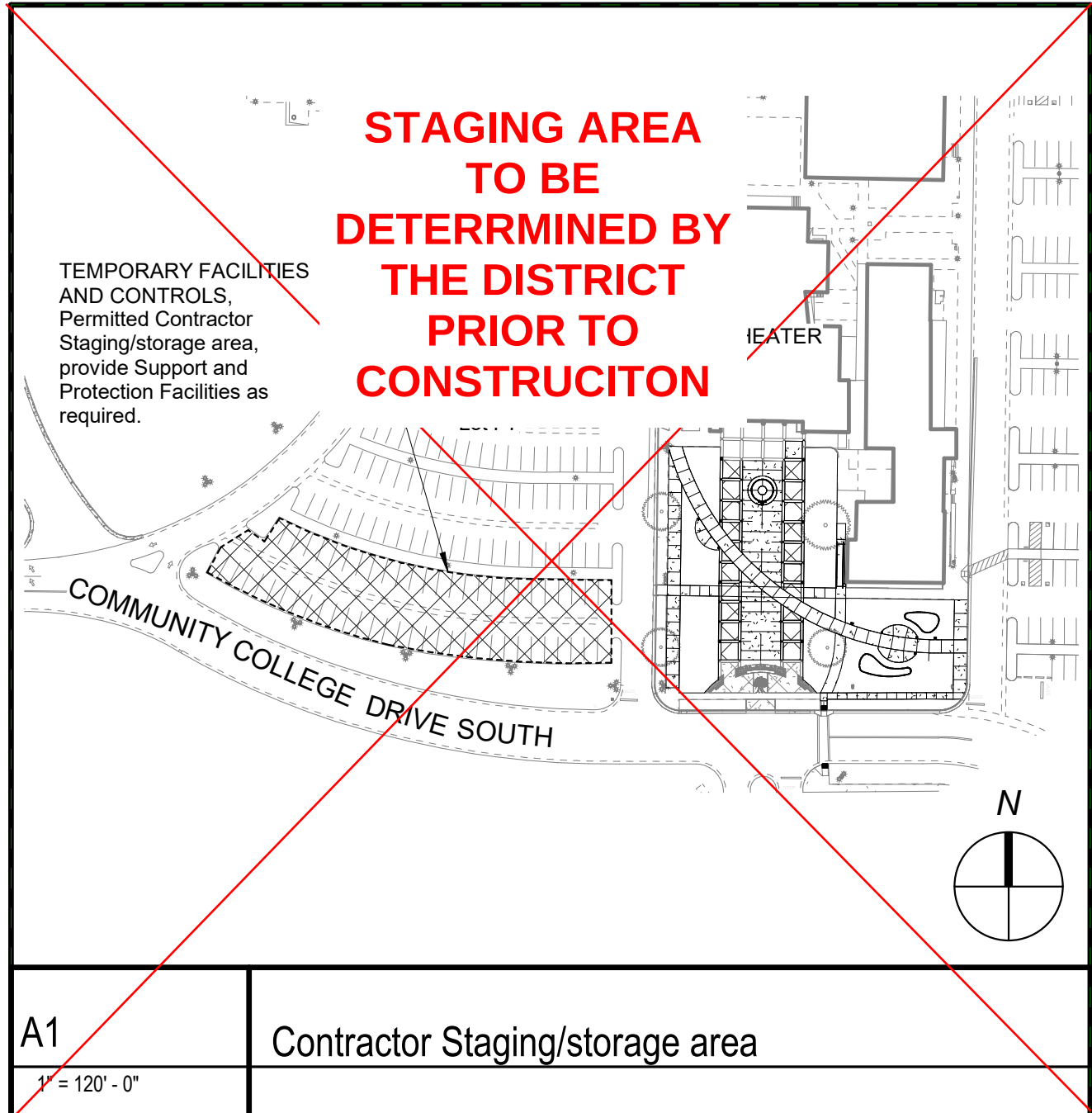
3.4 CLEANING

- A. Clean in accordance with Specification Section – PROJECT CLOSEOUT.
 - 1. At all times, keep the premises free from accumulations of waste materials or rubbish caused by employees or the Work.
 - 2. Clean all soiled surfaces to remain immediately.
 - 3. At the completion of the Work, remove all rubbish from and about the building and all tools, scaffolding, and surplus materials and shall leave the Work "broom clean" or its equivalent.

END OF SECTION

TEMPORARY FACILITIES AND
CONTROLS

AD1



CONSTRUCTION STAGING & STORAGE AREA
SITE DEVELOPMENT

DSA File No: 24-C1

DSA Appl No: 02-120479



ARCHITECTURE • PLANNING • INTERIORS

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Project No: 2211

Date: 10/24/2022

Scale: 1 : 1440

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Merced College Hermione Isakow Plaza
Merced College
Merced, CA 95348

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SECTION 017123 – FIELD ENGINEERING

PART 1 - GENERAL

1.1 SUMMARY

1. This section includes the following: Section includes requirements governing execution of the work including, but not limited to, the following:
 - a. Construction layout
 - b. Field engineering and surveying
- B. Related Sections: The following Project Manual Sections contain requirements that relate to this section:
 1. ALL DIVISION 00 SPECIFICATION SECTIONS
 2. ALL DIVISION 01 SPECIFICATION SECTIONS
 3. ALL SPECIFICATION SECTIONS IN THE FACILITY CONSTRUCTION SUBGROUP.
 4. ALL SPECIFICATION SECTIONS IN THE FACILITY SERVICES SUBGROUP
 5. ALL SPECIFICATION SECTIONS IN THE SITE AND INFRASTRUCTURE SUBGROUP.

1.2 SUBMITTALS

- A. Submit in accordance with specification section – SUBMITTAL PROCEDURES:
 1. Coordination Drawings:
 - a. Utility Coordination Drawing(s).
 2. Quality Assurance/Control Submittal:
 - a. Qualification Data for Civil Engineer/Surveyor.
 - b. Intermediate Certificate of Survey Compliance.
 - c. Final Certificate of Survey Compliance.
 3. Closeout Submittals in accordance with the following:
 - a. As-built Survey Drawing(s).
 - b. Project "Record" Survey Drawing.

1.3 QUALITY ASSURANCE

- A. Qualifications:
 1. Civil Engineer/Surveyor Qualifications:
 - a. A professional Civil Engineer or Land Surveyor who is licensed to practice in the State of California.
 - b. Has successfully completed three (3) projects of similar scope and size to that indicated for this project.
- B. Regulatory Requirements:
 1. In accordance with Specification Section – REGULATORY REQUIREMENTS and the following:

- a. CARB Materials and equipment used for this project shall comply with the current applicable regulations of the California Air Resources Board and the Environmental Protection Agency (EPA), in the area where the project is located.
 - b. CM County of Merced, codes and ordinances.
- C. Certificates:
 - 1. Intermediate Certificate of Survey Compliance:
 - a. Provide certification letter on contractor's letterhead stating the project complies with the requirements of the contract documents at the completion of the engineered pad construction and installation of underground utilities is complete. Certification letter must be stamped and signed by the qualified Civil Engineer/Surveyor.
 - 2. Final Certificate of Survey Compliance:
 - a. Provide certification letter on contractor's letterhead stating the project complies with the requirement of the contract documents at the completion of all above ground improvements and finish grading.
- D. Meetings:
 - 1. Pre-Installation: Scheduled by the Contractor prior to the start of work.
 - a. Coordinate the work with all other related work.
 - b. Identify any potential problems, which may impede planned progress and proper installation of work regarding quality of installation and warranty requirements.
 - 2. Progress: Scheduled by the Contractor during the performance of the work.
 - a. Review for proper installation of work progress.
 - b. Identify any installation problems and acceptable corrective measures.
 - c. Identify any measures to maintain or regain project schedule if necessary.
 - 3. Completion: Scheduled by the Contractor upon proper completion of the work.
 - a. Inspect and identify any problems, which may impede issuance of warranties or guaranties.
 - b. Maintain installed work until the Notice of Substantial Completion has been filed.

1.4 PROJECT CONDITIONS OR SITE CONDITIONS

- A. Existing Conditions:
 - 1. Examine site and compare it with the drawings and specifications. Thoroughly investigate and verify conditions under which the work is to be performed. No allowance will be made for extra work resulting from negligence or failure to be acquainted with all available information concerning conditions necessary to estimate the difficulty or cost of the work.

PART 2 - PRODUCTS

NOT APPLICABLE

PART 3 - EXECUTION

3.1 EXAMINATION

A. Existing Conditions:

1. The existence and location of underground utilities indicated as existing are not guaranteed. Before beginning sitework, investigate and verify the existence, location, and elevation of all underground utilities and other construction affecting the Work.
 - a. Call a local utility locator service (such as USA – "Underground Service Alert") for the task of locating any project related utilities.
 - b. Verify the location and invert elevation at points of connection of storm drainage system.
 - c. Accurately document vertical and horizontal measurements and elevations uncovered or verified.

B. Coordination:

1. Before proceeding to lay out the Work, verify layout information shown on the drawings in relation to the property survey, topographic survey, and existing benchmarks.
2. Drawings have been provided showing improvements and underground systems for foundations, storm drainage, electrical lines, and site improvements. Coordinate and verify the accuracy of the drawing locations and elevations as they relate to each other, with existing utility lines, and building pad earthwork zones of influence.
 - a. Provide 1"=20' scaled and dimensioned Utility Coordination Drawing.
 - b. No improvements shall be executed until the Utility Coordination Drawing is reviewed by the Architect for general conformance with the Contract Documents.
3. Coordinate Layout of Work performed under other sections of the Specifications.
4. If layout conflicts are encountered, report to Architect and then prepare recommendation(s) for correction.
5. Close and careful coordination is required between work of the Contract and that of any future work to follow.
6. Work under this Contract shall accommodate the installation of future work.

3.2 CONSTRUCTION

A. Layout of Work:

1. Engage a Civil Engineer/Surveyor to Layout the Work using accepted surveying practices and be responsible for all reference points, benchmarks, lines, elevations, and measurements required for Work under this Contract.
2. Reference points:
 - a. Locate existing permanent benchmarks, control points, and similar reference points before beginning the work.
 - b. Do not change or relocate existing benchmarks or control points without approval of the Architect.
 - c. Replace lost or destroyed permanent benchmarks and control points. Base replacements on the original survey control points.
3. Benchmarks:
 - a. Establish and maintain a minimum of two (2) permanent benchmarks on the project site, referenced to data established by survey control points.

- b. Where the actual location or elevation of layout points cannot be marked, provide temporary reference points sufficient to locate the Work.
- c. Use established benchmarks and control points to set lines and levels at each floor of construction and elsewhere as needed to locate each element of the Project.
- 4. Locate construction access to site parking, storage areas, and temporary facilities and controls.
- 5. Locate and layout control lines and levels for the circular planter, housekeeping pad including those required for electrical work. Transfer survey markings and elevations for use with control lines and levels.
- 6. Locate and layout site improvements, including concrete walk, grading, fill and topsoil placement, utility slopes, and rim and invert elevations.
- 7. Inform installers of lines and levels to which they must comply.
- 8. Check the location, level, and plumb of every major element as the Work progresses.
- 9. Remove temporary reference points when no longer needed. Restore marked construction to its original condition.

3.3 FIELD QUALITY CONTROL

- A. 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 the Inspector and Architect.
- B. Maintain As-built Survey Drawing(s) of all underground, surface, and above ground improvements and grades with measurements for both vertical and horizontal dimensions.
 - 1. Record all addendum and issued change documents.
 - 2. Upon project completion stamp and sign As-built Survey Drawing(s).
- C. Check documented measurements and elevations at completion of building pads and underground utilities against contract documents. The Contractor shall correct out of compliance Work before proceeding with the next element of Work. As-built Survey Drawing(s) shall be current. When all Work at this stage is in compliance with the contract documents, issue the Intermediate Certificate of Survey Compliance.
- D. Check documented measurements and elevations at completion of finish grading and site improvements, except for landscape and irrigation work, against contract documents. The Contractor shall correct out of compliance Work before proceeding with the next element of Work. As-built Survey Drawing(s) shall be complete. When all Work at this stage is in compliance with the contract documents, issue the Final Certificate of Survey Compliance.
- E. The Civil Engineer/Surveyor shall prepare Project "Record" Survey Drawing in accordance with Specification Section - PROJECT DOCUMENTS.
 - 1. The Project "Record" Survey Drawing shall contain all of the vertical and horizontal measurements and elevations of reference points, benchmarks, utility lines, grade contours, grade breaks, building floors, major vegetation, and sitework improvements.
 - 2. The Project "Record" Survey Drawing shall be stamped and signed by the qualified Civil Engineer/Surveyor.
 - 3. The As-built Survey Drawing(s) shall be used in preparation of the Project "Record" Survey Drawing.

3.4 PROTECTION

- A. Preserve and protect permanent benchmarks, control points, reference points, and staking during construction operations.

END OF SECTION

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SECTION 017329 – CUTTING AND PATCHING

PART 1 - GENERAL

1.1 SUMMARY

- A. This Section includes the following:
 - 1. Provide all material, labor, equipment and services necessary for cutting and patching existing materials, accessories and other related items necessary to remodel the Project as indicated by the Contract Documents.
- B. Related Sections: The following Project Manual Sections contain requirements that relate to this section:
 - 1. ALL DIVISION 00 SPECIFICATION SECTIONS.
 - 2. ALL DIVISION 01 SPECIFICATION SECTIONS.
 - 3. ALL SPECIFICATION SECTIONS IN THE FACILITY CONSTRUCTION SUBGROUP.
 - 4. ALL SPECIFICATION SECTIONS IN THE FACILITY SERVICES SUBGROUP.
 - 5. ALL SPECIFICATION SECTIONS IN THE SITE AND INFRASTRUCTURE SUBGROUP.

1.2 DEFINITIONS

- A. Cutting: Removal of existing construction necessary to permit installation or performance of Work.
- B. Patching: Fitting and repair work required to restore surfaces to original conditions after installation of Work.

1.3 SUBMITTALS

- A. Submit in accordance with Specification Section - SUBMITTAL PROCEDURES:
 - 1. Coordination Drawings:
 - a. Submit any installer's coordination drawings indicating the work of this section with that of related work of other sections for proper interface of the completed work. Installer shall coordinate and obtain approvals from the work of other related sections prior to submitting to the Architect.

1.4 QUALITY ASSURANCE

- A. Cutting and Patching Conference: Before proceeding, meet at Project site with parties involved in cutting and patching, including mechanical and electrical trades.
 - 1. Review areas of potential interference and conflict.
 - 2. Coordinate procedures and resolve potential conflicts before proceeding.
- B. Structural Elements: Do not cut and patch structural elements in a manner that could change their load-carrying capacity or load-deflection ratio.

- C. 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.
- 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 building's aesthetic qualities. Remove and replace construction that has been cut and patched in a visually unsatisfactory manner.
- E. The Contractor shall do all cutting, fitting or patching of existing construction and his work as may be required to make the several parts come together properly and ready to receive or be received by work of other contractors as shown, or reasonably implied by the drawings and specifications for the completed structure. All work shall be as directed by the Architect to achieve the intended work and degree of finish shown.
- F. Any cost caused by defective or ill-timed work shall be borne by the party responsible therefor.

1.5 WARRANTY

- A. Existing Warranties: Remove, replace, patch, and repair materials and surfaces cut or damaged during cutting and patching operations, by methods and with materials so as not to void existing warranties.

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.
- D. Existing Services: Where existing services are required to be removed, relocated, or abandoned, bypass such services before cutting to avoid interruption of services to occupied areas.

3.3 FIELD QUALITY CONTROL

- 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 or Masonry: Cut using a cutting machine, such as an abrasive saw or a diamond-core drill. *Do not overcut concrete corners* – hand chip all corners to prevent over-cutting lines. Cut any masonry pavers at grout lines, and *don't overcut* into adjacent brick that is to remain.
 - 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. Grinding and Sandblasting: Where grinding and sandblasting is required of existing construction, perform in accordance with industry standards for proper preparation of new construction or finishes.

- D. 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.
 - a. All hard paving and walk replacement shall be flush with adjacent existing construction. Compact existing subgrade so that there is no settling of adjacent horizontal surfaces greater than 1/4", and that all surfaces are ADA compliant.
 - b. When altering surfaces in brick paving, match nearby adjacent horizontal concrete surfaces in color and texture. Take care to protect adjacent brick surfaces from concrete slurry and finishing operations. Clean exposed surfaces of brick immediately so that no signs of adjacent concrete work is seen.
 - c. Match existing adjacent exposed aggregate concrete paving (color and texture) when construction is proposed for areas paved with exposed aggregate concrete.
 - d. Match existing adjacent colored concrete paving (color and texture) when construction is proposed for areas paved with colored concrete.
 3. Floors and Walls: Where walls or partitions that are removed extend one finished area into another, patch and repair floor and wall surfaces in the new space. Provide an even surface of uniform finish, color, texture, and appearance. Remove existing floor and wall coverings and replace with new materials, if necessary, to achieve uniform color and appearance.
 - a. 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.
 4. Exterior Building Enclosure: Patch components in a manner that restores enclosure to a weathertight condition.

END OF SECTION

SECTION 017419 – CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL

PART 1 - GENERAL

1.1 SUMMARY

- A. This section includes the following:
 - 1. Requirements governing execution of the work including, but not limited to, the following:
 - a. Salvaging non-hazardous demolition waste.
 - b. Recycling non-hazardous construction and demolition waste.
 - c. Disposing of non-hazardous construction and demolition waste.
- B. Related Sections: The following Project Manual Sections contain requirements that relate to this section:
 - 1. ALL DIVISION 00 SPECIFICATION SECTIONS
 - 2. ALL DIVISION 01 SPECIFICATION SECTIONS
 - 3. ALL SPECIFICATION SECTIONS IN THE FACILITY CONSTRUCTION SUBGROUP
 - 4. ALL SPECIFICATION SECTIONS IN THE FACILITY SERVICES SUBGROUP
 - 5. ALL SPECIFICATION SECTIONS IN THE SITE AND INFRASTRUCTURE SUBGROUP

1.2 DEFINITIONS

- A. Construction Waste: Building and site improvement materials and other solid waste resulting from construction, modernization, remodeling, renovation, or repair operations. Construction waste includes packaging.
- B. Demolition Waste: Building and site improvement materials resulting from demolition or selective demolition and site clearing operations.
- C. Disposal: Removal off-site of construction and demolition waste and subsequent sale, recycling, reuse, or deposit in landfill acceptable to authorities having jurisdiction.
- D. Recycle: Recovery of construction or demolition waste for subsequent processing in preparation for reuse.
- E. Salvage: Recovery of construction or demolition waste and subsequent sale or reuse in another facility.

1.3 SYSTEM DESCRIPTION

- A. Performance Requirements
 - 1. General:
 - a. Achieve end-of-project rate for salvage/recycling of minimum 65percent by weight of total non-hazardous construction and demolition waste generated by the Work.

- b. Practice efficient waste management in the use of materials in the course of the Work.
- c. Use all reasonable means to divert construction demolition waste from landfills and incinerators.

1.4 SUBMITTALS

- A. Submit in accordance with Specification Section – SUBMITTAL PROCEDURES:
 - 1. Quality Assurance/Control Submittal:
 - a. Waste Management Plan.
 - b. Waste Management Progress Reports.

1.5 QUALITY ASSURANCE

- A. Regulatory Requirements:
 - 1. In accordance with Specification Section - REGULATORY REQUIREMENTS and the following:
 - a. CARB Materials and equipment used for this project shall comply with the current applicable regulations of the California Air Resources Board and the Environmental Protection Agency (EPA), in the area where the project is located.
 - b. CAL/OSHA California Division of Occupational Safety and Health Administration.
 - c. CM County of Merced, codes and ordinances.
 - d. EPA Environmental Protection Agency.
- B. Waste Management Plan:
 - 1. Prior to commencing the Work, submit Waste Management Plan. The Plan must include, but not limited to, the following:
 - a. Contractor's name and project identification information.
 - b. Procedures to be implemented.
 - c. Materials to be salvaged, recycled, or disposed.
 - d. Estimated quantities of material broken down by material categories.
 - e. Names and locations of entities who receive salvaged and recycled materials.
 - f. Tonnage calculations that demonstrate that the Contractor will salvage, re-use, or recycle the minimum percentage by weight of the construction and demolition waste materials generated by the Work.
- C. Waste Management Progress Reports:
 - 1. Submit the Report with each application for progress payment.
 - a. Failure to submit the Report and its supporting documentation can render the application for progress payment incomplete and delay the progress payment.
 - 2. Each Report must include, but not limited to, the following:
 - a. List of material categories.
 - b. Weight quantity of waste by material category.
 - c. Weight quantity of waste salvaged.
 - d. Weight quantity of waste recycled.
 - e. Total weight quantity of salvaged and recycled waste by material category.
 - f. Weight percentage of waste salvaged and recycled by material category.

- g. Include manifests, weight tickets, receipts, and invoices specifically identifying the salvaged, reused, and recycled materials.
- h. Signature line for Contractor.

D. Meetings:

- 1. Pre- Demolition.....Schedule prior to the start of work.
 - a. Coordinate the work with other work being performed.
 - b. Identify any potential problems, which may impede the proper disposal of materials.
 - c. Review areas where waste and recycle bins will be located.
 - d. Review where salvaged materials will be stored.
 - e. Review demolition waste disposal and material recycling procedures and environmental goals per Waste Management Plan with all subcontractors and waste haulers.
- 2. Progress:.....Scheduled by the Contactor during the performance of the work.
 - a. Review for maintaining proper procedures.
 - b. Inspect and identify any problems and acceptable corrective measures.
- 3. Completion:.....Scheduled by the Contactor upon proper completion of the work.
 - a. Inspect and identify any problems.
 - b. Submit final Progress Report summarizing total construction and demolition waste weights, percentages salvaged, recycled, and disposed.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Cleaning, handling, and packing:

- 1. Salvaged Items shall be handled in such a manner as to assure that they are free from damage.
- 2. Salvaged Items shall be cleaned and packed or cleaned and palletted before off-site transport.

B. Storage and protection

- 1. Salvaged Items shall be stored in a dry, protected area prior to transport.
- 2. Cover with protective waterproof covering providing for adequate air circulation and ventilation.

1.7 PROJECT CONDITIONS

A. Environmental requirements;

- 1. Comply with federal, state, and local regulations pertaining to solid waste, recycling, chemical waste, sanitary waste, and noise pollution.
- 2. Perform work in a manner as to minimize the spread of dust and flying particles.
- 3. No burning will be allowed on-site.

B. Existing conditions:

- 1. Examine project site and building(s) and compare it with the drawings and specifications. Thoroughly investigate and verify conditions under which the work is to be performed. No allowance will be made for extra work resulting from negligence or failure to be acquainted with all available information concerning conditions necessary to estimate the difficulty or cost of the work.

2. Conduct work so as not to interfere unnecessarily with adjacent campus buildings, drives, and walks.
 - a. Do not close or obstruct streets, walks, or passageways without permission from the Owner.
 - b. Safety measures shall be taken to insure an uninterrupted flow of traffic around the site as required by local Police and Fire Departments.
3. Storage or sale of removed items on-site is not permitted.
4. It is not expected that hazardous materials will be encountered in the Work.
 - a. If suspected hazardous materials are encountered, do not disturb; immediately notify Architect and Owner.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Furnish all materials, tools, equipment, facilities, and services as required for performing the construction and demolition waste disposal work.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Verification of conditions:
 1. Report unacceptable conditions to the Architect. Do not begin work until unacceptable conditions have been corrected.
 2. Execution of work under this specification section shall constitute acceptance of existing conditions.
 3. Obtain all necessary permits and authorizations by regulatory agencies required to perform the Work under this Section.

3.2 PREPARATION

- A. Coordination:
 1. Before proceeding, verify plans match existing conditions.
 2. Review documents of existing construction provided by Owner against existing conditions.
 3. If conflicts are encountered, report it to the Architect. Then prepare recommendation(s) for correction and submit to Architect for review.
 4. Coordinate work under this specification section with work specified under other sections.
- B. Protection:
 1. Property:
 - a. Provide temporary weather protection to prevent damage to salvage and recycled items.

- b. All damage inflicted on public and private property and the property of the Owner shall be repaired or restored to the original condition prior to the start of this Work. All repair or replacement work shall be done at no additional cost to the owner.

3.3 IMPLEMENTATION

A. General:

- 1. Implement waste management plan as submitted.
- 2. Provide handling, containers, storage, signage, transportation, and other items as required to implement waste management plan during the entire duration of the contract.
- 3. Designate and label specific areas on project site necessary for separating materials that are to be salvaged, recycled, reused, and donated.

B. Demolition Waste:

- 1. Salvaged items for delivery to Owner or other entity:
 - a. Clean salvaged items.
 - b. Pack or crate items after cleaning. Identify contents of containers.
 - c. Store items in a secure area until pick-up or delivery to Owner.
 - d. Transport item to Owner's storage area on-site.
 - e. Protect items from damage during transport and storage.
- 2. Recyclable materials:
 - a. Prepare and maintain recyclable waste materials according to recycling facility requirements.
 - b. Maintain materials free of dirt, adhesives, solvents, petroleum contamination, and other substances deleterious to the recycling process.
 - c. Separate recyclable demolition waste from other waste materials. All recyclables may be co-mingled into one bin and separated off-site at the appropriate recycling facility.
 - 1) Provide appropriately marked containers or bins for controlling recyclable waste until they are removed from the project site.
 - 2) Include a list of acceptable and unacceptable materials at each container or bin.
 - 3) Inspect containers and bins for contamination and remove contaminated materials if found.
 - 4) Processed materials stockpiled on site shall not be mixed with other materials. Shape stockpiles to drain surface water. Cover stockpiles to prevent windblown dust.
 - 5) Processed material shall be stockpiled away from construction. Do not stockpile within drip line of remaining trees.
 - d. Remove recyclable demolition waste off project property and transport to recycling receiver or processor.
 - e. The following list is of common material types which can be recycled. The list of material types is in no way complete but is representative of materials that can be sorted and recycled as per the intent of this specification section.
 - 1) Concrete: Remove reinforcement and other metals from concrete and sort with other metals.
 - 2) Wood: Sort and stack members according to size, type, and length of member.

- 3) Metals: Separate metal by type. Stack structural steel members according to size and length. Remove bolts, nuts, washers, and other hardware from members.
 - 4) Piping: Reduce piping to straight lengths and store by type and size. Separate supports, hangers, valves, sprinklers, and other components by type and size.
 - 5) Conduit: Reduce conduit to straight lengths and store by type and size.
3. Site clearing waste:
- a. Excavated top soil and land clearing debris not recycled and reused on-site shall be removed to an off-site recycling location or disposed of at a landfill that accepts inert material.
- C. Construction Waste:
1. Recyclable materials:
 - a. Prepare and maintain recyclable waste materials according to recycling facility requirements.
 - b. Maintain materials free of dirt, adhesives, solvents, petroleum contamination, and other substances deleterious to the recycling process.
 - c. Recycle paper and beverage containers used by on-site workers.
 - d. Separate recyclable construction waste from other waste materials. All recyclables may be co-mingled into one bin and separated off-site at the appropriate recycling facility.
 - 1) Provide appropriately marked containers or bins for controlling recyclable waste until they are removed from the project site.
 - 2) Include a list of acceptable and unacceptable materials at each container or bin.
 - 3) Inspect containers and bins for contamination and remove contaminated materials if found.
 - e. Remove recyclable construction waste off project property and transport to recycling receiver or processor.
 - f. The following list is of common material types which can be recycled. The list of material types is in no way complete but is representative of materials that can be sorted and recycled as per the intent of this specification section.
 - 1) Cardboard Packaging: Breakdown into flat sheets. Bundle and store in a dry place.
 - 2) Polystyrene Packaging: Separate and bag materials.
 - 3) Pallets: As much as possible, require deliveries using pallets to remove pallets from the project site. For pallets that remain on-site, breakdown pallets into component wood pieces and comply with requirements for recycling wood.
 - 4) Crates: Break down crates into component wood pieces and comply with requirements for recycling wood.
 - 5) Wood: Clean cut-Offs of lumber and grind or chip into small pieces.
- D. Disposal of Waste:
1. Except for items or materials to be salvaged, recycled, or otherwise reused remove and transport waste materials from project site and legally dispose of them in a manner acceptable to authorities having jurisdiction.
 2. Do not allow waste material to accumulate on site.
 3. Transport waste in a manner that will prevent spillage on adjacent surfaces and areas.

3.4 CLEANING

1. Clean in accordance with Specification Section – PROJECT CLOSEOUT:
 - a. Immediately clean any soiled surfaces to remain.

END OF SECTION

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SECTION 017720 – PROJECT CLOSEOUT

PART 1 - GENERAL

1.1 SUMMARY

- A. This Section includes the following:
 - 1. Provide all material, labor, equipment and services necessary to completely install all materials, accessories and other related items necessary to complete the Project as indicated by the Contract Documents.
- B. Related Sections: The following Project Manual Sections contain requirements that relate to this section:
 - 1. ALL DIVISION 00 SPECIFICATION SECTIONS.
 - 2. ALL DIVISION 01 SPECIFICATION SECTIONS.
 - 3. ALL SPECIFICATION SECTIONS IN THE FACILITY CONSTRUCTION SUBGROUP.
 - 4. ALL SPECIFICATION SECTIONS IN THE FACILITY SERVICES SUBGROUP.
 - 5. ALL SPECIFICATION SECTIONS IN THE SITE AND INFRASTRUCTURE SUBGROUP.
- C. Work Included:
 - 1. Project cleanup and coordination of all cleaning work required under all sections of this specification.
 - 2. Collection of and processing for delivery to the Architect of all Project Record Drawings required under this and other various Sections of the Specifications.
 - 3. Compile and assemble all required documents, operation data, maintenance manuals, and parts lists for all equipment items provided for this project.
 - 4. Start-up of all mechanical, electrical, and miscellaneous equipment items; and adjustment required for the performance specified.
 - 5. Compile and assemble all guarantees, warranties, or other written documentation to establish the requirements outlined under all sections of this specification.
 - 6. Repair and touch-up on all items damaged during the construction and handling processes.
 - 7. Furnish maintenance material and spare parts as specified within DIVISIONS 02 through 49 of these specifications.
 - 8. Deliver to the Architect all assembled copies of those items required in Articles 1 through 6 above for presentation to the Owner.
- D. It shall be the responsibility of the Contractor to provide all labor and materials necessary to achieve completion of the items listed under Paragraph A, B and C above, although certain items may be specified under the work of other trades. Periodic removal of debris, cleaning, repair, and testing of times in various areas of the construction site shall be carried out under the direction of the Contractor.

1.2 SUBMITTALS

- A. Submit in accordance with Specification Section - SUBMITTAL PROCEDURES:

1. Quality Assurance/Control Submittals:
 - a. Design Data.
 - 1) All design data as required by the Contract Documents.
 - b. Test Reports:
 - 1) Submit four (4) copies of reports.
 - 2) Submit four (4) copies of reports required by regulatory requirements.
 - 3) Submit four (4) copies of ICC Evaluation Service Report.
 - 4) Submit four (4) copies of Testing Laboratory's report.
 - 5) All other Test Reports as required by the Contract Documents.
 - c. Certificates:
 - 1) Submit three (3) copies of certificates.
 - d. Manufacturer's Instructions:
 - 1) Submit three (3) copies of manufacturer's instructions.
 - e. Manufacturer's Field Reports:
 - 1) Submit three (3) copies of manufacturer's field reports.
 - f. Engineering Calculations:
 - 1) Submit four (4) copies of engineering calculations computed and signed by a registered Civil or Structural Engineer in the State of California.
2. Closeout Submittals in accordance with Specification Sections in Division One:
 - a. Maintenance Data in accordance with Specification Section - PROJECT CLOSEOUT.
 - b. Operation Data in accordance with Specification Section - PROJECT CLOSEOUT.
 - c. Warranty in accordance with Specification Section - WARRANTIES.
3. Project Record Documents:
 - a. Various Sections of the detailed specifications require Project Record Drawings to be prepared by the Contractor(s). These drawings shall be collected by the Contractor, checked for conformance to the specific requirements, and when completed, delivered to the Architect. The Contractor shall also be responsible for collecting bound operating and maintenance manuals required of all trades supplying equipment, and for delivering them to the Architect.
4. Documents Required for Project Certification
 - a. Compile and neatly assemble with indexed and labeled tabs, three (3) sets of the required documents for project certification by the State Agencies. The required documents include, but are not limited to, the following;
 - 1) Document Required List "Form" for Project Certification ORS-6.
 - a) This document shall be used to organize and index the required documents.
 - 2) Project Information "Forms":
 - a) Project Site Inspector(s) SSS-5.
 - b) In-Plant Inspector(s), required for re-locatable buildings only SSS-5.
 - c) Contract Information DSA-102.
 - 3) Final Verified Report "Forms" from the Architect and Engineers:
 - a) Architect's Final Verified Report DSA-6A/E.
 - b) Structural Engineer's Final Verified Report DSA-6A/E.
 - c) Mechanical Engineer's Final Verified Report DSA-6A/E.
 - d) Electrical Engineer's Final Verified Report DSA-6A/E.
 - 4) Final Verified Report "Forms" from the Contractor(s) and Inspector(s):
 - a) Project Site Inspector(s) Final Verified Report DSA-6.
 - b) Contractor(s) Final Verified Report DSA-6.
 - c) In-Plant Inspector(s) Final Verified Report DSA-6.

- d) Special Inspector(s) Final Verified Report DSA-6.
- 5) Other Final Verified Reports and Affidavits for:
 - a) Laboratory - To be signed by Licensed Professional Engineer.
 - b) Shop Welding and Fabrication - To be signed by AWS/CWI Welding Inspector
 - c) Field Welding - To be signed by AWS/CWI Welding Inspector
 - d) High Strength Bolt Installation
 - e) Glu-Laminated Fabrication
 - f) Manufactured Trusses
 - g) Masonry Inspection
 - h) Engineered Fill - To be signed by the Geotechnical Engineer
 - i) Bleacher Fabrication
 - j) Other items required by the State Agencies
- 6) Notices, Certificates, and Change Orders
 - a) Notice of Completion - Signed by the Owner, Notarized and recorded with the County Records Office.
 - b) Weighmaster Certificate(s)
 - c) Automatic Fire Sprinkler System
 - d) Fire Alarm System Components
 - e) Fire Standpipe System
 - f) Fire Suppression System
 - g) Smoke Ventilation System
 - h) Skylight System
 - i) Bleacher System
 - j) Change Orders - Signed and fully executed.
 - k) Other documents and/or requirements required by the State Agencies
- 7) Field Visit Reports, Correction Reports, Punch Lists & Final Review Reports
 - a) Field Visit Reports from State Agencies
 - b) Field Visit Reports from Architect and Engineers
 - c) Inspector's Correction Reports
 - d) Contractor Punch Lists
 - e) Architect, Engineers and Owner Final Review Reports
 - f) A jointly signed and notarized Affidavit from the Contractor and Project Inspector (formerly the Inspector of Record), indicating that any and all items of correction noted in the above documents have been corrected (including Testing Laboratory Reports).

1.3 QUALITY ASSURANCE:

- A. Safety, Fire and Environmental Protection, and Insurance standards shall be strictly adhered to in all phases of the construction work. It shall be the responsibility of the Contractor to determine the standards applicable to this project as set forth in all codes, regulations, and ordinances having jurisdiction, and as set forth elsewhere in the Specifications.
- B. All specific requirements stipulated in, or required by code references included under all sections of DIVISIONS 02 through 49 inclusive of this specification, and as detailed under Article 3.4 of this Section, shall be required under this Contract.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Cleaning Materials:
 - 1. Use only those specified materials or types of materials recommended and approved by the manufacturer of the item to be cleaned.
- B. Touch-Up Materials:
 - 1. Use only those materials furnished by or as recommended and approved by the manufacturer of the item to be touched up. Colors and finish characteristics shall exactly match the base material and extra materials, labor, and services required to achieve this result shall be provided by the Contractor(s).
- C. Replacement Materials:
 - 1. Materials that are damaged and not repairable, or materials that are destroyed shall be replaced with equal and identical materials of the same manufacture and shall function in conjunction with the remaining portions of that material. Items no longer manufactured or available shall be replaced with comparable materials as approved by the Architect and at no additional cost to the Owner.
 - 2. Materials that are required for maintenance replacement by the owner after the guarantee period has expired, or by the contractor during the guarantee period shall exactly match those materials installed as to make, style, color lot, etc., under this contract, and shall be delivered to the owner in marked, identified containers.
- D. Extra Materials:
 - 1. Carefully examine the requirements of the applicable Sections of all DIVISIONS and specifically of DIVISION 09 and deliver the materials required to the Owner.

PART 3 - EXECUTION

3.1 REPAIR AND RESTORATION

- A. All damaged items shall be repaired and replaced as directed using proper materials and craftsmen skilled in that particular trade. Materials shall be as follows:
 - 1. All repair or replacement parts shall be of the same equality and manufacturer as the item being repaired.
 - 2. All touch-up paint shall be as provided by the item manufacturer for that purpose and shall exactly match the original color and finish.

3.2 FIELD QUALITY CONTROL

- A. Final Reviews:
 - 1. In addition to all items covered under those Sections of Divisions 02 through 49 inclusive, the Contractor shall comply with the requirements stated herein.

- a. The Contractor shall request in writing a final review (see Contractor's Request for Final Review form at the end of this Specification Section).
 - 1) The Contractor shall allow a forty-eight (48) hour time period of advance notification prior to the requested date and time indicated on the Review Request form.
 - 2) The Contractor represents that the work has been carefully inspected by the Contractor to determine that the work is complete and in compliance with all requirements set forth.
- b. The Contractor shall prepare and shall submit the initial Contractor's Punch List identifying the items that remain uncompleted forty-eight (48) hours prior to the scheduled final review by the Architect.
- c. Under no circumstances shall the Contractor ask the Architect or his representative to make these determinations for him.
2. The Architect shall review the initial Contractor's Punch List along with the Owner's Project Inspector, and determine together whether or not the Project is ready for final review. If approved, the Architect or its representative will make the final review on the date and time requested in the Contractor's Request for Final Review form, except under the following conditions:
 - a. Upon reviewing a portion of the Project and finding quantities of work incomplete or not in compliance, the review shall cease, and the Architect will notify the Contractor.
 - b. If the Contractor has assured the Architect of the completeness and/or accuracy of the work, and the review does not bear this contention out.
3. The above conditions will be adhered to rigidly to prevent the Architect from being required to act as a supervisory agent of the Contractor by being asked to determine the degree of completion,.
 - a. When the Contractor requests additional reviews, he shall reimburse the Architect for all time and expense incurred as indicated on the Contractor's Request for Final Review form at the end of this Specification Section.
 - b. The Architect is herein defined as any of those firms or individuals listed by references on the drawings, including all consultants identified herein.
 - c. All requests for Project Final Review (and re-review) shall be made in writing on the form provided at the end of this Specification Section.
4. When the Architect does approve of the degree of readiness for the Project based on the initial Contractor's Punch List and the readiness of the Project, the Architect will make his final review, adding to the Contractor's Punch List any other items that require further completion.
5. The Contractor shall take the initial Contractor's Punch List, together with the Architect's Punch List, and initial and date each item on each list as to when it was completed.
6. Once both lists are completed and signed by the Project Inspector, the Contractor shall submit to the Architect the completed lists for final review and approval prior to filing for Substantial Completion.

3.3 CLEANING

A. During Construction:

1. Oversee cleaning and ensure that building and grounds are maintained free from accumulations of waste materials and rubbish.
2. Sprinkle dusty debris with water.
3. At reasonable intervals during progress of work, clean up site and access and dispose of waste materials, rubbish, and debris.

4. Provide suitable containers and locate on site for collection of waste materials, rubbish, and debris.
5. Do not allow waste materials, rubbish and debris to accumulate and become an unsightly or hazardous condition.
6. Remove waste materials, rubbish and debris from the site and legally dispose of at public or private dumping areas off the Owner's property.
7. Lower waste materials in a controlled manner with as few handling as possible; do not drop or throw materials from heights.
8. Schedule cleaning operations so that dust and other contaminants resulting from cleaning process will not fall on wet, newly painted surfaces.

B. Final Cleaning:

1. Use experienced professional cleaners for final cleaning.
2. At completion of construction and just prior to acceptance or occupancy, conduct a final review of exposed interior and exterior surfaces.
3. Remove grease, dust, dirt, stains, labels, fingerprints, and other foreign materials from surfaces.
4. Repair, patch, and touch-up marred surfaces to match adjacent finishes.
5. Broom clean paved surfaces; rake clean other surfaces of grounds.
6. Clean ducts, blowers, and coils if air conditioning units were operated during construction
7. Maintain cleaning until the area of work, or portion thereof, is accepted by the Owner.

3.4 DEMONSTRATION

A. During Construction and as each piece of equipment is installed, provide the following tests:

1. Verify that all external service connections have been properly completed, and that piping and/or wiring is properly sized, and contain all necessary safety devices.
2. Verify that the equipment is free of shipping materials, tie downs, or other internal obstructions.
3. Conduct tests employing the manufacturer's operating instructions as a sequential guide.
4. Verify that all portions of the equipment function properly and that the total performance criteria is satisfied.
5. Make adjustments, replacements, or repairs necessary to achieve full operational capability and repeat tests until performance is achieved and approval obtained.

B. Prior to acceptance, verify that all conditions specified in the Article titled FIELD QUALITY CONTROL, Final Review, have been satisfied and that equipment is ready for continuous use. Provide the following services preparatory to acceptance:

1. Demonstrate to the Owner's representative and the Architect or Engineer the method and sequence of operation, and provide testing devices and/or data to verify that performance equals that specified.
2. Provide operating instructions in bound form along with manufacturer's parts list and written warranties.

3.5 SCHEDULES

A. See next page for Request for Final Review from the Contractor(s):

(The rest of this page is left intentionally blank)

**CONTRACTOR'S REQUEST
FOR
FINAL REVIEW FORM**

PROJECT: _____
(Name of Project and DA Project Number)

TO: **DARDEN ARCHITECTS, INC.**
6790 N. West Avenue
FRESNO, CA 93711

FROM: _____
(Contractor)

(Address)

WE HEREBY request Final Review on _____ **and** _____.
(Date) (Time)

WE HEREBY, request and certify:

1. The project is ready for Final Review.
2. The undersigned will compensate the Architect at a rate of \$176.00 an hour for further review, investigation and comments if it is determined that the Project is not ready for final review as indicated earlier within this Specification Section. The Architect is herein defined as any of those firms or individuals listed by reference on the Drawings, including all Consultants identified herein.

Submitted By (Contractor)

Signature _____
Firm _____
Address _____
Date _____
Telephone _____

Below is

for Use by Design Consultant only

___ Conditions for Final Review Accepted
___ Final Review Accepted as Noted
___ Final Review Not Accepted

By _____

Date _____

Remarks _____

END OF SECTION

SECTION 017836 – WARRANTIES

PART 1 - GENERAL

1.1 SUMMARY

- A. In addition to providing all other warranties specified in the Project Manual and without affecting any rights of Owner under State or Federal law, Contractor shall warrant that the Work done under this Project Manual will be free from faulty materials or workmanship and hereby agrees, upon receiving notification from the Owner or his Agent, to immediately remedy, repair or replace, without cost to the Owners and to his entire satisfaction, all defects, damages or imperfections appearing in said work within a period of one (1) year unless specified otherwise, after date of final acceptance by the Owner of all work done under this Project Manual, regardless of whether or not the Owner or persons operating under contract with the Owner partially or wholly occupies any portion of the work prior to acceptance. For work performed after completion, the one (1) year period shall be extended by the period of time between the date of final acceptance by Owner and actual performance of the work. This obligation shall survive acceptance of the work and termination of the Contract.
1. Warranties shall be in the form outlined below and shall be submitted in duplicate to the Contractor and submitted on his own letterhead.
- B. Related Sections: The following Project Manual Sections contain requirements that relate to this section:
1. ALL DIVISION 00 SPECIFICATION SECTIONS.
 2. ALL DIVISION 01 SPECIFICATION SECTIONS.
 3. ALL SPECIFICATION SECTIONS IN THE FACILITY CONSTRUCTION SUBGROUP.
 4. ALL SPECIFICATION SECTIONS IN THE FACILITY SERVICES SUBGROUP.
 5. ALL SPECIFICATION SECTIONS IN THE SITE AND INFRASTRUCTURE SUBGROUP.

1.2 SUBMITTALS

- A. Warranty Form: *(following page.)*

(Contractor's Letterhead)

Project Number: _____

Project Name: _____

WARRANTY FOR

 We hereby warrant and the General Contractor warranties that

 has been done in accordance with the Drawings and the Specifications and that the Work as installed will fulfill the requirements of the warranty included in the Project Manual. We agree to repair, replace any or all of our work together with any other adjacent work which may be displaced or damaged by so doing that may prove to be defective in its workmanship or materials within a period of _____ years from date of acceptance of the above-named without any expense to the Owner, ordinary wear and tear and unusual abuse or neglect excepted. In the event of our failure to comply with above-mentioned conditions within ten (10) days after being notified in writing by the Owner or his agent, we collectively or separately, do hereby authorize the Owner to proceed to have said defects repaired and made good at our expense and we will honor and pay the costs and charges therefor upon demand.

 (Signature of Subcontractor)

 (Signature of Contractor)

Date: _____

- B. Submit 2 copies of all manufacturer's or installer/applicator's warranties and bonds as specified within Division 02 –49.
- C. Submit to Architect together with Project Record Documents.
- D. Accompany submittals with transmittal letter in duplicate.
- E. When Product Submittals are required, submit copy of warranty with product submittal.

PART 2 - PRODUCTS

NOT APPLICABLE

PART 3 - EXECUTION

NOT APPLICABLE

END OF SECTION

SECTION 017839 – PROJECT DOCUMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes the administrative and procedural requirements for Project Record Documents, including the following:
 - 1. Project As-Built Drawings.
 - 2. Project Record Drawings.
 - 3. Record Specifications.
 - 4. Record Product Data.
- B. Related Requirements: The following Project Manual Sections contain requirements that relate to this Section:
 - 1. ALL DIVISION 00 SPECIFICATION SECTIONS.
 - 2. ALL DIVISION 01 SPECIFICATION SECTIONS.
 - 3. ALL SPECIFICATION SECTIONS IN THE FACILITY CONSTRUCTION SUBGROUP.
 - 4. ALL SPECIFICATION SECTIONS IN THE FACILITY SERVICES SUBGROUP.
 - 5. ALL SPECIFICATION SECTIONS IN THE SITE AND INFRASTRUCTURE SUBGROUP.

1.3 DEFINITIONS

- A. CONTRACT DOCUMENTS: Contract Documents include Contract Forms, Project Manual (Contract Requirements and Specifications), Drawings, Addenda, Change Orders and Modification Documents (Supplemental Instructions, Request for Information, Construction Change Directives).
- B. PROJECT "AS-BUILT" DOCUMENTS: A set of Contract Documents used during construction for recording of actual construction information during construction. The recording of construction information shall be maintained on the Contract Drawings and in the Project Manual.
- C. PROJECT "RECORD" DOCUMENTS: A set of Contract Documents used at the completion of construction for transferring and documenting the actual construction information recorded on the PROJECT "AS-BUILT" DOCUMENTS.
- D. RECORD PRODUCT DATA: A set of Submittals and Shop Drawings that have documentation of field changes made after review.

- E. AGENCY DOCUMENTATION: Documents required by the Agency Having Jurisdiction to be prepared and submitted by the contractor.

1.4 SUBMITTALS:

- A. Submit the following in accordance with specification Section SUBMITTAL PROCEDURES.
- B. Format for Submittals:
 - 1. Accompany each submittal with a SHOP DRAWING AND SUBMITTAL TRANSMITTAL:
 - 2. PDF electronic file names shall match the Sheet Numbers of the Contract Documents.
 - 3. Provide labels on DVD's and DVD Cases and include the following:
 - 4. First Line: CLOSE-OUT DOCUMENTS
 - 5. If submittal contains multiple disks append to first line Disk, i.e. (1 of 2)
 - 6. Second Line: Project Name and Year
 - 7. Third Line: Architect Firm Name and Architect's Project Number
 - 8. Fourth Line: DSA or HCAI Number (if applicable)
 - 9. Fifth Line: Contractor Company Name
 - 10. PDF files for Project "Record" Documents and Record Product Data shall be combined with PROJECT CLOSEOUT, Maintenance Data and Operations Data, and WARRANTIES on a single set of DVD's.
- C. PROJECT "AS-BUILT" DOCUMENTS: Comply with the following:
 - 1. Number of Copies: Submit one paper-copy set of marked-up as-built drawings and one paper-copy of marked-up as-built specifications.
 - 2. Clearly Label each copy "PROJECT 'AS BUILT' DOCUMENTS" in two-inch-high printed letters.
- D. PROJECT "RECORD" DOCUMENTS: Comply with the following:
 - 1. Number of copies: Submit copies of the Record Documents as follows:
 - a. Initial Submittal:
 - 1) Submit one paper-copy of marked-up record drawings and one paper copy of marked-up record specifications,
 - 2) Alternatively, submit PDF electronic files of scanned marked-up record drawings and marked-up record specifications on one set of DVD's
 - 3) Architect will indicate whether general scope of changes, additional information recorded, and quality of drafting are acceptable.
 - 2. Final Submittal:
 - 3. Submit one paper-copy of marked-up record drawings, one paper copy of marked-up record specifications, and PDF electronic files of scanned marked-up record drawings and marked-up record specifications on three sets of DVD's.
 - 4. Each record drawing sheet shall be labeled, "PROJECT "RECORD" DOCUMENT."
 - 5. Print each drawing, whether or not changes and additional information were recorded.
 - 6. Clearly Label each copy "PROJECT "RECORD" DOCUMENTS in two-inch-high printed letters in a prominent location.
- E. RECORD PRODUCT DATA: Comply with the following:
 - 1. Number of Copies:
 - a. Submit one paper-copy set of marked-up shop drawings.
 - b. Submit three DVD's of PDF electronic files of scanned marked-up shop drawings.

- F. AGENCY DOCUMENTATION: Comply with the following:
 - 1. Submit Documentation Required by the Agency Having Jurisdiction utilizing the format and system established by the Agency.

1.5 SYSTEM DESCRIPTION

- A. The Architect considers the Project Record Documents to be of significant importance to the Owner.
- B. Project Record Documents provide important information for the Owner's records, they form an invaluable record for future reference for concealed conditions, facilities management processes, and future additions and renovations.

PART 2 - PRODUCTS

2.1 General:

- A. All costs (including the time) required for recording, transferring, and copying all documentation shall be part of the Contractor's Overhead Expense.
- B. Provide red pencil or ink (contrasting color) for all marking of the PROJECT "AS-BUILT" DOCUMENTS, PROJECT "RECORD" DOCUMENTS, and RECORD PROJECT DATA.
- C. Do not permanently conceal any work until required information has been recorded.

2.2 RECORD DRAWINGS

- A. PROJECT "AS-BUILT" DOCUMENTS: Maintain one set of marked-up paper copies of the Contract Drawings: and Specifications, incorporating new and revised drawings as modifications are issued.
 - 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 provide information for preparation of corresponding 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 acceptable drawing technique.
 - c. Record data as soon as possible after obtaining it.
 - d. Record and check the markup before enclosing concealed installations.
 - 2. Content: Types of items requiring marking include, but are not limited to, the following:
 - a. Elevation for finish grade for all points indicated on Site Grading Plan.
 - b. Depths of various elements of foundation in relation to first floor finish elevation.
 - c. Horizontal and vertical location of underground utilities and appurtenances referenced to visible and accessible features of structure.
 - d. Revisions to routing of piping and conduits.
 - e. Revisions to electrical circuitry.
 - f. Actual equipment locations.
 - g. Changes made by Addenda, Change Orders and other Modification Documents.

- h. Details not on original Contract Documents.
 - i. Changes made on Shop Drawings.
- 3. Mark Specifications to indicate the actual product installation where installation varies from that indicated in Specifications, addenda, and contract modifications.
 - a. Give particular attention to information on concealed products and installations that cannot be readily identified and recorded later.
 - b. Mark copy with the proprietary name and model number of products, materials, and equipment furnished, including substitutions and product options selected.
 - c. Record the name of manufacturer, supplier, Installer, and other information necessary to provide a record of selections made.
 - d. For each principal product, indicate whether record Product Data has been submitted in operation and maintenance manuals instead of submitted as record Product Data.
 - e. Note related Changes Orders, record Product Data, and record Drawings where applicable.
- 4. Mark the Contract Drawings and Specifications completely and accurately. Use personnel proficient at recording graphic information in production of marked-up record prints.
- 5. Note Request for Information numbers, Supplemental Instruction numbers, Construction Change Directive numbers, Change Order numbers, and similar identification, where applicable.

2.3 PROJECT "RECORD" DOCUMENTS:

- A. General: Transfer all changes, notations, etc. from the "AS-BUILT" PROJECT DOCUMENTS to the "PROJECT RECORD" DOCUMENTS in the same quality as the original Contract Documents.

2.4 RECORD PRODUCT DATA

- A. Maintain one set of marked-up paper copies of the Shop Drawings and Product Data, incorporating any modifications to the reviewed documents.
- B. Preparation: Mark Product Data to indicate the actual product installation where installation varies from that indicated in Product Data submittal.
 - 1. Give particular attention to information on concealed products and installations that cannot be readily identified and recorded later.
 - 2. Include significant changes in the product delivered to Project site and changes in manufacturer's written instructions for installation.
 - 3. Note related Change Orders and record Drawings where applicable.
 - 4. Include record Product Data directory organized by Specification Section number and title, electronically linked to each item of record Product Data.

2.5 AGENCY DOCUMENTATION

- A. Contractor shall prepare and upload all applicable forms pertaining to the Contractor as required by the Division of State Architect DSA Procedure 13-02, including but not limited to:
 - 1. DSA 6-C - Contractor Verified Report.
 - 2. NFPA System Record of Completion.

PART 3 - EXECUTION

3.1 RECORDING AND MAINTENANCE:

A. Recording:

1. Keep all documents current, PROJECT "AS-BUILT" DOCUMENTS shall be kept current at all times. Post changes and revisions to project as-built documents as they occur; do not wait until end of Project.
2. The Project Inspector will review the PROJECT "AS-BUILT" DOCUMENTS periodically for the Architect at the time Payment Requests are processed. Should the PROJECT "AS-BUILT DOCUMENTS not be current and up to date, the Owner reserves the right to hold the Payment Request until compliance with the Contract Documents has occurred.

B. Maintenance of Documents:

1. Maintain at job site the following:
 - a. Contract Drawings.
 - b. Project Manual/Specifications.
 - c. Addenda.
 - d. Reviewed shop drawings.
 - e. Change Orders.
 - f. All Modification Documents.
 - g. Field test records.
2. Store documents apart from documents used for construction.
3. Provide files and racks for storage of documents.
4. File documents in accordance with Project Filing Format or Uniform Construction Index.
5. Maintain documents in clean, dry, legible condition.
6. Do not use record documents for construction purposes.
7. Make documents available at all times for inspection by Architect, Owner and Owner's Inspector.

END OF SECTION

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SECTION 020110 – EXISTING LANDSCAPE MAINTENANCE

PART 1 - GENERAL

1.1 SUMMARY

- A. This Section includes the following:
 - 1. Provide all material, labor, equipment and services necessary to completely install all materials, accessories and other related items necessary to complete the Project as indicated by the Contract Documents.
- B. Related Sections: The following Project Manual Sections contain requirements that relate to this section:
 - 1. ALL DIVISION 00 SPECIFICATION SECTIONS.
 - 2. ALL DIVISION 01 SPECIFICATION SECTIONS.
 - 3. ALL SPECIFICATION SECTIONS IN THE FACILITY CONSTRUCTION SUBGROUP.
 - 4. ALL SPECIFICATION SECTIONS IN THE SITE AND INFRASTRUCTURE SUBGROUP.

1.2 DEFINITIONS

- A. Protection: Provide all barricades as required to prevent all damage to existing plant materials to remain including, but not limited to, protection from mechanical damage, soil compaction, pollution from all sources, and description of environmental support which would result in the loss of vigor of said plantings.
- B. Drip Line: An imaginary line on the ground around a tree representing its outermost branch tips. All of the area within the drip line of existing trees to remain is to be protected from damage as specified herein, unless otherwise noted.

1.3 SUBMITTALS

- A. Submit in accordance with Specification Section - SUBMITTAL PROCEDURES:
- B. Provide four (4) copies of the following:
 - 1. Shop Drawings:
 - a. Construction details for protective barriers and barricades are required.
 - 2. Schedule:
 - a. Watering schedule, where interruption of irrigation systems will exceed one watering period.
 - 3. Record of Existing Conditions:
 - a. Video record all existing planting at the project site designated to remain. Recording shall show all aspects of existing planting to remain throughout the project site.

1.4 DELIVERY, STORAGE, AND HANDLING

A. Storage:

1. Do not store materials or equipment under the branches of all existing trees or in turf or ground cover areas to remain.

1.5 PROJECT CONDITIONS

A. Review:

1. Visit and walk the site with Owner's representative to clarify Scope of Work and understand project conditions.

B. Documentation:

1. Confirm location of all plant materials to remain. Examine existing irrigation system to remain and report all malfunctioning equipment to be repaired by Owner. Record all discrepancies and all conditions which threaten existing plantings.

C. Acceptance:

1. Commencing work shall be taken as acceptance by the Contractor of responsibility for the protection of all existing site plantings with the exception if discrepancies and corrections noted above.

D. Replacements:

1. General:
 - a. Existing planting to remain which exhibits conditions which are determined as unacceptable due to inadequate protection during construction shall be replaced by Contractor at no expense to Owner.
2. Planting:
 - a. Closely match replacements to adjacent specimens of the same species, variety, and cultivate. Replacements are to be the same size as adjacent material at the time of replacement.

E. Traffic:

1. Do not operate or park equipment within the drip line of existing trees to remain. Keep foot traffic out of existing ground cover and turf areas. Protect shrub areas from cross traffic.

F. Operations:

1. Do not permit burning, temporary, or permanent dumping or storage of construction debris within drip line of existing trees to remain. Give written notification if any construction activity by any Contractor threatens to damage existing plants to remain.

1.6 SCHEDULING

- A. Construct protective barriers prior to demolition and selective clearing. Construct other barriers as indicated in the Part 1 Article titled - SUMMARY.

- B. A demolition meeting will be called prior to demolition where the Project Inspector, owner and Architect will set the extent of the protective barriers.

1.7 WARRANTY

- A. Contractor's General Warranty:
 - 1. In accordance with Specification Section - WARRANTIES.
- B. Manufacturer's General Warranty:
 - 1. During the Warranty Period for new planting, similarly warrant all existing plant materials against decline resulting from damage during construction.
 - a. Warranty Period: One (1) Year.
- C. Installer's Warranty:
 - 1. In accordance with the terms of the Specification Section - WARRANTIES:
 - a. Warranty period One (1) Year.

1.8 MAINTENANCE

- A. Existing Planting:
 - 1. General:
 - a. During the Maintenance Period for new planting, similarly maintain all existing plantings to remain.
 - 2. Fertilizers:
 - a. Do not use complete fertilizers on existing plant materials unless oils test indicates specific nutrient deficiencies.

PART 2 - PRODUCTS

2.1 MATERIALS:

- A. Fertilizers, herbicides, and Pest Control at Contractor's option as required to maintain existing landscaping.
- B. Barriers And Barricades:
 - 1. Contractor's option.
- C. Safety Materials:
 - 1. Provide all reflective signage and/or flashers as required by all codes and ordinances affecting barricaded plantings to remain.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Provide barriers at the drip line of all trees designated to remain. Grouping of trees may be enclosed by a single protective fence. Similarly protect turf, groundcover, and shrub areas from construction activities

3.2 FIELD QUALITY CONTROL

- A. Cut: Do not permit machine excavation within the drip line of existing trees to remain. All such work shall be by hand labor. Do not permit more than two (2) inches of existing soil to be removed within the drip line except as authorized in writing by Architect.
- B. Fill: Do not permit stockpiling of soil within the drip line of all existing trees nor on existing turf or ground cover areas. Do not permit more than three (3) inches of fill to be placed within the drip line during grading operations without written acceptance by Architect.
- C. Storage: Do not store materials or equipment under branches of all existing trees nor in turf or ground cover areas to remain.

3.3 IRRIGATION

- A. One week prior to the start of construction the contractor shall install and maintain for the project duration a controlled water system to maintain consistent and even watering to all plants to remain. System shall be type appropriate for the plants to remain and configured to give the appropriate amount of water for each type of plant.
- B. If the irrigation system is disrupted for any reason during construction the contractor shall restore irrigation within twenty four (24) hours of the disrupted service.

3.4 REPAIR OF DAMAGED PLANT MATERIAL

- A. During the course of construction, if roots two inches (2") or larger in diameter are cut, the contractor shall take the following immediate action to minimize further damage to the plant material.
- B. Stop construction activity, inform the Project Inspector and Architect. Contact a qualified arborist for inspection of plant material and report of construction impact on plants. The expense for the Arborist's services shall be the contractor's responsibility.
- C. If the arborist determines that damage occurred the contractor will be directed within forty eight (48) hours to perform the following:
 - 1. Prune plant material to I.S.A. standard specifications to compensate for root loss.
 - 2. Aerate soil to relieve compaction and to improve air and water exchange to root system.

- 3. Fertilize trees with deep water bore at a rate of one pound of actual nitrogen per 1,000 sq. ft.
- 4. Inject plant hormones (growth stimulator) through irrigation system.
- D. This process shall be implemented within forty eight (48) hours of direction by the arborist.
- E. Failure to perform repairs within specified time will institute liquidated damages to the contractor of two hundred (200) dollars for each calendar day by which the completion of the repairs is delayed.
- F. The owner reserves the right to hire a person or persons to perform the repair work in the event the contractor does not respond in a timely manner. The expense for this work will be the contractors responsibility at no further expense to the Owner.

3.5 CLEANING

- A. At close of construction in each area, remove all protective barriers at the direction of the Architect. Transport all barrier materials off site at no additional expense to Owner.
- B. Repair all grades and restore all damaged plant materials.

3.6 PROTECTION

- A. Provide all reflective signage and/or flashers as required by all codes and ordinances affecting barricaded plantings to remain.
- B. Barriers and Barricades:
 - 1. Provide as required to meet all regulatory requirements and protection of landscaping during construction.
 - 2. Remove when Owner occupies the Project.

END OF SECTION

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SECTION 031101 – CONCRETE FORMWORK

PART 1 - GENERAL

1.1 SUMMARY

- A. This Section includes the following:
 - 1. Provide all material, labor, equipment and services necessary to completely install all Concrete Formwork materials, and other related items necessary to complete the Project as indicated by the Contract Documents.
- B. Related Sections: The following Project Manual Sections contain requirements that relate to this section:
 - 1. ALL DIVISION 00 SPECIFICATION SECTIONS.
 - 2. ALL DIVISION 01 SPECIFICATION SECTIONS.
 - 3. 03 15 14 DRILLED ANCHORS
 - 4. 03 20 00 REINFORCEMENT
 - 5. 03 30 00 CAST-IN-PLACE CONCRETE
 - 6. 05 12 00 STEEL AND FABRICATIONS
 - 7. 31 20 00 EARTHWORK
 - 8. ALL SPECIFICATION SECTIONS IN THE FACILITY SERVICES SUBGROUP.
 - 9. ALL SPECIFICATION SECTIONS IN THE SITE AND INFRASTRUCTURE SUBGROUP.

1.2 REFERENCES

- A. Standards:
 - 1. In accordance with the latest edition of the following standards:
 - a. ACI American Concrete Institute
 - b. APA The Engineered Wood Association (formerly the American Plywood Association)
 - c. PS Product Standards of the U.S. Department of Commerce, latest edition
 - d. WCLIB West Coast Lumber Inspection Bureau

1.3 DEFINITIONS

- A. Terms used throughout this section.
 - 1. Unexposed:
 - a. "Unexposed to View" for determining what forms to use for an unfinished concrete surface.
 - 2. Exposed:
 - a. "Exposed to View" for determining what forms to use for a finished concrete surface.

1.4 SUBMITTALS

- A. Submit in accordance with Specification Section - SUBMITTAL PROCEDURES:
 - 1. Product Data.
 - a. Forming materials.
 - b. Tie rods and spreaders.
 - c. Formwork for exposed concrete.
 - d. Form coatings and release agents.
 - 2. Shop Drawings:
 - a. The Contractor shall submit drawings showing the proposed form tie locations for exposed form indentations.
 - 3. Samples.
 - a. Form liners for specific finished concrete surfaces.
 - 4. Quality Assurance/Control Submittals:
 - a. Manufacturer's written Instructions:
 - 1) Instructions for specific form liner manufacturer indicated.
 - 5. Closeout Submittals:
 - a. Record Documents in accordance with Specification Section – PROJECT DOCUMENTS.

1.5 QUALITY ASSURANCE

- A. Qualifications:
 - 1. Installer Qualifications:
 - a. Engage an experienced Installer who has successfully completed three (3) projects of similar scope and size to that indicated for this Project.
 - 2. Manufacturer/Supplier Qualifications:
 - a. Firm experienced in successfully producing/supplying products similar to that indicated for this Project, with sufficient production/supply capacity to produce/supply required units without causing delay in the Work.
- B. Regulatory Requirements:
 - 1. In accordance with Specification Section - REGULATORY REQUIREMENTS, and the following:
 - a. CARB Materials and equipment used for this Project shall comply with the current applicable regulations of the California Air Resources Board (CARB) and the Environmental Protection Agency (EPA), in the area where the project is located.
- C. Mockups:
 - 1. Cast in accordance with Specification Section – CAST-IN-PLACE CONCRETE, Part 1 Article titled "SUBMITTALS," paragraph titled "Mockups" for requirements.
 - a. Provide with all applicable joints, grooves, textures, etc.

1.6 WARRANTY

- A. Contractor's General Warranty:

1. In accordance with Specification Section - WARRANTIES.
- B. Manufacturer's Warranty:
 1. In accordance with manufacturer's written standard warranty:
 - a. Warranty Period: One (1) Year.
- C. Installer's Warranty:
 1. In accordance with the terms of the Specification Section - WARRANTIES.
 - a. Warranty Period: One (1) Year.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. These products listed herein establish the size, pattern, color range and function selected by the Architect for this Project. Manufacturers that are listed as acceptable alternative manufacturers and substitutions must still comply with the requirements of this project and the products listed in order to be approved as an equivalent during the Submittal Process. If the acceptable alternative manufacturers listed or substitutions are not approved during the Submittal Process due to non-compliance with the contract documents, then the Contractor shall submit product specified.
 1. Specified product manufacturer:
 - a. MDO Plywood: SIMPSON TIMBER PRODUCTS.
 - b. HDO Plywood: SIMPSON TIMBER PRODUCTS.
 2. Specified product accessories:
 - a. Chamfer Strips: MEADOW / BURKE COMPANY.
 - b. Cement Compound Plugs: MEADOW / BURKE COMPANY.
 - c. Double Sided Foam Tape: 3M COMPANY.
 - d. Rustication Strips: MEADOW / BURKE COMPANY.
 - e. Spreaders and Ties: MEADOW / BURKE COMPANY.
- B. Products from other manufacturers not listed must submit in accordance with Specification Section - SUBSTITUTION PROCEDURES.

2.2 MATERIALS

- A. Unexposed finish forms:
 1. Provide plywood, lumber, or another acceptable material.
 - a. Lumber shall be dressed on at least two edges and one side for tight fit, complying with WCLIB Standard Grading and Dressing Rules #17, for Douglas Fir Form Lumber.
 - b. When plywood is used, provide panels complying with PS1, B-B (Concrete Form) Plywood, Group 1, EXT-APA mill-oiled and edge-sealed, with each piece bearing legible inspection trademark.
- B. Exposed finish forms:
 1. Provide plywood panel type materials to provide continuous, straight, smooth, exposed surfaces. Furnish in largest practical sizes to minimize number of joints and to conform to joint system shown on the drawings.

- a. Single Pour Forms: Provide liner panels that are complying with PS1, MDO Plywood, B-B, Group 1, EXT-APA, mill-oiled, edge-sealed, with each piece bearing legible inspection trademark, which are limited to "single-pour use" forms, that are manufactured by SIMPSON TIMBER PRODUCTS, or approved equivalent.
 - b. Multiple Pour Forms: Provide HDO Plywood "Multipour" liner panels, which are limited to "double-pour use" forms, that are manufactured by SIMPSON TIMBER PRODUCTS, or approved equivalent.
- C. Non-Compressive High Density Foam Fill:
- 1. Foam-Control Geofoam, EPS19, complying with ASTM D 6817 "Standard Specification for Rigid Cellular Polystyrene Geofoam", with the following physical characteristics:
 - a. Density, min., kg/m³: 18.4.
 - b. Compressive Resistance, @ 1 percent deformation, min., psi: 40.0.
 - c. Flexural Strength min., psi: 207.0.
 - d. Oxygen index, min., volume percent: 24.0.
 - 2. Accessories: Provide all adhesives, "geogripper" plates, etc. to comply with manufacturer's written installation instructions for a complete and functional installation.

2.3 ACCESSORIES

- A. Cement Compound Plugs:
- 1. Provide gray colored cement compound plugs ("SnaPlug" by MEADOW / BURKE, or approved equivalent) in highly visible concrete surface areas.
 - a. Provide "flush type" in cone holes of size appropriate to the hole size created by tie-holes.
 - 2. Provide a waterproof neoprene adhesive ("SnaPlug Bonder" by MEADOW / BURKE, or approved equivalent), resistant to weather aging and bacterial growth, for adhering cement compound plugs into cone holes.
- B. Chamfer Strips:
- 1. Provide wood chamfer strips free of knots, for forming edges of cast-in-place concrete.
- C. Double Sided Foam Tape: Provide "Scotch" double sided, high density, pressure sensitive adhesive, foam tape as manufactured by The Tape Division of 3M PRODUCTS, INC., or approved equivalent.
- D. Form release agent:
- 1. Provide commercial formulation form release agent with a maximum volatile organic compounds (VOC's) in compliance with the CARB in the area where the project is located, that will not bond with, stain, or adversely affect concrete surfaces and will not impair subsequent treatments of concrete surfaces.
 - 2. Provide form liner manufacturer's form release agent when a particular form liner is used to maintain compatibility with form release agent and the form liners used for this project.
- E. Rustication Strips:
- 1. Provide wood rustication strips free of knots, for forming straight continuous reveals (either vertically or horizontally) and PVC rustication strips as manufactured by MEADOW / BURKE, for forming curved continuous reveals (either vertically or horizontally).

- F. Spreaders and ties for loose plywood forming:
 - 1. Spreader Ties: Use metal spreaders and ties for surfaces to be sacked. Use type that will give positive tying and accurate spreading for accurate sizing of cast walls or forms. Snap type shall leave no metal closer than 1-1/2 inches from exposed surface of concrete and have spreader cones no larger than 1 inch diameter.
- G. Nailer Strip:
 - 1. Provide decay resistant pressure treated wood nailer strips of sizes and locations indicated on the drawings.
 - a. For roof systems, provide compatible materials with the roof system manufacturer's applications.
 - b. Provide fire retardant pressure treated wood nailer strips when the roof assembly requires a Class A rating.
 - 2. All pressure treated wood (decay or fire-retardant) shall be in accordance with the applicable standards of the AWWPA as referenced in the Specification Section - ROUGH CARPENTRY.

PART 3 - EXECUTION

3.1 PREPARATION

- A. Surface preparation:
 - 1. Consult with other Trades relative to required openings, and items to be embedded in concrete (i.e., piping, conduit, hangers, reglets, anchors, inserts, sleeves, etc.). Coordinate work specified under other sections to ensure proper, adequate interfacing between trades, for openings, chases, blockouts, and other required interfacing items.

3.2 ERECTION

- A. All formwork shall be:
 - 1. Designed and constructed in accordance with ACI Standard 347 "Recommended Practice for Concrete Formwork."
 - a. Follow ACI 303R "Guide to Cast-In-Place Architectural Concrete" for further recommendations in design and use of Patterned Form Liners.
 - 2. Construct to size, shape, alignment, elevation and position of all concrete elements.
 - a. Provide for openings, offsets, sinkages, keyways, recesses, moldings, rustications, reglets, chamfers, blocking, screeds, bulkheads, anchorages, inserts, and other features required in the work. Use selected materials to obtain required finishes.
 - 3. Properly separate and securely tie with Spreaders and Ties to maintain proper shape. Wood spreaders shall not be allowed to remain in concrete work.
 - 4. Brace, support and center sufficiently to carry without excessive deflection all live and dead loads imposed during construction and placement of concrete, and to insure safety to workers and passersby.
 - 5. Properly construct to eliminate all open joints or discontinuous surfaces.
 - a. Solidly butt joints with double sided foam tape, apply silicone sealant at concrete face, and provide backup at joints to prevent cement paste or mortar from leaking.
- B. All joints shall be:

1. Uniform and backed by 2 inch material.
2. Continuous and level or plumb.
3. Sufficiently tight (with double sided foam tape and silicone sealant) to prevent leakage of cement paste.
 - a. Locate joints of formwork whenever possible at rustication joints.
4. Subject to Architect's approval.

3.3 INSTALLATION

- A. General: Design, engineer, erect, support, brace, and maintain formwork to support vertical, lateral, static, and dynamic loads that might be applied until concrete structure can support such loads. Construct formwork so concrete members and structures are of correct size, shape, alignment, elevation, and position.
 1. Access Openings: Shall be provided in forms for cleaning and inspection of forms and reinforcement.
 2. Architectural Concrete elements shall be formed with MDO (or HDO) form plywood where face uniformity is required such as on signs, plaques, kiosks, and landscape elements.
 3. Side forms at unexposed footings may be omitted if excavation stands without caving.
 - a. Make footing trench two (2) inches wider than width of concrete footing indicated on the drawings, when earth is used as a form.
 - b. Cut trenches true and straight.
 - c. Make side cuts neat and plumb.
 - d. Bottom of trenches shall be level with reasonably sharp corners.
 4. Formwork above grade shall be:
 - a. Plywood type as specified treated with Sealer.
 - b. Constructed with plumb and level joints.
 - c. Separated with removable or snap type Spreaders and Ties. Do not use wire ties.
 5. Unintentional indentations in the surface of the concrete left after removal of spreaders and ties shall be filled and sanded unless the architect's approval is given to do otherwise.
 - a. Install Cement Compound Plugs where exposed form tie indentations occur.
 6. Sleeves, anchors and bolts, angles, supports, ties and other materials in connection with concrete construction shall be secured in position before the concrete is placed.

3.4 CONSTRUCTION

- A. Special Techniques – Form Removal and Reuse of Forms:
 1. All forms shall be completely removed.
 2. Time of Removal shall be in accordance with ACI 301 "Specifications for Structural Concrete," which requires concrete to reach its specified compressive strength. Variations to the time of removal are listed below subject to the concrete reaching its specified compressive strength:
 - a. Dependent on weather conditions.
 - 1) Due to excessive cold weather for a long duration of days, and subject to the Architect's approval, the time for removal may be extended if deemed necessary.
 - b. Dependent on cylinder test results.
 - c. Dependent on recommendations of additive manufacturer when additives are admitted to the mix.
 - d. Typically (verify with three statements above before initiating the following):

- 1) Foundation Side Forms: Five (5) days after concrete is poured.
 - 2) Wall Forms: Ten (10) day after concrete is poured.
 - e. Remove forms in a manner that will not harm concrete. Do not hammer or pry against concrete.
 3. Nails, tie wires and form ties shall be cut off flush with face of concrete.
 4. Snap type spreaders to be snapped off inside the wall surface.
 5. Clean and repair surfaces of forms to be reused in the work. Split, frayed, delaminated, or otherwise damaged form-facing material will not be acceptable for exposed surfaces. Apply new form-release compound as specified for new formwork.
 6. When forms are extended for successive concrete placement, thoroughly clean surfaces, remove fins and laitance, and tighten forms to close joints. Align and secure joint to avoid offsets. Do not use patched forms for exposed concrete surfaces except as acceptable to the Architect.
- B. Site Tolerances:
1. Maintain formwork construction tolerances and surface irregularities complying with the following ACI 347 "Guide to Formwork for Concrete" limits:
 - a. Provide Class A tolerances (permitted irregularities are 1/8" in 10' for both gradual and abrupt) for all concrete surfaces exposed to view, or surfaces that will receive additional applied finishes.
 2. Concrete work out of alignment, or level or plumb exceeding the allowable tolerance will be cause for rejection of the whole work affected. Such work shall be removed and replaced as directed by Architect with no additional cost to Owner.

3.5 CLEANING

- A. Thoroughly clean forms and adjacent surfaces to receive concrete. Remove chips, wood, sawdust, dirt, or other debris just before placing concrete. Re tighten forms and bracing before placing concrete, as required, to prevent leakage of cement paste and maintain alignment.
- B. Remove all wood used for formwork from trenches. No wood shall be left buried in the earth.
- C. Final cleaning shall be in accordance with Specification Section – PROJECT CLOSEOUT.

END OF SECTION

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SECTION 032000 – REINFORCEMENT

PART 1 - GENERAL

1.1 SUMMARY

- A. This Section includes the following:
 - 1. Provide all reinforcement material, labor, equipment and services necessary to completely install all reinforcing materials, accessories and other related items necessary to complete the Project as indicated by the Contract Documents.
- B. Related Sections: The following Sections contain requirements that relate to this Section:
 - 1. ALL DIVISION 00 SPECIFICATION SECTIONS.
 - 2. ALL DIVISION 01 SPECIFICATION SECTIONS.
 - 3. 03 11 01 CONCRETE FORMWORK
 - 4. 03 15 14 DRILLED ANCHORS
 - 5. 03 30 00 CAST-IN-PLACE CONCRETE
 - 6. 05 12 00 STEEL AND FABRICATIONS
 - 7. 31 20 00 EARTHWORK
 - 8. ALL SPECIFICATION SECTIONS IN THE FACILITY SERVICES SUBGROUP.
 - 9. ALL SPECIFICATION SECTIONS IN THE SITE AND INFRASTRUCTURE SUBGROUP.

1.2 REFERENCES

- A. The following References and Manufacturer's Standards shall apply to this Specification Section:
 - 1. ACI American Concrete Institute
 - 2. ASTM American Society for Testing and Materials
 - 3. AWS American Welding Society
 - 4. CRSI Concrete Reinforcing Steel Institute

1.3 SUBMITTALS

- A. Submit in accordance with Specification Section - SUBMITTAL PROCEDURES:
 - 1. Product Data:
 - a. Manufacturer's specification and installation instructions for splice devices.
 - 1) Bar supports.
 - 2. Shop Drawings
 - a. Detail in accordance with ACI 315 "Details and Detailing of Concrete Reinforcing."
 - b. Indicate bending diagrams, assembly diagrams, splicing and laps of bars and shapes, dimensions and details of bar reinforcing and assemblies. Correctness of all reinforcing requirements and work is the responsibility of Contractor. Identify such shop drawings with reference thereon to sheet and detail numbers from Contract Drawings.

- 1) Do not use scaled dimensions from Contract Drawings in determining the lengths of reinforcing bars.
- 2) No reinforcing steel shall be fabricated without approved shop drawings.
- 3) One of the required submittal copies shall be reproducible transparency.
- 4) Any deviations from the contract documents must be clearly indicated as a deviation on the shop drawings.
- 5) Areas of high congestion, including member joints and embed locations shall be fully detailed to verify clearances and assembly parameters and coordination with other trades.
- c. Certificates of Compliance with specified standards:
 - 1) Reinforcing Bars.
 - 2) Welded wire fabric.
 - 3) Welding electrodes.
3. Samples
 - a. Only as requested by Architect.
4. Quality Assurance/Control Submittals:
 - a. Test Reports - Testing Laboratory shall submit to DSA/SSS, Project Inspector, Architect, Structural Engineer and the Contractor one (1) copy of each report showing results of test.
 - 1) Certified mill test reports of supplied reinforcing indicating chemical and physical analysis. Tensile and bend tests shall be performed by the mill in accordance with ASTM A 615 "Specification for Deformed and Plain Carbon-Steel Bars for Structural Concrete."
 - 2) Testing Laboratory reinforcement tests in accordance with CBC Table 1705A.2.1, CBC Section 1910A, and the provisions of Specification Section - TESTING LABORATORY SERVICES.
 - 3) Owner will pay for tests of samples taken from identified bundles accompanied by mill analysis.
 - b. Certificates of Compliance with specified standards:
 - 1) Reinforcing bars.
 - 2) Welded wire fabric.
 - 3) Welding electrodes.
 - 4) Welder's Certification.
5. Closeout Submittals:
 - a. Project Record Documents in accordance with Specification Section - PROJECT DOCUMENTS.
 - b. Warranty.

1.4 QUALITY ASSURANCE

A. Qualifications:

1. Installer Qualifications:
 - a. Installation shall be done only by an installation firm normally engaged in this business. All work shall be performed by qualified mechanics working under an experienced supervisor.
2. Welding Qualifications:
 - a. Welding procedures, welding operators and welders shall be qualified in accordance with AWS D1.4 - "Structural Welding Code Reinforcing Steel."
 - b. Welders shall be recently qualified by Test as prescribed in AWS "Standard Qualifications Procedure."

- 1) Welders whose work fails to pass inspection shall be re-qualified before performing further welding.
3. Manufacturer/Supplier Qualifications:
 - a. Acceptable Manufacturers/Suppliers shall be regularly engaged in the manufacture of steel bar and wire fabric reinforcing.
4. Testing Laboratory will be approved by DSA/SSS, and selected by the Architect and the Owner.

B. Regulatory Requirements:

1. In accordance with Specification Section – REGULATORY REQUIREMENTS and the following:
 - a. CARB Materials and equipment used for this Project shall comply with the current applicable regulations of the California Air Resources Board (CARB) and the Environmental Protection Agency (EPA), in the area where the project is located.
2. General:
 - a. Reinforcement work shall conform to ACI 301 "Specifications for Structural Concrete for Buildings," and CBC Section 1905A as minimum standards.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Packing, shipping, handling, and unloading:
 1. Deliver reinforcement to Project plainly tagged, completely fabricated and ready to set.
- B. Storage and protection:
 1. Store reinforcement above the ground surface on platforms, skids or other supports, protected from dirt, rust, or other substances which will prevent bonding to the concrete.
 2. Use all necessary care to maintain identification after bundles are taken apart.

1.6 WARRANTY

- A. Contractor's General Warranty:
 1. In accordance with Specification Section - WARRANTIES.
- B. Manufacturer's Warranty:
 1. In accordance with manufacturer's written standard warranty:
 - a. Warranty Period: One (1) Year.
- C. Installer's Warranty:
 1. In accordance with the terms of the Specification Section - WARRANTIES.
 - a. Warranty Period: One (1) Year.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Deformed Bars: In accordance with ASTM A 706 "Low Alloy Steel Deformed Bars for Concrete Reinforcement" and ASTM A 615 "Specification for Deformed and Plain Carbon-Steel Bars for Concrete Reinforcement," Grade as indicated on the structural drawings.
- B. Tie Wire: In accordance with ASTM A 82 "Cold Drawn Wire for Concrete Reinforcement," plain, cold-drawn steel.
- C. Welded Wire Fabric: In accordance with ASTM A 1064 "Standard Specification for Carbon-Steel Wire and Welded Wire Reinforcement, Plain and Deformed, for Concrete."
- D. Steel Dowels: Same grade as bars to which dowels are connected.

2.2 ACCESSORIES

- A. Supports for Reinforcement: Provide bolsters, chairs, spacers, and other devices for spacing, supporting, and fastening, deformed bars and welded wire fabric in place. Use wire bar-type supports complying with CRSI specifications.
 - 1. Supports and spacing of spacers per standards set forth by CRSI/WCRSI Manual of Standard Practice.
 - 2. For slabs-on-grade, use supports with sand plates or horizontal runners where base material will not support chair legs.
 - 3. For exposed-to-view concrete surfaces, where legs of supports are in contact with forms, provide supports with legs that are protected by plastic color to match adjacent concrete surfaces in accordance with CRSI Class I, or stainless steel in accordance with CRSI, Class II.
- B. Welding Electrodes: As per AWS D1.4 "Structural Welding Code for Reinforcing Steel."
- C. Mechanical Couplers: Mechanical Couplers shall develop 125 percent of the specified yield strength of the bars, and shall comply with ACI 318 "Building Code Requirements for Structural Concrete and Commentary," Section 12.14.3.

2.3 FABRICATION

- A. Bending: In accordance with ACI 318 "Building Code Requirements for Structural Concrete and Commentary," except as modified by CBC Sections 1905A.
 - 1. Fabricate reinforcement in accordance with the requirements of ACI 315 "Details and Detailing of Concrete Reinforcement," where specific details are not shown.
 - 2. Inside diameter of bends for stirrups and ties shall not be less than 1-1/2 inches for No. 3 bars, 2 inches for No. 4 bars and 2-1/2 inches for No. 5 bars.

3. Where bent bars are straightened: field bending of bars will only be done in accordance with DSA/SSS approval per ACI 318 "Building Code Requirements for Structural Concrete and Commentary," Section 7.3.2. Steel reinforcement shall not be bent or straightened in a manner that will injure the material. Bars with kinks or bends not shown on the drawings shall not be used. Heating of bars will not be permitted.
4. Provide offsets in rebar (1:6 maximum) where required to maintain clearances.

B. Allowable Tolerances:

1. Fabrication:
 - a. Sheared length: 1 inch.
 - b. Depth of truss bars: Plus 0., minus 1/2 inch.
 - c. Ties: Plus or minus 1/2 inch.
 - d. All other bends: Plus or minus 1 inch.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Placing:

1. Place Reinforcement accurately.
2. Do not move bars beyond allowable without concurrence of the Architect.
3. Do not heat, bend, or cut bars without concurrence of the Architect.
4. Reinforcement shall not be bent after being embedded in hardened concrete.
5. Tie Reinforcement together at all intersections with Tie Wire.
6. Support Reinforcing Bars by bar supports. Place and secure in accordance with CRSI "Specifications for Placing Bar Supports."
7. Placement and support shall be complete.
8. Do not use Reinforcing Bars with kinks or bends except when detailed on the structural drawings.
9. Architect shall approve placement and support before concrete is deposited.
10. Spiral reinforcing shall comply with ACI 318 "Building Code Requirements for Structural Concrete and Commentary."

B. Spacing:

1. Clear space between parallel Reinforcing Bars shall not be less than 1 bar diameter nor less than 1 inch, unless otherwise noted on drawings.

C. Splicing:

1. At splices, lap Reinforcing Bars 53 diameters minimum, unless otherwise indicated on Drawings.
 - a. Lap Splices: Tie securely with wire to prevent displacement of splices during placement of concrete.
 - b. Splice Devices: Install in accordance with manufacturer's written instructions.
 - 1) Obtain the Architect's review before using.
 - c. Do not splice bars except at locations shown without the concurrence of the Architect.
 - 1) Where splices in addition to those indicated are required, indicate location on shop drawings clearly and highlight "for the Architect's approval."
2. Stagger splices as indicated on drawings. Splice locations shall be as shown on drawings or shall be approved by Architect and DSA/SSS.

3. Where vertical Reinforcing Bars are offset at a splice, the slope of the inclined portion of bar with the axis of the column or wall shall not exceed 1 in 6.
4. Welded Wire Fabric:
 - a. Install in long lengths, lapping 24 inches at end splices and one mesh at side splices.
 - b. Offset laps in adjacent widths.
 - c. Place fabric in approximately the middle of the slab thickness unless otherwise shown on the drawings.
 - d. Wire tie lap joints at 12 inch centers.
 - e. Use concrete blocks to support mesh in proper position.
5. Mechanical bar splices shall be approved by the Architect and DSA/SSS.

D. Welding:

1. Welding is not permitted unless specifically detailed on Drawings or approved by the Architect.
2. Weld under supervision of qualified Testing Laboratory selected by Owner. Cost of supervision to be paid by the Owner. Weld only ASTM A 706 "Specification for Low-Alloy Steel Deformed and Plain Bars for Concrete Reinforcement," unless otherwise noted.
3. Employ shielding metal-arc method and meet requirements of AWS D1.4 "Structural Welding Code for Reinforcing Steel."
4. Welding is not permitted on bars where carbon equivalent is unknown or is determined to exceed 0.55.
5. Welding shall not be done within two bar diameters of any bent portion of a bar which has been bent cold.
6. Welding of crossing bars is not permitted.
7. Provide material properties supplemental report for bars other than ASTM A706 "Low Alloy Steel Deformed Bars for Concrete Reinforcement."
8. Weld in accordance with AWS D1.4 "Structural Welding Code for Reinforcing Steel."
 - a. Weld only where indicated on the drawings.
 - b. Weld only ASTM A 615 "Specification for Deformed and Plain Carbon-Steel Bars for Concrete Reinforcement," unless otherwise approved by the Architect and DSA/SSS.
9. Inspection provided per CBC Table 1705A.3.

E. Allowable Tolerances:

1. Placement:
 - a. Concrete cover to form surfaces: Plus or minus 1/4 inch.
 - b. Minimum spacing between bars: Plus or minus 1/4 inch.
 - c. Crosswise of members: Spaced evenly with 2 inches of stated separation.
 - d. Lengthwise of members: Plus or minus 2 inches.
2. Maximum bar movement to avoid interference with other reinforcing steel, conduits, or embedded items: 2 bar diameters.

F. Drawing Notes: Refer to notes on drawings for additional reinforcement requirements.

3.2 CONSTRUCTION

A. Corrective Measures:

1. Notify Architect if conduit, piping, inserts, sleeves, etc. interfere with placement of Concrete Reinforcement as indicated on Drawings. Notify Architect immediately if any Concrete Reinforcement is found to be misplaced after concrete has been poured.
2. Do not cut, bend, kink or hickey misplaced reinforcement.
3. Make corrections only as directed by Architect and approved by DSA/SSS.
4. This Contractor shall bear the cost of any alteration, corrections or replacements of Concrete Reinforcing to concrete required because of misplaced reinforcement.

3.3 FIELD AND QUALITY CONTROL

A. Site Tests:

1. When inspections are indicated for reinforcement placement on the Structural drawings, a special inspector shall be employed to inspect reinforcing placement per CBC Table 1705A.3.
2. Inspect shop and field welding in accordance with AWS D1.4 "Structural Welding Code for Reinforcing Steel," including checking materials, equipment, procedure and welder qualifications as well as the welds. Inspector will use non-destructive testing or any other aid to visual inspection that he deems necessary to assure himself of the adequacy of the weld.

B. Inspections:

1. All reinforcing steel whose properties are not identifiable by mill test reports shall be tested in accordance with ASTM A 706 "Specification for Deformed and Plain Low-Alloy Steel Bars for Concrete Reinforcement." One series of tests shall be performed for each missing report. Contractor shall pay for test required due to lack of positive identification, by means of a back charge by the Owner.
2. When tests are indicated for reinforcing steel on the structural drawings, the reinforcing steel used shall be tested in accordance with ASTM A 615 "Specification for Deformed and Plain Carbon-Steel Bars for Concrete Reinforcement." One tensile and one bend test for each 2-1/2 tons of steel or fraction thereof, shall be made.

C. Tests and Inspection shall be performed by Owner's Testing Laboratory except when needed to justify rejected work, in which case the cost of re-tests and re-inspection shall be borne by the Contractor.

3.4 CLEANING

- #### A.
- Reinforcement, at time concrete is placed, shall be free of loose rust scale, mud, oil or other coating that will destroy or reduce the bond.

END OF SECTION

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SECTION 033000 - CAST-IN-PLACE CONCRETE

PART 1 - GENERAL

1.1 SUMMARY

- A. This Section includes the following:
1. Provide all material, labor, equipment and services necessary to completely install all Cast-In-Place Concrete materials, accessories and other related items necessary to complete the Project as indicated by the Contract Documents.
 - a. Footings.
 - b. Planter Walls.
 - c. Housekeeping Pad.
 - d. Site Improvements.
- B. Related Sections: The following Sections contain requirements that relate to this Section:
1. ALL DIVISION 00 SPECIFICATION SECTIONS.
 2. ALL DIVISION 01 SPECIFICATION SECTIONS.
 3. 03 11 01 CONCRETE FORMWORK
 4. 03 15 14 DRILLED ANCHORS
 5. 03 20 00 REINFORCEMENT
 6. 05 12 00 STEEL AND FABRICATIONS
 7. 10 05 00 MISCELLANEOUS SPECIALTIES
 8. 31 20 00 EARTHWORK
 9. ALL SPECIFICATION SECTIONS IN THE FACILITY SERVICES SUBGROUP.
 10. ALL SPECIFICATION SECTIONS IN THE SITE AND INFRASTRUCTURE SUBGROUP.

1.2 REFERENCES

- A. Standards:
1. In accordance with the following standards:
 - a. ACI American Concrete Institute
 - b. ASTM American Society of Testing Materials.
 - c. RFCI The Resilient Floor Covering Institute
 - d. RIS Redwood Inspection Service
 - e. RMAI Rubber Manufacturers Association Inc.

1.3 SUBMITTALS

- A. Submit in accordance with Specification Section - SUBMITTAL PROCEDURES:
1. Coordination Drawings:
 - a. Layout drawings for construction, control and expansion joints.
 - 1) Coordinate joints with floor patterns.
 2. Product Data.
 - a. Submit data on all products listed under MATERIALS, and ACCESSORIES within this specification section.

3. Quality Assurance/Control Submittals:
 - a. Coordinate with Specification Section - TESTING LABORATORY SERVICES for additional Testing Requirements as required by DSA.
 - b. Material samples and mix designs:
 - 1) Material samples and mix designs as required for testing shall be submitted to Architect at least fourteen (14) days prior to any concrete work and shall include results of test data used to establish proportions.
 - a) Grout samples and colors for colored surfaces upon Architect's request only.
 - c. Continuous batch plant inspection required per CBC Section 1705A.3.3, or may be waived per CBC Section 1705A.3.3.2.
 - d. Continuous Batch Plant Inspection is waived for this project in compliance with CBC Section 1705A.3.3.2, subject to the following requirements:
 - 1) The concrete plan complies fully with the requirements of ASTM C94, Sections 9 and 10, and has a current certificate from the National Ready Mixed Concrete Association or another agency acceptable to the DSA. The certification shall indicate that the plant has automatic batching and recording capabilities.
 - 2) A licensed Weighmaster shall positively identify the quantity of materials and certify each load with a batch ticket.
 - 3) Batch tickets shall accompany the load and be transmitted to the Inspector of Record by the truck driver with the load identifies thereon. The load shall not be placed without a batch ticket identifying the mix. The Inspector of Record shall keep a daily record of placements, identifying each truck, its load, and the time of receipt at the jobsite, and approximate location of deposit in the structure. A copy of the daily record shall be maintained.
 - e. Test Reports:
 - 1) Testing Laboratory shall submit to Architect, Structural Engineer, Owner, and to the DSA one (1) copy of each report showing results of tests.
 - a) Report shall state whether materials were in conformance with specifications.
 - b) Report shall state whether the curing of the concrete slabs are within parameters required for future flooring installations.
 - 2) Moisture and Alkalinity Tests.
 - a) Relative Humidity (RH).
 - b) Moisture Vapor Emission Report (MVER).
 - f. Certificates:
 - 1) Submit three (3) copies of certificates.
 - a) Provide Vapor Retarder manufacturer's certificate of inspection and compliance to installation procedures.
 - b) Cement manufacturer's Mill Certificate of Compliance with the specification.
 - c) Certificates for aggregates and admixtures.
4. Closeout Submittals:
 - a. Project Record Documents in accordance with Specification Section - PROJECT DOCUMENTS.
 - b. Warranty.

1.4 QUALITY ASSURANCE

A. Qualifications:

1. Installer Qualifications:
 - a. Engage an experienced Installer who has successfully completed three (3) projects of similar scope and size to that indicated for this Project.
2. Manufacturer/Supplier Qualifications:
 - a. Firm experienced in successfully producing/supplying products similar to that indicated for this Project, with sufficient production/supply capacity to produce/supply required units without causing delay in the Work.
3. Testing Laboratory Qualifications:
 - a. Qualified Testing Laboratory and personnel approved by DSA.
 - 1) Cost of testing and inspection will be paid by the Owner unless otherwise specified. The Owner shall pay all costs of re-inspection and/or re-tests due to non-compliance with specifications and/or failures, but the Contractor shall reimburse the Owner for these tests when billed or deducted from its payment.

B. Regulatory Requirements:

1. In accordance with Specification Section - REGULATORY REQUIREMENTS, and the following:
 - a. All materials, equipment and placing operations shall be subject to inspection, tests and approval at all items. Testing Agent shall have free and unhampered access to all places where concrete materials are stored proportioned and mixed.
 - b. CARB Materials and equipment used for this Project shall comply with the current applicable regulations of the California Air Resources Board (CARB) and the Environmental Protection Agency (EPA), in the area where the project is located.

C. Mockups:

1. Provide mockups prior to application of work and prior to installation of any materials.
2. Mockups shall be used for establishing construction sequences, installation requirements of materials, and shall be representative for the intended end-use configuration.
3. Mockup Assemblies:
 - a. Exterior Slab-On-Grade (Walks): Mockups shall be the finish and texture of concrete.
 - 1) Mockups shall be a minimum overall size of 3' x 3' x 4" thick panels.
 - 2) Provide Mockups for each texture and finish required.
4. Installation of Mockups:
 - a. The Project Inspector, the Architect, and Contractor's Superintendent shall observe the installation of materials and work.
 - b. Installation crew for the Mockups shall be the Cast-In-Place Concrete, Reinforcement for this project and installers, as necessary, of other related work.
 - c. Unacceptable Mockups shall be removed and reinstalled until the work is deemed to be in compliance with the project requirements and is acceptable by the Owner, Architect and Project Inspector.
5. Allow 24 hours for inspection of mockup before proceeding with work.
6. Protect the Mockups during the course of construction.

7. Remove mockup and dispose of materials when no longer required and when directed by the Architect at the end of the project.

D. Meetings:

1. Pre-Installation: Scheduled by the Contractor prior to the start of work.
 - a. Coordinate the work with other related work being performed.
 - b. Identify any potential problems that may impede planned progress and proper installation of work regarding quality of installation and warranty requirements.
 - c. Prior to submitting design mixes, review detailed requirements for preparing concrete design mixes and determine procedures for satisfactory concrete operations.
 - d. Review requirements for submittals, status of coordinating work, and availability of materials.
 - e. Establish preliminary work progress schedule and procedures for materials inspection, testing, and certifications.
2. Progress: Scheduled by the Contractor during the performance of the work.
 - a. Review for proper installation of work progress.
 - b. Identify any installation problems and acceptable corrective measures.
 - c. Identify any measures to maintain or regain project schedule if necessary.
3. Completion: Scheduled by the Contractor upon proper completion of the work.
 - a. Inspect and identify any problems that may impede issuance of warranties or guaranties.
 - b. Maintain installed work until the Notice of Substantial Completion has been executed.

1.5 PROJECT CONDITIONS

A. Environmental requirements:

1. Cold Weather Requirements:
 - a. Do not pour concrete unless air temperature is at least 40 degrees Fahrenheit and rising.
 - b. Do not pour concrete on frozen ground or ice.
 - c. Heat and otherwise prepare materials in accordance with ACI Standard 306.
 - d. Maintain concrete temperature at 50 degrees Fahrenheit (minimum) the first three (3) days after pouring. Protect concrete from freezing the first six (6) six days, after placing.
2. Hot Weather Requirements:
 - a. Do not pour when temperature exceeds 90 degrees Fahrenheit.
 - b. During hot weather, proper attention shall be given to ingredients, production methods, handling, placing, protection, and curing to prevent excessive Concrete temperatures or water evaporation, which will impair the required strength or serviceability of the member or structure.

1.6 WARRANTY

A. Contractor's General Warranty:

1. In accordance with Specification Section - WARRANTIES.

B. Manufacturer's Warranty:

1. In accordance with manufacturer's written standard warranty:

- a. Warranty Period: One (1) Year.
- C. Installer's Warranty:
 - 1. In accordance with the terms of the Specification Section - WARRANTIES
 - a. Warranty period: One (1) Year.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. These products listed herein establish the size, pattern, color range and function selected by the Architect for this Project. Manufacturers that are listed as acceptable alternative manufacturers and substitutions must still comply with the requirements of this project and the products listed in order to be approved as an equivalent during the Submittal Process. If the acceptable alternative manufacturers listed or substitutions are not approved during the Submittal Process due to non-compliance with the contract documents, then the Contractor shall submit product specified.
 - 1. Cement:
 - a. Natural (Grey) Portland Cement:
 - 1) LEHIGH PORTLAND CEMENT COMPANY.
 - 2) TXI CEMENT COMPANY (formerly RIVERSIDE WHITE CEMENT).
 - b. White Cement:
 - 1) LEHIGH WHITE CEMENT
 - 2) TXI CEMENT COMPANY (formerly RIVERSIDE WHITE CEMENT).
 - 2. Admixtures:
 - a. Water Reducing, High Range:
 - 1) W.R. GRACE CONSTRUCTION PRODUCTS.
 - b. Shrinkage Control:
 - 1) Specified product manufacturer: SIKA CONTROL-40.
 - 2) Acceptable alternative product manufacturer:
 - a) EUCLID: "Eurcon SRA Floor".
 - 3. Vapor Retarders:
 - a. Specified product manufacturer: STEGO INDUSTRIES.
 - 1) "Stego-Wrap" ("Yellow" color).
 - b. Acceptable alternative product manufacturers:
 - 1) EPRO SERVICES, INC.: "Ecoshield-E15" ("Red" color).
 - 2) W.R. MEADOWS: "Perminator 15" ("Green" color).
 - 4. Bonding Agents:
 - a. Specified product manufacturer: CONRAD SOVIG CO., INC.
 - 1) "Cemlok-NE."
 - b. Acceptable alternative product manufacturers:
 - 1) THE EUCLID CHEMICAL COMPANY: "Euroweld."
 - 2) LARSON PRODUCTS CORPORATION: "Weld-Crete."
 - 3) SONNEBORN: "Sonobond."
 - 4) W.R. GRACE CONSTRUCTION PRODUCTS: "Darweld C."
 - 5) W.R. MEADOWS: "Deck-O-Weld."
 - 5. Epoxy Adhesives and Mortar Materials:
 - a. Specified product manufacturer: W.R. MEADOWS.
 - 1) "Rezi-Weld," "LV, 1000" or "Gel-Paste" as suitable for application.

- b. Acceptable alternative product manufacturers:
 - 1) THE EUCLID CHEMICAL COMPANY: "Euco #456."
 - 6. Non-Shrink Grout:
 - a. Specified product manufacturer:
 - 1) MINWAX CONSTRUCTION PRODUCTS COMPANY
 - a) "POR-ROK", Epoxy Grout.
 - b. Acceptable alternative product manufacturers:
 - 1) MASTER BUILDERS: "713."
 - 2) MASTER BUILDERS: "928."
 - 7. Drypack Grout Materials:
 - a. Specified product manufacturer:
 - 1) THE EUCLID CHEMICAL COMPANY: "Euco Dry Pack Grout."
 - b. Acceptable alternative product manufacturers:
 - 1) W.R. MEADOWS: "Pac-It Grout."
 - 8. Semi-Rigid Joint Filler:
 - a. Specified product manufacturer:
 - 1) W.R. MEADOWS: "Rezi-Weld Flex."
 - 9. Truncated Domes:
 - a. Specified Cast-In-Place Replaceable Truncated Dome Mat product manufacturer:
 - 1) ADA SOLUTIONS, INC.
 - b. Specified Surface Applied Truncated Dome Mat product manufacturer:
 - 1) ADA SOLUTIONS, INC.
- B. Products from other manufacturers not listed must submit in accordance with Specification Section - SUBSTITUTION PROCEDURES.

2.2 MATERIALS

- A. Concrete:
 - 1. Cement: Type I or II in accordance with ACI 318 "Building Code Requirements for Structural Concrete and Commentary," Chapter 3, and ASTM C 150 "Specifications for Portland Cement."
 - a. Provide white cement for mixing when the Project requires patching for defective work, to match adjacent material color. See Specification Section - CAST-IN-PLACE CONCRETE, Part 3 Article titled "APPLICATIONS," the paragraph titled "Sack Finish."
 - 2. Water: Clean and free from deleterious amounts of acids, alkalis, salts, organic material, or other substances that may be deleterious to concrete or reinforcing.
 - 3. Aggregates:
 - a. Normal weight aggregates in accordance with ACI 318 "Building Code Requirements for Structural Concrete and Commentary," Chapter 3 and ASTM C33 "Standard Specifications for Concrete Aggregates." Crushed Granite or "Perkins" type aggregates are acceptable materials.
 - 1) Maximum Aggregate Size: 1-1/2 inches for standard aggregate.
 - 4. Admixtures: Admixtures shall be in accordance with the provisions of ACI 318 "Building Code Requirements for Structural Concrete and Commentary," Section 3.6, and shall not be used until prior approval from DSA has been obtained. Calcium Chloride is not permitted.

- a. Water Reducing, High Range: On approval of DSA, the Architect and the Structural Engineer, the Contractor may use a High Range Water Reducing Admixture complying with ASTM C 494 "Specification for Chemical Admixtures for Concrete." Use one of the following materials:
 - 1) Finish Enhancing Water Reducer; "ADVA 170" by GRACE Construction Products, or approved equivalent.
 - a) ASTM C 494 "Specification for Chemical Admixtures for Concrete," Type F.
 - b. Shrinkage Control:
- B. Rock Base:
- C. Vapor Retarder:
- 1. Vapor Retarder: Physical Requirements in accordance with ASTM E 1745 "Standard Test Methods for Water Vapor Retarders Used in Contact with Earth Under Concrete Slabs," Class A Material, are as follows:
 - a. Thickness: 15 mils minimum.
 - b. Permeance: 0.01 Perms.
 - 1) Maintain permeance of less than 0.01 perms after mandatory conditioning tests per ASTM E 154 "Test Methods for Water Vapor Retarders Used in Contact with Earth Under Concrete Slabs, on Walls, or as Ground Cover," Sections 8, 11, 12, and 13.
 - c. Tensile Strength: 45.0 lbf/in.
 - 1) Per ASTM E 154 "Test Methods for Water Vapor Retarders Used in Contact with Earth Under Concrete Slabs, on Walls, or as Ground Cover," Sec. 9, ASTM D 828 "Standard Test Method for Tensile Properties of Paper and Paperboard Using Constant-Rate-of-Elongation Apparatus:"
 - d. Resistance to Puncture: 2200 grams.
 - 1) ASTM E 154 "Test Methods for Water Vapor Retarders Used in Contact with Earth Under Concrete Slabs, on Walls, or as Ground Cover", Sec. 10, ASTM D 1709 "Test Methods for Impact Resistance of Plastic Film by the Free-Falling Dart Method:"
 - e. Resistance to decay:
 - 1) Per ASTM E 154 "Test Methods for Water Vapor Retarders Used in Contact with Earth Under Concrete Slabs, on Walls, or as Ground Cover."
 - f. Use pressure sensitive seam tape compatible with materials to be seamed in accordance with manufacturer's written recommendations.
 - 1) Water vapor Transmission Rate: 0.3 perms or lower.
 - a) Per ASTM E 96 "Test Methods for Water Transmission of Materials."
 - g. Vapor Proof Mastic: 0.3 perms or lower.
 - 1) Water vapor Transmission Rate: 0.3 perms or lower.
 - a) Per ASTM E 96 "Test Methods for Water Transmission of Materials."
 - h. Pipe Boots: Construct pipe boots from vapor retarder material, pressure sensitive seam tape, and /or mastic per manufacturer's written instructions.
 - i. Vapor Stakes:
 - 1) Density: 0.0289 lb/cu.in.
 - a) Per ASTM D 1505 "Test Method for Density of Plastics by the Density-Gradient Technique."
 - 2) Specific Gravity: 0.0477.
 - a) Per ASTM D 792 "Test Methods for Density and Specific Gravity (Relative Density) of Plastics by Displacement."

2.3 ACCESSORIES

- A. Bonding Agents: Polyvinyl acetate or acrylic base, mixed in accordance with the manufacturer's written recommendations.
- B. Mortar:
 - 1. Site Mix:
 - a. Composed of Concrete Materials indicated in Specification Section - CAST-IN-PLACE CONCRETE, Part 2 Article titled "MATERIALS."
 - 1) Mix: One part cement to 3 parts aggregate (all aggregate shall pass No. 4 sieve).
 - 2) Mixing: Thoroughly mixed in accordance with ACI 318 "Building Code Requirements for Structural Concrete and Commentary."
 - 2. Epoxy Mortar and Adhesive Materials:
 - a. Modified Polyamide, high modulus mortar, strength to match adjacent concrete or greater, in accordance with ASTM C 881 "Specification for Epoxy-Resin-Base Bonding Systems for Concrete," Grade 1, Type III, Class B & C, and in accordance with ACI 503.4, mixed in accordance with the manufacturer's written recommendations.
- C. Grout:
 - 1. Strength to match adjacent concrete or greater, composed of Concrete Materials indicated in Specification Section - CAST-IN-PLACE CONCRETE, Part 2 Article titled "MATERIALS."
 - a. Mix: Same proportions as concrete mix except omit coarse aggregate and adjust water to produce a thick consistency. Provide mix design per CBC Section 1904A.2.
 - b. Mixing: In accordance with ACI 318 "Building Code Requirements for Structural Concrete and Commentary," mixed in accordance with the manufacturer's written recommendation.
 - 2. Non-Shrink Grout: Flowable, non-shrink, self-leveling, non-staining, non-metallic grout, strength to match adjacent concrete or greater, and in compliance with ASTM C 1107 "Specification for Packaged Dry, Hydraulic-Cement Grout (Nonshrink)," mixed in accordance with the manufacturer's written recommendation.
 - 3. Drypack Grout: Non-staining, non-shrink, non-metallic grout, strength to match adjacent concrete or greater, and in accordance with ASTM C 1107 "Specification for Packaged Dry, Hydraulic-Cement Grout (Nonshrink)," mixed in accordance with the manufacturer's written recommendation.
- D. Semi-Rigid Joint Filler: Two-component, semi-rigid, 100 percent solids, epoxy resin with a Type A shore durometer hardness of 80 per ASTM D 2240 "Standard Test Method for Rubber Property — Durometer Hardness."
- E. Sack Finish Materials: For repair and patching of defective areas.
 - 1. Provide sack finish materials composed of Concrete Materials indicated in Specification Section - CAST-IN-PLACE CONCRETE, Part 2 Article titled "MATERIALS." Sand shall be fine.
 - 2. Mix: One part cement to one part fine sand with enough water to provide a creamy consistency.

2.4 MIXES

- A. Mix Design and Proportions in accordance with ACI 318 "Building Code Requirements for Structural Concrete and Commentary:"
1. Initial mix design shall be prepared for all concrete by recognizing testing laboratory (approved by Architect). In the event that additional mix designs are required due to depletion of aggregate sources, aggregate not conforming to Specifications, or at request of Contractor, these mixes shall be prepared as above.
 2. Contractor shall notify the Testing Laboratory and Architect of intent to use concrete pumps to place concrete so that mix designs can be modified accordingly.
 3. Owner's testing laboratory shall review all mix design before submittal.
 4. All concrete shall have the following minimum compressive strengths in accordance with ACI 318 "Building Code Requirements for Structural Concrete and Commentary" at 28 days and shall be proportioned within the following limits:
 - a. Site: Use for exterior concrete slabs on grade such as walks, site work, mechanical and electrical pads and miscellaneous site items:
 - 1) Strength: 3,000 psi at 28 days.
 - 2) Max. Aggregate Size: 1 inch.
 - 3) Max. Water/Cement Ratio: 0.60.
 - 4) Admixture: Water Reducing.
 - 5) Weight: 145 pcf.
 - b. Lightweight: Use for lightweight concrete over metal deck:
 - 1) Strength: 3,500 psi at 28 days.

- 2) Max. Aggregate Size: 3/4 inch, aggregate shall be vacuum saturated.
 - 3) Max. Water/Cement Ratio: 0.45.
 - 4) Admixture: Water Reducing + Entrained Air - 4% to 7%.
 - 5) Weight: 110 ± 3 pcf.
 - c. Architectural: Used for all highly detailed concrete items such as the planter wall.
 - 1) Strength: 3,000 psi at 28 days.
 - 2) Max. Aggregate Size: 3/8 inch.
 - 3) Max. Water/Cement Ratio: 0.64.
 - 4) Admixture: Plasticizing admixtures used to create maximum workability at minimum slump.
 - 5) Weight: 145 pcf.
 - d. Lean mix: Used for Back Fill of over excavated trenches, encasement of all penetrations, plumbing pipe, mechanical pipe under footings (plumbing & mechanical pipes and electrical conduits):
 - 1) Strength: 1,500 psi at 28 days.
 - 2) Max. Aggregate Size: 3/8 inch.
 - 3) Max. Water/Cement Ratio: 0.62.
 - 4) Admixture: None.
 - 5) Weight: 145 pcf.
- B. Consistency of Concrete: Concrete slump, measured in accordance with ASTM C 143 "Test method for Slump of Hydraulic-Cement Concrete," shall fall within the following limits:
- 1. For General concrete placement: 3 inch plus or minus 1 inch.
 - 2. Mixes employing the specified high range water reducer shall provide a measured slump not to exceed 7 inch +/- 1 inch after dosing, 2 inch +/- 1 inch before dosing.
 - 3. Concrete slump shall be taken at point of placement. Use water reducing admixtures as required, to provide a workable consistency for pump mixers. Water shall not be added in route by truck or at the jobsite without written review by the Architect.
- C. Mixing:
- 1. Equipment: All concrete shall be machine mixed. Provide adequate equipment and facilities for accurate measurement and control of materials.
 - 2. Method of Mixing to comply with ACI 318 "Building Code Requirements for Structural Concrete and Commentary:"
 - a. Transit Mixing: Comply with ASTM C 94 "Specification for Ready-Mixed Concrete." Ready mixed concrete shall be used throughout, except as specified below.
 - 1) On-Site Mixing: Use only if method of storing material, mixing of material and type of mixing equipment is approved by Architect.
 - 2) Approval of site mixing does not relieve Contractor of any other requirements of Specifications.
 - 3. Mixing Time: After mix water has been added, concrete shall be mixed not less than 1-1/2 minutes nor more than 1-1/2 hours. Concrete shall be rejected if not deposited within the time specified.
 - 4. Admixtures:
 - a. Use automatic metering dispenser to introduce admixture into mix. Dispenser shall be recommended and calibrated by admixture manufacturer.
 - b. Admixtures shall be charged into mixer as a solution and shall be dispensed by an automatic dispenser or similar metering device. Powdered admixtures shall be weighed or measured by volume as recommended by manufacturer. Accuracy of measurement of any admixture shall be within plus or minus 3 percent.

- c. Two or more admixtures may be used in same concrete, provided such admixtures are added separately during batching sequence, and provided further that admixtures used in that combination retain full efficiency and have no deleterious effect on concrete or on properties of each other.
- d. All admixtures are to be approved by Architect prior to commencing this work.
- 5. Re-tempering:
 - a. Concrete shall be mixed only in quantities for immediate use. Concrete, which has set shall be discarded, not re-tempered.
 - b. Indiscriminate addition of water to increase slump is prohibited.
 - c. When concrete arrives at project with slump below what is suitable for placing, water may be added only if neither maximum permissible water-cement ratio nor maximum slump is exceeded.
 - 1) Water shall be incorporated by additional mixing equal to at least half of total mixing time required.
 - 2) Any addition of water above that permitted by limitation of water-cement ratio shall be accompanied by a quantity of cement sufficient to maintain proper water-cement ratio.
 - 3) Such additions shall only be used if approved by the Architect.
 - 4) In any event, with or without addition of cement, not more than 2 gallons of water per cubic yard of concrete, over that specified in the design mix, shall be added.
- 6. Cold Weather Batching: When temperature is below 40 degrees F, or is likely to fall below 40 degrees F during a 24 hour period after placing, provide adequate equipment for heating concrete materials.
 - a. No frozen materials or materials containing ice shall be used.
 - b. Temperatures of separate materials, including mixing water, when placed in mixer shall not exceed 100 degrees F.
 - c. When placed in forms, concrete shall have a temperature between 50 degrees F and 85 degrees F.
- 7. Hot Weather Batching: Concrete deposited in hot weather shall have a placing temperature below 85 degrees F. If necessary, ingredients shall be cooled to accomplish this.

2.5 FINISHES

A. Slab Finishes:

- 1. Tooled Finishes:
 - a. Aggregate Finish: Apply aggregate finish to selected concrete surfaces as indicated on the drawings.
 - 1) "Washed" Aggregate Finish.
 - b. Sandblast Finish:
 - 1) "Light Sandblast Finish:" 1/16 inch reveal.
 - c. Truncated Dome Finish:
- 2. Repair finishes (Vertical surfaces):
 - a. "Sack Finish:" Applied to defective surfaces mixed to the color and consistency required to match the adjacent materials in color and strength.

2.6 SOURCE QUALITY CONTROL

A. Test, Inspection:

1. Inspection of Mix:
 - a. Quality and quantity of material used shall be subject to continuous inspection by a qualified person. Sampling and testing of cement and aggregates in accordance with Title 24, Part 1, Section 4-335, and CBC Section 1705A, and Table 1705A.3.
 - b. Maintain sources of material supply constantly after approval of concrete mix.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Site verification of conditions:
 1. Contractor shall inspect bearing soil and report soft or loose unsuitable bearing soil to Architect.
 2. Architect will furnish Contractor with corrective measures necessary to remedy field condition.
 3. Do not pour concrete until suitable bearing surfaces are achieved.
 4. At Engineered Fill, remove soft and loose unsuitable fill and replace with concrete. Cost shall be paid by Contractor.
 5. Contractor shall inspect and identify any site conditions and/or design information that prevents the Contractor from complying with the laws, regulations and/or building codes governing ADA access compliance.

3.2 PREPARATION

- A. Transportation of Concrete:
 1. Handle Concrete from mixer to place of final deposit as rapidly as practical by methods which shall prevent the separation or loss of the ingredients in accordance with ACI 304.3R "Heavyweight Concrete Measuring, Mixing, Transporting, and Placing."
 2. Do not move concrete horizontally by means of vibrators.
 3. Deposit concrete as nearly as practical at its final position in a manner which, will ensure that required quality is obtained.
 4. Chutes shall slope not less than 4 inches and not more than 6 inches per foot of horizontal run.
- B. Protection:
 1. At old concrete or concrete which has begun to set upon which Concrete is to be placed:
 - a. Surface shall be level, cleaned of all laitance and rough with solidly embedded large aggregate exposed.
 - b. Rough surface by chipping entire surface not earlier than 5 days after set, by high pressure hosing (80 pounds per square inch) 2 to 4 hours after placing or by sand blasting with coarse silica sand, roughness amplitude shall be at least 1/4 inch.
 - c. Not more than 1/2 hour prior to pouring concrete, place 2 inch thick uniform layer of grout on old concrete.
- C. Surface preparation:
 1. Prepare all and material as applicable prior to forming footings and trenches.
 2. Remove all water from excavation. Divert flow of water through drains using methods to avoid washing over freshly deposited concrete.

3. Remove hardened concrete, wood chips, shavings and other debris from interior of forms and from reinforcing steel by vacuum process.
 - a. No wooden ties or blocking shall be left in concrete except where indicated for attachment of other work.
4. Forms shall have been erected, adequately braced, cleaned, sealed, lubricated if required, and bulkheaded where placing is to stop.
5. Any wood forms other than plywood shall be thoroughly water soaked before placing any concrete.
 - a. The wetting of forms shall be started at least 12 hours before concreting.
6. Reinforcing steel shall have been placed, tied and supported.
7. Embedded work of all trades shall be in place in the forms and adequately tied and braced.
8. Reinforcing steel, at the time the concrete is placed around it, shall be cleaned of scale, mill scale or other contaminants that will destroy or reduce bond.
9. Concrete surfaces to which fresh concrete is to be bonded shall be brush cleaned to remove all dust and foreign matter and to expose the aggregate, and then coated with the bonding adhesive herein specified.
10. Prior to placing concrete for any slabs on grade, the moisture content of the subgrade below the slabs shall be adjusted to at least optimum moisture.
11. No concrete shall be placed until formwork, reinforcement, and embedded items have been approved by the Architect.
 - a. Clean forms of all debris and remove standing water.
 - b. Thoroughly clean reinforcement and all handling equipment for mixing and transporting concrete.
 - c. Concrete shall not be placed against reinforcing steel that is hot to the touch.
12. Provide runways or other approved means for wheeled equipment. Do not wheel equipment over reinforcing or formwork.

3.3 INSTALLATION

A. Placing of Rock Base, Sand Base,:

1. Rock Base:
2. Vapor Retarder:
 - a. Follow ASTM E 1643 "Standard Practice and Procedure for Installation of Vapor Retarder used in Contact with Earth Fill Under Concrete Slabs."
 - b. General:
 - 1) Level, tamp or roll Earth Fill or Base Material beneath the slab in thickness as indicated on the drawings. Remove all sharp objects that could puncture the Vapor Retarder.
 - 2) Unroll Vapor Retarder over the area where the slab is to be poured, with the longest direction parallel with the direction of the pour.
 - 3) Cut to size, if necessary. Vapor Retarder used shall completely cover the pour area.
 - 4) All joints/seams, both lateral and butt, shall be overlapped six (6) inches and taped using a compatible four (4) inch wide Pressure Sensitive Seaming Tape.
 - a) Tape areas shall be free from dust, dirt and moisture to allow maximum adhesion of the pressure sensitive tape.
 - 5) Vapor Retarder shall overlap six (6) inches and seal to top of all footings and against any vertical walls. Provide manufacturer's written recommended sealant.

- 6) Repair any damaged areas in accordance with manufacturer's written recommendations, and overlap all repairs a minimum of six (6) inches in all directions with Vapor Retarder Material, Pressure Sensitive Tape, and Vapor Proofing Mastic.
- 7) Follow manufacturer's written recommendations for all Vertical Wall Applications.
- c. Penetrations:
 - 1) Seal all penetrations and check that all pipe, ductwork, rebar, wire penetrations and block-outs are thoroughly sealed.
 - 2) Single Pipe Penetrations may be sealed using pipe boot constructed from the product.
 - a) Cut a piece of plastic, width - 12 inches, length - 1 and 1/2 times the circumference of the pipe with scissors; cut slits half the width of the film, and wrap the boot around the pipe; tape onto pipe and completely tape the base to the Vapor Retarder.
 - 3) Multiple pipe penetrations in close proximity and very small pipes may be sealed using Vapor Proofing Mastic.
 - a) Cut out small area around pipes; cut a patch of Vapor Retarder extending at least 6 inches past the cut out in all directions; cut X's or small circles in the patch and install over pipes; overlap at least 6 inches and tape; build up 40-60 mils of mastic, or as needed to completely fill all voids between the pipe and Vapor Retarder.
 - 4) No penetration of the Vapor Retarder is allowed except for reinforcing steel and permanent utilities.
 - a) In the case that forms must be used vapor stakes should be used to hold forms in place.
 - b) Penetrate plastic with stake; treat stake as pipe penetration (see above "penetration" paragraphs; leave stake permanently in concrete; using a power saw, cut stake off above the seal, but below the concrete finished surface; the lower portion of the vapor stake remains in place, permanently plugging the penetration.
- B. Joints:
 1. General: Construct joints straight, horizontal, true with faces perpendicular to surface plane of concrete and free of "overhangs" or "lips" to line.
 2. Construction Joints:
 - a. Location: as indicated or as approved by Architect.
 - 1) Install as to least impair strength of structure, appearance of concrete and shall conform to typical details and in accordance with ACI Standards.
 - a) Joints between concrete and masonry shall be considered construction joints.
 - b. Spacing: Pour lengths shall be as follows, unless specifically noted otherwise.
 - 1) Exterior Slabs on grade: 30 feet o.c. maximum
 - c. Installation:
 - 1) Construction joints shall have level tops, vertical sides.
 - 2) Construction joints shall be thoroughly cleaned and roughened by removing entire surface film and exposing clean aggregate solidly embedded in mortar matrix.
 - 3) See drawings for doweling and required keys.
 - 4) Roughen construction joints by any of the following methods:
 - a) By sandblasting joint.

- b) By thoroughly washing joint, using a high pressure hose, after concrete has taken initial set. Washing shall be done not less than 2 hours nor more than 4 hours after concrete has been poured, depending upon setting time.
 - c) By chipping and wire brushing.
 - d) Vertical construction joints need not be roughened
 - 5) All decisions pertaining to adequacy of construction joint surfaces and to compliance with requirements pertaining to construction joints shall be reviewed with the Architect.
 - 6) Just before starting new pour, horizontal and vertical joint surfaces shall be dampened (but not saturated).
 - 7) Before placing regular concrete mix, horizontal and vertical joint surfaces shall be covered with a layer of mortar composed of cement and fine aggregate of same proportions as that used in prescribed mix, but omitting coarse aggregate.
3. Expansion Joints:
- a. Location: as indicated or as approved by Architect.
 - 1) Exterior slabs on grade: locate at walks, curbs, gutters, etc.
 - a) Locate at each side of structure/vertical surface, curb transition opposite apron joints, end of curb returns, and back of curb when adjacent to walk.
 - b. Spacing:
 - 1) Exterior Slabs on grade: 30 feet o.c. maximum, unless otherwise noted.
 - c. Installation:
 - 1) Install Expansion Filler in expansion joints.
 - a) Extend joint-filler strips full width and depth of joint, terminating flush with finished concrete surface unless noted otherwise.
 - b) Terminate full-width joint-filler strips not less than 1/2 inch or more than 1 inch below finished concrete surface.
 - c) Install joint-filler strips in lengths as long as practicable. Where more than one length is required, lace or clip sections together.
 - d) "Glue" Expansion Filler to edge of previous pour.
 - 2) When concrete has taken initial set, the edge of concrete surface shall be rounded by tooling to top of Expansion Filler.
 - 3) Interrupt reinforcing at all expansion joints.
 - a) Refer to Drawings for detail.
4. Control Joints (Contraction Joints):
- a. Location: as indicated or as approved by Architect.
 - 1) Construction and expansion joints shall be considered as control joints.
 - b. Spacing:
 - 1) Exterior Slab on grade: 10 feet o.c. maximum, unless otherwise noted.
 - c. Installation: Form weakened-plane control joints, sectioning concrete into areas as indicated.
 - 1) Use saw cuts 1/8 inch wide by 1/4 of slab depth, or tooled joints with rounded edges 1/8 inch wide by 1/4 of slab depth, unless specifically noted otherwise.
 - 2) Slab reinforcing need not be terminated at control joints.

C. Placing of Concrete - General:

- 1. All concrete shall be placed under direct observation of the Owner's Inspector.

2. Notify Owner's Inspector not less than forty-eight (48) hours prior to pouring of first concrete.
3. Place concrete in accordance with ACI 304.3R "Heavyweight Concrete Measuring, Mixing, Transporting, and Placing."
4. Do not place Concrete outside of regular working hours except to complete work already started.
5. Do not use Concrete which has been mixed for a period longer than one and one-half (1-1/2) hours or which has started to stiffen or set.
6. Re-mixing on concrete, which has started to set, shall not be permitted.
7. Pouring of concrete shall be a continuous operation until the completion of the Section or Panel in accordance with ACI 304.3R "Heavyweight Concrete Measuring, Mixing, Transporting, and Placing."
8. Consolidation:
 - a. Concrete shall be thoroughly compacted and worked to all points with solid continuous contact to forms and reinforcement to eliminate air pockets and honeycombing.
 - b. Power vibrators shall be used immediately following pour.
 - c. Spading by hand, hammering of forms or other combination of methods will be allowed only where permitted by Architect.
 - d. In no case shall vibrators be placed against reinforcing steel or used for extensive shifting of deposited fresh concrete.
 - e. Provide and maintain standby vibrators, ready for immediate use.
9. Keep a record of times, dates and locations of all concrete placing operations for the duration of the project. Record shall be available to Architect and Owner's Inspector at all times.
10. In no case shall concrete be poured into an accumulation of water ahead of pour.
11. If any concrete operation, once planned, can not be completed in a continuous operation, placement shall stop at temporary bulkheads located where resulting construction joints will least impair the strength of the structure. The location of construction joints shall be as shown on the drawings, or as approved by Architect.
12. Hot Weather Concreting: Unless otherwise directed by the Architect, perform all work in accordance with ACI 305.1 "Specification for Hot Weather Concreting" when air temperature rises above 75 degrees F and the following:
 - a. Mixing Water: Keep water temperature as low as necessary to provide for the required concrete temperature at time of placing. Ice may be required to provide for the design temperature.
 - b. Aggregate: Keep aggregate piles continuously moist by sprinkling with water.
 - c. Temperature of Concrete: The temperature of the concrete mix at the time it is being placed in the forms shall not exceed 85 degrees F.
 - 1) The method employed to provide this temperature shall in no way alter or endanger the design mix or the design strength required.
 - 2) Dampen subgrade and formwork before placing concrete.
 - 3) Remove all excess water before placing concrete.
 - 4) Keep concrete continuously wet when air temperature exceeds 85 degrees F for a minimum of 48 hours after placing concrete.
 - d. Protection: Minimize evaporation from concrete in place by providing shade and windbreaks. Maintain such protection for 14 days minimum.
13. Cold Weather Concreting: Follow recommended ACI 306R "Cold Weather Concreting" procedures when air temperature falls below 40 degrees F, as approved by Architect.
 - a. Concrete placed in freezing temperature shall have a temperature of not less than 50 degrees F.
 - b. Maintain this temperature for at least 7 days.

- c. No chemicals or salts shall be used to prevent freezing and no accelerating agents shall be used without prior approval from Architect.
- D. Placing of Concrete at Footings and planter walls:
 - 1. Concrete shall be placed in layers not to exceed twenty-four (24) inches in depth, and shall be thoroughly compacted.
 - a. Wait forty minutes before placing next layer.
 - b. Re-vibrate six (6) inches into previous lift before next lift is added.
 - c. Locate top of lift at or below top of wall opening.
 - 2. Use openings in forms, elephant trunks or other approved methods to prevent accumulation of concrete on forms and reinforcement above the level of pour.
 - a. Unconfined free falls shall not exceed five (5) feet.
 - 3. Where placing or consolidation is restricted by close assemblage of reinforcing and/or forms use a Modified Mix Concrete with smaller aggregate and/or pour 3 inches of neat grout into form prior to regular mix.
 - 4. Concrete shall not be flowed horizontally along forms.
- E. Placing of concrete at slab on grade:
 - 1. Slabs on grade shall not be poured until the sub-grade has been thoroughly compacted and properly prepared, nor until reinforcement and inserts are securely fastened in place.
 - 2. No greater area shall be poured at one time than can be properly finished without checking.
 - 3. Slabs on grade shall be laid out in a checkerboard pattern when applicable. Pour and allow alternate slabs to set.
 - a. Fill out balance of checkerboard pattern with subsequent pour.
 - 4. Concrete shall be poured as dry as possible, consistent with good workmanship.
 - a. Water shall not be added to mix to improve workability without approval of the Architect.
 - 5. Concrete shall be compacted by hand tamping and by mechanical vibration.
 - a. After the concrete is thoroughly compacted, the surface shall be screeded off, any surface water removed and finish applied as specified.
 - 6. The Contractor may, on approval of DSA and the Architect, use a Finish Enhancing Admixture (High Range Water Reducer) in accordance with Article Titled MATERIALS.
- F. Placing of concrete by pumps:
 - 1. If pumps are used to place concrete, the fines (3/8" and smaller) shall not exceed 45 percent of the total volume of aggregate. Standby equipment must be provided to insure completing pours to planned cutoffs.
 - 2. Pumps shall handle concrete at a uniform rate without bleeding or segregation of aggregates. Concrete from end of the hose shall have a free fall not to exceed four (4) feet. Aluminum pipe shall not be used to transport pumped concrete.
- G. Installation of nonshrink grout or drypack.
 - 1. General: Ram in thin layers, using a short length of ram, the free end of which shall be struck with a heavy hammer or mallet, several blows for each layer, to compact the mixture. When completed, the exposed drypack shall show slight indication of moisture.
 - 2. Curing: Cure with a curing compound or with moisture-retaining barrier kept wet.

3.4 APPLICATION

A. Finishes application:

1. Screed, consolidate, and level concrete slabs prior to any Finishes.
2. Tooled Finishes:
 - a. Aggregate Finishes:
 - 1) "Washed" Aggregate Finish method:
 - a) When concrete has cured sufficiently to hold aggregate, but soft enough to remove surface cement, wash and brush surface to expose aggregate.
 - b) Quality of finish shall be in accordance with approved mock-up.
3. Sandblast Finishes:
 - a. "Light Sandblast Finish" by the Abrasive Blast Method:
 - 1) Miscellaneous concrete structures as indicated on the drawings.
 - 2) Perform abrasive blasting after compressive strength of concrete exceeds 2000 psi. Coordinate with formwork removal to ensure that surfaces to be abrasive blasted are treated at same age for uniform results.
 - 3) Surface Continuity: Perform abrasive-blast finishing in as continuous an operation as possible, maintaining continuity of finish on each surface or area of Work. Maintain required patterns or variances in depths of blast to match design reference sample or mockup.
 - 4) Abrasive blast corners and edges of patterns carefully, using backup boards, to maintain uniform corner or edge line. Determine type of nozzle, nozzle pressure, and blasting techniques required to match design reference sample or mockup.
 - 5) Sufficient to expose fine aggregate with occasional exposure of coarse aggregate as follows:
 - a) Maximum Reveal: 1/16 inch.
 - b) Cracks, voids, protrusions, spalls, or non-uniform color or texture will not be acceptable.
 - b. "Medium Sandblast Finish" by the Abrasive Blast Method:

5. Repair Finishes:

- a. Sack Finish: Use only enough water as required for handling and placing.
 - 1) Cut out honeycombs, rock pockets, voids over 1/4 inch in any dimension, and holes left by tie rods and bolts down to solid concrete but in no case to a depth less than one (1) inch.
 - a) Make edges of cuts perpendicular to the concrete surface.
 - b) Thoroughly clean, dampen with water, and brush-coat the area to be patched with a bonding agent.
 - c) Place patching mortar before bonding agent has dried.
 - 2) For surfaces exposed to view, blend white portland cement and standard portland cement so that, when dry, patching mortar will match surrounding color.
 - a) Provide test areas at inconspicuous locations to verify mixture and color match before proceeding with patching.
 - b) Compact mortar in place and strike-off slightly higher than surrounding surface.

B. Concrete curing and protection:

- 1. Protect freshly placed concrete from premature drying and excessive cold or hot temperatures.
 - a. In hot, dry, and windy weather protect concrete from rapid moisture loss before and during finishing operations with an evaporation-control material.
 - b. Apply according to manufacturer's written instructions after screeding and bull floating, but before power floating and troweling.
- 2. Start initial curing as soon as free water has disappeared from concrete surface after placing and finishing. Weather permitting, keep continuously moist for not less than ten (10) days.
- 3. Formed Surfaces:
 - a. Wet forms immediately after pouring.
 - b. Keep forms and exposed surfaces wet until forms are removed.
 - c. Keep all surfaces wet after forms are removed for ten (10) days after placement of Concrete.

3.5 CONSTRUCTION

A. Site Tolerances:

- 1. Exterior Site Improvements:
 - a. Placement of all concrete shall not exceed 0.02 feet variance from designated grades.
 - b. Surface variation of all concrete slabs shall not exceed 0.01 foot in 10 feet.

- c. Construction of all concrete subject to ADA access compliance, including Accessible Path of Travel, curb returns, parking stalls and unloading areas, barrier free amenities and / or other applicable site improvements shall conform to the Americans with Disabilities Act, California Title 24 and the California Building Code, regardless of any construction tolerances. Examples of minimum and maximum limits related to ADA access compliance include, but are not limited to:
 - 1) Accessible Path of Travel cross-slope shall not exceed 2 percent.
 - 2) Accessible Path of Travel longitudinal slopes shall not exceed 5 percent.
 - 3) Ramp longitudinal slopes shall not exceed 8.33 percent.
 - 4) Walks shall not have less than 48 inches in unobstructed width.
- d. Contractor shall maintain all grades and slopes through out construction and until Notice of Completion has been filed.

3.6 REPAIR/RESTORATION

A. Minor Defects:

1. Minor defects in concrete shall mean any of the following:
 - a. Pour joints, voids, rock pockets, tie holes, etc. where strength, and durability is not adversely affected.
 - b. Shrinkage Cracks where slabs are not exposed or where appearance is not important
 - c. Minor defects of pour joints, voids, rock pockets, tie holes, etc.
 - d. Immediately after removing forms, inspect all concrete surfaces. Patch any pour joints, voids, rock pockets, tie holes, etc., as soon as possible, but not until the defect has been examined by the Architect.
 - e. Chip away defective areas to a minimum depth of one inch, with edges perpendicular to surface. Clean area to be patched of all laitance.
 - f. Coat area to be patched with Bonding Agent. Patch with Mortar mixed with Bonding Agent thoroughly compacted into place and screeded off to leave the patch slightly higher than the surrounding surface. After at least one hour finish patch to match the adjoining surface. Cure patch by application of curing compound or by wetting for seven (7) days.
 - g. Fill tie holes solid with mortar after cleaning and thoroughly wetting. Fill through holes by means of a plunger-type grease gun. See Specification Section - CONCRETE FORMWORK, Part 3 Article titled "INSTALLATION," and the paragraph titled "Indentations" for exception.
 - h. Remove fins and rough surfaces from all exposed concrete.

2. Minor defect of shrinkage cracks:
 - a. After entire slab is finished and fully cured, shrinkage cracks larger than 1/32 inch wide shall be filled with cement grout and struck off level with surface.

B. Serious Defects:

1. Serious defects in concrete shall mean any of the following:
 - a. Concrete not meeting 100 percent of the specified 28 day compressive strength.
 - b. Concrete exhibiting rock pockets, voids, spalls, streaks, cracks, exposed reinforcing to extent that strength, durability, or appearance is adversely affected.
 - c. Concrete significantly out of place, line or level.
 - d. Concrete not containing the required embedded items.
 - e. Shrinkage Cracks where slabs are exposed and appearance is important.
 - f. Concrete where patching does not satisfactorily restore quality and appearance of surface.
2. Upon determination that concrete strength is defective:
 - a. Should cylinder tests fall below minimum strength specified, concrete mix for remainder of work shall be adjusted to produce required strength. Core samples shall be taken and tested from cast-in-place concrete where cylinders and samples indicate inferior concrete with less than minimum specified strength.
 - b. Cores of hardened concrete shall be taken and tested in accordance with ASTM C 39 "Test method for Compressive Strength of Cylindrical Concrete Specimens" and ASTM C 42 "Test method for Obtaining and Testing Drilled Cores and Sawed Beams of Concrete." Number and location of such cores shall be subject to the approval of Architect.
 - c. Cost of core sampling and testing will be paid for by the Contractor.
 - d. "500 psi" and "85 percent" reduction in ACI 318 "Building Code requirements for Structural Concrete and Commentary," Section 26.12.4 will not justify low cylinder tests.
 - e. If core tests indicate that concrete is below the strength specified, the concrete shall be deemed defective, and shall be removed and replaced without additional cost to the Owner.
3. Major defect of shrinkage cracks.
 - a. After entire slab is finished and fully cured, unsightly shrinkage cracks shall be repaired in a manner satisfactory in appearance to the Architect. If this cannot be accomplished, concrete shall be considered defective.
4. Upon determining that concrete surface is defective:
 - a. Contractor may restore concrete to acceptable condition by cutting, chipping, pointing, patching, grinding, if this can be done without significantly altering strength of structure.
 - b. Permission to patch defective areas will not be considered a waiver of the right to require removal if patching does not, in the opinion of the Architect, satisfactorily restore quality and appearance.
 - c. If patching does not restore concrete to specified quality and appearance, the concrete shall be deemed defective, and shall be removed and replaced without additional cost to the Owner.
 - d. No repair work shall begin until concrete has been examined and procedures have been reviewed by the Architect and Structural Engineer and approved by DSA.
5. Repair defects by complete removal of concrete and replacement or repair defects with Shotcrete in accordance with CBC Sections 1908A, strength to match mix design and material being repaired.
6. Place and cure Shotcrete in accordance with CBC Section 1908A.

7. Inspect and test Shotcrete as per CBC Section 1908A.10.

C. Cost of repairing shall be borne by the Contractor.

3.7 FIELD QUALITY CONTROL

A. Site Tests:

1. Compression Tests:

a. Testing Agent will make a set of four (4) concrete compression cylinders from each fifty (50) cubic yards or every 2,000 sq.ft. of surface area for slabs and walls per CBC Section 1905A.1.15 of each class of concrete, or fraction thereof, placed each day, and cure and test concrete compression cylinders in accordance with ASTM C 31 "Practice for Making and Curing Concrete Test Specimens in the Field," ASTM C 39 "Test method for Compressive Strength of Cylindrical Concrete Specimens," ACI Section 26.12 and ASTM C 172 "Practice for Sampling Freshly Mixed Concrete."

- 1) From each concrete compression cylinder set, Testing Agent shall test one cylinder at age seven (7) days, test two cylinders at age twenty-eight (28) days per ACI 318 "Building Code requirements for Structural Concrete and Commentary," Section, 26.12 and hold one cylinder for test only if directed by the Architect.
- 2) Cylinders shall be identified as to area from which they were taken and show the date and time of day they were prepared.

b. Testing Agent shall also test Grout and Mortar as required for compliance to Compression Requirements specified.

2. Drying Shrinkage Test (Lightweight Concrete Slabs only):

- a. Testing agent will make three identical 4" x 4" x 11" specimens from the same concrete as used in the structure for the purposes of measuring Drying Shrinkage.
- 1) Record time and location of concrete from which specimens were taken.
 - 2) Percent of shrinkage shall be reported at 21 days after 7 day moist curing period.
 - 3) Average results of 3 specimens shall be used as the accepted value.
 - 4) The value for laboratory cast specimens shall not exceed .040 percent.
 - 5) If field test specimens are used in lieu of laboratory specimens, a tolerance of +33 percent may be used.

B. Inspection:

1. Project Inspector shall inspect placement of concrete and grout.

3.8 CLEANING

A. The top of all concrete foundations receiving concrete masonry units shall be washed free of all laitance and loose concrete, and roughened to a roughness amplitude of 1/4".

B. Remove all debris, excess materials, tools, and equipment resulting from or used in this operation at completion of work.

END OF SECTION

SECTION 311100 – CLEARING AND DEMOLITION

PART 1 - GENERAL

1.1 SUMMARY

- A. This section includes the following:
 - 1. Section includes requirements governing execution of the work including, but not limited to, the following:
 - a. Demolition and removal of small building(s) or structure(s).
 - b. Demolition and removal of above and below ground site improvements.
 - c. Removal of Contaminated Soils.
 - d. Removal of trees and shrubs.
 - e. Clearing and grubbing.
 - f. Stripping and stockpiling.
- B. Related Sections: The following Project Manual Sections contain requirements that relate to this section:
 - 1. ALL DIVISION 00 SPECIFICATION SECTIONS
 - 2. ALL DIVISION 01 SPECIFICATION SECTIONS
 - 3. 02 01 10 EXISTING LANDSCAPE MAINTENANCE
 - 4. ALL SPECIFICATION SECTIONS IN THE FACILITY SERVICES SUBGROUP
 - 5. ALL SPECIFICATION SECTIONS IN THE SITE AND SUBSTRUCTURE SUBGROUP

1.2 DEFINITIONS

- A. Existing to Remain: Existing item(s) within project site that is not to be permanently removed and that is not otherwise indicated to be removed, removed and salvaged, or removed and reinstalled.
- B. Remove: Detach item(s) and legally dispose or recycle off-site.
- C. Remove and Reinstall: Detach item(s) from existing site or building and prepare for reuse. Reinstall where indicated.
- D. Remove and Salvage: Carefully detach items(s) from existing site or building, in a manner to prevent damage, and deliver to Owner.
- E. Subsoil: All soil beneath the topsoil layer of the soil profile, and typified by the lack of organic matter and soil organisms
- F. Topsoil: Top layer of the soil profile consisting of existing native surface topsoil or existing in-place surface soil and is the zone where plant roots grow.
- G. Vegetation: Native trees, shrubs, grass, and other plants indigenous to the site.

1.3 SUBMITTALS

- A. Submit in accordance with specification section – SUBMITTAL PROCEDURES:
 - 1. Shop Drawings:
 - a. Proposed Protection Measures – Submit report and drawings that indicate the measures proposed for protecting property for dust and noise control.
 - 1) Indicate proposed locations and construction of barriers.
 - 2) Indicate how long utility services will be interrupted.
 - b. Salvaged Item Inventory List
 - 1) Indicate items to be salvaged and delivered to Owner.
 - 2. Closeout Submittals:
 - a. Pre-demolition Photographs

1.4 QUALITY ASSURANCE

- A. Regulatory Requirements:
 - 1. In accordance with specification section – REGULATORY REQUIREMENTS and the following:
 - a. CARB California Air Resources Board. Materials and equipment used for this project shall comply with the current applicable regulations and the Environmental Protection Agency (EPA), in the area where the project is located.
 - b. CAL/OSHA California Division of Occupational Safety and Health Administration
 - c. COM County and City of Merced, Standard Drawings and Specifications, latest edition.
 - d. EPA Environmental Protection Agency
- B. Meetings:
 - 1. Pre- Demolition and Clearing: Schedule prior to the start of work.
 - a. Coordinate the work with other work being performed.
 - b. Review requirements of work performed by others that rely on soil and/or substrates exposed by clearing and demolition work.
 - c. Identify any potential problems, which may impede planned progress and proper clearing and demolition work.
 - d. Review areas where existing item(s) are to remain and requires protection.
 - e. Review demolition waste disposal and material recycling procedures.
 - 2. Progress: Scheduled by the Contractor during the performance of the work.
 - a. Review for proper work progress.
 - b. Identify any problems and acceptable corrective measures.
 - c. Identify any measures to maintain or regain project schedule if necessary.
 - 3. Completion: Scheduled by the Contractor upon proper completion of the work.
 - a. Inspect and identify any problems.
 - b. Establish method and procedures to maintain protections while progressing to project completion.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Cleaning, handling, and packing:

1. Salvaged Items and Reinstalled Items shall be handled in such a manner as to assure that they are free from damage.
2. Salvaged Items shall be cleaned and packed or cleaned and palleted.
3. Reinstalled Items shall be cleaned.

B. Storage and protection

1. Salvaged Items and Reinstalled Items shall be stored in a dry, protected area.
2. Salvaged Items and Reinstalled Items shall be stored above ground on level platforms, six (6) inches above ground, allowing air circulation underneath.
 - a. Cover with protective waterproof covering providing for adequate air circulation and ventilation.

C. Waste Management and Disposal:

1. Disposal of all demolition items shall be per Specification Section - CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL.
2. All excavated top soil and land clearing debris shall be stockpiled on-site and reused or recycled.
 - a. Grade and shape stockpiles to drain surface water.
 - b. Cover stockpiles to prevent windblown dust and erosion by water.

1.6 PROJECT CONDITIONS

A. Environmental requirements;

1. Dust control: perform work in a manner as to minimize the spread of dust and flying particles.
 - a. Thoroughly moisten appropriate surfaces as required to prevent dust from being a nuisance to the public and neighbors.
2. Noise control: perform work in a manner as to minimize construction noise.
 - a. When a certain level of noise is unavoidable and is objectionable to the neighbors, coordinate with Owner and make arrangements to perform such work at the most appropriate time periods of the day.
3. Erosion control: do not perform site clearing operations until temporary erosion and sedimentation control measures are in place.
4. Burning: No burning will be allowed on-site.

B. Existing conditions:

1. Examine project site and building(s) and compare it with the drawings and specifications. Thoroughly investigate and verify conditions under which the work is to be performed. No allowance will be made for extra work resulting from negligence or failure to be acquainted with all available information concerning conditions necessary to estimate the difficulty or cost of the work.
2. Conduct work so as not to interfere unnecessarily with adjacent buildings, roads, streets, drives, and walks.
 - a. Do not close or obstruct streets, alleys, walks, or passageways without permission from authorities having jurisdiction and coordinating same with immediate neighbors whose business operation may be affected.
 - b. Provide alternate routes around closed or obstructed traffic ways if required by the authorities having jurisdiction.
 - c. Safety measures shall be taken to insure an uninterrupted flow of traffic around the site as required by local Fire and Police Departments.

3. Maintain existing utilities indicated to remain in service and protect against damage during clearing and demolition work.
4. Demolition waste becomes the property of the Contractor.
5. Storage or sale of removed items on-site is not permitted.
6. It is not expected that hazardous materials will be encountered in the Work.
 - a. Hazardous materials will be removed by Owner before start of the Work.
 - b. If suspected hazardous materials are encountered, do not disturb; immediately notify Architect and Owner.
7. Hazardous materials are present in buildings and structures to be demolished. The Owner has prepared a report for the Contractor to review and use.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Furnish all materials, tools, equipment, facilities, and services as required for performing the clearing, demolition, and removal work.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Verification of conditions:
 1. Report unacceptable conditions to the Architect. Do not begin work until unacceptable conditions have been corrected.
 2. Execution of work under this specification section shall constitute acceptance of existing conditions.
 3. Obtain all necessary permits and authorizations by regulatory agencies required to perform the Work under this Section.
 4. Record existing conditions by use of Pre-demolition Photographs.
 - a. Inventory and record the condition of items to be salvaged and/or re-installed.
 5. Examine the location of existing utilities as identified per Specification Section - FIELD ENGINEERING.

3.2 PREPARATION

- A. Coordination:
 1. Before proceeding, verify plans match existing conditions.
 2. Review documents of existing construction provided by Owner against existing conditions.
 3. If conflicts are encountered, report it to the Architect. Then prepare recommendation(s) for correction and submit to Architect for review.
 4. Coordinate work under this specification section with work specified under other sections to ensure proper and adequate interface of work.

- a. Coordinate with the requirements of Specification Section - EXISTING LANDSCAPE MAINTENANCE for protection of trees, shrubs, turf, and vegetation.
- 5. Coordinate any utility shut-down with owner 48 hours in advance of the anticipated shut-down.
 - a. Do not interrupt utilities serving adjacent existing facilities, except when authorized in writing by the Owner.
 - b. Provide temporary service during interruptions to existing facilities, as may be required by the Owner to maintain essential services.
 - c. Coordinate location of existing utilities with Specification Section - FIELD ENGINEERING.
- 6. Prior to clearing and demolition, review status of trees and shrubs with Architect and Owner. The Owner may wish to relocate trees or shrubs to outside the limits of construction.

B. Protection:

- 1. Structure and Property:
 - a. Provide temporary barricades and other protection required to prevent injury to people and damage to adjacent buildings, landscape, and facilities to remain.
 - b. Provide protection to ensure safe passage of people around clearing and demolition area and to and from adjacent building(s) and site.
 - c. Protect and maintain benchmarks and survey control points from disturbance during clearing and demolition operations.
 - d. Protect and maintain utility services to remain.
 - e. Protect existing improvements designated to remain from damage during construction.
 - f. All damage inflicted on public and private property and the property of the Owner shall be repaired or restored to the original condition prior to the start of this Work. All repair or replacement work shall be done at no additional cost to the owner.

3.3 APPLICATION

A. General:

- 1. Implement temporary erosion control measures to prevent soil erosion and discharge of soil-bearing water runoff or airborne dust to adjacent properties and walkways.
 - a. Inspect, maintain, and repair temporary erosion control measures during construction and until permanent landscape has been established or until new improvements are completed.
- 2. Arrange with utility companies to shut off indicated utilities.
 - a. Excavate and remove underground utilities as indicated.
 - b. Excavate, cap, and seal underground utilities as indicated.
 - c. Utility lines to be abandoned within the construction area shall be removed and stubbed off outside the limits of construction.
- 3. Visually locate trees, shrubs, turf, and vegetation to remain.
 - a. Salvage trees, shrubs, and vegetation to be re-installed or returned to Owner.

B. Demolition:

- 1. Demolition shall include the removal of all components of the existing building and/or site described in the documents to be removed. Unless otherwise specified, the component identified for removal shall include all materials, accessories and fabrications associated with that component.

- a. At pavement or concrete on grade: unless existing full-depth joints coincide with line of demolition, neatly saw-cut along line of existing pavement or concrete to remain before removing adjacent material. Saw-cut faces vertically.
 2. Removed and Salvaged items:
 - a. Clean salvaged items.
 - b. Pack or crate items after cleaning. Identify contents of containers.
 - c. Store items in a secure area until delivery to Owner.
 - d. Transport item to Owner's storage area on-site.
 - e. Protect items from damage during transport and storage.
 3. Removed and Reinstalled items:
 - a. Clean and repair items to functional condition adequate for intended reuse.
 - b. Pack or crate items after cleaning and repairing. Identify contents of containers.
 - c. Protect items from damage during transport and storage.
 - d. Reinstall items in locations indicated. Comply with installation requirements for new materials and equipment. Provide connections, supports, and miscellaneous materials necessary to make item functional for use indicated.
 4. Existing Items to Remain:
 - a. Protect construction indicated to remain against damage and soiling during clearing and demolition operations.
 5. Remove debris, concrete, asphalt, and any other obstruction above and below-grade to the extent indicated.
 6. Remove all:
 - a. Buried objects which will interfere with the Work.
 - b. Septic Systems.
 - c. Irrigation lines, irrigation risers, and irrigation valves.
 - d. Stand pipes.
 - e. Water wells and pumps.
 - f. Electrical service and power poles.
 7. Demolished items that are recyclable or slated for disposal shall be promptly dealt with per Specification Section - CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL.
- C. Clearing and Grubbing:
 1. Refer to drawings for trees and shrubs to be removed.
 2. Remove tops, trunks, and roots of trees and shrubs to a minimum depth of 3 feet or to a depth required to remove all roots 1/4 inch diameter and larger.
 3. Remove all sod, turf, and grass before stripping topsoil.
 - a. Stockpile for recycling as mulch. Refer to Specification Section - LANDSCAPE PLANTING for treatment.
 - b. Stockpile for recycling as mulch. Remove material to recycling station.
 - c. Legally dispose off-site.
 4. Chip removed trees, shrubs, and roots.
 - a. Remove chipped material to recycling station.
 - b. Recycle chipped material into mulch for this project. Refer to Specification Section - LANDSCAPE PLANTING for treatment.
- D. Topsoil Stripping:
 1. Strip topsoil to a minimum depth of 6 inches.
 - a. Prevent intermingling with underlying subsoil or other waste materials.
 - b. Perform only when the topsoil is dry or slightly moist.

2. Remove subsoil, and non-soil materials from topsoil, including clay lumps, gravel, trash, debris, weeds, roots, other waste materials, and objects more than 1/2 inch in diameter.
3. Stockpile reusable topsoil away from excavation and where work is to proceed without intermixing with subsoil.
 - a. Do not stockpile topsoil within drip line of remaining trees.
4. Non-soil materials removed from topsoil shall be separated into like materials and recycled either within the project or removed from the project site to a recycling station.
 - a. Those waste materials that are non-recyclable shall be legally disposed off of the project site.

3.4 CLEANING

- A. Clean in accordance with Specification Section - PROJECT CLOSEOUT:
 1. Clean any soiled surfaces to remain immediately.
 2. Existing substrates shall be clean and ready for the installation of any additional materials.
 3. Leave site level and free of any ruts or debris. Appearance of earth surface shall be equal to or better than adjacent undisturbed surfaces.

END OF SECTION

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SECTION 312000– EARTHWORK

PART 1 - GENERAL

1.1 SUMMARY

- A. This Section includes the following:
 - 1. Provide all material, labor, equipment and services necessary to do all Earthwork and other related items necessary to complete the Project as indicated by Contract Documents unless specifically excluded.
- B. Related Sections: The following Project Manual Sections contain requirements that relate to this section:
 - 1. ALL DIVISION 00 SPECIFICATION SECTIONS.
 - 2. ALL DIVISION 01 SPECIFICATION SECTIONS.
 - 3. 03 11 01 CONCRETE FORMWORK
 - 4. 03 20 00 REINFORCEMENT
 - 5. 03 30 00 CAST-IN-PLACE CONCRETE
 - 6. ALL SPECIFICATION SECTIONS IN THE FACILITY SERVICES SUBGROUP.
 - 7. ALL SPECIFICATION SECTIONS IN THE SITE AND INFRASTRUCTURE SUBGROUP.

1.2 SUBMITTALS

- A. Submit in accordance with Specification Section - SUBMITTAL PROCEDURES:
 - 1. Product Data:
 - a. Information indicating the source of all import material, the fill material type and where it is to be used.
 - 2. Quality Assurance/Control:
 - a. Material Test Reports:
 - 1) Classification of Soils.
 - 2) Compaction Characteristics of Soils.
 - 3) Density and Unit Weight of Soils in Place.
 - 4) Environmental Contaminates Report.
 - 5) Import Soil:
 - a) Letter of certification from Owner's Testing Lab indicating material conforms to DTSC requirements.
 - b) Soil Test Results.
 - 3. Project Closeout: In accordance with Specification Section – PROJECT CLOSEOUT.
 - a. Drawings indicating the extent and depth of all engineered fill. This information shall be a part of the Project "As-Built" and Project "Record" Documents in accordance with the Specification Section – PROJECT DOCUMENTS.

1.3 QUALITY ASSURANCE

- A. Qualifications:
 - 1. Installer:

- a. Engage an experienced Installer who has successfully completed three (3) projects of similar scope and size to that indicated for this project.
- B. Regulatory Requirements:
- 1. In accordance with Specification Section - REGULATORY REQUIREMENTS and the following:
 - a. AHJ Authority Having Jurisdiction
 - b. CAL/OSHA Comply with all provisions of the Construction Safety Orders and the General Safety Orders of the California Division of Occupational Safety and Health, as well as all other applicable regulations as they pertain to the protection of workers from the hazard of caving ground excavations.
 - c. CARB Materials and equipment used for this Project shall comply with the current applicable regulations of the California Air Resources Board (CARB) and the Environmental Protection Agency (EPA), in the area where the project is located.
 - d. COM County and City of Merced, Standard Drawings and Specifications, latest edition.
 - e. DTSC California Department of Toxic Substances Control.
 - f. EPA Environmental Protection Agency.
- C. Certificates:
- 1. Installer's certification that all Earthwork installation meets or exceeds the requirements of this specification.
 - 2. Contractor's certification (on Contractor's letterhead paper) that the Earthwork materials and installation meets or exceeds the requirements of this specification.
 - 3. Contractor and Supplier of imported material shall provide certification from the Owner's Testing Lab to certify that the soils do not contain any environmental contaminants regulated by Local, State or Federal Agencies. Cost of testing is the responsibility of the Contractor.
- D. Meetings:
- 1. Pre-Installation: Schedule prior to the start of work.
 - a. Coordinate the work with other work being performed.
 - b. Identify any potential problems that may impede planned progress and proper installation of work regarding quality of installation and warranty requirements.
 - 2. Progress: Scheduled by the Contractor during the performance of the work.
 - a. Review for proper installation of work progress.
 - b. Identify any installation problems and acceptable corrective measures.
 - c. Identify any measures to maintain or regain project schedule if necessary.
 - 3. Completion: Scheduled by the Contractor upon proper completion of the work.
 - a. Inspect and identify any problems that may impede issuance of warranties or guaranties.
 - b. Maintaining installed work until the Notice of Substantial Completion has been executed.

1.4 PROJECT CONDITIONS

- A. Existing Conditions:
- 1. Examine site and verify conditions with the Drawings and Specifications.
 - 2. Thoroughly investigate and verify conditions under which the Work is to be performed.
 - 3. Locate and identify utilities:

- a. Call a Local Utility Locator Service (USA - "Underground Service Alert") for the task of locating any applicable off-site and on-site utilities in the area where the Project is located.
4. No allowance for extra Work will be granted resulting from negligence or failure to meet requirements of Article titled "Existing Conditions" above.

B. Environmental Requirements:

1. Dust control: Perform work in a manner as to minimize the spread of dust and flying particles. Thoroughly moisten all surfaces as required to prevent dust from being a nuisance to the public, neighbors and concurrent performance of other on-site work.
 - a. All disturbed areas, including storage piles, which are not being actively utilized for construction purposes, shall be effectively stabilized of dust emissions using water, chemical stabilizer/suppressant, or vegetative ground cover.
 - b. All on-site unpaved roads shall be effectively stabilized of dust emissions using water or chemical stabilizer/suppressant.
 - c. All land clearing, grubbing, scraping, excavation, land leveling, grading, and cut and fill activities shall be effectively controlled of fugitive dust emissions utilizing application of water or by presoaking.
 - d. When materials are transported off-site, all material shall be covered, effectively wetted to limit visible dust emissions or at least six inches of freeboard space from the top of the container shall be maintained.
 - e. All operations shall limit or expeditiously remove the accumulation of mud or dirt from adjacent public streets at least once every 24 hours when operations are occurring. The use of dry rotary brushes is expressly prohibited except where preceded or accompanied by sufficient wetting to limit the visible dust emissions. The use of blower devices is expressly forbidden.
 - f. Following the addition of materials to, or the removal of materials from, the surface of outdoor storage piles, said piles shall be effectively stabilized of fugitive dust emissions utilizing sufficient water or chemical stabilizer/ suppressant.
2. Burning: No burning will be allowed on-site.
3. Rain: Work under this section shall not be started or maintained under threat of rain, unless the work is not affected by the rain.
4. Do not place fill during weather conditions which will alter moisture content of fill materials sufficiently to make compaction to the specified densities difficult or impossible.
5. In accordance with EPA and AHJ.

C. Protection:

1. Protect cut and fill areas to prevent water running into excavation. Maintain areas free of water. Remove seeping water immediately by pumps.
2. Protect cut slopes from erosion due to precipitation and other sources of runoff.
3. Protect utilities to remain within the construction area and special construction. If utility lines are uncovered (water, electric, sewer, etc.) not shown on the drawings during excavation of site, notify the Architect promptly for its review and action.
4. Do not permit access to undeveloped portions of the site, nor to areas that are outside of the limits of grading.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Locator Tape:

1. Tape shall be an inert material such as polyethylene plastic with a metallic core, and highly resistant to alkalis, acids, or other chemical components likely to be encountered in soils. The tape shall be bright colors for contrast with the soils with identifying print in black letters. The tape shall be 6 inches wide and installed over all of the pipelines as shown on the drawings.

B. Earth Fill:

1. Fill shall consist of non-hazardous, non-expansive, low corrosivity and predominantly granular material composed of a reasonably well graded mixture of hard inert mineral fragments, approved by the Geotechnical Engineer.
2. Free of brush, roots, sod, rubbish or other organic materials or clay.
3. Free of rocks 3 inches or larger in greatest dimension. Not more than 15 percent larger than 2-1/2 inches. Remove rock or stones, which may interfere with the action of compacting equipment.
4. Materials excavated from the site below the top twelve (12) inches may be used, subject to approval by the Geotechnical Engineer.
 - a. On-Site materials shall be in accordance with Earth Fill paragraph within this specification section, and remove all roots 1/4 inch in diameter or larger.
 - b. The moisture content of the soil shall be within two percent of optimum moisture content at the time of placement.
5. Imported soil shall be predominantly granular material, as described in PART 2 paragraph titled IMPORT MATERIAL.

C. Engineered Fill:

1. All Engineered Fill shall be in accordance with Earth Fill paragraph in this specification section.
2. Import Material:
 - a. Soil Type S4: Imported borrow, suitable for purposes intended, meeting the following characteristics:
 - 1) Maximum Particle Size: 3"
 - 2) Percent Passing #4 Sieve: 65-100
 - 3) Percent Passing #200 Sieve: 20-45
 - 4) Expansion Index: <20
 - 5) Plasticity Index: <12
 - 6) R-Value (in paved areas): >50
 - 7) Low Corrosion Potential:
 - a) Soluble Sulfates: <1,500 mg/Kg
 - b) Soluble Chlorides: <300 mg/Kg
 - c) Soil Resistivity: >5,000 ohm-cm
 - b. Soil Type S5: Imported sand. Natural river or bank sand (sand equivalent greater than 30), washed; free of silt, clay, loam, friable or soluble materials, and organic matter.

- c. The Contractor shall be responsible for securing an acceptable source of import material with the approval of the Geotechnical Engineer and the Owner's Testing Lab prior to transport to the site.
 - d. All import material shall meet the standards and criteria of DTSC for environmentally clean soil suitable for school construction.
 - 3. Materials excavated from the site below the top twelve (12) inches may be used, subject to approval by the Geotechnical Engineer:
 - a. On-Site soils shall be in accordance with Engineered Fill paragraph in this specification section and remove all roots 1/4 inch in diameter or larger.
- D. Back Fill:
 - 1. In accordance with Article titled "Earth Fill" above, within this specification section.
 - a. Lean Concrete: Refer to Specification Section – CAST-IN-PLACE CONCRETE.
 - 2. Mechanical and Plumbing Utility Trench Back Fill shall be soil in accordance with "Earth Fill" paragraph within this specification section, unless indicated otherwise within this Project Manual.
 - 3. Electrical Utility Trench Back Fill shall be sand in accordance with "Sand Fill" (for Electrical Trenches) paragraph within this specification section, unless indicated otherwise within this Project Manual.
- E. Sand Fill:
 - 1. Sand to be washed and of natural siliceous or igneous origin, having hard, strong, and durable particles.
 - 2. Sand shall comply with ASTM C 33 "Standard Specification for Concrete Aggregates", generally as follows:
 - a. Percent passing 3/8 inch sieve: 100%.
 - b. Percent passing No. 4 sieve: 95 to 100%.
 - c. Percent passing No. 50 sieve: 10 to 30%.
 - d. Percent passing No. 100 sieve: 2 to 10%.
- F. Finish Fill:
 - 1. Predominately granular material composed of a reasonably, well-graded mixture of hard inert mineral fragments approved by Geotechnical Engineer.
 - 2. Shall be topsoil free of brush, roots, sod, rubbish or other organic materials.
 - 3. Free of rocks 1/2 inch or larger and not more than 15 percent.
 - 4. Topsoil stripped from the top twelve (12) inches from the site may be re-used subject to approval by the Geotechnical Engineer.
 - a. On-Site topsoil shall be in accordance with Finish Fill paragraph in this specification section.

2.2 SOURCE QUALITY CONTROL

- A. Tests, Inspection:
 - 1. Material Test Reports: Performed by the Owner's Testing Laboratory agency in accordance with the Specification Section – TESTING LABORATORY SERVICES, indicating and interpreting test results for compliance of the following with requirements:
 - a. Classification according to ASTM D 2487 "Practice for Classification of Soils for Engineering Purposes (Unified Soil Classification System)," of each on-site and import soil material proposed for fill and backfill.

- b. Laboratory compaction curve according to ASTM D 1557 "Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft.-lb./sq.ft.)," for each on-site and import soil material proposed for fill and backfill.
- 2. Material Test Reports: Performed by the Owner's Testing Laboratory agency in accordance with the Specification Section – TESTING LABORATORY SERVICES, indicating and interpreting test results for compliance of the following with requirements:
 - a. Imported soil: Test report showing import fill dirt chemicals are within allowable DTSC standards.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Site verification of conditions:
 - 1. Prior to the execution of the work under this specification section, inspect the installed work executed under other sections of this Project Manual, which affect the execution of work under this specification section.
 - 2. Report unacceptable conditions to the Architect. Do not begin work until unacceptable conditions have been corrected.
 - 3. Execution of work under this specification section shall constitute acceptance of existing conditions.

3.2 PREPARATION:

- A. Layout of Work:
 - 1. Contractor shall be responsible for all lines and grades.
 - 2. Check all bench marks, monuments and property lines and verify locations.
 - 3. Locate and maintain all grade stakes.
 - 4. Monuments moved or displaced during grading operation are to be replaced by a California Registered Civil Engineer or Surveyor, at Contractor's expense.
- B. Coordination:
 - 1. Coordinate work under this specification section with work specified under other specification sections to ensure proper and adequate interface of work.
- C. Protection:
 - 1. Protect and maintain all benchmarks and survey control points from disturbance during clearing and demolition operations.
 - 2. Provide erosion-control measures to prevent soil erosion and discharge of soil-bearing water runoff or airborne dust to adjacent properties and walkways.
 - 3. Protect existing improvements designated to remain from damage during construction.
 - a. Restore damaged improvements to their original condition, as acceptable to the Owner.
 - b. Support exiting fences as required, where site earthwork operations are near existing fence posts or footings.
- D. Surface Preparation:
 - 1. Stripping:

- a. Remove all topsoil, vegetation, organics and debris from entire project site. Remove to a minimum of stripping depth of six (6) inches .
- b. Stockpile stripped topsoil suitable to be re-used as Finish Fill for:
 - 1) Landscape areas.
 - 2) Stripped topsoil is not suitable for use as Earth Fill and Engineered Fill.
2. Removal of loose or organic soils resulting from Specification Section – CLEARING AND DEMOLITION.
 - a. All loose or organic materials resulting from excavations and removal of:
 - 1) Irrigation lines.
 - 2) Trees.
 - 3) Existing above and below grade improvements shall be removed.
 - b. Expose undisturbed native soils, scarify to a minimum depth of six (6) inches, then compact as Engineered Fill.
 - c. At locations where the existing ground slope exceeds a ratio of 4:1 (horizontal to vertical ratio), the existing ground surface must be "benched" as directed by the Geotechnical Engineer, prior to placing fill material.
 - d. Backfill with Engineered Fill at concrete slab areas and improvement structures.
 - 1) Backfill with Earth Fill at Landscape areas.

3.3 CONSTRUCTION

- A. Over-excavation:
 1. Over-excavation shall occur after stripping operations.
 2. Over-excavate at all planned building areas to a depth indicated on the drawings, but not less than twenty-four (24) inches below exposed grade or twenty-four (24) inches below bottom of footings, whichever is greater.
 3. Over-excavate to a depth indicated on the drawings, but not less than twelve (12) inches below exposed grade at:
 - a. Improvement structures.
 4. Extend over-excavation for a distance beyond the perimeter of the footprint of each:
 - a. Concrete walk areas: two (2) feet.
 - b. Improvement structures: five (5) feet.
 - c. Housekeeping pad: five (5) feet.
 - d. Over-excavation shall not undermine and extend beyond past existing site improvements that are to remain.
 5. Stockpile excavated on-site soils suitable to be re-used as Earth Fill or Engineered Fill.
 6. Remove all unsuitable excavated material.
- B. Scarification and Compaction:
 1. Scarification and Compaction shall occur after over-excavation operations.
 2. The exposed grade in areas to receive Earth Fill and Engineered Fill shall be scarified to a minimum depth of twelve (12) inches.
 3. Moisture condition to within two (2) percent of optimum moisture content.
 4. Compact to at least ninety-two (92) percent of the maximum dry density in accordance with ASTM D 1557 "Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft.-lb./sq.ft.)."
- C. Placing Earth Fill:
 1. Shall occur after scarification and compaction operations.

2. Spread Earth Fill in successive layers that will result in compacted layers six (6) inches thick maximum.
3. Moisten or dry Earth Fill to obtain optimum moisture content for compaction. Add water as required to obtain uniform distribution of water to each layer. Disc soil to thoroughly mix after water is added.
4. Compact Earth Fill to a density of not less than ninety-two (92) percent in accordance with ASTM D 1557 "Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft.-lb./sq.ft.)."
5. Compaction by ponding and jetting shall not be permitted.
6. Contractor shall be responsible for selection of equipment used for compaction, and for obtaining specified fill density.
7. Costs of initial compaction tests shall be borne by the Owner. Contractor shall pay for all re-tests required due to failure of initial tests.

D. Placing Engineered Fill:

1. Shall occur after scarification and compaction operations.
2. Place Engineered Fill in accordance with article titled "Placing Earth Fill" within this specification section.
3. As a minimum, extend at a distance indicated beyond the perimeter of the footprint of each:
 - a. Concrete walk areas: two (2) feet.
 - b. Improvement structures: five (5) feet.
 - c. Housekeeping pad: five (5) feet.
4. Preparation of sub-grade and selection and placing of Engineered Fill subject to continuous inspection and supervision of Geotechnical Engineer.
5. Compact Engineered Fill to a density of not less than ninety-two (92) percent, but not more than ninety-five (95) percent, in accordance with ASTM D 1557 "Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft.-lb./sq.ft.)." Density of each layer of Engineered Fill shall be tested and verified that it meets required density of Geotechnical Engineer prior to placing succeeding layer.
6. Roll Engineered Fill under interior and exterior slabs to smooth surface, free of large or sharp particles.
7. Conduct work to minimize inspection costs.
8. When testing agency reports that sub-grades, fills, or backfills have not achieved degree of compaction specified, scarify and moisten or aerate, or remove and replace soil to depth required; re-compact and retest until specified compaction is obtained.

E. Excavation for Formwork:

1. Excavate for footings to depth and width indicate on the drawings or within these specifications.
2. Protect top corners of trenches against sloughing.
3. Side forms at footings may be omitted if excavation stands without caving. Make footing trench two (2) inches wider than width of concrete footing indicated on the drawings, when earth is used as a form. Cut trenches true and straight. Make side cuts neat and plumb. Bottom of trenches shall be level with reasonably sharp corners.
4. When forms are required at footings, allow additional space for construction and inspection.
5. Provide means to accurately position and secure sill bolts, tie downs, reinforcing, and all other inserts in concrete.
6. Footings to bear on firm soil, as determined and approved by the Geotechnical Engineer.
7. Notify the Architect if unsuitable bearing is encountered at depths indicated. After review and approval of the Architect and Geotechnical Engineer, continue excavation.

8. Fill trenches excavated below indicated depths on drawings with concrete to required elevations. Concrete shall be in accordance with Specification Section - CAST-IN-PLACE CONCRETE.
- F. Trenching for Piping or Conduit:
1. Cut trenches true and straight. Make sides with neat cut. Bottom of trenches shall be uniform and in conformance with laying piping.
 2. Cut trenches wide enough to provide sufficient working space.
 3. Piping or conduit to bear on firm soil. Notify the Architect if unsuitable bearing is encountered at depths indicated on the drawings.
 - a. Sub-Base Support: Where installation of sub-base material is indicated, excavate to depth indicated or, if not otherwise indicated, a minimum of six (6) inches below bottom of work to be supported.
 - b. Excavate by hand below belling so that piping bears continuously on firm soil.
 4. Fill trenches excavated below required depths to required depths with Sand Fill, Earth Fill or Back Fill as required in accordance with article titled "Placing Back Fill" within this specification section.
 - a. Lean concrete shall be used as Back Fill where Utility Trenches extending from the exterior to the interior limits of building. Lean concrete shall extend a minimum distance of two (2) feet laterally on each side of the exterior building line and a minimum of six (6) inches above footing penetration.
- G. Protection of Excavations:
1. Provide all shoring and bracing as required and those codified in local, state or federal safety regulations.
 - a. OSHA Health and Safety Standards for Excavations.
 - b. Any other successor regulations.
 2. Prevent water, caving, or sloughing from entering excavation.
 3. Maintain excavations free of water.
- H. Placing Back Fill:
1. Remove all debris, wood, paper and deleterious materials from excavations before placing Back Fill.
 2. Do not backfill against foundation wall without Architect's approval and not until forms have been removed. Place Back Fill on each side simultaneously or brace one side.
 3. Do not Back Fill over piping until piping has been tested, inspected and approved.
 4. Place Back Fill in accordance with article titled "Placing Earth Fill" within this specification section, or in accordance with article titled "Placing Engineered Fill" within this specification section, when Back Fill occurs within limits of Engineered Fill.
 - a. Compact around the lower haunches of piping without disturbing the pipe's line and grade.
 - b. Compact the fill to ninety-two (92) percent minimum twelve (12) inches above pipe or to twenty-four (24) inches of required grade, whichever is greater.
 - c. Compact the remainder of the fill to ninety-two (92) percent minimum, or as required by surface construction.
 - d. All compaction shall be in accordance with ASTM D 1557 "Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft.-lb./sq.ft.)."
 5. Jetting of trench backfill is not allowed.
- I. Placing Finish Fill:

1. Remove debris subject to termite attack, rot, or corrosion and all other deleterious materials from areas to receive Finish Fill.
2. Place Finish Fill in Landscape and Athletic Field areas only. The maximum depth allowed is twelve (12) inches.
3. Place Finish Fill in maximum layers of six (6) inches and compact to a density of not less than eighty-five (85) percent in accordance with ASTM D 1557 "Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft.-lb./sq.ft.)."

J. Grading:

1. Grade to elevations as indicated on the drawings.
2. Grading shall be reasonably smooth, compacted and free from irregular surface changes.
3. Grade ditches, swales and gutters to drain readily.
4. Slope grade evenly from proposed building pads in all directions to provide drainage.
 - a. Grades at exterior building walls shall slope away from the structure at a minimum slope of two (2) percent for a minimum of ten (10) feet, in order to prevent standing water adjacent to building foundations.
5. Protect newly graded areas. Repair impairments resulting to grading from settlement or washing and re-establish grades to the required elevations and slopes.
6. All grading shall be plus or minus 0.05 foot of the designated grade in areas to receive concrete slabs-on-grade, other concrete improvements, and asphalt concrete paving.
 - a. Finished grades in turf and planter areas shall be within plus or minus 0.05 foot of the designated grade.
7. Keep elevations of areas to be turfed one (1) inch below proposed adjoining walks, curbs, slabs, etc., and areas of planters two (2) inches below proposed improvements.
8. All grading shall be plus or minus 0.05 foot of the designated grade in areas to receive concrete slabs-on-grade, other concrete improvements, and asphalt concrete paving.
 - a. Finished grades in turf and planter areas shall be within plus or minus 0.10 foot of the designated grade.
9. Keep elevations of areas to be turfed one (1) inch below proposed adjoining walks, curbs, slabs, etc., and areas of planters two (2) inches below proposed improvements.

3.4 FIELD QUALITY CONTROL

A. Site Tests:

1. Required field test reports on placed fill materials. Test will be performed by the Owner's Testing Laboratory Agency in accordance with the Specification Section – TESTING LABORATORY SERVICES.
2. Testing Agency will test compaction of soils in place according to ASTM D 1556 "Test Method for Density and Unit Weight of Soil in Place by the Sand-Cone Method"; ASTM D 2167 "Standard test Method for Density and Unit Weight of Soil in Place by the Rubber Balloon Method"; ASTM D 2922 "Standard test Methods for Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth)"; and ASTM D 2937 "Standard Test Method for Density of Soil in Place by the Drive-Cylinder Method," as applicable. Tests will be performed at the following locations and frequencies:
 - a. Trench Back Fill: At each compacted initial and final Back Fill layer.
3. Costs of initial compaction tests shall be borne by the Owner. Contractor shall pay for all re-tests and re-inspection required due to failure of initial tests.

B. Inspection:

1. As required by Regulatory Requirements.

2. Schedule inspections and notify the Architect, Project Inspector and any other regulatory agencies of the time at least 48 hours prior to the inspection.
3. No work shall be without the inspections required by Regulatory Requirements.
4. Testing Agency: Owner will engage a qualified independent Geotechnical Engineering testing agency to perform field quality-control testing.
5. Allow testing agency to inspect and test sub-grades and each fill or back fill layer. Proceed with subsequent earthwork only after test results for previously completed work comply with requirements.

3.5 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.
 1. Scarify or remove and replace soil material to depth as directed by Architect; reshape and re-compact.
- C. Where settling occurs before Project correction period elapses, remove finished surfacing, back fill 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.

3.6 CLEANING

- A. Disposal of Surplus and Waste Materials:
 1. Remove surplus satisfactory soil material, including unsatisfactory soil, trash, and debris, and legally dispose of it off Owner's Property.

END OF SECTION

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SECTION 312222 - SOIL MATERIALS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY:

- A. SECTION INCLUDES

- 1. Excavated (and re-used) materials and imported materials.

1.3 RELATED SECTIONS:

- 1. Section 31 20 00 - Earthwork: Excavation, Filling and Grading.

1.4 SUBMITTALS

- A. Samples: Submit, in air-tight containers, 10 lb. sample of Type S3, S4 and S5 fill to inspector.
- B. Soil Analysis: Submit for Type S3, S4 and S5 soils to be imported.
- C. Materials Source: Submit location of imported materials source. Provide materials from same source throughout the work. Change of source requires approval.
- D. For imported soil, obtain Geotechnical Engineer and District approval prior to importing.

PART 2 - PRODUCTS

2.1 SOIL MATERIALS

- A. Soil Type S1: Excavated and re-used material, graded; free of lumps larger than 3 inches, rocks larger than 2 inches, and debris.
- B. Soil Type S2: Excavated and reused material, graded; free of roots, lumps greater than one inch, rocks larger than 1/2 inch, debris, weeds and foreign matter.
- C. Soil Type S3: Imported topsoil, friable loam; reasonably free of roots, rocks larger than 1/2 inch, debris, weeds, and foreign matter.

- D. Soil Type S4: Imported borrow, suitable for purposes intended, meeting the following characteristics:
1. Maximum Particle Size: 3"
 2. Percent Passing #4 Sieve: 65-100
 3. Percent Passing #200 Sieve: 20-45
 4. Expansion Index: <20
 5. Plasticity Index: <12
 6. R-Value (in paved areas): >50
 7. Low Corrosion Potential:
 - a. Soluble Sulfates: <1,500 mg/Kg
 - b. Soluble Chlorides: <300 mg/Kg
 - c. Soil Resistivity: >5,000 ohm-cm
- E. Soil Type S5: Imported sand. Natural river or bank sand (sand equivalent greater than 30), washed; free of silt, clay, loam, friable or soluble materials, and organic matter.

2.2 SOURCE QUALITY CONTROL

- A. Inspection of imported soil will be performed by the Geotechnical Engineer, at source of import and prior to being delivered to the site.

PART 3 - EXECUTION

3.1 STOCKPILING

- A. Stockpile excavated or imported material onsite at location designated by project inspector.
- B. Stockpile excavated or imported material in sufficient quantities to meet project schedule and requirements.

3.2 STOCKPILE CLEANUP

- A. Remove stockpile, leave area in a clean and neat condition. Grade site surface to prevent free standing surface water.
- B. Dispose of excess material off-site.

END OF SECTION

SECTION 328400 – IRRIGATION SYSTEM

PART 1 - GENERAL

1.01 SCOPE OF WORK

- A. Provide all materials, labor, equipment and services necessary to furnish, install and maintain the Irrigation System, accessories and other related items necessary to complete the Project as indicated by the Contract Documents unless specifically excluded.
- B. Related Work Specified Elsewhere
 - 1. Drawings and general provisions of the Contract, including General and Supplemental Conditions and Division 1 Specification Sections, apply to work of this section.
 - 2. Section 31 20 00 – Earthwork
 - 3. Section 32 90 00 – Landscape Planting

1.02 CODES AND REGULATIONS

- A. All work and materials shall be in full accordance with the following codes adopted and amended by the authority having jurisdiction. Nothing in these drawings or specifications is to be construed to permit work not conforming to these codes. The work described in these specifications shall govern in the event that the drawings or specifications call for material or methods of construction of higher quality or standard than required by these codes.
 - 1. California Plumbing Code
 - 2. California Administrative Codes:
 - a. Title 8, Industrial Relations
 - b. Title 19, Public Safety
 - 3. California Electrical Code
 - 4. California Green Building Standards Code, Section 5.304.
 - 5. California Department of Water Resources, Model Water Efficient Landscape Ordinance (MWELO)
 - 6. Standards and Regulations of other agencies, water utility provider, or organizations as listed in this specification relating to products or procedures, e.g. American Society for Testing and Materials.

1.03 DEFINITIONS

- A. Piping: All pipe fittings, valves, and accessories as required for a complete piping system.
- B. PVC: Polyvinyl Chloride.
- C. Agencies and Organizations:
 - 1. ASTM- American Society for Testing and Materials
 - 2. AWWA- American Water Works Association
 - 3. IAPMO- International Association of Plumbing and Mechanical Officials
 - 4. NEC - National Electrical Code.
 - 5. UL - Underwriter's Laboratories
 - 6. SSPWC – Standard Specifications for Public Works Construction, by the American Public Works Assoc./Associated General Contractors of California.

- D. Owner: An authorized representative of the Owner or the Owner's authorized consultant.

1.04 QUALITY ASSURANCE

- A. The work of this section shall be performed by a single firm experienced in irrigation work and holding a current California Contractor's A or C27 License.
- B. Qualifications of Workers
 - 1. The Contractor shall employ skilled workers who are thoroughly trained and experienced in irrigation system installation and who are completely familiar with the specified requirements and methods needed for proper performance of this work.
 - 2. The Contractor shall provide adequate supervision by a qualified foreman fluent in English that will be continuously onsite during the performance of this work.

1.05 SUBMITTALS

- A. An operational assessment report of any existing irrigation system in the area of work shall be submitted prior to the start of the project's work, including demolition and clearing. See Subsection 1.07.
- B. The Contractor shall submit complete lists of proposed materials and equipment per the Division 01 Submittal Section, including manufacturer's name and model numbers. Only provide additional product data and/or catalog cut sheets if a substitute material or equipment is proposed. No substitution will be allowed without prior written approval.
- C. Shop drawings shall be provided for the layout and description of all equipment assemblies, including dimensions, capacities, and other characteristics as listed in product specifications. Shop drawings for booster pump assemblies shall clearly and neatly indicate the layout of the assemblies and proposed piping in the pump yard, and shall show adjacent equipment, required clearances, walls, fences, piping and other existing permanent improvements affecting the layout. Materials and equipment shall not be ordered until given written acceptance. Equipment or materials installed or furnished without prior approval or acceptance may be rejected and the Contractor shall be required to remove such materials from the site at his own expense.
- D. When specific name brands of equipment and materials are used, they are intended as preferred standards only. This does not imply any right upon the part of the Contractor to furnish other materials unless specifically approved in writing as equal in quality and performance by the Owner. Decisions by the Architect/Engineer shall govern as to what name brands of equipment and materials are equal to those specified on the plans and his decisions shall be final. It shall be the responsibility of the Contractor to furnish proof as to equality of any proposed equipment or material.
- E. Approval of any item, alternate or substitute indicates only that the products apparently meet the requirements of the drawings and specifications on the basis of the information or samples submitted. Manufacturer's warranties shall not relieve the Contractor of his liability under the guarantee. Such warranties shall only supplement the guarantee.
- F. Acceptance of any submittals, deliverables, or other work product of the Contractor shall not be construed as assent that the Contractor has complied with, nor in any way relieved the

Contractor of compliance with (i) the applicable standard of care, and/or (ii) applicable statutes, regulations, rules, guidelines, and contract requirements.

- G. Irrigation Equipment: When the Contractor desires to transfer salvaged irrigation equipment and/or new spare equipment and/or parts to the Owner, he must submit along with the equipment an itemized list. The Contractor is solely responsible to obtain a written confirmation by the Owner that all materials received by the Owner matches his material list. The transfer of materials will not be considered executed without written confirmation of same.
- H. Submit any required or requested testing data and/or Certificates, including but not limited to the backflow prevention assembly testing Certificate after the assembly is installed prior to regular system operation.

1.06 EXPLANATION OF DRAWINGS

- A. The intent of the drawings and specifications is to indicate and specify a complete and efficient sprinkler irrigation system ready for use in accordance with the manufacturer's recommendations, and all applicable local codes and ordinances. Interpretation of irrigation plans and specifications shall be the responsibility of the Landscape Architect or Owner.
- B. All existing systems and improvements are shown in their approximate locations. Before proceeding with any work, the Contractor shall carefully check and verify all dimensions and shall report any variations to the Owner.
- C. Due to the scale of the drawings, it is not possible to indicate all offsets, fittings, etc., which may be required. The Contractor shall carefully investigate the structural and finished conditions affecting all his work, and plan his work accordingly, furnishing such fittings, etc., as may be required to meet such conditions. Drawings are generally diagrammatic and indicative of the work to be installed in the most direct and workmanlike manner, so that conflicts between sprinkler systems, planting, utilities, and architectural features will be avoided. Locate pipe, valves and other equipment in planting areas unless specifically noted otherwise.
- D. All work called for on the drawings by notes shall be furnished and installed whether or not specifically mentioned in the specifications.

1.07 EXISTING CONDITIONS

- A. The Contractor shall not install the irrigation system and equipment as shown on the Drawings when it is obvious in the field that obstructions or differences in existing conditions and/or systems are present. Such obstructions or differences should be immediately brought to the attention of the Owner. Failure to provide notification prior to the start of this work shall make the Contractor liable for any and all repairs and/or corrections necessary for proper functioning and coverage of the system without any additional cost to the Owner.
- B. The Contractor shall examine carefully the site of work contemplated and the proposal, plans, specifications, and all other contract documents. By submitting a bid, the Contractor attests that he has investigated and is satisfied as to the conditions to be encountered, as to the character, quality, and quantity of work to be performed and materials to be furnished, and the requirements of the specifications. The Contractor shall take necessary precautions to

protect existing site conditions that are to remain. Should damage be incurred, the Contractor shall make the necessary repair or replacement to bring it back to its original condition at his own expense.

- C. Prior to cutting into the soil, the Contractor shall coordinate with the Owner to locate all cables, conduits, sewers, septic tanks, and other such underground utilities as are commonly encountered and he shall take proper precaution not to damage or disturb such improvements. If a conflict exists between such obstacles, notify the Owner who will consider realignment of the proposed work. The Contractor will proceed in the same manner if a rock layer or any other condition encountered underground makes change advisable. Should utilities not shown on the plans be found during excavations, Contractor shall promptly notify the Owner for instructions as to further action. Failure to do so will make Contractor liable for any and all damage thereto arising from his operations subsequent to discovery of such utilities not shown in plans.
- D. The Contractor shall verify the correctness of all finish grades within the work area in order to insure the proper soil coverage (as specified) of the sprinkler system pipes. The Contractor shall verify and be familiar with location and size of the proposed water supply (P.O.C.). He shall make approved type connection and install new work.
- E. The Contractor shall be responsible for notifying the Owner prior to installation that equipment or methods indicated on the drawings or in the specifications conflict with local codes, are incompatible or an error is apparent. If the event the Contractor neglects to do this, he will accept full responsibility for any revisions necessary.

1.08 PERMITS

- A. The Contractor shall obtain and pay required fees to any governmental or public agency. Any permits for the installation or construction of any of the work included under this contract, which are required by any of the legally constituted authorities having jurisdiction, shall be obtained and paid for by the Contractor, each at the proper time. He shall also arrange for and pay all costs in connection with any inspections and examination required by these authorities.

1.09 TESTING

- A. General: Unless otherwise directed, tests shall be witnessed by the Owner. Work to be concealed shall not be covered until prescribed tests are made. Should any work be covered before such tests, the Contractor shall, at his expense, uncover, test and repair his work and that of other contractors to original conditions. Leaks and defects shown by tests shall be repaired and entire work re-tested. Tests may be made in sections, however, all connections between sections previously tested and new section must be included in the test.
- B. Main Line Piping: Maintain 125 psi water or air pressure in new main line piping for a duration of twenty-four (24) hours. There shall be no drop in pressure during test except that due to ambient temperature changes (+/- 5psi).
- C. After being installed at the project site, any newly installed Backflow Prevention unit must be tested and approved as functioning properly per the local water agency requirements. Approval of the backflow prevention unit must precede any final inspection of the irrigation system. All costs for testing shall be the responsibility of the Contractor.

1.10 OBSERVATION

A. General:

1. Installation and operations must be approved by the Owner.
2. In no event shall the Contractor cover up or otherwise remove from view any work under this contract without prior approval of the Owner. Any work covered prior to inspection shall be opened to view by the Contractor at his expense.
3. In all cases, where inspection of the irrigation system work is required and/or where portions of the work are specified to be performed under the direction and/or inspection of the Owner's Representative, the Contractor shall notify the Owner's Representative at least 48 hours in advance of the time when such inspection and/or direction is required. Any necessary re-excavation or alterations to the system needed because of failure of the Contractor to have the required inspection, shall be performed at the Contractor's own expense.

B. Periodic observations shall be required for basic operations and installations during progression of the project. The Owner's Representative, Owner or Landscape Architect shall perform the observations and shall record the observation on the Irrigation System Observation Log form on the As Built Record Drawings. Such observations will include but not necessarily be limited to the following items as included in the scope of work:

1. Layout and flagging of sprinkler heads.
2. Trenching.
3. Main line installation.
4. Main line sustained pressure check.
5. Wire placement.
6. Partial fill compaction of trenches.
7. Control valve installation.
8. Drip line installation prior to backfilling.
9. Irrigation controller programming and operation.
10. Sprinkler/emitter coverage prior to the start of planting operations.
11. Overall system operation and primary/secondary communication.

C. Coverage & Operations Review:

1. When the irrigation system is operational and prior to soil conditioning operations, the Contractor in the presence of the Owner shall perform a coverage test of the irrigation system. The Contractor shall furnish all materials and labor required to perform the coverage test and to correct any minor inadequacies of coverage disclosed. The Contractor shall inform the Owner and Owner of any deviation from the plan required due to wind, planting, soil, or site conditions that bear on proper coverage. If such notification of necessary corrections or additions to the irrigation system is not provided prior to or during the coverage test, the Contractor shall make all subsequent adjustments and corrections needed for proper coverage without any extra cost to the Owner.
2. Prior to the start of the maintenance period, the irrigation system shall be reviewed by the Owner for proper operations, and a review of and training on equipment and associated controls performed. Any corrections and/or adjustment shall be made as a condition for the start of the maintenance period and subsequent Final Acceptance.

D. Final Acceptance: The work will be accepted in writing when the entire project improvements have been completed to the satisfaction of the Owner. In judging the work, no allowance for deviation from the original plans and specifications will be made unless already

approved in writing at proper time. Should it become necessary for the Owner to occupy any portion of the work area before the contract is fully completed, such occupancy shall not constitute acceptance. The Contractor will not be responsible for any damage caused by the Owner's separate work forces.

1.11 REJECTION OF NON-CONFORMING MATERIAL OR WORK

- A. The Owner reserves the right to reject any material or work which does not conform to the contract documents. The rejected material or work shall be removed or corrected by the Contractor at no additional cost to the Owner.

1.12 OPERATIONS AND MAINTENANCE INSTRUCTIONS & RECORD DOCUMENTS

- A. The Contractor shall prepare and deliver to the Owner's Representative within ten (10) calendar days prior to completion of the construction and as a prerequisite to the start of the maintenance period, all required and necessary descriptive material in complete detail and sufficient quantity, properly prepared in two individually bound sets of Operating and Maintenance Manuals. These manuals shall describe the material installed and shall be in sufficient depth to permit operating personnel to understand, operate and maintain all equipment. Spare part lists and related manufacturer identification shall be included for each installed equipment item. Each complete, bound manual shall contain the following information:
 - 1. Cover sheet stating Contractor's address and telephone number, duration of guarantee period, and a list of equipment, with names and addresses of local manufacturer representatives and warranty periods.
 - 2. The Contractor to issue a "CERTIFICATE OF CONSTRUCTION COMPLIANCE" which indicates that all work done, materials and equipment used and installed are in compliance with the approved plans, specifications and all authorized revisions and that the system functions properly.
 - 3. Complete operating and maintenance instructions and warranties on all major equipment.
 - 4. Complete set of manufacturer's literature and specifications of material installed, including parts list.
 - 5. A list of the controller station number for each control valve if different than the control valve number shown on the drawings.
 - 6. Initial electrical data on each control valve:
 - a. Ohms reading for each valve taken at the controller (circuit is OFF).
 - b. Voltage reading for each valve taken both at the controller and at the valve (circuit is ON).
- B. The contractor shall furnish one set of As-Built full-scale drawings on bond, and two compact disks with complete sets of digital PDF files of all close-out documents after the As-Built Record Drawings have been reviewed and accepted by the Landscape Architect.
 - 1. Label first page of each document, or set of documents, "AS-BUILT PROJECT RECORD" in neat large printed letters on lower right hand corner. Record information concurrently with construction progress. 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. Do not conceal any work until required information is recorded. These drawings shall also serve as work in progress sheets, and the Contractor shall make **neat and legible** annotations thereon daily as the work progresses, 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 Owner.

2. Drawings: Legibly mark to record actual construction:
 - a. Horizontal and vertical locations of underground utilities and appurtenances, referenced to permanent surface improvements. Give sufficient horizontal and vertical dimensions to accurately trace route and depth of each concealed line or item. Accurately locate each capped, plugged or stubbed line.
 - b. Field changes of dimension and detail.
 - c. Changes made by Field Order, Addenda, or other change document.
 - d. Show the final controller station number for each control valve if different than the control valve number shown on the drawings.
 3. Deliver all Close-out Documents (As-Built) to the Owner. Accompany submittal with transmittal letter in duplicate, containing:
 - a. Date.
 - b. Project title.
 - c. Contractor's name and address.
 - d. Title and number of each Record Document (As-Built).
 - e. Signature of Contractor or his authorized representative.
- C. The Contractor shall provide controller chart(s) as follows:
1. The Contractor shall provide two controller charts for each controller's area of work.
 2. The chart shall show the area of work controlled by the automatic controller and shall be the maximum size that the controller door will allow.
 3. Show the controller station number for each control valve if different than the control valve number shown on the drawings.
 4. The chart may be a reduced drawing of the actual as-built system. However, in the event the valve numbering is not legible when the drawing is reduced, it shall be enlarged to a size that will be readable when reduced.
 5. The chart shall be colored with a different permanent color for each station.
 6. The chart shall be enclosed in a waterproof envelope or laminated.
- D. Per MWELC Section 492.9, upon completion of the landscape planting and irrigation system, and as a condition of Final Acceptance and/or the issuance of a Certificate of Occupancy, the licensed landscape contractor shall submit to the approving agency and/or Owner, the following items in a form acceptable to the approving agency and/or Owner:
1. Project information and contact information for the Owner and Applicant (Contractor).
 2. Certification that the installation complies with the approved Landscape Documentation Package.
 3. Irrigation scheduling parameters used in programming the controller during the establishment and maintenance periods.
 4. A Schedule of Irrigation System Maintenance.

1.13 SPARE PARTS AND EQUIPMENT

- A. Prior to the conclusion of the maintenance period, furnish the Owner with the following spare parts and equipment:
1. One quick coupler key with attached hose swivel for each set of four quick coupler valves installed.
 2. Ten spare nozzles for each different sprinkler head arc and/or radius nozzle installed.
 3. One valve key for the 2" operating nut and/or hand wheel isolation valve.
 4. One hundred feet of in-line emitter tubing with ten straight and ten ninety degree compression fittings.

1.14 WORK AREA AND SAFETY

- A. The Contractor shall furnish, erect, and maintain all temporary facilities; perform all temporary work during the period of construction, including those herein specified. All facilities shall be maintained in proper and safe operating and sanitary conditions at all times.
- B. The Contractor shall comply with the provisions of the Construction Safety Orders, and General Safety Orders issued by the State Division of Industrial Safety, as well as all other applicable laws, ordinances and regulations.
- C. The project site shall be maintained in a neat and safe condition at all times. Cleanup shall be accomplished as the work progresses and upon completion of the work. The Contractor shall provide adequate safety measures to protect workers and the public from injury.

1.15 GUARANTEE

- A. Irrigation system consisting of materials, equipment and workmanship shall be guaranteed for proper operation a minimum of one year from date of Final Acceptance of the Work or the Notice of Substantial Completion of the Project, whichever is later. Manufacturer's warranty periods may be longer, and shall be noted in the close-out documents.
- B. The Contractor shall be held responsible for repair and/or replacement of damages to new or existing improvements resulting from the defects of materials, equipment or workmanship one year from the date of Final Acceptance of the Work or the Notice of Substantial Completion of the Project, whichever is later.
- C. The Owner reserves the right to make temporary repairs as necessary to keep the irrigation system equipment in operating condition. The exercise of this right by the Owner shall not relieve the Contractor of his responsibilities under the terms of the Guarantee as herein specified.

PART 2 - PRODUCTS

2.01 PIPE AND FITTINGS

- A. Schedule rated white rigid PVC Pipe shall be made from NSF approved Type 1, Grade I, PVC compound conforming to ASTM D-1785.
- B. Class rated (Standard Dimension Ratio) white rigid PVC Pipe shall be made from NSF approved Type 1, Grade I, PVC compound conforming to ASTM D-1784.
- C. PVC pipe shall be of the Class or Schedule as follows:
 - 1. PVC pipe shall meet ASTM D-2241 for solvent weld, plain end, ASTM D-2672 for solvent weld, bell end, and ASTM D-3139 for gasketed bell end. Pipe shall be of the Schedule and/or Class as indicated herein.
 - 2. Pipe sleeves under paving shall be PVC Schedule 40 for 3-inch and smaller or SDR 35 for 4-inch and larger pipes.
 - 3. Riser and/or manifold pipe connecting valves to main line fittings shall be Schedule 80 PVC.

4. Pressurized main line pipe shall be Schedule 40, belled end with solvent welds for pipe sizes less than 2 inches. Pipe sized 2 inches and greater shall be Class 200, SDR 21, with gasketed bell ends.
 5. Non-pressurized lateral line pipe shall be Schedule 40, belled end with solvent welds.
- D. All pipes shall be continuously and permanently marked and conform with the following information: manufacturer's name or trademark, nominal pipe size, Schedule or Class of pipe, pressure rating in PSI, ASTM designation and (NSF) seal of approval.
- E. Rigid polyvinyl chloride (PVC) Fittings:
1. White Schedule 40 type I and II grade 1, solvent weld socket fittings ASTM D-2466 for all lateral lines 2-1/2 inches and smaller.
 2. Gray Schedule 80 type I and II grade 1 solvent weld socket fittings ASTM D-2464 for all main line less than 2 inches diameter, and lateral lines 3 inches and larger.
 3. All fittings shall bear the manufacturer's name or trademark, material designation, size, applicable (IPS) schedule, and (NSF) seal of approval.
 4. All plastic fittings and connectors shall be injection molded of an improved polyvinyl chloride compound featuring high tensile strength, high chemical resistance and high impact strength in terms of current ASTM standards for such fittings. Where threads are required in plastic fittings, these shall be injection molded also.
- F. PVC Solvent Weld Adhesive: All socket and bell type connections shall be joined with primer and PVC solvent cement which shall meet the requirements of ASTM F656 for primer and ASTM D2564, "Standard Specification for Solvent Cements for Polyvinyl Chloride (PVC) Plastic Pipe and Fittings." Solvent cement joints for plastic pipe and fittings will be made as prescribed by manufacturer. The high chemical resistance of the pipe and fitting compounds specified in the foregoing sections makes it mandatory that an aggressive colored primer, which is a true solvent for PVC be used in conjunction with a solvent cement designed for the fit of pipe and fittings specified. A heavy bodied, medium set solvent cement, e.g. Weld-On 711 gray, shall be used for all classes and schedules of pipe and fittings.
- G. PVC Pipe Thread Sealant: A non-hardening all purpose sealant and lubricant similar to Permatex #51 or Lasco blue pipe thread sealant which is certified by the manufacturer to be harmless to PVC pipe and fittings. Apply sealant to clean male threads, brushing into grooves and to the first three threads of the female threads. A good quality grade of teflon tape recommended by the manufacturer for use with plastics may be used in lieu of sealant. Minimum width of tape to be used is 3/4". A minimum of two wraps and a maximum of three wraps shall be used.
- H. PVC Swing Joints: Connections to sprinkler heads from lateral lines shall be made with swing joints as detailed. Pre-assembled swing joints from Hunter, King Brothers or Spears are acceptable.
1. Use 6" length nipples for 1/2 inch inlet heads.
 2. Use 12" length nipples for 3/4 or 1 inch inlet heads.
- I. Coated Ductile Iron pipe and fittings:
1. Ductile Iron pipe shall be centrifugally cast pipe conforming to ANSI/AWWA C150/A21.50 and ANSI/AWWA C151/A21.51, thickness Class 50, with cement - mortar lining and seal coating per ANSI/AWWA C104/A21.4.
 2. Ductile Iron flanged pipe shall conform to ANSI/AWWA C115/21.15.

3. Ductile Iron flanged fitting to PVC pipe shall use a 'Megalug' mechanical joint restraint Series 2000PV by EBAA Iron per either ANSI/AWWA C111/A21.11 or ANSI/AWWA C153/A21.53, or equal.
 4. Joints shall comply with the following standards:
 - a. Rubber gasketed/mechanical joints: ANSI/AWWA C111/A21.11.
 - b. Flanged joints: ANSI/AWWA C110/A21.10, B16.1, B16.2.
- J. Coated ductile iron push-on fittings meeting ANSI/AWWA C110 or C153/A21.10 shall be used for:
1. Main line connections for pipe 2 inches and greater in diameter.
 2. New main line service tee at valve connections where a service saddle is not acceptable.
 3. Self-restrained fittings or joint restraints (Leemco LH or equal) shall be used for all elbows, tees, bends, etc fittings.
- K. Coated ductile iron service saddles with stainless steel double straps, Smith-Blair 317, Romac Industries 202NS, or equal, shall be used for remote control/quick coupler valve service connections on main lines 1.25 inch or greater, and where the available outlet size can match the largest lateral line size downstream of the remote control valve.
- L. Galvanized pipe and fittings:
1. Galvanized Pipe shall be hot dip galvanized continuous welded, seamless steel SCH 40 pipe conforming to current ASTM A53 standards.
 2. Galvanized Fittings shall be galvanized, threaded malleable iron SCH 40 conforming to current ASTM A865 standards.

2.02 BACKFLOW PREVENTION ASSEMBLY

- A. The backflow prevention assembly is existing and shall remain in place.

2.03 VALVES

- A. Electric Control Valves:
1. Globe valves operated by low-power solenoid, normally closed, manual flow adjustment. Sizes and types as shown on drawings.
 2. Provide a pressure regulating module on all control valves, or other pressure regulating components as part of the operating spray head or low volume head zones when the dynamic system pressure is, or may be greater than 45 psi.
- B. Control Valve Marking: Christy's valve identification tag (or equal), yellow color (purple color for recycled water) with text designating controller and valve station number, e.g. "A12", or equivalent.
- C. Isolation Valves:
1. Cast bronze, coated ductile iron or coated cast iron gate valve with resilient wedge, non-rising stem and two inch operating nut for main line 2 inch size or greater. Match size of mainline.
 2. Cast bronze threaded gate valve with bronze cross handle for main line less than 2 inch size.
- D. Quick Coupling Valve: Two piece quick coupling valve as shown on the Drawings.

2.04 VALVE BOXES

- A. Control Valve/Master Valve/Flow Sensor boxes:
 - 1. Shrub/Ground Cover areas: Carson 1419 body with lockable tan plastic cover, or equivalent. Drip Valve Kits shall use a Jumbo body with lockable tan plastic cover.
 - 2. Turfgrass areas: Carson 1419 body with lockable green plastic cover, or equivalent.
 - 3. Hardscape areas: Christy B16 concrete box (11.75" x 22.25") with N16R composite solid flush lid, or equivalent.
- B. Quick Coupler Valve boxes:
 - 1. Shrub/Ground Cover areas: Carson 910 body with lockable tan plastic cover, or equivalent.
 - 2. Turfgrass area: Carson 910 body with lockable green plastic cover, or equivalent.
- C. Isolation Valve boxes:
 - 1. Gate Valve box in hardscape: Christy G05 round concrete valve box (10.375" ID) with cast iron G05C lid, or equivalent.
 - 2. Gate Valve box in planting areas: Christy F08 round concrete valve box (8" ID) with F08R concrete lid, or equivalent. Use F14 ADS adapter and extension for sizes 2.5 inches and larger.
- D. Control Valve box marking: Plastic lids shall have branded markings, and concrete lids shall have painted markings on the top of lid with minimum 2 inch high stenciled letters showing controller letter and station number.

2.05 CONTROLLER

- A. The irrigation Controller is existing and shall remain in place / shall be relocated. Verify open stations and spare wire, if any in the area of work.

2.06 CONTROL AND TRACER WIRE, COMMUNICATION CABLE

- A. Connections between the automatic controllers and the electric control valves, and tracer wire shall be made with direct burial AWG – UF 600 volt copper wire manufactured for irrigation system use.
- B. Hot control wires for the first controller shall be red. If multiple controllers are installed, the hot wire color shall be orange, yellow, purple in order for each controller. Common ground wire shall be white, with a color stripe corresponding to the hot control wire color when multiple controllers are installed. Spare control wires shall be black and spare common wire blue. Tracer wire shall be green.
- C. Install in accordance with valve manufacturer's specifications and wire chart. In no case shall wire size be less than #14. Common wire shall be a minimum #12 size.
- D. All control wire splices/caps shall be made with direct bury rated, waterproof wire connectors with silicone sealant, Spears DS-500 Dri-Splice, 3M DBR/DBY or approved equal. Use one splice per connector sealing pack.
- E. Apply waterproof numbered wire markers or sleeves at both sides of all splices and at the controller terminal board corresponding to the controller (A, B, etc.) and station number (02,

14, etc.). If multiple valves are connected to one station, add a single digit identifier (1, 2, etc.) to the station number (XX), e.g. A02-1, A02-2, etc.

2.07 IRRIGATION HEADS

- A. Bubbler Pop-up Head: Molded plastic body with pop-up plastic riser and nozzle. Manufacturer's model numbers are listed with description on the Drawings.

2.08 DRIP IRRIGATION EQUIPMENT

- A. Flexible distribution tubing shall be 0.66" – 0.70" OD (17mm nominal) fabricated from virgin polyethylene resin specifically designed for subsurface drip irrigation use and conforming to ASTM D 1248 for Type I, Class C, Category 4 Grade P14, and to ASTM D-3350 for PE 122111C. Provide all fittings, connectors and accessories compliant with the tubing for a complete, properly functioning system.
- B. Pressure rating of tubing shall be as defined in Standard ASAE S435. Burst strength shall be minimum 50 psi at 176 degrees F for 4,200 hours.
- C. In-line wye filters shall be type as noted on the Drawings. Filter element shall be molded polyester screen cylinder with minimum 150 mesh screen (blue).
- D. Preset pressure regulators shall be type as noted on the Drawings for above or below ground application.
- E. In-line emitter tubing shall be a below grade product with self-cleaning emitters. Manufacturer as noted on the Drawings.
- F. Flush valve as noted on the Drawings.
- G. Operation indicator shall be a 6 inch pop-up sprinkler body with built-in check valve. Install a bubbler or variable arc nozzle that can be adjusted to a no-flow condition, Hunter ECO-INDICATOR, or equal.

2.09 CONCRETE

- A. Cast-in-place Portland cement concrete used for pipe encasement, cover, thrust blocks, pipe support or other below-grade use shall at minimum comply with 2,800 psi 28 day strength.

2.10 OTHER MATERIALS

- A. Materials not specifically indicated but necessary for the proper execution of this work shall be of first quality as selected by the Contractor subject to the acceptance of the Owner.
- B. All materials appearing in the legend and details of the irrigation drawings are to be furnished and installed by the Contractor unless specifically noted to the contrary. Contractor is responsible for installation according to plans and details. The system shall efficiently and uniformly irrigate all areas and perform as required by these plans and specifications.
- C. Granular bedding material shall be clean natural occurring sand, free from clay, salt, sea shells or organic material, suitable for the purpose intended, and shall be of such size that 90

percent to 100 percent will pass a No. 4 sieve and not more than 5 percent will pass a No. 200 sieve.

PART 3 - EXECUTION

3.01 SYSTEM DESIGN AND VERIFICATION

- A. Contractor shall verify existing pressure and any existing irrigation equipment, and shall inform the Owner of any discrepancies between the existing systems' make and model of equipment, such as sprinkler heads, control valves, etc., and those indicated in the Drawings in writing prior to the start of irrigation system installation. Failure to inform the Owner of any discrepancy within seven working days prior to beginning of system installation will place the responsibility of any and all corrective action on the Contractor at no expense to the Owner.

3.02 PIPING INSTALLATION

- A. General:
 - 1. Any equipment installed by the Contractor and deemed to be for the use of the Owner in various situations (i.e., control valves, control panels, etc.) shall be so installed to be readily accessible and quickly operable. Equipment deemed by the Owner to be inoperable for its intended purpose shall be reinstalled by the Contractor in an operable position before approval will be given. Any changes made by the Contractor shall be done without any additional cost to the Owner.
 - 2. The Contractor shall be responsible for layout of proposed facilities and any minor adjustments required due to differences between existing conditions and the Drawings. Any such deviations in layout shall be within the intent of the original drawings, and without additional costs to the Owner. The Owner will indicate the proposed precise location of the control panels. Head spacing on drawings is diagrammatic. Head spacing and patterns shall be adjusted to provide complete and adequate coverage with a minimum spray on non-planted areas. Where head spacing is not specifically noted, Contractor shall install sprinkler heads evenly along the irrigation area's perimeter. Flush all lines prior to installation of heads.
 - 3. Support piping without strain on joints or fittings and allow for piping expansion and contraction. "Snake" pipe into trench in accordance to manufacturer's recommendations to allow for expansion. Lay on solid bedding, at uniform depth.
- B. The Contractor shall examine all other portions of working drawings and plan trenching and pipe layout so that no conflict will arise between irrigation and any other work. Any corrective action will be the Contractor's responsibility at no further expense to the Owner.
- C. Excavations:
 - 1. Excavations shall be open vertical construction, sufficiently wide to provide clear working space around the work installed and to provide ample space for backfilling and tamping.
 - 2. The use of a vibratory plow or methods other than open vertical trenching will not be allowed without the written approval of the Owner. To obtain such approval, a field test must be performed, at the proposed site, with the equipment to be used in the presence of the Owner and Owner. The field test is to indicate if the proposed site is favorable to the

plowing method. Approval for plowing at one location does not allow the use of plowing at another location. Approval for plowing must be obtained for each location where the use of plowing is proposed. If, at previously approved plowing locations, conditions for plowing become unfavorable as determined by the Owner, plowing shall be terminated.

3. Trenches for pipe and equipment shall be cut to required grade lines, and compacted to provide an accurate grade and uniform bearing for the full length of the line.
4. Unless written approval for using native soils as bedding material is given by the Owner, main line pipe shall be placed on a minimum 6 inch depth of granular bedding material.
5. Excess trench soil with rocks greater than ½ inch diameter shall be removed from the planted area and spread as directed by the Owner.
6. When two pipes/conduit are to be placed in the same trench, it is required to maintain a minimum six inch (6") horizontal separation between pipes/conduit.
7. Depth of trenches shall be sufficient to provide a minimum cover above the top of the pipe as follows:
 - a. 24-inch minimum over main lines and wire conduit.
 - b. 18-inch minimum over non-pressure (rotary pop-up) lateral lines.
 - c. 12-inch minimum over non-pressure (pop-up spray head) lateral lines.
 - d. 24-inch minimum from subgrade over any lines located in a paved vehicle area.
 - e. Maximum cover above the top of the pipe shall not exceed twelve inches (12") greater than the required minimum cover.
 - f. 12-inch minimum cover over drip line non-pressure lateral and manifold pipe, and main distribution tubing.
 - g. 1-inch minimum cover over in-line emitter tubing.

D. Assemblies:

1. Routing of pressure supply lines as indicated on drawings is diagrammatic. Install lines (and various assemblies) in such a manner as to conform with details on plans.
2. Install all assemblies specified herein according to the respective detail drawings or specifications pertaining to specific items required to complete the work. Perform work according to best standard practice.
3. Install no multiple assemblies on plastic lines. Provide each assembly with its own outlet.
4. All threaded pipe and fittings shall be assembled using an approved teflon tape, or equivalent, applied to the male threads only. A minimum of two (2) wraps and a maximum of three (3) wraps of an approved teflon tape will be required.
5. No main line elbows, branch tees or isolation valves are to be located closer than five (5) feet to each other without prior approval of the Owner.

E. Line Clearance: All lines shall have a minimum clearance of four inches (4") from each other, and six inches (6") from lines of other trades. Parallel lines shall not be installed directly over one another.

F. Plastic to Steel Connections:

1. At all plastic (PVC) pipe connections, the Contractor shall work the steel connections first. Connections shall always be plastic into steel, never steel into plastic. An approved teflon tape shall be used on all threaded (PVC) to steel, never steel into plastic. An approved teflon tape shall be used on all thread (PVC) to steel pipe joints applied to the male threads only, and light wrench pressure is to be applied. A minimum of two (2) wraps and a maximum of three (3) wraps of an approved 3/4" wide teflon tape will be required.

2. A non-hardening sealant and lubricant similar to Permatex #51 or LASCO blue pipe sealant may be used in lieu of teflon tape. Apply sealant to clean male threads brushing into grooves and to the first three threads of the female threads.

G. Plastic Pipe:

1. The Contractor shall exercise care in handling, loading, unloading, and storing plastic pipe and fittings. All plastic pipe and fittings shall be stored under a weatherproof roofed structure before using and shall be transported in a vehicle with a bed long enough to allow the length of pipe to lie flat so as not to be subject to undue bending or concentrated external load at any point.
 - a. All lumber, rubbish, rubble, concrete and rocks shall be removed from the trenches by the Contractor. Pipe shall have a firm uniform bearing for the entire length of each pipe line to prevent uneven settlement. Wedging or blocking under riser tees shall be done only if specified on the plans. Pad trenches with soil as necessary to provide uniform bearing surfaces.
 - b. Where extensive lengths of pipe are installed, snake pipe in trench from side to side to allow for expansion and contraction. One additional foot per one hundred (100) feet of pipe is the minimum allowance for snaking. Never lay pipe when there is water in the trench or when the temperature is 32 degrees F or below.
 - c. All changes in direction of pipe shall be made with fittings, not by bending. No main line fittings for changes in direction shall be greater than 45 degrees. Provide a minimum five (5) feet between changes in direction fittings.
 - d. Safely handle primers and cements per ASTM F-402. Make solvent weld joints per ASTM D-2855 with a non-synthetic bristle brush in the following sequence:
 - 1) Make sure pipe is cut square and all rough edges and burrs are removed. All connecting surfaces are properly cleaned and dry prior to application of pipe primer.
 - 2) Apply an even coat of colored primer to pipe and fitting prior to application of solvent.
 - 3) Apply an even coat of solvent to the outside of the pipe, making sure that the coated area is equal to the depth of the fitting socket.
 - 4) Apply an even light coat of solvent to the inside of the fitting.
 - 5) Apply a second coat of solvent to the pipe.
 - 6) Insert the pipe quickly into the fitting and turn pipe approximately one-eighth to one-quarter turn to distribute the solvent and remove air bubbles. Hold the joint for approximately fifteen seconds so the fittings do not push off the pipe.
 - 7) Using a clean rag, make sure to wipe off all excess solvent to prevent weakening at joint.
 - 8) Exercise care in going to the next joint so that pipe is not twisted, thereby disturbing the last completed joint.
 - 9) Allow at least fifteen minutes setup time for each welded joint before moving.
 - 10) Repairing plastic pipe when damaged shall be done by replacing the damaged portion of pipe.

- H. Concrete Thrust Blocks: Concrete anchors or thrust blocks shall be provided on pressure main pipelines 2 inches or greater in diameter at abrupt changes in pipeline grade, changes in horizontal alignment (bends, tees and crosses), reduction in pipe size (reducers, reducing tees or crosses), end-line caps or plugs, and/or in-line isolation valve to absorb any axial thrust of the pipeline. The pipe manufacturer's recommendation for thrust control shall be followed. Thrust blocks must be formed against solid unexcavated earth (undisturbed). Do not enclose

entire joint in concrete. Provide a minimum of three cubic feet of concrete for each thrust block.

- I. Concrete thrust blocks may be eliminated if the main line piping system uses self-restrained fittings and bell joint restraints per manufacture's specifications throughout.

3.03 PIPE DEPTH AND BACKFILL

- A. Backfill shall not be placed until the installed system has been inspected, pressure tested and approved by the Owner.
- B. Backfill for first 6 inches underneath, and 4 inches around and above main line pipe and control wires shall be granular bedding material, unless the Owner approves in writing that native soil may be used for initial backfill in lieu of granular bedding material. Backfill material for the upper portion of the trench shall be approved soil. Unsuitable material, such as pipe remnants and wire including clods and rocks over two inches (2") in size, shall be removed from the premises and disposed of legally at no cost to the Owner.
- C. Backfilling for all pipe shall be carried out in two basic stages.
 - 1. Stage One Backfilling: This shall be accomplished as soon as possible after the pipe is laid. A bedding of uniform depth with no voids must be provided along the entire length of the pipe. The bedding material should be placed in the trench and tamped into the areas under the pipe, using a suitable tool. Joints should be left exposed until hydrostatic tests are completed. Cover only those portions of the pipe necessary to prevent movement or damage.
 - 2. Stage Two Backfilling: This shall be completed after all hydrostatic tests are completed and the piping system has been thoroughly checked for leaks or other defects. Continue to add backfill material in four inch (4") layers and hand tamp to achieve density similar to adjacent soil. After twelve inches (12") in main line trenches and eight inches (8") in lateral line trenches of hand tamped soil is in place over the pipe and fittings, backfilling can be continued, using light machinery to place dirt in the trenches in six inch (6") layers and to compact the dirt to conform to adjacent soil. Extreme care should be taken to avoid damage to the pipe from machinery that is too heavy. All trenches shall then be water jetted to assure uniform settling and compaction. Backfilling operations will not be considered complete until the top surface has been graded to conform to the adjacent soil. All rocks uncovered and not used as backfill must be collected and removed from the site.
- D. All backfilling shall be done carefully and shall be properly tamped. All soil shall be tamped and puddled to eliminate any voids.
- E. Surplus earth remaining after backfilling shall be disposed of as directed by the Owner.
- F. PVC piping and fittings shall not be backfilled during periods of extreme heat or when a sudden lowering of temperature of the pipe may cause separation of joints or fittings.
- G. Contractor shall fill with properly amended topsoil any irrigation trench that subsides during the warranty period. Contractor shall assume all cost associated with the trench repair, including but not limited to plant replacement of a size of plant disturbed at the time of the repair.

3.04 BACKFLOW PREVENTION ASSEMBLY

- A. Check the existing backflow assembly for leaks or any improper condition. Notify the Owner as such if found.

3.05 CONTROL AND TRACER WIRE, AND COMMUNICATION CABLE

- A. Install control wires alongside of main line piping. Do not tape wires together when encased in sleeve or conduit. Minimum cover shall be 24 inches. Crimp wires together at valve manifold with Scotchlok connector. Conventional valve wire splices shall use a 3M DBY splice kit. Tag all control wire at splices with approved control wire markers.
- B. Wire size shall be determined by the number of valves operating on a given wire and the distance from the controller to the farthest valve, as specified by the charts furnished by the remote control valve manufacturer. Splices are only allowed when rerouting or repairing existing wire. All splice connections must be provided in a valve box.
- C. Communication/sensor cable shall be installed in electrical conduit with long radius sweeps at direction changes and at valve/splice/pull boxes. Maintain a minimum six inch clearance to adjacent pipe. Minimum cover shall be 24 inches.
- D. Install tracer wire along the top of pipe at the following locations:
 - 1. All pipe sleeves.
 - 2. Main line pipe without adjacent control wire.

3.06 VALVES

- A. The Contractor shall make all necessary connections for operation, and shall be connected and aligned to provide the most efficient flow of water to the irrigation heads. Where pressure regulating electric control valves are specified, the Contractor shall adjust the valve so a uniform distribution of water is applied by the heads, and that the most remote heads operate at the pressure recommended by the head manufacturer.
- B. Each valve is to be enclosed in a separate valve box. The valve box shall be secured on firm soil clear of valves and wiring connections. Valve boxes and lids shall be set to finished grade or as indicated on the Drawings. Use valve box extensions of the same material as the box to the proper depth below the pipeline. Valve boxes shall be supported by common bricks at each corner and at the long side of the box. Use a minimum of six bricks to support rectangular boxes and four bricks to support round boxes. Backfill carefully and properly compact in order to prevent settlement and subsequent damage.
- C. Install a concrete collar around valve boxes when located in asphaltic concrete pavement or in turfgrass areas.
- D. Remote control valve boxes within the field of play at sports venues shall be buried with a minimum of 8 inches of cover over the box lid in turfgrass, and a minimum 3 inches in skinned infield or warning track surfacing.

- E. When existing valve and/or splice boxes are within the area of work, replace in kind any damaged boxes and/or lids, unless noted otherwise. Adjust the elevation of all existing boxes within the area of work to final grade per the drawings.
- F. Locate valve boxes in ground cover/shrub planting areas instead of turfgrass areas whenever possible. Locate valve boxes 18" from and perpendicular to adjacent paving. When grouped together, provide equal spacing of at least 36" between boxes.
- G. Permanently attach the plastic valve identification tag to the remote control valve body and locate so it's clearly visible in an open valve box.

3.07 AUTOMATIC CONTROLS

- A. Connect operational control wires or accessory components to the controller, and program valve schedules appropriately for the new planting.
- B. The Owner shall review the fully functional operation of the irrigation control system prior to acceptance of the system, and as a requirement for the start of maintenance.
- C. Install automatic controller chart in laminated or watertight plastic envelope inside controller cover showing which valves are connected to which stations on controller in the work area.

3.08 DRIP IRRIGATION SYSTEM

- A. Install control valves, wye strainer, pressure regulator and rigid PVC lateral distribution lines or manifolds prior to planting soil conditioning operations.
- B. Install in-line emitter tubing as follows:
 - 1. After planting soil has been amended, tilled and rough graded, remove and stockpile the planting soil to the required depth of the in-line tubing, and install and stake drip tubing taking into account adjustments needed in the tubing location based on the planting layout. Stake in-line tubing at every-other emitter. Install flush and air relief valves, and operation indicator. Install the operation indicator on the supply manifold with a swing joint in a location easily visible by maintenance personnel.
 - 2. After system flushing, verification of proper operation and inspection, reinstall the stockpiled planting soil and finish grade to final elevation.
- C. Operate the system to moisten the planting soils to a minimum 8 inch depth prior to planting operations.
- D. Program the controller to operate the drip system using the controller's "cycle and soak" feature in order to apply the required daily watering amount in three equal cycles with a one hour delay between cycles.

3.09 CONCRETE

- A. Concrete shall be installed in accordance with the relevant portions of the Site Concrete specification section.

3.10 COMPLETION AND MAINTENANCE

- A. After the system has been completed but prior to the start of maintenance, the Contractor shall operate the automated system with the Owner, shall instruct the Owner in the operations and maintenance of the system and controls, and shall program the controller for each station.
- B. If site satellite controller(s) for a central control system is installed, an authorized central control distributor/installer shall program the central base station to communicate with the site satellite controller(s), and shall verify that proper communication protocols are operational.
- C. The irrigation system shall be maintained and adjusted as required to provide proper coverage throughout the maintenance period or until Final Acceptance of the project, whichever is greater. Irrigation system maintenance shall commence upon an acceptable review following the completion of irrigation installation, planting operations and general clean-up.
- D. The maintenance period shall not terminate until the close-out documents and as-builts record drawings have been submitted and accepted.

3.11 REPAIR AND CLEAN-UP

- A. All areas shall be maintained in a neat and orderly condition at all times. All reasonable precautions shall be taken to avoid damage to new planting and improvements. Disturbed and/or damaged areas shall be restored to their original condition to the satisfaction of the Owner.
- B. Where trenching or other work disturbs existing and/or newly planted turfgrass and/or planting, the Contractor shall reinstall the existing sod if viable, or install a full width of new turfgrass sod or new planting to match the existing turfgrass/planting species, variety and size, after first conditioning the top 6 inches of soil per the Landscape Planting specification. Adjust finish grades to account for the new turfgrass sod's soil mat so that the new sod is flush to the adjacent turfgrass.
- C. After the irrigation operations are completed, the Contractor shall remove all trash, excess materials, empty containers or any other debris accumulated by the work from the site. All damage caused by the work shall be repaired or material replaced at the Contractor's expense. The site shall be left in a neat and orderly condition to the satisfaction of the Owner.

END OF SECTION

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SECTION 329000 – LANDSCAPE PLANTING

PART 1 - GENERAL

1.01 SCOPE OF WORK

- A. The Contractor shall furnish all material, labor and equipment necessary to install all landscape work as indicated in the plans and specifications.
- B. The landscape work includes but is not necessarily limited to the following:
 - 1. Soil preparation including cross ripping of all planting soil.
 - 2. Weed control including an application of a pre-emergent herbicide.
 - 3. Providing import planting topsoil at raised grade planters and/or at planting areas needing fill.
 - 4. Fine grading, conditioning and amending planting topsoil.
 - 5. Planting new trees, plants and ground covers.
 - 6. Tree drainage sump boring and testing.
 - 7. Root Barriers.
 - 8. Installation of mulch.
 - 9. Sixty (60) day maintenance.
- C. Related Work Specified Elsewhere
 - 1. Contract Drawings, Addenda, general provisions of the Contract, including General and Supplemental Conditions, and Division 1 Sections apply to work of this section.
 - 2. Section 31 20 00 - Earthwork
 - 3. Section 31 22 22 - Soil Materials
 - 4. Section 32 84 00 - Irrigation System
 - 5. Section 32 15 40 – Crushed Stone Surfacing

1.02 1.03 DEFINITIONS

- A. Unless noted otherwise, the term "approved" shall mean by the Owner in writing.
- B. Agencies and Organizations:
 - 1. ASTM- American Society for Testing and Materials
 - 2. ANSI – American National Standards Institute
 - 3. ISA – International Society of Arborists
 - 4. SSPWC – Standard Specifications for Public Works Construction, by the American Public Works Assoc./Associated General Contractors of California.
 - 5. TPI – Turfgrass Producers International
- C. Owner: The Owner's authorized representative or authorized consultant.

1.03 QUALITY ASSURANCE

- A. The work of this Section shall be performed by a single firm experienced in landscape planting and holding a current California Contractor's A or C27 License.

- B. Tree and plant quality and sizes shall conform to the current edition of “American Standard for Nursery Stock” for Number One nursery stock as adopted by the American Nursery & Landscape Association (ANSI Z60.1). Plants shall be of uniform, standard size for their listed container size, neither overgrown and root bound or encircling, nor so recently transplanted that the root system is not thoroughly well established throughout the container. Roots should reach the sides of the container and maintain a firm root ball. Pruning shall not be done prior to delivery except by prior approval.
- C. Trees shall also comply with quality characteristics described in “Guideline Specifications for Nursery Tree Quality” current edition, published by the Urban Tree Foundation. Trees not in compliance with any of the following characteristics may be subject to removal and replacement, whether planted or still in their containers.
1. Acceptable caliper and height ranges for the Type, Form and Size of tree.
 2. An intact central leader, or after heading of an old leader, the new leader diameter is greater than one-half the diameter of the old leader. Co-dominant leaders are not acceptable.
 3. Scaffold branch diameters are less than two-thirds the diameter of the trunk, and without included bark at the attachment.
 4. Scaffold branches shall be balanced, well spaced vertically, and with a radially blank section no greater than one-third of the canopy circumference.
 5. Temporary branches on the lower trunk shall be less than three-eighths inch diameter, and the clear trunk height shall be no more than forty (40) percent of the overall tree height.
 6. The root collar and rootball shall be free of defects, including circling, kinked and girdling roots. Roots at the edge and bottom of the container shall be less than one-quarter inch diameter, and uniformly distributed throughout the container.
 7. The tree canopy width shall be a minimum of twenty-five percent of the standard form tree height, except for naturally columnar forms.
- D. Botanical names shall take precedence over common names. Provide plants that are true to name. Tag one representative plant of each species and size with the botanical name and size.
- E. Inspection:
1. All landscape work and materials shall comply with applicable Federal, State, County and City regulations.
 2. All plant material shall be reviewed onsite or by providing photo submittals by the Owner’s Representative and/or Landscape Architect prior to positioning and planting. The lack of a review shall not limit the right of rejection during any stage of the work until Final Acceptance for any reason including condition of the foliage or root ball, size, variety, form, appearance, latent defects or injuries or location errors. Rejected or wrongly located plants shall be removed/relocated from/on the site and replaced/replanted immediately by the Contractor as directed at no additional cost to the Owner.
- F. Qualifications of Workers
1. Employ skilled workers who are thoroughly trained experienced in landscape planting and who are completely familiar with specified requirements and methods needed for proper performance of the work in this section.

2. Provide adequate supervision by a qualified foreman fluent in English that will be continuously onsite during the performance of this work.
 3. Weed control pesticides shall only be applied by an individual holding a valid Qualified Applicator Certificate (Category A) issued by the Department of Pesticides Regulation. Submit a copy of the Certificate.
- G. Any pruning of existing trees specified as part of this Work shall be performed under the direct supervision of an ISA Certified Arborist and in compliance with ANSI A300-Part 1 Standard Practices (Pruning).

1.04 SUBMITTALS

- A. In accordance with the Submittal section, submit:
1. A complete materials list of all items proposed to be furnished including estimated quantities.
 2. Laboratory analyses of soil conditioning materials shall have been performed within three months of the submittal date.
 3. Quality Certificates and/or Certificates of Inspection required by government agencies (providing duplicate copies for the Owner's Representative).
 4. Qualified Applicator Certificate, and DPR Registration Certificates and Material Safety Data Sheets for all pesticides/herbicides proposed for use.
 5. Submit photos with a scale marker of all boxed trees, and a representative photo of each species/variety of ground plane plants proposed for use from the nursery source. Photos shall clearly show the individual tree or plant form without background greenery.
- B. Soil amendments: Submit one (1) pint sample and an analysis of organic compost and mulch.
- C. Other Samples: When requested by the Landscape Architect and/or Owner's Representative.
- D. Soil Fertility Analysis and Recommendations:
1. The Contractor shall provide and pay for a fertility analysis of the existing topsoil and any proposed import planting topsoil. After mass grading operations are completed, native soil samples shall be collected for the fertility analysis by collecting a minimum of 5 representative samples of the soil per acre throughout the area of work. Separate samples shall be produced for cut and fill areas, and for any other area composed of soils not similar to the existing soils. Each sample shall be a minimum of one pint each, and shall be thoroughly mixed together to prepare a homogenous sample. A one quart representative sample for cut, fill and any other special conditions shall be submitted to the soil testing laboratory as a representative sample for fertility analysis. The fertility analysis shall at a minimum provide the following data:
 - a. soil texture class and percent sands, silts and clays per ASTM D422
 - b. estimated soil infiltration and percolation rates
 - c. pH
 - d. organic matter (%)
 - e. total soluble salts (ECe)
 - f. Cation Exchange Capacity (CEC) and Percent Cation Saturation for K, Mg,

Ca and Na

- g. major and minor nutrients (ppm).
 2. Recommendations for improvement of the soil conditions for optimum plant growth shall be made by the testing laboratory, and at a minimum shall include the following:
 - a. A fertilizer and amendment application program (including macro and micro nutrients) for both pre-planting and maintenance fertility applications for broad area tillage and for planting pit backfill (pre-plant only).
 - b. Treatments to neutralize soil pH and to correct any adverse conditions as warranted.
 - c. Recommendations shall address soil conditioning for both planting area tillage and tree/plant planting pit backfill.
 3. The soil analysis and recommendations shall be performed by one of the following laboratories capable of providing the above analyses by a licensed soil scientist:
 - a. D&D Agricultural Laboratory. Contact Darrin Peters at 559-348-1818.
 - b. Wilber-Ellis Company. Contact Michael Cline at 209-442-1220.
 4. The Contractor shall submit the results of the soil testing investigations and shall receive written direction from the Landscape Architect before proceeding with any soil conditioning activities such as fertilizing and/or tillage of amendments.
- E. Within seven days from the start of the maintenance period, submit a calendar of maintenance activities, including scheduled dates for mowing, fertilizing, weed control and all other activities. Provide the quantities of maintenance fertilizer and any other materials scheduled to be used in each application during the maintenance period.
- F. Submit invoices and/or delivery tags from material suppliers for all amendments, fertilizer, seed, plants, mulch and any other materials provided for the landscape planting installation and applied during the maintenance period. Submit tags from seed packaging indicating seed varieties, percent purity and percent germination minimums. The invoices and/or delivery tags shall be provided directly to the Owner's Representative/Inspector of Record within 24 hours of delivery to the site, as well as to the normal submittal recipients per the Contract Documents.
- G. Close-out Documents: Submit prior to the end of the maintenance period. Acceptance of the Close-out documents in a condition for scheduling a Final Acceptance review. Provide two bound copies of the following:
1. Cover sheet stating Contractor's address and telephone number, duration of guarantee period, and a list of plant nurseries, materials and equipment vendors with names and addresses of the vendor/manufacturer representatives and warranty periods.
 2. A "CERTIFICATE OF CONSTRUCTION COMPLIANCE" which indicates that all work done, materials and equipment used and installed are in compliance with the approved plans, specifications and all authorized revisions.
 3. Maintenance Manuals and Instructions: Submit a monthly schedule of procedures to be established by Owner for maintenance of landscapes (trees, mixed planting and turfgrass) for one full year and shall include recommendations for fertilizing, pest and disease control, weeding, mowing, aeration and top dressing.

4. Soil Amendment and/or Seed/Stolon confirmation form noting the installed quantities of materials, tags or invoices from Subsection F. above, and the person who confirmed the delivery and installation of the materials.
5. Operations and Maintenance Manuals and Warranty certificates for any maintenance equipment turned over to the Owner.
6. As-built Record Drawings with all modifications to the Drawings noted in red ink, and the Landscape Planting Observation Log completed.

1.05 AVAILABILITY

- A. The Contractor shall confirm availability of plants, supplies, and materials prior to submitting his landscape bid. Plant variety substitutions are not desired.
- B. If a plant is found not to be suitable or available, the Contractor is to notify Landscape Architect before bidding. The Landscape Architect is then required to select a reasonable alternate and to inform all those bidding of the availability of the original plant. If a substitute is selected it must be of the same size, value and quality as the original plant. Failure to inform the Landscape Architect of unavailable plants prior to bidding will require that all plants specified shall be provided by the Contractor at time of installation.
- C. Plant container size listed on construction documents are minimum acceptable size. If plant material specified is not substituted prior to award of the contract the minimum container size specified shall be provided by the Contractor. If the Contractor can not provide the minimum specified size plant material at the time of installation, the Contractor shall be required to install a larger size container of the plant specified at no additional cost to the Owner.

1.06 EXISTING CONDITIONS

- A. The Contractor is to visit the job site to verify existing conditions including soils, vegetative growth, subsurface conditions, existing grade and drainage, irrigation system etc. making allowances in his bid for any required work to provide the landscape installation as specified in the construction documents.
- B. The Contractor shall notify the Owner to locate underground lines prior to hole boring or trenching. Do not permit heavy equipment such as trucks, rollers, or tractors to damage utilities. Hand excavate as required to minimize possibility of damage to underground utilities. Maintain grade stakes set by others until removal is mutually agreed upon by all parties concerned. Prevent damage to temporary risers of underground irrigation system and similar obstructing work located in the landscape areas.
- C. If there is a conflict with existing utilities, improvements and/or planting and the proposed planting, Contractor shall promptly notify the Owner's Representative for instructions as to further action. Failure to do so will make Contractor liable for any and all damage or corrective actions arising from his operations.
- D. Prior to the start of this work, the Contractor and the Owner's Representative shall verify the operational condition of that portion of the existing irrigation system pertaining to the proposed planting area. The Contractor shall notify the Owner's Representative of any repairs and/or corrections necessary for proper functioning and coverage. The repairs

and/or corrections shall be completed before any plant material is planted. Failure to perform system verification and provide notification prior to the start of this work will make the Contractor liable for any and all repairs and/or corrections necessary for proper functioning and coverage, as well as any required plant replacement, without any additional cost to the Owner.

- E. No plants shall be planted in situations that show poor drainage infiltration or low areas that result in standing water. Such situations shall be corrected by the Contractor as directed by the Landscape Architect or Civil Engineer. Failure by the Contractor to notify the Owner of poor drainage conditions prior to proceeding with the conditioning or planting operations shall place the responsibility for any plant removals, additional soil conditioning and replanting on the Contractor without any additional cost to the Owner. Any corrections of finish grading not in compliance with the Contract Documents including plant removal, soil conditioning and replanting shall be performed by the Contractor at no additional cost to the Owner.

1.07 PROTECTION

- A. The Contractor shall guarantee repair of damage to any part of the premises resulting from but not limited to leaks, defects in materials or workmanship, operation of equipment, storage of materials and/or equipment, installation of underground or overhead utilities. The Contractor shall be liable for any and all accidents resulting from his work, including open holes and trenches during construction.
- B. Protect new and existing landscape areas in the area of work from theft, loss, damage and deterioration during storage, installation and maintenance. Protect from unauthorized persons (trespassers) as well as from operations by other contractors and tradesmen, and landscape operations. Protect all planted turf and shrub areas from persons as well as operations of other contractors and the Owner. Cost of protection shall be born by the Contractor with means of protection such as temporary fencing as approved by Owner. Cost for protection shall be included in the Contractor's bid for the work.
- C. Contractor shall repair or replace damaged work and/or damage to existing improvements/landscape as identified by the Owner's Representative to a condition acceptable to the Owner's Representative. No additional payment will be made to the Contractor for repair or replacement of damaged work and/or damage to existing improvements/landscape.

1.08 OBSERVATIONS

- A. The Owner's Representative, Project Inspector or Landscape Architect shall perform periodic observations and shall record the observation on the Landscape Planting Observation Log form on the As Built Record Drawings. Such observations shall include but are not necessarily be limited to:
 - 1. Weed control operations prior to other portions of work.
 - 2. Ripping and soil conditioning of the planting area.
 - 3. Layout of the plant material and trees at the site prior to planting in order to avoid conflicts and to meet the design intent.
 - 4. Condition and quality of plant material prior to planting.
 - 5. Auguring, digging and preparation of plant pits and drainage sumps for trees and

- shrubs.
- 6. Planting and staking of trees.
- 7. Planting of shrubs & ground cover.

- B. Any corrective action called for shall be immediately performed by the Contractor.
- C. Failure by the Contractor to obtain the above observations shall place the responsibility on the Contractor for any relocation and/or replacement of planted trees or shrubs.

1.09 PRODUCT DELIVERY, STORAGE AND HANDLING

- A. Plant label shall identify each species and variety. A label shall be attached to each individual plant or block of identical plants grouped together.
- B. Adequately protect plants from sun and wind prior to planting. Do not allow stored plant material to dry out at any time.
- C. Deliver packaged materials in containers showing weight, analysis, and name of manufacturer. Protect materials from deterioration during delivery and while stored at the site. Store materials and equipment in a location as directed by the Owner's Representative.

1.10 PESTICIDE NOTIFICATION

- A. A written notification of any and all pesticide/herbicide products scheduled for use by the Contractor or their representative on the Owner's property must be submitted to the Owner's Representative at least seven days prior to the scheduled application. Notification shall include the product name, manufacturer's name, the pesticide active ingredient, the U.S. EPA and CalDPR registration numbers, the scheduled date and application areas, and the reason (target species) for the application.

1.11 REPAIR OF DAMAGED EXISTING PLANTING AREAS

- A. The Contractor shall be responsible to repair all damage and/or distress to existing planting areas including turfgrass, shrubs, ground covers, perennials, etc., whether specifically shown on the Contract Documents or not, as a result of construction operations, material and/or equipment storage, site access, site offices, utility and/or irrigation line installations or other actions.
- B. Replacement shrubs shall be 15 gallon size, replacement ground cover and perennial plants shall be 5 gallon size, and turfgrass shall be full width sod. Damaged areas shall be amended and finish graded per the Contract Documents prior to planting. Non-turfgrass planting areas shall also receive decomposed granite mulch as specified herein. The limits of repair shall be determined by the Owner.

PART 2 - PRODUCTS

2.01 TOPSOIL

- A. Topsoil used in planting areas shall be a clean, friable soil with no noxious weeds, clods or stones larger than 0.5 inch in diameter, subsoil, hardpan, wood, debris, fine organic material greater than 5%, undesirable insects, plant disease or any other natural or extraneous objects detrimental to normal plant growth to a minimum depth of 18 inches from finish grade.
- B. The Contractor shall provide a particle size analysis, fertility testing and amendment recommendations of proposed native and/or import topsoil, and the Landscape Architect reserves the right to reject topsoil not conforming to the minimum specifications. Stockpiled onsite topsoil may be used if analysis and testing determines compliance with these requirements prior to placement. Failure to meet minimum specifications shall result in the removal of any unauthorized placed topsoil at the Contractors expense.
- C. Particle size distribution for topsoil shall meet the following per ASTM D422:
 - 1. 100% passing a 12.2 mm (1/2") screen.
 - 2. Minimum 95% passing a 9.5 mm (3/8") screen.
 - 3. Minimum 75% passing a 2.36 mm (No. 8) screen.
 - 4. Maximum 45% passing a No. 200 screen.
 - 5. Silt content shall be a maximum 35%.
 - 6. Clay content shall be a maximum 25%.
 - 7. Silt to Clay ratio shall be less than 2 and greater than 0.5.
- D. Other characteristics shall conform to the following:
 - 1. Permeability rate shall be not less than one (1.0) inch per hour or not more than 20 inches per hour.
 - 2. The sodium absorption ratio (SAR) shall not exceed 3.0 and the electrical conductivity (ECe) shall not exceed 2.5 milliohms per centimeter at 25 degrees centigrade.
 - 3. Soluble boron shall be no greater than 1.0 part per million (mg/l).
 - 4. Soil pH range shall be 6.5 – 7.9.
 - 5. Maximum concentration of soluble chloride shall be 150 parts per million.
 - 6. Maximum concentration of heavy metals shall not exceed the following when the pH is between 6 and 7:
 - a. Arsenic: 0.5 ppm
 - b. Cadmium: 0.5 ppm
 - c. Chromium: 5 ppm
 - d. Cobalt: 1 ppm
 - e. Lead: 15 ppm
 - f. Mercury: 0.5 ppm
 - g. Nickel: 2.5 ppm
 - h. Selenium: 1.5 ppm
 - i. Silver: 0.25 ppm
 - j. Vanadium: 1.5 ppm
 - 7. Petroleum hydrocarbons shall not exceed 100 mg/kg dry soil.
 - 8. Aromatic volatile organic hydrocarbons shall not exceed 2 mg/kg dry soil.

2.02 SOIL AMENDMENTS

- A. Organic Compost: "Harvest Premium" as supplied by Harvest Power (559) 435-1114; "WonderGrow Compost" by Grover, Inc. (866) 764-5765, or "Allgro Compost" by Synagro (559) 341-5158, and conforming to the following minimums per the US Composting Council 'Compost Technical Data Sheet' report dated within three months of the submittal date:
 - 1. Certified as "Mature" or better
 - 2. Pass EPA Class A standards for pathogens and heavy metals.
 - 3. Particle size: 1/8" maximum
 - 4. pH: 6.0-7.5.
 - 5. Macro-nutrients: Minimum of 1.0% Nitrogen, 0.5% Phosphorus, 0.5% Potassium.
 - 6. AgIndex ratio (Nutrients/Salts) 10 or more.
 - 7. Ammonia N/Nitrate N ratio: rated Mature or Very Mature
 - 8. Organic matter content greater than 25% dry weight.
 - 9. Carbon/Nitrogen ratio: less than or equal to 15.
 - 10. Salinity (ECe): less than 5.0 dS/m.
 - 11. Odor shall be soil-like (musty, earthy) without any sour, ammonia-like or putrid smell.
- B. Gypsum shall be mined agricultural grade gypsum composed of no less than 95% $\text{CaSO}_4 \cdot 2\text{H}_2\text{O}$ hydrated calcium sulfate in a pelletized form. Elemental Sulfur shall be a minimum 95% pure agricultural grade.
- C. Dry Humate organic soil conditioner comprised of a minimum 40% humic acid from Leonardite.
- D. Endo 120 Mycorrhizae containing a minimum 60,000 living propagules per pound.
- E. Amendment material types and application rates may be subject to change based on the findings and recommendations of the horticultural soil testing lab, and as such may result in an increase or decrease in the Contract Amount.

2.03 FERTILIZER

- A. Trees and Shrubs: Fertilizer for all trees and shrubs to be BEST PAKS (20-10-5) controlled release fertilizer in a biodegradable 10 gram packet. The BEST PAKS shall be applied at the following rates:
 - 1. 1 Gallon Can: 1 Best-Pak
 - 2. 2 Gallon Can: 2 Best-Paks
 - 3. 5 Gallon Can: 5 Best-Paks
 - 4. 15 Gallon Can: 10 Best-Paks
 - 5. 24" Box: 16 Best-Paks
 - 6. 36" Box: 24 Best-Paks
- B. The pre-plant fertilizer shall be a commercial homogeneous, granular pellet:
 - 1. Pre-plant fertilizer for mixed plantings shall be:
 - a. BEST Landscape Color 14-14-14 (14-6-11.6-3S and micronutrients) with 9.9% slow release N, or equal.

- C. The maintenance fertilizer shall be a commercial homogeneous, granular pellet:
 - 1. Maintenance fertilizer for mixed plantings shall be the pre-planting fertilizer.
- D. Fertilizer material types and analysis may be subject to change based on the findings and recommendations from the horticultural soil testing lab, and as such may result in an increase or decrease in the Contract Amount.

2.04 DECOMPOSED GRANITE

- A. Decomposed Granite for on-grade planters and trees shall be crushed stone surfacing per specification section 321540

2.05 STAKING & GUYING MATERIALS

- A. Stakes: 2" Diameter lodgepole pine, pressure treated and pointed one end.
- B. Ties: V.I.T. Cinch Tie, 32 inches long, V.I.T. Products, Inc. (619) 673-1760, or equivalent.

2.06 PLANTS

- A. Plants shall be typical of their species and variety, shall have normal growth habits, well developed branches and be densely foliated, and shall have fibrous root systems. No substitutions will be allowed unless approved in writing by the Landscape Architect.
- B. Plants shall be free from defects and injuries including disease, insects, insect eggs and larvae and girdled or matted roots.
- C. Quality and size of plants shall be in accordance with ANSI Z60.1-2004, "American Standard for Nursery Stock", and as described in Quality Assurance.
- D. Plants shall not be pruned before planting.
- E. Plant material must be selected from nurseries that have been inspected by State or Federal Agencies.
- F. Plants shall be nursery grown and shall have been transplanted or root pruned at least once in the past three (3) years. Plants shall have been grown under climatic conditions similar to those in the locality of the project.
- G. Each bundle of plants shall be properly identified by weatherproof labels securely attached thereto before delivery to the project site. Label shall identify plant by name.
- H. Nomenclature shall be in accordance with Sunset Western Garden Book, current edition.
- I. No plants shall be removed from their container until a review has been made in the field or at the nursery, or except when specifically authorized in writing by the Owner.

- J. Collected plant material may be used only when approved. Approval shall not limit the right of rejection during work progress for conditions of the root ball, latent defects or injuries.
- K. Where shown a "MULTI" provide trees with a minimum of three trunks.
- L. Plant sizes listed on the planting plan are minimum acceptable sizes. The quantities listed are the Landscape Architect's estimate only. The Contractor is responsible for the quantities of plant symbols shown on the plan, and/or the quantities in hatched planting areas at the specified triangular spacing.

2.07 ROOT BARRIER

- A. A ribbed polyethylene panel of minimum 0.080" thickness equal to Deep Root Partners #UB 24-2 PANEL, (800) 458-7668..

2.08 HERBICIDES

- A. Herbicide products for removal of unwanted grass and broad-leafed weeds shall be registered and approved for use by the U.S. EPA and CalDPR, and shall comply with the Owner's Standards.
- B. Provide pre-emergent and post-emergent, selective herbicide formulations for use on ornamental shrub/ground cover areas that are not injurious to the proposed plantings.
- C. Provide a non-selective contact herbicide formulation for use on existing established weeds. The herbicide shall be certified for organic use, broad-spectrum with systemic function, 'Weed Slayer' by Agro Research International, or equal.

2.09 OTHER MATERIALS

- A. Materials not specifically indicated, but necessary for proper execution of the work, shall be of first quality as selected by the Contractor subject to approval of the Landscape Architect.

PART 3 - EXECUTION

3.01 EXAMINATION & PREPARATION

- A. General: Verify that existing site conditions are as specified and indicated before beginning this work.
- B. Damaged Earth: Verify that earth rendered unfit to receive planting due to concrete water, mortar, limewater, hydrocarbons or any other contaminant dumped on it has been removed and replaced with clean earth from a source approved by the Owner's Representative.
- C. Examine the area and conditions under which the work in this section is to be performed.

Verify that any existing irrigation system within the limit of work is in proper working order with full coverage. Correct conditions detrimental to the timely and proper completion of the work. Do not proceed until unsatisfactory conditions have been corrected. Commencement of the work signifies acceptance of the existing conditions.

- D. Protection:
 - 1. Locate sewer, water, irrigation, gas, electric, phone and other pipelines or conduits and equipment within the area of work prior to commencing work.
 - 2. Mark existing irrigation heads, valves, valve boxes and other below grade equipment or components that are scheduled to remain. Protect in place.
- E. Runoff and Erosion Control: Furnish equipment, materials and labor necessary to control the flow, drainage, and accumulation of excess water running off the work area and prevent soil erosion, blowing soil and accumulation of wind-deposited material on the site per the approved SWPPP.

3.02 ROUGH GRADING, SOIL PREPARATION, PLANTER BACKFILL

- A. Rough grading shall be performed by other subcontractors to the extent of establishing rough pads, slopes and drainage patterns. The Contractor is responsible for placement of topsoil and grading required to ensure positive drainage in all planting areas. All planting areas shall have a minimum topsoil depth of 18 inches from on-site native and/or approved import sources. Rough grading shall be completed prior to weed control, cross ripping or rock removal operations.
- B. After the completion and acceptance of the weed control operations outlined below, and unless directed otherwise by the Landscape Architect or noted on the Drawings, and except for the area under the canopy of existing trees, the Contractor shall cross rip and till (break up large clumps and clods in excess of 2 inch diameter) the existing soil within all planting areas outside the canopy drip line of existing trees until the soil is loose and friable. Ripping shall be to a minimum depth of eighteen inches (18") in shrub/ground cover areas, with ripping tines a maximum 18" apart performed in a minimum of two passes total in different perpendicular directions. The Contractor shall review the completed ripping operation with the Owner's Representative and Landscape Architect to determine compliance. The first 6 inches of any new topsoil fill shall be tilled into the existing soil to a minimum depth of 6 inches prior to placing any further topsoil fill. The Contractor shall provide any additional work as directed by the Owner's Representative after the review to obtain compliance. Do not proceed with the addition of topsoil and/or amendments, or commence rock picking or fine grading until the completed ripping operation is accepted in writing by the Owner's Representative.
- C. Planting area soil under the canopy drip line of existing trees, or in planting beds not accessible by motorized equipment, shall be ripped to a minimum depth of 12 inches using manual spading shovels, forks and/or broadforks and working around major tree roots and/or utilities. In areas receiving new mulch, rip to a minimum depth of 4 inches while protecting any existing plants and their root system. Break up and/or remove rocks and clods as indicated below.
- D. Do not work soil when moisture content is so great that excessive compaction will occur, or when it is so dry that dust will form in air or clods will not break up readily, or when a

full ripping depth cannot be achieved. Apply water, if necessary, to bring soil to an optimum moisture content for tilling and dust control. Maintain within 2 percent above or below optimum moisture content for the existing soil type at all times during the work.

- E. After soil ripping and preliminary finish grading is completed, the topsoil shall be cleared of all concrete, wire, sticks, roots, debris and foreign materials. Remove native stones and clods as follows:
 - 1. In shrub/ground cover areas, remove stones and clods greater than one (1.0) inches in diameter from the top 3 inches of finish grade.
- F. Add clean planting topsoil where needed to bring grade to elevation to promote positive drainage. Spread approved planting topsoil over ripped subgrade prior to incorporating amendments.

3.03 WEED CONTROL

- A. Weed control pesticides shall only be applied by an individual holding a valid Qualified Applicator Certificate (Category A) issued by the Department of Pesticides Regulation.
- B. The Contractor shall treat any weeds in proposed new planting areas with a non-selective contact weed killer at the manufacturer's approved rates and procedures prior to any commencement of work at the site including any irrigation work, ripping of soils or fine grading.
- C. Weed eradication shall be ongoing throughout the course of the landscape installation. The Contractor shall apply a pre-emergent herbicide after shrub/ground cover planting and prior to mulch installation. Manually remove weed seed heads. At no time will weeds be allowed to become established. Contractor shall provide all weed control operations as directed by the Owner's Representative.
- D. All weed control operations using pesticides/herbicides shall comply with the CalDPR and Owner Standards.
 - 1. The Contractor shall notify the Owner per Subsection 1.11, A.
 - 2. The Contractor shall post highly visible signs around the treatment area in conformance with the "Healthy Schools Act" warning of a scheduled pesticide/herbicide application a minimum of 24 hours before to 72 hours after a pesticide application.
- E. A non-selective contact herbicide for grassy weeds, '20% Vinegar Weed Slayer' by Good Natured, CA DPR Reg# 85208-1-AA-42177, shall be applied directly to the weed foliage. Only apply to dry surfaces, and a minimum of 8 hours before a rain event. Allow a minimum of 14 days from herbicide application to commence any planting.
- F. After the shrub/ground cover planting is complete and prior to mulch installation, apply an approved pre-emergent herbicide per the manufacturer's recommended rates.

3.04 SOIL CONDITIONING

- A. Before commencement of any soil conditioning, weed and rock removal shall be completed as outlined above.

- B. Uniformly amend the entire area of topsoil in mixed planting areas per the following bid rates and per the approved modifications as a result of the soils analysis recommendations:
 - 1. Non-Sloped (less than 4h:1v) Planting Area Soil Conditioning (per 1,000 square feet).
 - a. Compost at a rate of six (6.0) cubic yards (a 2.0 inch thick layer).
 - b. Gypsum at a rate of 100 pounds, or Sulfur at 19 pounds, or an equivalent combination.
 - c. Humate soil conditioner at a rate of thirty (30) pounds.
 - d. A pre-planting fertilizer to mixed planting areas at a rate of 1 pound of actual N.
 - e. Mycorrhizae per Subsection 3.06, Mycorrhizae Application.
- C. Till soil amendments into the entire planting area soil to a minimum depth of six (6) inches. Perform the cultivation in at least two passes, one in each perpendicular directions to the first, so that the amendments are homogeneously incorporated into the topsoil. All cultivation inside the dripline of existing trees shall be preformed manually with minimal disturbance to the root system.
- D. Planting backfill for trees and shrubs shall be a mix of three parts native soil and one part Compost by volume. Add Humate at 2.0 pounds, and Mycorrhizae at 0.5 pounds per cubic yard of backfill.
- E. Amendment material types and application rates may be subject to change based on the findings and recommendations of the horticultural soil testing lab, and as such may result in an increase or decrease in the Contract Amount.

3.05 FINE GRADING

- A. Upon completion of soil preparation, fine grade all planting areas to a smooth and even slope conforming to and establishing drainage patterns per the approved Grading Plan. Grading shall eliminate all humps and hollows and promote positive drainage in all planting areas.
- B. Where hardscape is installed in existing planting areas, a minimum transition grade width of 2 feet adjacent to the edge of hardscape shall be constructed unless noted otherwise. The maximum slope of any transition grade shall be 20 percent. The area of transition grading shall be planted or repaired as specified herein.
- C. Tolerance of grade differential for planting areas shall be plus or minus 0.04 foot. If requested, the Contractor shall water test all planting areas after the grading operations are completed in the presence of the Owner's Representative and Landscape Architect. The water test shall consist of applying water to the planting areas to the point where water begins to run over the soil to show the drainage pattern. Make all corrections to the finish grading as required by the Owner's Representative to re-established positive drainage patterns. Acceptance of the finish grading shall be obtained in writing from the Owner's Representative and Landscape Architect prior to proceeding with soil conditioning and planting operations.
- D. After the finish grading process, relative compaction of the soil in planting areas shall range between 82% and 85% relative density. Compaction/moisture levels are generally

acceptable if an Oakfield probe is able to penetrate a minimum of six inches into the cultivated planting topsoil with moderate pressure. The Owner reserves the right to require the Contractor to test for over compaction. If the compaction is within the acceptable range, the test will be paid for by the Owner. All testing due to non-compliance will be paid for by the Contractor.

- E. Remove all rocks produced as a result of the soil conditioning and finish grading operations per the requirements of Subsection 3.02.
- F. Finish grades shall be two inches (2") for shrub/ground cover planting areas below the finish surface of all adjacent walks, curbs, mowstrips and utility/valve boxes or collars. Transition any grade modification in existing planted areas at a maximum 12h:1v slope to existing grade, unless shown otherwise on the grading plan.

3.06 MYCORRHIZAE APPLICATION

- A. In shrub and/or ground cover planting areas, the Mycorrhizae inoculant shall be incorporated into the soil with the other soil amendments at five (5.0) pounds per 1,000 square feet (218 lbs. per acre) per Subsection 3.04, Soil Conditioning. Inoculant shall also be incorporated into the planting backfill per Subsection 3.04, E.

3.07 PLANTING

- A. General Requirements
 - 1. Obtain written approval from the Landscape Architect or Owner's Representative to begin planting operations. The irrigation system shall be fully automated and operational, all weeding, soil conditioning and finish grading completed, and the tree and plant layout approved.
 - 2. Planting shall be performed by workmen familiar with planting procedures and under the supervision of a qualified foreman. The planting foreman shall be on the job site at all times when planting is in progress.
 - 3. Planting operations shall not occur under unfavorable weather conditions.
 - 4. Boxed trees shall be planted first. Shrub planting shall be completed before groundcover is planted.
 - 5. Proceed and complete the landscape work as rapidly as portions of the site become available, working within the seasonal limitations for each kind of planting required.
 - 6. Cooperate with other contractors and trades working in and adjacent to the planting work areas. Examine drawings which show the development of the entire site and become familiar with the scope of other work required.
- B. Planting Preparation and Operations
 - 1. Planting material shall be provided with adequate protection of root system and balls from drying winds and sun. Do not bend or bind trees or shrubs in such a manner as to damage bark, break or destroy natural shape. Provide protective covering during delivery.
 - 2. Deliver trees and shrubs after preparations for planting have been completed, and plant immediately. If planting is delayed more than six (6) hours after deliver, set trees and shrubs in shade, protect from weather and mechanical damage and keep roots moist. Do not remove container grown stock from containers until planting

time.

3. All planting areas shall be smooth and even. Finish grades shall be done prior to any placement of plants.
4. Place all trees and shrubs in locations shown on the planting plan and obtain written field approval of the Landscape Architect before planting or digging planting pits. Inform the Landscape Architect seven (7) days prior to placing the plants. Maintain a minimum 15 foot clearance from trees to any light pole, unless specifically noted otherwise.
5. Carefully remove all canned stock from containers with tin snips or approved cutter. Cut away and remove any girdled or matted roots.
6. Excavate holes of circular outline with vertical sides for all plants 15 gallon or less. Boxed trees shall have square planting holes. The vertical sides and bottom of the holes shall be thoroughly scarified to promote union of backfill with existing soils. All trees shall have two drainage sump holes drilled with a twelve inch (12") diameter auger penetrating hardpan layers to a minimum one (1) foot into a sand/gravel layer or to a minimum depth of ten (10) feet below the planting pit bottom. Precautions shall be exercised to avoid smooth sides on the holes. Offset augured holes a minimum of eighteen inches (18") from planned tree location to avoid settling of tree after planting.
7. After cleaning out the sump holes, the Contractor shall test the sumps for drainage by flooding with water. If the water does not drain out within twenty-four (24) hours, auger down as required to achieve such drainage by breaking through the hardpan layer, or by extending the drainage sumps to a minimum depth of 15 feet below the bottom of the planting pit. After obtaining approval of the sump holes, fill the augured drainage sump holes with coarse concrete sand.
8. Tree and shrub planting pits shall be at least two and one half (2.5) times the width of the plant container, but a minimum of 36" wide for trees and 18" wide for container shrubs. Planting pits shall be as deep as the soil depth in the container or box, less the additional height of the crown above the finish grade.
9. Set each plant in the center of the pit, plumb and straight. Set the crown of the plant at one inch (1") for shrubs, two inches (2") for trees above finish grade. When 1/2 of the backfill mix has been placed, tamp-in, insert fertilizer (BEST PAKS as per Section 2.1B1) and allow no air pockets as remainder of backfill is added.
10. Compact soil around the rootball of all plants and thoroughly water in the entire backfill depth.
11. Excess soil from plant holes shall be cultivated and raked to a smooth outline.
12. Shrubs and groundcovers shall be installed in relation to walks and paving to allow for future growth without obstructing traffic with clearance as shown on the drawings.
13. All plants shall be set in watering basin which shall be as wide as the planting pit, but at least four feet (4') in diameter and four inches (4") deep for trees and two feet (2') in diameter and three inches (3") deep for shrubs and vines.
14. Ground cover plants shall be planted at the spacing noted on the drawings. Not more than fifteen minutes shall elapse from the time any groundcover plant is planted until it is watered.

- C. Pruning: Prune plants in accordance with established horticultural practice. Shearing of any plants will not be acceptable. Tree pruning shall only be performed with the written approval of the Landscape Architect and under the direction of a certified arborist, and

shall comply with ISA Pruning Standards (ANSI 300).

3.08 DECOMPOSED GRANITE

- A. Prior to any crushed stone surfacing application, perform weed control operations as specified herein.
- B. Install a minimum 3" layer of decomposed granite in all planting areas, except for slopes greater than 3h:1v and seeded areas. Install a minimum 2" layer of decomposed granite in all areas receiving flatted plants.

3.09 STAKING & GUYING

- A. Trees shall be supported by two (2) tree stakes as shown on the drawings. Cut off the top of stakes damaged by installation or where the stake conflicts with canopy branches.
- B. Stakes shall be set firmly in the ground outside the rootball and where possible set stakes perpendicular to the prevailing northwest wind.
- C. Trees shall be tied to upright stakes loosely with tree ties (see planting detail). Remove the nursery stake.
- D. Multi-trunked trees shall be guyed, or individual branches may be staked and loosely tied as shown on the Drawings.

3.10 ROOT BARRIER

- A. Install root barrier along hardscape edges whenever the distance from the center of the trunk to the hardscape edge is less than eight (8) feet. Install per the planting details and manufacturers recommendations.

3.11 CLEAN-UP AND REPAIR

- A. All areas shall be maintained in a neat and orderly condition at all times. All reasonable precautions shall be taken to avoid damage to existing planting and structures. Disturbed and/or damaged areas, whether a part of this work or from the work of other trades, shall be restored to their original condition.
- B. Plants and/or turfgrass shown to remain and damaged or removed by construction operations and/or utility/electrical/drainage lines shall be replaced with plants that match as closely as possible to the existing plant species, variety and size. The replacement turfgrass sod variety shall match the existing turfgrass variety where the turfgrass is existing. Adjust the finish grade so that the new turfgrass sod abuts flush to the existing turfgrass or to hardscape. The replacement plants and/or turfgrass sod shall be maintained as part of the original scope of work.
- C. After the planting operations are completed, the Contractor shall remove all trash, excess soil, empty containers or any other debris accumulated by the work from the site. All damage caused by the work shall be repaired at the Contractor's expense and the site shall be left in a neat and orderly condition to the satisfaction of the Owner.

3.12 PRE-MAINTENANCE REVIEW

- A. A general review will be held prior to the start of the maintenance period upon conclusion of the planting operations, irrigation system installation and after clean-up has occurred. The Owner's Representative shall be informed in writing a minimum of seven (7) working days prior to the time the work is ready for review in order to arrange a suitable time and date for such review.
- B. At the time of review, Contractor shall have all planting areas free of weeds and neatly cultivated and fine graded. All plant basins shall be in good repair. All trees shall be properly staked and tied. All planting areas shall be clear of weeds.
- C. The establishment of turfgrass is herein defined as being all work necessary to grow a full, healthy, uniform stand of smooth and even texture and grade with clean straight edges without weeds, distressed areas or bare spots, and has been mowed at least twice per the specifications. The establishment of turfgrass is further defined as being all work necessary to develop a minimum rooting depth of 2 inches into site soil.
- D. Work requiring corrective action or replacement in the judgment of the Owner's Representative shall be performed within five (5) days after the inspection. Corrective work and materials replacement shall be in accordance with the drawings and specifications and shall be made by the Contractor at no cost to the Owner. A subsequent review shall then be arranged.
- E. If after the review, the Landscape Architect is of the opinion that all the work has been performed as per the Contract Documents, and a uniform stand of healthy dense turfgrass has been established without weeds or bare spots, the Contractor will be given written notice that the maintenance period may begin.

3.13 MAINTENANCE - GENERAL

- A. After all work indicated on the drawings or herein specified has been completed, reviewed, and approved, the Contractor shall commence a sixty (60) calendar day maintenance period in which the Contractor shall continuously maintain all areas included in the contract during the progress of the work and throughout the maintenance period, or until Final Acceptance of the project, whichever is greater.
- B. Establishment and maintenance work includes monitoring the site to control all watering, replanting, fertilizing, mulching, weeding, cultivating and mowing necessary to bring the planted areas to a healthy and vigorous growing condition, and any additional work needed to keep the areas neat, edged, weed and trash free, and attractive.
- C. All trees, shrubs, ground cover shall be kept at optimum growing condition by watering, weeding, replanting, fertilizing, cultivating, tree stake repair, spraying for diseases and insects, replace dead or dying materials, pruning as directed, maintaining proper grades of plants, and providing any other reasonable operations of maintenance and protection required for successful completion of the project.
- D. Any date when the Contractor fails to adequately water, replace unsuitable planted areas and other work determined to be necessary by the Owner, will **NOT** be credited as part of

the establishment/maintenance period.

- E. No additional payment will be made for additional time necessary for turfgrass establishment. The maintenance period shall not start until all contract work has been completed and all close-out documents and materials have been submitted.
- F. During the progress of the maintenance period, the Contractor and the Owner's Representative shall conduct reviews at no less than 21 day intervals to determine that ongoing maintenance activities have been conducted by the Contractor. If in the opinion of the Owner, ongoing maintenance has not been conducted by the Contractor in a satisfactory manner the maintenance period shall be suspended. The Contractor shall provide remedial work as directed by the Owner's Representative to correct the found deficiencies and schedule another review. If after the subsequent review the work is deemed acceptable, the maintenance period shall resume.

3.14 MAINTENANCE - FERTILIZATION

- A. The Contractor shall fertilize the planted areas during the last week of the maintenance period with the mixed pre-planting fertilizer (14-6-11.6) at a rate of six (6.0) lbs./1,000 s.f. and as modified by the soil fertility recommendations and approved by the Landscape Architect.

3.15 MAINTENANCE – REPAIR AND WEEDING

- A. Visible weeds shall be removed at least weekly during the maintenance period. At the end of the maintenance period, all planting areas shall be without weeds. If weeds are present, the Contractor shall manually remove the weeds and shall then apply a granular, selective pre-emergent herbicide at manufacturer's approved rates. Coordinate application with the Owner's Representative and provide certificates of application to Owner's Representative. The turfgrass will be considered weed-free if there are 9 weeds or less per 50 square yards (one per 50 square feet).

3.16 FINAL REVIEW

- A. A Final Review will not be scheduled until all Close-out Documents and materials have been submitted and accepted.
- B. A Final Review will be performed before the end of the Maintenance Period or upon the pending Final Acceptance of the work, whichever is earlier, provided all deficiencies revealed during the maintenance period have been corrected. If deficiencies have not been corrected by the end of the stated maintenance period, the Contractor shall continue to fully maintain the project at his own expense. After all deficiencies have been corrected, a Final Review will be held with the Landscape Architect, Owner's Representative, and Contractor.
- C. If after the Final Review, the Landscape Architect and Owner's Representative are of the opinion that the work is acceptable and complete, the Contractor's maintenance responsibility shall terminate on an agreed upon date.

3.17 WARRANTY AND REPLACEMENT

- A. All trees and plants provided under this Contract shall be guaranteed to be in good, healthy, disease/pest free and in a flourishing condition one growing year from the date of Final Acceptance of the work, provided the Owner maintains the plants properly and in accordance with accepted horticultural practices. Species and size of any tree and/or plant replacements, either prior to or after Final Acceptance, shall be equal to that of the same adjacent trees and/or plants at the time of replacement as determined by the Landscape Architect.
- B. The Contractor shall be responsible to replace all lost plants due to theft, vandalism or any other preventable causes till Final Acceptance of the work by the Owner. Replacement trees and plants shall be planted as originally specified and detailed. Replacement trees and plants shall be guaranteed as specified above from the date of replacement. The maintenance period may be extended for a duration of not more than the original maintenance period duration for the establishment of replacement plants.
- C. The Contractor shall be held responsible for repair and/or replacement of damages to new or existing improvements resulting from the defects or actions of trees, plants, materials, equipment or workmanship one year from the date of Final Acceptance or the Notice of Completion, whichever is later.

END OF SECTION