

YUBA COMMUNITY COLLEGE DISTRICT

YUBA COMMUNITY COLLEGE

NEW SOFTBALL FIELD & SITE
IMPROVEMENTS

TECHNICAL SPECIFICATIONS

DSA Application No. 02-120867

December 29, 2022

HY HIBSER YAMAUCHI ARCHITECTS

OAKLAND

LOS ANGELES

DAVIS

<p><u>ARCHITECTURAL</u></p> <p>HIBSER YAMAUCHI ARCHITECTS 300 27TH ST OAKLAND, CA 94612 Contact: Lee Pollard CA License:</p> <p>Tel: (408) 453-1222 Email: lpollard@hy-arch.com</p>	 <p>STAMP</p>
<p><u>STRUCTURAL</u></p> <p>BUEHLER ENGINEERING 500 Q STREET, SUITE 200 SACRAMENTO, CA 95811 Contact: Jason Passalacqua CA License:</p> <p>Tel: (916) 443-0303 Email: jpassalacqua@buehlerengineering.com</p>	 <p>STAMP</p>
<p><u>ELECTRICAL</u></p> <p>N. NEILS ENGINEERING, INC. 100 HOWE AVENUE, SUITE 235N SACRAMENTO, CA 95825 Contact: Stuart Lindsay CA License:</p> <p>Tel: (916) 923-4400 Email: slindsay@mneilsengineering.com</p>	 <p>STAMP 05/04/2023</p>
<p><u>CIVIL</u></p> <p>WARREN CONSULTING ENGINEERS, INC 1117 WINDFIELD WAY, SUITE 100 EL DORADO HILLS, CA 95762 Contact: Anthony Tassano CA License:</p> <p>Tel: (916) 985-1870 Email: anthony@wceinc.com</p>	 <p>STAMP 12/08/2022</p>
<p><u>LANDSCAPE</u></p> <p>MTW GROUP 2707 K STREET, SUITE 201 SACRAMENTO, CA 95816 Contact: Peter Latimer CA License:</p> <p>Tel: (916) 369-3990 Email: peter@mtwgroup.com</p>	 <p>STAMP</p>

IDENTIFICATION STAMP
DIV. OF THE STATE ARCHITECT

APP: 02-120867 INC:

REVIEWED FOR

SS FLS ACS

DATE: 05/11/2023

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SECTION 00 11 13
ADVERTISEMENT FOR BIDS

May 24, 2023

PROJECT: Yuba College Campus, New Softball Field

Contractors are invited to submit, under General Contract format, an offer under seal to perform the work defined for the referenced project to Yuba Community College District.

Submit proposals on **July 18, 2023**, at the office of **YUBA COMMUNITY COLLEGE DISTRICT , ATTN: DAVID WILLIS, YUBA COLLEGE, SUTTER COUNTY CENTER, DISTRICT OFFICES, 3301 EAST ONSTOTT ROAD, YUBA CITY, CALIFORNIA, 95991** at times as specified in the Section 00 21 13, "Instructions to Bidders".

The District will **not** be providing hard copy drawings and specifications.

Bid security will be required in the amount of **10 percent** of the Proposal Amount, in the form of a Bid Security Bond per Section 00 43 13, "Bid Security Forms" or approved equivalent.

Optional Pre-Bid Conference Zoom Meeting: Tuesday, June 6, 12pm Noon to 1pm

Topic: RFP 22-14 Optional Pre-Bid Contractor Meeting
Time: Jun 6, 2023 12:00 PM Pacific Time (US and Canada)

Join Zoom Meeting

<https://yccd-edu.zoom.us/j/83863104397>

Dial by your location

+1 669 444 9171 US

+1 719 359 4580 US

Optional Pre-Bid Conference Zoom Meeting: Tuesday, June 20, 12pm Noon to 1pm

Topic: RFP 22-14 Optional Contractor Pre-Bid Meeting
Time: Jun 20, 2023 12:00 PM Pacific Time (US and Canada)

Join Zoom Meeting

<https://yccd-edu.zoom.us/j/89207023345>

Dial by your location

+1 669 444 9171 US

+1 253 205 0468 US

Optional On-Campus Pre-Bid Meeting: Tuesday, July 11, 2023: 1pm to 2:30pm

Location: Yuba College Campus, Building 1400 (Maintenance Building) conference room, 2088 North Beale Road, Marysville, California 95901.

We will tour the project location after this brief meeting.

Note: There are no mandatory pre-bid meetings for this project.

Requests for Information Due Date: July 12, 2023: 12:00pm noon.

Proposal Due Date: Tuesday, July 18, 2023, 1:00PM **Sharp.** Deliver proposal to the following address:

Yuba Community College District, Sutter County Center
District Offices, Second Floor, Room 217
Attention: David Willis
3301 East Onstott Road
Yuba City, California 95991

Note: Late proposals will not be accepted or considered. There will be a public bid opening.

The Instructions to Bidder define specific submittals that must accompany the Bid Proposal for each project. These include:

- * Summary of project management team and team members work experience and credentials.
- * Preliminary Construction Schedule.
- * Cost Breakdowns.
- * Sub-Contractors List with contractor license number and Division of Industrial Relations registration number.
- * Bid Bond or acceptable alternative

Submit Bid Proposal on form provided in Document 00 41 00, "Bid Form". Do not use any other bid forms.

The Bid Proposal shall be submitted under a Condition of Irrevocability for a period of 90 days after submission.

The Owner reserves the right to accept or reject all offers, and to waive minor irregularities in compliance with bid procedures. All requirements established by the bidding requirements must be met in order for the Bid Proposal to be considered.

Thank you for your consideration of this invitation. Please direct requests for information and questions concerning this project in MS Word Format to the following:

1. **HY Architects, Inc.** ; Howard Cho, email: hcho@hy-arch.com

AND copy:

2. **YCCD**; David Willis, email: dwillis@yccd.edu

Note: Include “RFP 22-14, RFI, YC Softball Field” in the subject field of your email.

The End.

1. Perform Work in accordance with the applicable provisions of California Code of Regulations, Title 24, Parts 1-6, and 10 - 12, 2019 editions, as applies.

Particular attention is directed to the following Sections of CCR, Title 24, Part 1, 2019 California Administrative Code, Chapter 4, "Safety of Construction of Public Schools".

- a. Section 4-335 – Structural Tests and Inspections.
- b. Section 4-336 - Verified Reports.
- c. Section 4-338 – Addenda and Construction Changes.
- d. Section 4-339 – Final Certification of Construction.
- e. Section 4-342 - Duties of the Project Inspector.
- f. Section 4-343 - Duties of the Contractor.

1.4 WORK SEQUENCE

- A. Coordinate construction schedule and operations with Owner.
- B. Construct the Work in a manner to provide for public convenience. Do not close off public use of facilities.

1.5 CONTRACTOR USE OF SITE AND PREMISES

- A. Coordinate use of premises and access to site under direction of Owner.
- B. Limit use of premises for Work and construction operations and to allow for work by other contractors.
- C. Contractors use of site and premises shall allow:
 1. Work by Others and Work by Owner.
 2. Use of site and premises by public.
- D. Access to Site: Coordinate with Owner.
- E. Building Exits During Construction: Maintain all exits. Do not obstruct at any time.
- F. Time and Construction Schedule Considerations:
 1. Schedule all construction operations with Owner.
 2. **(Not Applicable unless there is an event scheduled at the College in the Sports Complex Area)** Construction operations generating excessive noise, such as use of pneumatic tools and powder actuated fastener equipment, shall be scheduled with the Owner. Permitted hours of operation for demolition and excessive noise operations are limited to period from 7:00 AM to 9:00 AM or on Weekends.

3. Locate all noise generating equipment, such as cut-off saws, in a remote location away from administrative or classroom areas.
 4. **(Not Applicable unless there is an event scheduled at the College in the Sports Complex Area)** Schedule replenishing construction materials only during period of 7:00 AM to 9:00 AM.
 5. Owner reserves the right to modify such scheduled operations to accommodate school operations or classroom programs. Contractor shall be entitled to contract time extension per contract modification procedures.
 6. Provide Owner with **7 working days notice** prior to commencing such operations.
 7. Construction operations, such as material deliveries, debris removal, and crane operations, shall not occur when students, staff or visitors are present at construction site. Schedule such operations around school schedule, including recess and lunch periods. Where, in the sole opinion of the Architect, the construction site is sufficiently remote or isolated that students, staff or visitors are not exposed to such operations, construction operations may proceed as scheduled by Contractor in conformance with the Project Manual.
 8. After Owner takes beneficial occupancy of portions of project the Contractor, subcontractors and all support staff will not be allowed to enter such school facilities during hours school is in session. Where access is required to complete the work, coordinate access and scheduling with Owner's representative for non-school time.
 9. No interference with classroom or administrative activities will be permitted without approval of Owner, Inspector and School Administrator.
- G. Utility Outages and Shutdown: Utility Outages and Shutdown: All Contractor requests for a power, water, or utilities shut-down must be received in writing at least 10 days in advance prior to the shutdown date. No deviation to the commencement nor duration of the outage or shutdown from the schedule agreed upon is allowed.
- H. Corporation Yard and Storage Areas: Coordinate with Owner. Coordinate location with areas required by work performed under separate contract by others. Owner will establish acceptable path for products, staging areas, and trash disposal.
1. Coordinate location of all equipment parking, material and stockpile storage and construction parking with Owner.
- I. Furniture and Equipment Relocation:
1. Prior to beginning work in any one area, District will relocate all books, supplies, equipment and furniture in all areas of work.
 2. District will return books, supplies, and furniture to the classrooms after completion of work.

1.6 OWNER OCCUPANCY

- A. The Owner will occupy the site and existing facilities during entire period of construction for the conduct of normal school and business operations.

- B. Cooperate with Owner to minimize conflict, and to facilitate Owner's operations.
- C. The Owner will occupy portions of the project as individual rooms become available for outfitting, furniture and fittings installation, and related start-up tasks.
- D. **(Not Applicable on this Project)** Adjacent Floor/Area access: Coordinate scheduling of required access to adjacent rooms and floors incidental to not included in the work of this contract. Provide minimum **15 working days notice** to Owner for required access to such areas.
 - 1. Do not core or drill through walls or floors into adjacent occupied areas.

1.7 FEES, BONDS, AND PERMITS

- A. Contactor shall obtain all required permits required for work under this contract, if applies, including but not necessarily limited to the following:
 - 1. Encroachment permits.
 - 2. Shoring, trenching and grading permits.
- B. Contractor shall contact County and local agencies and arrange for all required improvement bonds, entitlement fees and County/local agency engineering fees, if offsite improvements are required. After submission of documentation to Owner, Owner will pay such costs. Provide Owner with notice of cost obligation as required to avoid delay in project completion.
- C. All costs associated with permits defined in General Conditions, Paragraph 1.7.2 shall be included in Contract amount. Costs associated with bonds, entitlement and inspection fees defined above shall be paid directly to County/Local jurisdictional authority.
- D. For the Owner's records, submit copies of permits, licenses, certifications, inspection reports, releases, jurisdictional settlements, notices, receipts for fee payments, judgments, and similar documents, correspondence and records established in conjunction with compliance with standards and regulations bearing upon performance of the Work.

1.8 FIELD ENGINEERING

- A. Provide field engineering services; if required by scope of work. Establish lines and levels by use of recognized engineering survey practices.
- B. Locate and protect control and reference points.
- C. See Section 01 71 23, "Field Engineering".

PART 2 - PRODUCTS

- A. Not Used

PART 3 - EXECUTION

A. Not Used

END OF SECTION

- a. Identify each line item with number and title of major Specification sections.
 - b. Name of Subcontractor.
 - c. Name of manufacturer or fabricator where applicable.
 - d. Name of supplier where applicable.
 - e. Change Order amounts allocated to the line item.
 - f. Total Dollar value of item.
 - g. Percentage of Contract sum represented by item, rounded to nearest one hundredth percent, adjusted to total 100 percent.
- H. Correlate line items with terms and identification used in other administrative work items, including schedules, list of subcontractors, list of products and suppliers, and submittal schedule.
- I. Provide schedules as follows.
1. Provide separate schedule of values for each building, and a single schedule for site work.
 2. Where an Application for Payment may include requests for equipment, components or materials purchased, stored or fabricated, but not yet installed, provide separate line item on the Schedule of Values for such items. Breakdown such line items to include component, equipment or material cost for each phase or sequence of construction, with associated staging, transport and installation cost.
- J. The total of the amounts of all scheduled line items shall equal the Contract Sum. Round amounts to nearest dollar.
- K. Provide separate line item for Contractor's overhead and profit.
- L. Revise schedule to list approved Change Orders and Construction Change Directives, and submit with each Application For Payment.
- M. The amounts shown on Schedule of Values may be used by Owner to determine the true value for additive or deductive change orders.

1.3 APPLICATIONS FOR PAYMENT

- A. Content and Format: Utilize Schedule of Values for listing items in Application for Payment.
- B. Payment Period: Monthly, scheduled as defined in General Conditions.
- C. Submit application on AIA Form G702, "Application and Certificate for Payment", or approved equivalent, as follows:
 1. Submit initial rough draft of pay application to Architect, Inspector of Record and Owner for review.
 2. Architect will return initial rough draft of pay application to Contractor, including continuation sheets when required, following review.
 3. Submit PDF of pay application to Architect.
 - a. Submit to Inspector of Record for signature prior to submittal to Architect.
 - b. Submit conditional lien releases for work covered by current application warranting that title to all work, labor, materials and equipment covered by the application is free and clear of all liens, claims, security interests or encumbrances, and notarized unconditional releases for work covered by previous months billings.

- c. Complete every entry on the form, including notarization and execution by person authorized to sign legal documents on behalf of the Contractor. Incomplete applications will be returned without action. Present required information in typewritten form.
 - d. Execute certification by signature of authorized officer.
 - e. Use data from approved Schedule of Values. Provide dollar value in each column for each line item for portion of work performed and for stored products.
 - f. List each authorized Change Order as an extension on continuation sheet, listing Change Order number and dollar amount as for an original item of Work.
 - g. Certificates for payment as recommended by the Architect or the Owner shall include a 5% retention that will be held by the Owner until such a time as outlined in Section 01 77 19, "Closeout Requirements".
4. Submit an updated construction schedule with each Application for Payment.
 5. Payment Period: Monthly.

1.4 SUBSTANTIATING DATA

- A. When Architect/Engineer requires substantiating information, submit data justifying dollar amounts in question.
- B. Provide one copy of data with cover letter for each copy of submittal. Show Application number and date, and line item by number and description.

1.5 PROGRESS PAYMENT COORDINATION

- A. See Section 01 77 19, "Closeout Requirements" for requirements and relationship between progress payment and maintenance of record drawings.
- B. See Section 01 33 00, "Submittal Procedures" for requirements and relationship between progress payment and construction schedule updates.

1.6 INSPECTOR OF RECORD PAYMENT PROVISIONS

- A. In the event Contractor's performance of the work activities requires the Owner's Inspector of Record to work overtime, holidays or weekends, Inspectors cost shall be reimbursed by Contractor to Owner by deductive contract adjustment.

1.7 PAYMENT FOR CONTRACT MODIFICATIONS

- A. The Contractor shall compensate the Owner, by Owner-Contractor Contract adjustment, for the Architect reasonable costs to modify Contract Documents required by work not performed in accordance with approved Contract Documents.

1.8 RETAINAGE

- A. Subject to the requirements of state law, each Application for Payment shall be subject to retainage in the amount of ten percent. The amounts so reserved will be subject to claims of liens provided by applicable state law.
- B. Pursuant to Section 22300 of the Public Contract Code of the State of California, the contract will contain provisions permitting the Contractor to substitute securities for any moneys withheld by the Owner to ensure performance under the contract.

- C. The Contractor warrants and guarantees herewith that title to all work, Materials and equipment covered by an application for payment will pass to the Owner either by incorporation in the construction or upon the receipt of payment by the Contractor, whichever occurs first, free and clear of all liens, claims, security interest or encumbrances, referred to in this article as “liens”; and that no work, materials or equipment covered by an application for payment will have been acquired by the Contractor, or by any other person performing work at the site or furnishing materials and equipment for the project, subject to an agreement under which an interest of an encumbrance is retained by the seller or otherwise imposed by the Contractor or such other person.

1.9 PROGRESS PAYMENTS – OWNER REQUIREMENTS

- A. After a certificate of payment has been issued, the Owner shall make payment in the manner and within the time provided in the Contract Documents.
- B. The contractor shall promptly pay each subcontractor (including suppliers, laborers and material men) performing labor or furnishing material for the work upon receipt of payment from the Owner out of the amount paid to the Contractor on account of the work of such subcontractor, supplier, laborer or material man, the amount to which said subcontractor is entitled, reflecting the percentage actually retained, if any, from payments to the Contractor on account of such work. The Contractor shall, by an appropriate agreement with each subcontractor, also require each subcontractor to make payments to his sub subcontractors in a similar manner.
- C. The Owner may, on request, furnish to any subcontractor, if practicable, information regarding the percentages of completion or the amounts applied for the Contractor and the action taken by the Architect on account of the work done by such subcontractor.
- D. Neither the Owner nor the Architect shall have any obligation to pay nor to see to the payment of any monies to a subcontractor except as may otherwise be required by law.
- E. No certificate for a progress payment nor any progress payment nor any partial or entire use or occupancy of the project by the Owner shall constitute an acceptance of any work which is not in accordance with the Contract Documents.
- F. The Contractor agrees to keep the work and the site on which work is to be performed free and clear of all liens and claims of liens on materials furnished pursuant to the Contract Documents.

1.10 PAYMENTS WITHHELD

- A. The Architect may decline to certify payment and may withhold their certificate in whole or in part, to the extent necessary to protect the Owner, if in their opinion they are unable to make representations to the Owner as provided in this Section.
- B. If the Architect is unable to make representations to the Owner and to certify payment in the amount of the application, the Architect will notify the Contractor as soon as possible. If the Contractor and the Architect cannot agree on a revised amount, the Architect will promptly issue a certificate for payment in the amount for which the Architect is able to make such representations to the Owner.
- C. The Architect may also decline to certify payment or any part thereof or, because of subsequent observations, Architect may nullify the whole or any part of any certificate for payment previously issued, to such extent as may be necessary in their opinion to protect the Owner from loss because of the following conditions.
 - 1. Defective work not remedied;
 - 2. Third party claims filed or reasonable evidence indicating probable filing of such claims;
 - 3. Failure of the Contractor to make payments property to subcontractors or for labor, materials or equipment;

4. Reasonable evidence that the work cannot be completed for the unpaid balance of the contract sum;
5. Damage to the Owner or another contractor;
6. Failure to execute the work in accordance with the Construction schedule;
7. Failure to provide, maintain, and update record drawings;
8. Reasonable evidence that the work will not be or had not been completed within the contract time;
9. Failure to carry out the work in accordance with the Contract Documents;
10. Liens filed, or reason to believe it is probable a lien will be filed for any portion of the work;
11. Failure or refusal of the Contractor to fully comply with Division 1.

1.11 FINAL COMPLETION AND FINAL PAYMENT

- A. Upon receipt of written notice from the Contractor as required in Section 01 77 19, "Closeout Requirements" that the work is ready for final inspection and acceptance and upon receipt of final application for payment, the Architect will promptly make such inspection, and when they find the work acceptable under the Contract Documents and the Contract fully performed, the Architect will issue a Final Certificate for Payment stating that to the best of their knowledge, information and belief, and on the basis of their observations and inspections, the work has been completed in accordance with the terms and conditions of the Contract Documents and that the entire balance found to be due the Contractor, and noted in said final certificate, is due and payable.
- B. Retention of funds withheld will be released to the Contractor within 60 days of the date of completion of a work of improvement. Completion is defined as occurring when a Owner begins occupancy, beneficial use, and enjoyment of work of improvement (excluding an operation for testing, startup, or commissioning) accompanied by a cessation of labor on the work of improvement.
- C. Neither final payment nor the remaining retainage percentage shall become due until the work is free and clear of any and all liens and the Contractor submits to the Owner:
 1. An affidavit that all payrolls, bills for materials and equipment and other indebtedness connected with the work for which the Owner or his property might in any way be responsible, have been paid or otherwise satisfied.
 2. Consent of surety, if any, to final payment.
 3. If required by the Architect, other data establishing payment or satisfaction of all such obligations, such as receipts, releases and waivers of liens arising out of the Contractor, to the extent and in such form as may be designated by the Architect.
- D. If, after substantial completion of the work, final completion thereof is materially delayed through no fault of the Contractor or by the issuance of change orders affecting final completion, and the Owner so confirms, the Owner shall, upon application by the Contractor and certification by the Architect, and without terminating the contract, make payment of the balance due for that portion of the work fully completed and accepted.
- E. The making of final payment shall constitute a waiver of all claims by the Owner against the Contractor except those arising from:
 1. Unsettled liens and claims against the Owner, the Architect, or their employees, agents or representatives;
 2. Faulty or defective work appearing after substantial completion;

3. Failure of the work to comply with the requirements of the Contract Documents;
4. Failure to provide fully updated and completes record drawings;
5. Any warranties contained in or required by the Contract Documents; or
6. Damages incurred by the Owner resulting from lawsuits brought against the Owner, the Architect, or their agents, employees or representatives because of failures or actions on the part of the Contractor, his subcontractors or sub subcontractors, or any of their employees, agents or representatives.
7. The acceptance of final payment shall constitute a waiver of all claims by the Contractor except those previously made in writing and identified by the Contractor as unsettled at the time of the final application for payment
8. All provisions of this Agreement, including, without limitation, those establishing obligations and procedures, shall remain in full force and effect notwithstanding the making or acceptance of final payment prior to the Date of Substantial Completion of the Project.

F. PREPARATION OF APPLICATION FOR FINAL PAYMENT

1. Administrative actions and submittals, which must precede or coincide with submittal of the final payment Application for Payment include the following:
 - a. Occupancy permits and similar:
 - b. Warranties (guarantees) and maintenance agreements.
 - c. Test/adjust/balance records.
 - d. Maintenance instructions.
 - e. Meter readings.
 - f. Start-up performance reports.
 - g. Change-over information related to
 - h. Owner's occupancy, use, operation and maintenance.
 - i. Final cleaning.
 - j. Completion of Project closeout requirements, including all reports and certifications required by Authorities Having Jurisdiction.
 - k. Completion of items specified for completion after Substantial Completion.
 - l. Assurance that unsettled claims will be settled.
 - m. Assurance that Work not complete and accepted will be completed without undue delay.
 - n. Transmittal of required Project construction records to Owner.
 - o. Proof that taxes, fees and similar obligations have been paid.
 - p. Removal of temporary facilities and services.
 - q. Removal of surplus materials, rubbish and similar elements.
 - r. Change of door locks to Owner's access.

1.12 APPLICATION FOR FINAL PAYMENT

- A. Prepare Application for Final Payment as specified in Section 01 77 19, "Closeout Requirements".

- a. Use continuation sheet for presenting the final statement of accounting.
 - b. Transmit a PDF copy with a transmittal form listing attachments, and recording appropriate information related to the application in a manner acceptable to the Architect.
 - c. Entries shall match data on the Schedule of Values and Contractor's Construction Schedule. Use updated schedules if revisions have been made. Include amounts of Change Orders and Construction Change Directives issued prior to the last day of the construction period covered by the application.
2. By signing a certificate for payment, the Architect shall not be deemed to represent that the Architect has made exhaustive or continuous on-site inspections to check the quality or quantity of the work, has reviewed the construction means, methods, techniques, sequences or procedures, or has made an examination to ascertain how or for what purpose the Contractor has used previous payments.
 3. Payments may be made by the Owner, in its sole discretion, on account of materials or equipment not incorporated into the work but delivered to the site and suitably stored and insured by the Contractor. Payments for materials or equipment stored shall only be considered upon submission by the Contractor of satisfactory evidence that it has acquired title to such material, that it will be utilized on the work under this contract and that it is satisfactorily stored, protected and insured, or such other procedures satisfactory to Owner (District Project Manager), Inspector, and Architect,

PART 2 - PRODUCTS

- A. NOT USED

PART 3 - EXECUTION

- A. (NOT USED)

END OF SECTION

SECTION 00 21 13
INSTRUCTIONS TO BIDDERS

1.1 DEFINITIONS

- A. Addenda are written or graphic instruments issued prior to the execution of the Contract, which modify or interpret the Bidding Sections, including Drawings and Specifications by additions, deletions, clarifications, or corrections, Addenda will become part of the Contract Sections when the Construction Contract is executed.
- B. See Section 00 52 00, “Agreement for Services” for list of definitions related to Construction Contract.

1.2 BIDDERS REPRESENTATION

- A. Each bidder, by making his bid, represents that he has read and understands the Bidding Sections. After executing the Agreement, no consideration will be given to any claim of misunderstanding of the Sections.
- B. Each bidder, by making his bid, represents that he has visited the site, inspected the area of the work, and familiarized himself with the local conditions under which the work is to be performed. Such inspection shall specifically consider requirements for accessing concealed spaces and determining sufficient clearance and installation space exists to complete the work shown in the Contract Sections.
- C. Each bidder, by stating the time for completion of the work on the Bid Form, agrees to commence the work within five days of notice to proceed and complete the work within the stipulated time period.

1.3 BIDDING PROCEDURE

- A. All bids must be prepared, in duplicate, on the forms provided and submitted in accordance with the Instructions to Bidders.

Completed Bid Package includes:

- 1. Section 01 61 00, “Bid Form”
 - 2. Subcontractor List as defined Section 00 52 00 – Agreement for Services, Contract Documents, Item 4.09
 - 3. Preliminary Schedule as defined Section 00 52 00 – Agreement for Services, Contract Documents, Item 4.12
 - 4. Proposed Schedule of Values Form in format described in Section 00 43 73, “Proposed Schedule of Values”
 - 5. Section 00 45 19, “Non-Collusion Affidavit”
 - 6. Section 00 45 10, “Verification of Contractor and Subcontractor's DIR Registration”
 - 7. Section 00 45 27, “Drug-Free Workplace Certification”
 - 8. Section 00 61 00, “Bid Bond”
- B. A bid is invalid if it has not been deposited at the designated location prior to the time and date for receipt of bids.

- C. Submit bid package no later than the date and time listed in Section 00 11 13, “Advertisement for Bids” and Section 00 21 13, “Instructions to Bidders”
- D. If email transmission method selected, Architect and Owner are not responsible for Contractor's inability to transmit Section for any reason, including equipment or transmission failure.
- E. Unless otherwise provided in any supplement to these Instructions to Bidders, no bidder shall modify, withdraw, or cancel his bid, or any part thereof, for **ninety (90) days** after the time designated for the receipt of bids.
- F. Prior to the receipt of bids, Addenda will be transmitted or delivered to each person, or firm, recorded by the Architect as having received the Bidding Sections, and will be available for inspection wherever the Bidding Sections are kept available for that purpose. Addenda issued after receipt of bids will be mailed or delivered only to the selected bidder.
- G. Each Bidder shall prepare and submit a list of suggested changes to products, systems or construction procedures sequences as shown in construction Sections. Do not list modifications with anticipated cost reductions of less than **\$5,000**. Provide detailed breakdowns for items selected for further review by Owner. See Section 00 26 00, “Procurement Substitution Procedures” for requirements

1.4 EXAMINATION OF BIDDING SECTIONS

- A. Each bidder shall examine the Bidding Sections carefully and, not later than **seven (7) days** prior to the date for receipt of bids, shall make written request to the Architect for interpretation or correction of any ambiguity, inconsistency, or error therein which he may discover. Any interpretation or correction will be issued as an addendum by the Architect. Only a written interpretation or correction by addendum shall be binding. No bidder shall rely upon any interpretation or correction given by any other method.

1.5 SUBSTITUTIONS

- A. Each bidder represents that his bid is based upon the materials and equipment described in the Bidding Sections.
- B. The materials, products, and equipment described in the Bidding Sections establish a standard of required function, dimension, appearance, and quality to be met by proposed substitutions.
- C. No substitution will be considered unless written request has been submitted by the bidder, and has been received by the Architect and the District at **least ten (10) days** before the date for receipt of bids. Requests received after this time will not be considered. Include with each request the name of the material or equipment for which it is to be substituted, and a complete description of the proposed substitute, including drawings, cuts, performance, and test data, in compliance with Section 00 26 00, “Procurement Substitution Procedures”, Section 01 25 00, “Substitution Procedures” requirements, submitted on the form provided in Section 01 25 00.10, “Substitution Request Form”.
- D. If the Architect approves a proposed substitution, such approval will be set forth in an addendum. Bidders shall not rely upon approval made in any other manner.

1.6 REJECTION OF BIDS

- A. The Bidder acknowledges the right of the Owner to reject any or all bids, and to waive any informality or irregularity in any bid received. In addition, the Bidder recognizes the right of the Owner to reject a bid if the Bidder fails to furnish any required bid security, or to submit the data required by the Bidding Sections, or if the bid is in any way incomplete or irregular.

1.7 SUBMISSION OF POST-BID INFORMATION

- A. Upon request by the Architect or the District, the selected bidder shall, **within seven (7) days thereafter**, submit the following:
 - 1. A designation of the work to be performed by the bidder with his own forces.
 - 2. Explanation establishing the experience, reliability and responsibility of the proposed subcontractors.
- B. Prior to the award of the Contract, the Architect or Owner will notify the Bidder, in writing, if either the Owner or the Architect, after due investigation, has reasonable and substantial objection to any person or organization on such list. If the Owner or Architect has such objection, and refuses, in writing, to accept such person or organization, the Bidder may withdraw his bid without forfeiture of bid security. If the Bidder submits an acceptable substitution with an increase in his bid price to cover the difference in cost occasioned by such substitution, the Owner may accept the increased bid price, or he may disqualify the Bidder. Subcontractors and other persons and organizations proposed by the Bidder, and accepted by the Owner and Architect, must be used on the work for which they were proposed and accepted, and shall not be changed, except with the written permission of the Owner and Architect.

1.8 CONSTRUCTION LABOR AND MATERIAL PAYMENT BOND

- A. The Owner will, prior to the execution of the contract, require the **bidder to furnish bonds** covering the faithful **performance** of the Contract and the **payment** of all obligations arising thereunder with such sureties secured through the bidders usual sources as may be agreeable to the parties. Each bond shall be in the amount of 100 percent of the Contract price and shall be submitted on forms stipulated in the Bidding Sections and the premiums shall be paid by the bidder. The bidder shall deliver the required bonds to the Owner not later than the date of execution of the Contract, or if the work is commenced prior thereto in response to a letter of intent, the bidder shall, prior to commencement of the work, submit evidence satisfactory to the Owner that such bonds will be issued. See Section 00 52 00, "Agreement for Services", Appendix C, for requirements.

1.9 BID SECURITY

- A. Provide bid security in the amount of **10 percent** of the proposal amount, on the form included in Section 00 61 00, "Bid Form", or approved equivalent.

1.10 TIME OF COMPLETION

- A. Bidders shall begin the Work on receipt of the Notice to Proceed and shall complete the Work within the Contract Time, as defined in Section 00 52 00, "Agreement for Services".
- B. Work is subject to liquidated damages, as defined in Section 00 52 00, "Agreement for Services".

1.11 PRELIMINARY CONSTRUCTION SCHEDULE

- A. Accompanying bid, Contractor shall submit a preliminary construction schedule. See Section
- B. Proposed overall construction period, major work sequences, utility disruption/shut down periods, and other critical scheduling considerations shall be shown in an approved format.

1.12 PROJECT MANAGEMENT STAFF

- A. Identify project manager and project superintendent proposed for project on Bid Form in designated location. When requested by Owner, provide resumes describing staff expertise.

1.13 SUBMISSION OF BIDS

- A. Sealed bids will be received by the Owner in accordance with procedures and schedule as defined in the Invitation to Bid.

END OF SECTION

SECTION 01 25 00
SUBSTITUTION PROCEDURES

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. General Requirements
- B. Definitions
- C. Product Options
- D. Substitution Procedures – Contractor’s Duties
- E. Substitution Procedures – Architect’s Duties

1.2 GENERAL REQUIREMENTS

- A. Provide products listed in Contract Documents, products by manufacturers listed in Contract Documents, and products meeting specified requirements.
 - 1. Contract Amount: Base on materials and products included in Contract Documents.
 - 2. Where listed in Contract Documents, materials and products by manufacturers not listed shall not be used without Owner’s and Architect’s approval of Contractor's written request for substitution.
- B. Procedures are described for requesting substitution of unlisted materials in lieu of materials named in Specifications or approved for use in addenda.

1.3 DEFINITIONS

- A. Substitutions: Changes in products, materials, equipment, and methods of construction from those required by the Contract Documents.
 - 1. "Approved Equal" or "Equal" shall mean in the opinion of the Architect and/or Owner.
 - 2. DSA – Division of the State Architect.
 - 3. Substitutions for Cause: Changes proposed by Contractor that are required due to changed Project conditions, such as unavailability of product, regulatory changes, or unavailability of required warranty terms.
 - 4. Substitutions for Convenience: Changes proposed by Contractor or Owner that are not required to meet other Project requirements but may offer advantage to Contractor or Owner.

1.4 PRODUCT OPTIONS

- A. **Products Specified by Reference Standards or by Description:** Select product meeting referenced standard for products specified only by reference standard.
- B. **Named Manufacturers and Named Products:** Provide Products of the Basis of Design manufacturer named in compliance with specifications.
 - 1. **Where another manufacturer is listed as an approved alternate manufacturer to the specified Basis of Design manufacturer, and a specific make and model is NOT provided, Contractor shall demonstrate compliance with the Basis of Design products supplied by listed alternate manufacturer by providing substitution documentation as required by this Section.**
 - 2. **If a specific make and model is provided with the Approved Alternate Manufacture(s) listed in each specification section, a substitution request will not be required, as the characteristics for those products have been compared by the Architect/Engineer and are considered equivalent.**
 - 3. Where the substituted manufacturers standard product is not equal to that specified, the substituted manufacturer shall provide custom or non-standard products, system components, fabrication and configuration as necessary to comply with specified criteria, whether or not such criteria are the substituted manufacturers standard or stock item.
 - 4. Consideration of whether a substituted product is equal to that specified will include all characteristics of the specified product, based on published data available from the specified manufacturer, whether listed in the specification or not. See Paragraph 1.5H, this Section for specific submittal procedures.
 - 5. Consideration of whether a substituted product is equal to that specified is solely the decision of the Architect.
 - 6. Provide substitution documentation as specified in this Section, submitted on the provided form in Section 01 25 00.10, "Substitution Request Form".
- C. Where product is specified followed by term "No Substitution Permitted", or similar phrase, do not submit alternate products for review. Any substitution request received will be returned rejected.

1.5 SUBSTITUTION PROCEDURES – CONTRACTOR’S DUTIES

- A. Substitutions, including requests for substitution during bidding period, will be considered in accordance with the General Conditions and this Section.
 - 1. Submit all Requests for Substitutions within **45 days** after Notice to Proceed. Substitutions received after **45 day** period will be rejected.
 - 2. Request for Substitution will only be considered when submitted within specified time period of Contract award, and when such request is accompanied by complete data substantiating compliance of proposed substitution with Contract Documents criteria and standard of quality.
- B. Substitutions may be considered when a Product becomes unavailable through no fault of the Contractor.

- C. Incomplete substitution requests will be rejected without explanation.
- D. **Substitutions are required for all substituted products.** Substitutions will not be considered for acceptance when:
 - 1. They are indicated or implied on shop drawings or product data submittals only, without separate written request, or when acceptance will require revision to the Contract Documents.
 - 2. They are requested directly by a subcontractor or supplier.
 - 3. Acceptance will require substantial revision of Contract Documents.
- E. By submitting a request, the Contractor stipulates that the Contractor:
 - 1. Has investigated proposed Product and determined that it meets or exceeds the quality level of the specified Product.
 - 2. Will provide the same warranty or longer warranty for the Substitution as for the specified Product.
 - 3. Will coordinate installation and make other changes that may be required for Work to be complete in all respects, at no additional cost to the Owner.
 - 4. Unless specifically noted in the Request for Substitution, waives claims for additional costs or time extension which may subsequently become apparent.
 - 5. Will pay costs of changes to Contract Documents, Drawings, details and Specifications required by accepted substitutions.
- F. Any substitutions that change or affect the Structural, Access or Fire & Life Safety portions of the project construction documents shall be submitted as a CCD and approved by DSA prior to fabrication and installation.
- G. Contractor agrees to compensate Architect, at Architect's current billing rates, for review of Substitution requests that require modification of the Contract Documents.
 - 1. Compensation shall be made by an adjustment to the Contract amount.
 - 2. Compensation as agreed upon shall be paid by the Contractor whether the change is approved or rejected.
 - 3. Where approval(s) are required by Division of State Architect (DSA), the Contractor shall pay all plan check fees or fees required to obtain approval.
 - 4. The Contractor shall pay the Architect and its Consultants for all services rendered for drawings, calculations, review time, and/or DSA plan check time for each substitute item(s) for approval.
- H. Substitution Submittal Procedure and Documentation:
 - 1. Procedure:

- a. A maximum of one substitution request shall be submitted for any one item. Submit with same section name and number in specification. **Do not combine specification sections.**
 - b. Document each request with complete data substantiating compliance of proposed Substitution with Contract Documents and as follows.
 - c. Where necessary, arrange the product information to provide a side-by-side comparison of test data and other comparative data of the proposed substitution with the same test data and other comparative data in the specified item or product.
 - d. Substitution requests without such documentation will be rejected without review.
 - e. Where substitution request is rejected, provide submittal for specified product within five days of receipt of notice rejection.
 - f. Where decision cannot be made within the time required for orderly and uninterrupted work progress, provide the specified product.
2. Documentation – Submit all substitution requests on the provided form in Section 01 25 00.10, “Substitution Request Form”:
- a. Substitutions shall be accepted in PDF format.
 - b. If physical copies of product data or samples are required, provide three copies of each, along with PDF submittal request.
 - c. Provide a typed, line by line comparison of the characteristics and attributes of the specified item with those of the proposed substitution.
 - d. For product data submitted, provide only those items that are applicable to the products being compared. Cross out, or otherwise note, any non-applicable items within the submittal to expedite review.
 - e. Show comparative documentation, illustrating compliance with requirements for substitutions and the following, as applicable (attach to Substitution Request Form in Section 01 25 00.10, if required):
 - 1) Specification Name and Number shall be clearly indicated in the Substitution Request Form.
 - 2) Statement indicating why specified product or fabrication or installation method cannot be provided, if applicable.
 - 3) Coordination of information, including a list of changes or revisions needed to other parts of the Work and to construction performed by Owner and separate contractors that will be necessary to accommodate proposed substitution.
 - 4) Detailed comparison of significant qualities of proposed substitutions with those of the Work specified. Include annotated copy of applicable Specification Section. Significant qualities may include attributes, such as performance, weight, size, durability, visual effect, sustainable design characteristics, warranties, and specific features and requirements indicated. Indicate deviations, if any, from the Work specified.

- 5) Product Data, including drawings and descriptions of products and fabrication and installation procedures.
 - 6) Samples, where applicable or requested.
 - 7) Certificates and qualification data, where applicable or requested.
 - 8) Material test reports from a qualified testing agency, indicating and interpreting test results for compliance with requirements indicated.
 - 9) Research reports evidencing compliance with building code in effect for Project, from appropriate approval and testing agencies, e.g. ICC-ES, ASTM, UL, Warnock Hersey, etc.
 - 10) Detailed comparison of Contractor's construction schedule using proposed substitutions with products specified for the Work, including effect on the overall Contract Time. If specified product or method of construction cannot be provided within the Contract Time, include letter from manufacturer, on manufacturer's letterhead, stating date of receipt of purchase order, lack of availability, or delays in delivery.
 - 11) Provide an indication of cost impacts, if any. If a possible cost increase is indicated, upon request, provide a Change Order Request for consideration and approval by the Owner..
 - 12) Contractor's certification that proposed substitution complies with requirements in the Contract Documents, except as indicated in substitution request, is compatible with related materials and is appropriate for applications indicated.
 - 13) Contractor's waiver of rights to additional payment or time that may subsequently become necessary because of failure of proposed substitution to produce indicated results.
- I. Substitutions for Convenience are not allowed.

INCLUDE OPTION BELOW ONLY IF THE ARCHITECT AND OWNER ARE WILLING TO ACCEPT SUBSTITUTIONS FOR CONVENIENCE

- J. Substitutions for Convenience: Architect will consider requests for substitution if received within **45 days** after the Notice to Proceed. **OR commencement of the Work OR the Notice of Award.** Requests received after that time may be considered or rejected at discretion of Architect.
1. Conditions: Architect will consider Contractor's request for substitution when the following conditions are satisfied. If the following conditions are not satisfied, Architect will return requests without action, except to record noncompliance with these requirements:
 - a. Requested substitution offers Owner a substantial advantage in cost, time, energy conservation, or other considerations, after deducting additional responsibilities Owner must assume. Owner's additional responsibilities may include compensation to Architect for redesign and evaluation services, increased cost of other construction by Owner, and similar considerations.
 - b. Requested substitution does not require extensive revisions to the Contract Documents.

- c. Requested substitution is consistent with the Contract Documents and will produce indicated results.
- d. Substitution request is fully documented and properly submitted.
- e. Requested substitution will not adversely affect Contractor's construction schedule.
- f. Requested substitution has received necessary approvals of authorities having jurisdiction.
- g. Requested substitution is compatible with other portions of the Work.
- h. Requested substitution has been coordinated with other portions of the Work.
- i. Requested substitution provides specified warranty.
- j. If requested substitution involves more than one contractor, requested substitution has been coordinated with other portions of the Work, is uniform and consistent, is compatible with other products, and is acceptable to all contractors involved.

1.6 SUBSTITUTION PROCEDURES – ARCHITECT’S DUTIES

- A. The Architect will review Substitution Request upon receipt with reasonable promptness and will request any additional data necessary to accept or reject substitution request.
- B. Substitution Requests received after 9:00 AM on Friday will be logged as received on the following Monday at 8:00 AM.
- C. Architect will recommend that Owner accept or reject substitution request based on, but not limited to, the following items:
 - 1. Requested substitution is consistent with the Contract Documents and will produce indicated results.
 - 2. Substitution request is fully documented and properly submitted.
 - 3. Requested substitution will not adversely affect Contractor's construction schedule.
 - 4. Requested substitution will not adversely affect the desired aesthetics for the Project.
 - 5. Requested substitution has received necessary approvals of authorities having jurisdiction.
 - 6. Requested substitution is compatible with other portions of the Work.
 - 7. Requested substitution has been coordinated with other portions of the Work.
 - 8. Requested substitution provides specified warranty.
 - 9. Requested substitution clearly indicates whether additional costs will be incurred by the Owner.
 - 10. If requested substitution involves more than one contractor, requested substitution has been coordinated with other portions of the Work, is uniform and consistent, is compatible with other products, and is acceptable to all contractors involved.

- D. The decision to accept or reject substitution request will be made within a reasonable period after Architect receives final documentation data.
 - 1. Architect and Owner will determine acceptability of proposed substitutions and reserve right to reject proposals due to insufficient information.
 - 2. The Architect may reject any substitution request on the basis of aesthetics.
- E. If changes to the Contract Documents require reapproval by DSA, Architect/Engineer will indicate to the Contractor in their review response that addition costs must be incurred for re-approvals.
- F. If the Contractor accepts that additional costs to be borne by Contractor for changes to Contract Documents, Drawings, details and Specifications that are required by substitutions are acceptable, then Architect/Engineer will provide a cost proposal for consideration. Written acceptance of charges by Contractor is required prior to any cost being incurred by the Architect/Engineer.
- G. Substitutions with material effect on the project will be submitted for approval by DSA as a Construction Change Document (CCD), prior to fabrication or installation.
- H. The Architect will notify Contractor, in writing on the Substitution Request Form, of decision to accept or reject request.

PART 2 - PRODUCTS

- A. NOT USED

PART 3 - EXECUTION

- A. NOT USED

END OF SECTION

SECTION 00 25 13
PRE-BID MEETINGS

PART 1 - GENERAL

1.1 PREBID MEETING

A. The District will conduct Prebid meetings as indicated below:

1. **Optional Pre-Bid Conference** Zoom Meeting: Tuesday, June 6, 12pm Noon to 1pm

Topic: RFP 22-14 Optional Pre-Bid Contractor Meeting
Time: Jun 6, 2023 12:00 PM Pacific Time (US and Canada)

Join Zoom Meeting

<https://yccd-edu.zoom.us/j/83863104397>

Dial by your location

+1 669 444 9171 US

+1 719 359 4580 US

2. **Optional Pre-Bid Conference** Zoom Meeting: Tuesday, June 20, 12pm Noon to 1pm

Topic: RFP 22-14 Optional Contractor Pre-Bid Meeting
Time: Jun 20, 2023 12:00 PM Pacific Time (US and Canada)

Join Zoom Meeting

<https://yccd-edu.zoom.us/j/89207023345>

Dial by your location

+1 669 444 9171 US

+1 253 205 0468 US

3. **Optional On-Campus Pre-Bid Meeting:** Tuesday, July 11, 2023: 1pm to 2:30pm
Location: Yuba College Campus, Building 1400 (Maintenance Building) conference room, 2088 North Beale Road, Marysville, California 95901.
We will tour the project location after this brief meeting.

Note: There are no mandatory pre-bid meetings for this project. Attendance will be recorded for all optional meetings either on a log sheet or through a zoom meeting.

Requests for Information Due Date: July 12, 2023: 12:00pm noon.

- B. Attendance:
 1. Prime Bidders: Attendance at Prebid meeting is **OPTIONAL**.
 2. Subcontractors: Attendance at Prebid meeting is recommended.
- C. **Typical Pre-Bid Meeting Agenda:** Prebid meeting agenda will include review of topics that may affect proper preparation and submittal of bids, including the following:
 1. Introductions
 2. Procurement and Contracting Requirements:
 - a. Advertisement for Bids.
 - b. Instructions to Bidders.
 - c. Bidder Qualifications.
 - d. Bonding.
 - e. Insurance.
 - f. Bid Security.
 - g. Bid Form and Attachments.
 - h. Bid Submittal Requirements.
 - i. Bid Submittal Checklist.
 - j. Notice of Award.
 3. Communication during Bidding Period:
 - a. Bidder's Requests for Information (RFI's)
 - b. Bidder's Substitution Request/Prior Approval Request.
 - c. Addenda.
 4. Contracting Requirements:
 - a. Agreement.
 - b. The General Conditions.
 - c. The Supplementary Conditions. (Not Applicable)
 - d. Other Owner requirements.
 5. Construction Documents:

- a. Scopes of Work.
 - b. Temporary Facilities.
 - c. Use of Site.
 - d. Work Restrictions.
 - e. Alternates, Allowances, and Unit Prices.
 - f. Substitutions following award.
6. Schedule:
 - a. Project Schedule.
 - b. Contract Time.
 - c. Liquidated Damages.
 - d. Other Bidder Questions.
 7. Site/facility visit or walkthrough.
 8. Post-Meeting Addendum.
- D. Minutes: Entity responsible for conducting meeting will record and distribute meeting minutes to attendees and others known by the issuer to have received a complete set of Procurement and Contracting Documents. Minutes of meeting are issued as Available Information and do not constitute a modification to the Procurement and Contracting Documents. Modifications to the Procurement and Contracting Documents are issued by written Addendum only.
1. Sign-in Sheet: Minutes will include list of meeting attendees.
 2. List of Planholders: There are no Planholders for this project.

PART 2 - PRODUCTS

2.1 NOT USED

PART 3 - EXECUTION

3.1 NOT USED

END OF SECTION

SECTION 00 26 00
PROCUREMENT SUBSTITUTION PROCEDURES

PART 1 - GENERAL

1.1 DEFINITIONS

- A. Procurement Substitution Requests: Requests for changes in products, materials, equipment, and methods of construction from those indicated in the Procurement and Contracting Documents, submitted prior to receipt of bids.
- B. Substitution Requests: Requests for changes in products, materials, equipment, and methods of construction from those indicated in the Contract Documents, submitted following Contract award. See Section 01 25 00 "Substitution Procedures" for conditions under which Substitution requests will be considered following Contract award.

1.2 QUALITY ASSURANCE

- A. Compatibility of Substitutions: Investigate and document compatibility of proposed substitution with related products and materials. Engage a qualified testing agency to perform compatibility tests recommended by manufacturers.

1.3 PROCUREMENT SUBSTITUTIONS

- A. Procurement Substitutions, General: By submitting a bid, the Bidder represents that its bid is based on materials and equipment described in the Procurement and Contracting Documents, including Addenda. Bidders are encouraged to request approval of qualifying substitute materials and equipment when the Specifications Sections list materials and equipment by product or manufacturer name.
- B. Procurement Substitution Requests will be received and considered by Owner when the following conditions are satisfied, as determined by Architect; otherwise requests will be returned without action:
 - 1. Extensive revisions to the Contract Documents are not required.
 - 2. Proposed changes are in keeping with the general intent of the Contract Documents, including the level of quality of the Work represented by the requirements therein.
 - 3. The request is fully documented and properly submitted.

1.4 SUBMITTALS

- A. Procurement Substitution Request: Submit to Architect Procurement Substitution Request must be made in writing by prime contract Bidder only in compliance with the following requirements:
 - 1. Requests for substitution of materials and equipment will be considered if received no later than ten (10) days prior to date of bid opening.
 - 2. Substitution Request Submittal Format: Submit PDF in format indicated in Section 01 25 00.10, "Substitution Request Form", and per procedures delineated in Section 01 25 00, "Substitution Procedures:".

3. Provide certification by manufacturer that the substitute proposed is equal to or superior to that required by the Procurement and Contracting Documents, and that its in-place performance will be equal to or superior to the product or equipment specified in the application indicated.
- B. Architect's Action:
1. Architect may request additional information or documentation necessary for evaluation of the Procurement Substitution Request. Architect will notify all bidders of acceptance of the proposed substitute by means of an Addendum to the Procurement and Contracting Documents.
- C. Architect's approval of a substitute during bidding does not relieve Contractor of the responsibility to submit required shop drawings and to comply with all other requirements of the Contract Documents.

PART 2 - PRODUCTS

2.1 NOT USED

PART 3 - EXECUTION

3.1 NOT USED

END OF SECTION

SECTION 00 31 13
PRELIMINARY SCHEDULES

PART 1 - GENERAL

1.1 PROJECT SCHEDULE

- A. This Document with its referenced attachments is part of the Procurement and Contracting Requirements for Project. They provide Owner's information for Bidders' convenience and are intended to supplement rather than serve in lieu of Bidders' own investigations. They are made available for Bidders' convenience and information, but do not affect Contract Time requirements. This Document and its attachments are not part of the Contract Documents.
- B. Available Project information includes the following:
 - 1. Project Schedule
- C. Important Milestone Dates:
 - 1. Mobilization and Start Construction: August 21, 2023
 - 2. All Submittals Received by August 28, 2023
 - 3. Substantial Completion: December 1, 2023
 - 4. Final Completion: January 12, 2024
- D. Contractor to include the above important milestone dates in the preliminary project schedule submitted with the proposal at bid date.

PART 2 - PRODUCTS

2.1 NOT USED

PART 3 - EXECUTION

3.1 NOT USED

END OF SECTION

DOCUMENT 00 41 00
BID FORM

TO: Yuba Community College District, David Willis, District Director of Facilities Planning, Maintenance, and Operations

From: _____

OFFER

A. OFFER SCOPE

We, the undersigned, having carefully examined the site of the work, the adjoining site conditions, the Drawings and Specifications, Instructions to Bidders and the Contract Documents for the Construction of the defined projects, hereby propose and agree to furnish all required tools, equipment, services, facilities, transportation, materials and labor in conformance with the Drawings and Specifications and related contract documents, including all taxes, permits and licenses.

B. PROJECT: Yuba College, New Softball Field

The undersigned agrees to construct this project for the lump sum price of:

_____ Dollars
(\$ _____).

We acknowledge receipt of the following addenda and have included their provisions in this bid:

Addendum No. _____ Dated _____	Addendum No. _____ Dated _____
Addendum No. _____ Dated _____	Addendum No. _____ Dated _____
Addendum No. _____ Dated _____	Addendum No. _____ Dated _____

1.1 ACCEPTANCE

In submitting this bid, we agree:

1. To hold this bid open until **ninety (90) days** after date for receipt of bids.
2. To accept the provisions of the Instructions to Bidders regarding disposition of bid security.
3. To commence work within five days after receipt of written notice to proceed and to complete the Work within the proposed Contract Time period.
4. That the Owner shall be allowed the use of such portions of the building, prior to completion, as may be required to install fixtures, or equipment.
5. That time and access necessary to inspect existing conditions, including concealed spaces, was sufficient to prepare a complete and competent bid.

The undersigned fully understands that a contract is formed upon acceptance of this bid by the Owner, and the undersigned further agrees that he will promptly execute and deliver to the Owner, written memorial of the Agreement together with the Performance Bond, the Labor and Material Payment Bonds and the required Insurance Certificates.

1.2 CONTRACT TIME

If this proposal is accepted, we propose to complete the work in accordance with the Contract Documents within the stated number of calendar days from receipt of Notice to Proceed.

A. PROJECT: Yuba College, New Softball Field

1.3 CONTRACTOR'S STAFF

The Contractor's Project Team consists of the following individuals:

Project Manager: _____

Project Superintendent: _____

1.4 ATTACHMENTS

We have attached the following documents, fully executed and complete for each project:

- A. Subcontractor List as defined Section 00 52 00 – Agreement for Services, Contract Documents, Item 4.09
- B. Preliminary Schedule as defined Section 00 52 00 – Agreement for Services, Contract Documents, Item 4.12
- C. Proposed Schedule of Values Form in format described in Section 00 43 73, “Proposed Schedule of Values”
- D. Section 00 45 19, “Non-Collusion Affidavit”
- E. Section 00 45 10, “ Verification of Contractor and Subcontractor's DIR Registration”
- F. Section 00 45 27, “Drug-Free Workplace Certification”
- G. Section 00 61 00, “Bid Bond”

1.5 AFFIRMATION AND SIGNATURE

DATE: _____

CONTRACTOR: _____

BY: _____

TITLE: _____

ADDRESS: _____

TELEPHONE: _____

LICENSE NUMBER: _____

SURETY: _____

SEAL (If Corporation)

END OF SECTION

PRE-BID INQUIRY FORM

Project: **Yuba College, New Softball Field**

Submittal Date _____

Bidder inquiries will be responded to only if: (i) submitted on this Pre-Bid Inquiry Form; (ii) this completed Pre-Bid Inquiry Form is submitted prior to the latest date/time for submittal of pre-bid inquiries as set forth in the Call for Bids; and (ii) this completed Pre-Bid Inquiry Form is submitted to the person or entity noted in the Call for Bids.

Item No.	Item Description	Drawing Sheet No. & Detail No. Reference	Specifications Section and Paragraph No. Reference

Submitted By:
 (Bidder Name)

 (Signature of Bidder’s Authorized Employee, Officer or Representative)

Bidder Contact Information:
 (Bidder Contact Name)

 (Phone and Fax)

END OF SECTION

SECTION 00 43 73
PROPOSED SCHEDULE OF VALUES FORM

PART 1 - GENERAL

1.1 BID FORM SUPPLEMENT

- A. A completed Proposed Schedule of Values form is required to be attached to the Bid Form.

1.2 PROPOSED SCHEDULE OF VALUES FORM

- A. Proposed Schedule of Values Form: Provide a breakdown of the bid amount, including alternates, in enough detail to facilitate continued evaluation of bid. Coordinate with the Project Manual table of contents. Provide multiple line items for principal material and subcontract amounts in excess of five (5) percent of the Contract Sum.
- B. Arrange schedule of values using AIA Document G703 format, latest edition, or equal.
1. Copies of AIA standard forms may be obtained from the American Institute of Architects;
<https://www.aiacontracts.org/contract-documents/20631-continuation-sheet>

PART 2 - PRODUCTS

2.1 NOT USED

PART 3 - EXECUTION

3.1 NOT USED

END OF SECTION

VERIFICATION OF CONTRACTOR AND SUBCONTRACTOR'S DIR REGISTRATION

I am the _____ of _____ (“Bidder”) (Title/Position) (Bidder Name)

submitting the accompanying Bid Proposal for the Work described as the **Yuba College, New Softball Field.**

1. The Bidder is currently registered as a contractor with the Department of Industrial Relations (“DIR”).
2. The Bidder’s DIR Registration Number is: _____. The expiration date of the Bidder’s DIR Registration is _____, 20__.
3. If the expiration date of the Bidder’s DIR Registration will occur prior to expiration of the Contract Time for the Work and the Bidder is awarded the Contract for the Work, prior to the Bidder’s DIR Registration expiration, the Bidder will take all measures necessary to renew the Bidder’s DIR Registration so that there is no lapse in the Bidder’s DIR Registration.
4. The Bidder has independently verified that each Subcontractor identified in the Subcontractors List is a DIR registered contractor.
5. The Bidder, if awarded the Contract for the Work will remain a DIR registered contractor for the entire duration of the Work.
6. The Bidder’s solicitation of Subcontractor bids included notice to prospective Subcontractors that: (i) all sub-tier subcontractors must be DIR registered contractors at all times during performance of the Work; and (ii) prospective subcontractors may only solicit sub-bids from and contract with lower-tier subcontractors who are DIR registered contractors.
7. If any of the statements herein are false or omit material facts rendering a statement to be false or misleading, the Bidder’s Bid Proposal is subject to rejection for non-responsiveness.
8. I have personal first-hand knowledge of all of the foregoing.

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

Executed this ____ day of _____, 20__ at _____ (City and State)

(Signature)

(Name, typed or printed)

END OF SECTION

SECTION 00 45 19
NON-COLLUSION AFFIDAVIT

STATE OF CALIFORNIA
COUNTY OF Yuba, CA

PROJECT: **Yuba College, New Softball Field**

I, _____, being first duly sworn, deposes and says that I am the
(Typed or Printed Name)

_____ of _____, the party submitting the
(Title) (Bidder Name)

foregoing Bid Proposal ("the Bidder"). In connection with the foregoing Bid Proposal, the undersigned declares, states and certifies that:

1. The Bid Proposal is not made in the interest of, or on behalf of, any undisclosed person, partnership, company, association, organization or corporation.
2. The Bid Proposal is genuine and not collusive or sham.
3. The bidder has not directly or indirectly induced or solicited any other bidder to put in a false or sham bid, and has not directly or indirectly colluded, conspired, connived, or agreed with any other bidder or anyone else to put in sham bid, or to refrain from bidding.
4. The bidder has not in any manner, directly or indirectly, sought by agreement, communication, or conference with anyone to fix the bid price, or that of any other bidder, or to fix any overhead, profit or cost element of the bid price or that of any other bidder, or to secure any advantage against the public body awarding the contract or of anyone interested in the proposed contract.
5. All statements contained in the Bid Proposal and related documents are true.
6. The bidder has not, directly or indirectly, submitted the bid price or any breakdown thereof, or the contents thereof, or divulged information or data relative thereto, or paid, and will not pay, any fee to any person, corporation, partnership, company, association, organization, bid depository, or to any member or agent thereof to effectuate a collusive or sham bid.

Executed this _____ day of _____ 20____ at _____
(City, County and State)

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

Dated _____

By: _____
(Signature of Bidder's Authorized Officer or Representative)

(Typed or Printed Name)

END OF SECTION

SECTION 00 45 26
CERTIFICATE OF WORKERS' COMPENSATION INSURANCE

I, _____ the _____ of
(Name) (Title)

_____, declare, state and certify that:
(Contractor Name)

1. I am aware that California Labor Code §3700(a) and (b) provides:
“Every employer except the state shall secure the payment of compensation in one or more of the following ways:
(a) By being insured against liability to pay compensation in one or more insurers duly authorized to write compensation insurance in this state.
(b) By securing from the Director of Industrial Relations a certificate of consent to self-insure either as an individual employer, or one employer in a group of employers, which may be given upon furnishing proof satisfactory to the Director of Industrial Relations of ability to self-insure and to pay any compensation that may become due to his or her employees.”
2. I am aware that the provisions of California Labor Code §3700 require every employer to be insured against liability for workers' compensation or to undertake self-insurance in accordance with the provisions of that code, and I will comply with such provisions before commencing the performance of this Contract.
3. I am authorized to execute this Certificate of Workers' Compensation Insurance on behalf of the above-identified Contractor.

By: _____
(Signature of Bidder's Authorized Officer or Representative)

(Typed or Printed Name)

Title: _____

END OF SECTION

SECTION 00 45 27
DRUG-FREE WORKPLACE CERTIFICATION

I, _____, am the _____ of
(Print Name) (Title)

(Contractor Name)

I declare, state and certify to all of the following:

1. I am aware of the provisions and requirements of California Government Code §§8350 et seq., the Drug Free Workplace Act of 1990.
2. I am authorized to certify, and do certify, on behalf of Contractor that a drug free workplace will be provided by Contractor by doing all of the following:
 - 2.1. Publishing a statement notifying employees that the unlawful manufacture, distribution, dispensation, possession or use of a controlled substance is prohibited in Contractor’s workplace and specifying actions which will be taken against employees for violation of the prohibition.
 - 2.2. Establishing a drug-free awareness program to inform employees about all of the following: (i) the dangers of drug abuse in the workplace; (ii) Contractor’s policy of maintaining a drug-free workplace; (iii) the availability of drug counseling, rehabilitation and employee-assistance programs; and (iv) the penalties that may be imposed upon employees for drug abuse violations.
 - 2.3. Requiring that each employee engaged in the performance of the Contract be given a copy of the statement required by Paragraph 2.1 above, and that as a condition of employment by Contractor in connection with the Work of the Contract, the employee agrees to abide by the terms of the statement.
3. Contractor agrees to fulfill and discharge all of Contractor’s obligations under the terms and requirements of California Government Code §8355 by, inter alia, publishing a statement notifying employees concerning: (i) the prohibition of any controlled substance in the workplace, (ii) establishing a drug-free awareness program, and (iii) requiring that each employee engaged in the performance of the Work of the Contract be given a copy of the statement required by California Government Code §8355(a) and requiring that the employee agree to abide by the terms of that statement.
4. Contractor and I understand that if the District determines that Contractor has either: (i) made a false certification herein, or (ii) violated this certification by failing to carry out and to implement the requirements of California Government Code §8355, the Contract awarded herein is subject to termination, suspension of payments, or both. Contractor and I further understand that, should Contractor violate the terms of the Drug-Free Workplace Act of 1990, Contractor may be subject to debarment in accordance with the provisions of California Government Code §§8350, et seq.
5. Contractor and I acknowledge that Contractor and I are aware of the provisions of California Government Code §§8350, et seq. and hereby certify that Contractor and I will adhere to, fulfill, satisfy and discharge all provisions of and obligations under the Drug-Free Workplace Act of 1990.
6. All Yuba Community College District College properties and buildings are “tobacco-free and vape-free” per Board of Trustees and District Policy.

I declare under penalty of perjury under the laws of the State of California that all of the foregoing is true and correct. Executed this ____ day of _____ 20__ at

(City and State)

By: _____
(Signature of Bidder's Authorized Officer or Representative)

(Typed or Printed Name)

Title: _____

END OF SECTION

SECTION 00 51 00
NOTICE OF AWARD

PART 1 - GENERAL

1.1 BID INFORMATION

- A. Bidder: <Insert successful bidder name>.
- B. Bidder's Address: <Insert street address, city, state, zip, and telephone>.
- C. Prime Contract: <Insert prime contract name>.
- D. Project Name: Yuba College Campus, New Softball Field.
- E. Project Location: 2088 N Beale Rd, Marysville, CA 95901
- F. Owner Representative: David Willis, District Director of Facilities, Maintenance, and Operations
- G. Architect: HY Architects, Inc.
 - 1. Howard Cho, Principal, Architect of Record
 - 2. Howard Cho, Project Architect
- H. Architect Project Number: 5924

1.2 NOTICE OF **INTENT TO AWARD** [**AWARD**] CONTRACT

- A. Notice: The above Bidder is hereby notified that their bid, dated <Insert date>, for the above Contract has been considered and the Bidder is hereby awarded a contract for the construction of the Yuba College New Softball Field Complex.

INCLUDE BELOW, IF APPLIES ONLY

Alternates Accepted: The following alternates have been accepted by Owner and have been incorporated in the Contract Sum:

- 1. Alternate No. 1: <Insert alternate title>.
- 2. Alternate No. 2: <Insert alternate title>.

- B. Contract Sum: The Contract Sum is <Insert written amount> dollars (\$ <Insert numeric amount>).

1.3 EXECUTION OF CONTRACT

- A. Contract Documents: Copies of the Contract Documents will be made available to the Bidder immediately. The Bidder must comply with the following conditions precedent **within seven (7) calendar days** of the above date of issuance of the Notice:
 - 1. Emailed Contractor Agreement for Services (CAFS), fully filled-out and executable/ signed per specification 00 52 00 by email to:
 - a. Rachel Harvey; rharvey@yccd.edu
 - b. David Willis; dwillis@yccd.edu

2. Deliver with the executed Contract Documents Performance and Payment Bonds and Certificates of Insurance required by the Contract Documents.

a. Email a copy of these documents to:

- 1) Rachel Harvey; rharvey@yccd.edu
- 2) David Willis; dwillis@yccd.edu

b. Mail one Original of the signed/notarized Performance and Payment Bonds to:

- 1) Yuba Community College District
Sutter County Center, District Offices
Attention: David Willis
3301 East Onstott Road, Yuba City, California, 95993

B. Compliance: Failure to comply with conditions of this Notice within the time specified will entitle Owner to consider the Bidder in default, annul this Notice, and declare the Bidder's Bid security forfeited.

1. Within seven (7) days after the Bidder complies with the conditions of this Notice, Owner will return to the Bidder one fully executed copy of the Contract Documents.

1.4 NOTIFICATION

A. This Notice is issued by:

1. Owner: Yuba Community College District/ David L. Willis.
2. Authorized Signature: _____ (Handwritten signature).
3. Signed By: David L. Willis (Type or print name).
4. Title: Director of Facilities Planning, Maintenance and Operations (Owner).

PART 2 - PRODUCTS

2.1 NOT USED

PART 3 - EXECUTION

3.1 NOT USED

END OF SECTION



District Offices, Attn.: Rachel Harvey, David Willis, 3301 East Onstott Road, Yuba City, California 95991

CONTRACTORS AGREEMENT FOR SERVICES

1. **PROPOSED START DATE:** _____ **PROPOSED END DATE:** _____

2. **IDENTIFICATION OF CONTRACTOR:**

CONTRACTOR:

LICENSE NO:

LICENSE EXPIRATION DATE:

DIR REGISTRATION NO:

DIR REGISTRATION EXPIRATION DATE:

3. **CAFS AGREEMENT—WORK ORDERS:** The specific work and services to be performed under this Contractors Agreement For Services (**CAFS Agreement**), the amounts to be paid, the times for performance, and liquidated damages (if any), are to be described in one or more Work Order(s), substantially in form attached hereto as Attachment A (each, including attachments thereto, an **Order**). However, nothing in this CAFS Agreement or any other document guarantees the execution of any Order, and the issuance of any Order does not guaranty the issuance of any further Orders.

4. **CONTRACT DOCUMENTS AND MISCELLANEOUS:**

4.01 Contractor shall perform the Work in accordance with the following (together, **Contract Documents**):

- A. This CAFS Agreement:
- B. Appendix A – General Conditions
- C. Appendix B -- Insurance
- D. Appendix C – Construction Labor and Material Payment Bond
- E. Appendix D – Construction Performance Bond
- F. Appendix E - Supplemental Conditions (Not Applicable)
- G. Appendix F – Firm/Contractor Checklist
- H. Appendix G – Addenda
- I. Appendix H - Contractor Proposal (Refer to Specification 00 41 00 for the Bid Proposal Form)

- 4.02 Other Related Sections and Forms:**
- A. Signature/Stamps Page
 - B. 00 01 00 - Table of Contents
 - A. 00 01 12 - DSA Form 103 Statement of Structural Tests & Inspections
 - B. 00 11 13 – Advertisement for Bids, including Bid Addenda Nos. _____
 - C. 00 21 13 - Instructions to Bidders
 - D. 00 41 00 - Bid Form
 - E. 00 43 24 - Pre-Bid Inquiry Form
 - F. 00 45 10 - Verification of Contractor and Subcontractor's DIR Registrations
 - G. 00 45 19 Non-Collusion Affidavit
 - H. 00 45 26 Certificate of Workers' Compensation Insurance
 - I. 00 45 27 Drug-Free Workplace Certification
 - J. 00 60 00 - Project Forms
 - K. 00 61 10 - Bid Bond
 - L. 00 62 90 - Verification of Certified Payroll Records Submittal to Labor Commission
 - M. 00 65 36 - Guarantee Form
 - N. 00 65 37 - Contractor Certification of Subcontractor Claim
- 4.03** The Contract Documents are the sole and exclusive provisions that govern the Work. Any provision contained in any District purchase order issued in connection with this CAFS Agreement or any Work shall be null and void and shall have no force or effect.
- 4.04** CAFS Agreement and Order numbers must appear on all invoices and correspondence. Send invoices in duplicate immediately upon performance of Work under any Order or as otherwise provided in Contract Documents to:
- Yuba Community College District**
Sutter County Center, District Offices, Yuba City, California 95991
Attn: Accounts Payable
- 4.05 Contract Time.** The Work shall be commenced on the date stated in the District's Notice to Proceed. The Contractor shall achieve Substantial Completion of the Work **one hundred and forty seven 147 calendar days** after the commencement date of the Work set forth in the Notice to Proceed.
- 4.06 Liquidated Damages.** The Contractor shall be subject to assessment of Liquidated Damages if the Contractor: (i) fails to achieve Substantial Completion of the Work within the Contract Time, including adjustments thereto authorized by the Contract Documents; (ii) fails to submit Submittals in accordance with the Submittal Schedule; or (iii) fails to complete Punchlist items noted upon Substantial Completion within the time established to complete the Punchlist items. The per diem rate of Liquidated Damages assessed for each of the foregoing events is as follows:
- A. Liquidated Damages. The per diem rate of Liquidated Damages for delayed Substantial Completion, delayed submission of Submittals and delayed completion of Punchlist shall be as set forth herein.

- B. Delayed Substantial Completion. If Substantial Completion is not achieved on or before expiration of the Contract Time, the Contractor shall be liable to the District for Liquidated Damages from the date of expiration of the Contract Time to the date that the Contractor achieves Substantial Completion of the Work at the per diem rate of **Two Hundred Dollars (\$200)**.
- C. Delayed Submission of Submittals (Not Applicable)
- D. Delayed Punchlist Completion. If the Contractor fails to complete Punchlist within the time established pursuant to the Contract Documents, the Contractor shall be liable to the District for Liquidated Damages from the date established for completion of Punchlist until the date that all Punchlist is actually completed at the per diem rate of **Three Hundred Dollars (\$300)**.
- E. Surety Liability. Subject only to limitations established by the penal sum of the Performance Bond, the Surety issuing the Performance Bond shall be liable to the District for Liquidated Damages due from the Contractor.

4.07 By signing below, each individual executing this instrument represents that he or she has the authority to execute this instrument and to bind the party on whose behalf the execution is made.

4.08 Provide contact information for staff that will be administering the contract, per the table below:

Name:
Title/Project Role:
Address:
Office Phone Number:
Cell Phone Number:
Email Address:

4.09 List all first Tier Sub-Contractors, Contractor License Numbers, and Scope of Work:

No.	Sub-Contractor Name	Contractor License Number	Scope of Work Under Contract
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			

Attach pages as needed to describe additional sub-contractor information.

- 4.10 Change Order Cost Estimating:** Provide rationale for cost estimating of change orders by either getting multiple quotes for the work, using unit pricing from MS Means cost data for the region, or by other methods that allow a thoughtful determination of maximum value to the District. See Section 01 26 00, Contract Modification Procedures
- 4.11 Change Order Mark-Ups.** Provide change order mark-up percentage on all changes to cover profit and overhead by the general/prime contractor and sub-contractors.
- General/Prime contractor mark-up percentage: 10%.
- Sub-contractor mark-up percentage: 10%.
- 4.12 Schedule.** Provide a preliminary schedule for the work to be completed with the proposal. Note any issues or considerations that may impact the schedule. Note if overtime is included or not.

(Signatures on Next Page)

CONTRACTOR [Insert CONTRACTOR NAME]

**OWNER: YUBA COMMUNITY COLLEGE
DISTRICT**

Signature

Signature

Print Name & Title

Print Name & Title

Date

Date

Addresses for Notices:

Attn:

Yuba Community College District
Chancellor,
Yuba College, Sutter County Center,
District Offices
3301 East Onstott Road
Yuba City, California 95991

Signature

Print Name & Title

Date

Yuba Community College District
Vice-Chancellor of Administrative Services:
Kuldeep Kaur
Yuba College, Sutter County Center, District Offices
3301 East Ontott Road
Yuba City, California, 95991

Signature

Print Name & Title

Date

Yuba Community College District
Director, Facilities Planning
David Willis
Maintenance & Operations
Yuba College, Sutter County Center, District Offices
3301 East Ontott Road
Yuba City, California, 95991

(End of CAFS Agreement)

Requisition# _____

G/L# _____

APPENDIX A, TO CONTRACTORS AGREEMENT FOR SERVICES**GENERAL CONDITIONS****5 ARTICLE 1 - TERMS OF PERFORMANCE**

5.01 Contract Documents Force and Effect. The Contract Documents constitute the entire agreement between the Contractor and District regarding the Work. No representation, term or covenant not expressly specified in the Contract Documents shall be included in the parties' agreement. The Contract Documents shall govern the Work (whenever performed), and shall supersede all other agreements and documents between Contractor and District, and any proposal, with respect to any Work.

5.02 Construction Performance Bond; Construction Labor and Materials Payment Bond; Securities in Lieu of Retention Escrow Account.

5.02.1 Except for Orders that consist solely of maintenance work, if the compensation under any Order, or the aggregate compensation under all Orders expected to be issued under the CAFS Agreement at the time the CAFS Agreement is executed, exceeds (or is expected to exceed) \$25,000, Contractor shall provide (i) a construction labor and material payment bond, in accordance with Civil Code Section 9550 and in form attached to the CAFS Agreement as Appendix C – Construction Labor and Materials Payment Bond, and (ii) a construction performance bond in form attached to the CAFS Agreement as Appendix D – Construction Performance Bond. Contractor may not substitute cash in lieu of the required bond(s).

5.02.2 If the CAFS Agreement or any Order specifies performance retention, Contractor may elect to substitute securities or direct payment to an escrow account, pursuant to Public Contract Code Section 22300 (incorporated herein by this reference).

5.03 Records and Payment Requests. Contractor shall submit all billings with all necessary invoices or other appropriate evidence of proper performance, after which District shall make payment within 30 days. Upon District's written request, Contractor shall make available to District, its authorized agents, officers, or employees, any and all ledgers, books of accounts, invoices, vouchers, cancelled checks, and other records or documents evidencing or relating to the Work or the expenditures and disbursement charged to District, and all correspondence, internal memoranda, calculations, books and accounts, records documenting its Work under the Contract Documents, and invoices, payrolls, timecards, records and all other data related to matters covered by the Contract Documents. Contractor shall furnish to District, its authorized agents, officers, or employees, such other evidence or information as District may require with regard to the Work or any such expenditure or disbursement charged by Contractor. Contractor shall maintain all such documents and records prepared by or furnished to Contractor during the course of performing the Work for at least five years following completion of the Work, except that all such items pertaining to hazardous materials shall be maintained for at least 30 years. Contractor shall permit District to audit, examine and make copies, excerpts and transcripts from such records. The State of California or any federal agency having an interest in the subject of the Contract Documents shall have the same rights conferred to District by this section. Such rights shall be specifically enforceable.

5.04 Use of Contract Documents and Other Information. Drawings, Specifications, and other Contract Documents are made available to Contractor solely for Contractor's use under the Contract Documents. Further, all tangible and intangible property developed, produced and/or provided by Contractor under the Contract Documents, and all such items (other than Contract Documents) provided by District to Contractor

in connection with the Contract Documents including, without limitation, drawings, specifications, sketches, models, samples, tools, computer programs, technical information, confidential business information, scripts, customer or personnel information and data, whether written, oral or otherwise (all hereinafter referred to as **Information**) shall be District's sole property. Contractor may not use Contract Documents or Information for any purpose unrelated to Contract Documents without prior written consent of District's Executive Vice Chancellor. All copies of Information in written, graphic, or other tangible form shall be delivered to District upon completion of Work, or earlier if otherwise provided in Contract Documents.

5.05 Performance of Work/No Assignment. Time is of the essence in the performance of the Work. Contractor will perform the Work in a skillful and workmanlike manner; comply fully with criteria established by District, and with applicable laws, codes, and all applicable industry standards. Contractor shall maintain its work area(s) in a clean and sanitary condition, clear debris and trash at the end of each work day, and shall not damage or disrupt any property unless specifically part of the scope of the Contract Documents. Contractor shall not contract any portion of the Work or otherwise assign the Contract Documents without prior written approval of District. (Contractor shall remain responsible for compliance with all terms of the Contract Documents, regardless of the terms of any such assignment.) Contractor shall permit District (or its designees) access to the work area, Contractor's shop, or any other facility, to permit inspection of the Work at all times during construction and/or manufacture and fabrication. The granting of any progress payment, and any inspections, reviews, approvals or oral statements by any District representative, or certification by any governmental entity, shall in no way limit or relieve Contractor from its obligations under the Contract Documents. Either party's waiver of any breach, or the omission or failure of either party, at any time, to enforce any right reserved to it, or to require strict performance of any provision of the Contract Documents, shall not be a waiver of any other right to which any party is entitled, and shall not in any way affect, limit, modify or waive that party's right thereafter to enforce or compel strict compliance with every provision hereof. District shall have, at all times, set-off rights with respect to any payment and Contractor's failure to perform the terms of the Contract Documents.

5.06 Defective Work; Warranties. Contractor warrants that all construction services shall be performed in accordance with generally accepted professional standards of good and sound construction practices, all Contract Documents requirements, and all laws, codes, standards, licenses, and permits. Contractor warrants that all materials and equipment shall be new, of suitable grade of their respective kinds for their intended uses, and free from defects. Contractor hereby grants to District for a period of one year following the date of completion of all Work under an Order its unconditional warranty of the quality and adequacy of all of the Work under that Order including, without limitation, all labor, materials and equipment provided by Contractor and its Subcontractors of all tiers. If either prior to completion of the Work under an Order, or within one year after completion of the Work under that Order, any Work (completed or incomplete) is found to violate any of the foregoing warranties (**Defective Work**), Contractor shall promptly, without cost to District and in accordance with District's written instructions, correct, remove and replace the Defective Work with conforming Work, and correct, remove and replace any damage to other Work or other property resulting therefrom. If Contractor fails to do so within five days of District's written notice (or other time period specified in the notice), Contractor shall pay all of the District's resulting claims, costs, losses and damages. Where Contractor fails to timely correct Defective Work, or defects are discovered outside the correction period, District shall have all rights and remedies granted by law.

5.07 Scope of Liquidated Damages.

5.07.1 This paragraph applies to any Order that provides for payment of liquidated damages.

5.07.2 Contractor and District agree that because of the nature of the Work, it would be impractical or extremely difficult to fix the amount of such actual damages incurred by District because of a delay in completion of all or any part of the Work. Contractor and District agree that specified measures of

liquidated damages shall be presumed to be the amount of such damages actually sustained by District, and that because of the nature of the Work, it would be impracticable or extremely difficult to fix the actual damages.

Liquidated damages for delay shall cover administrative, overhead, interest on bonds, and general loss of public use damages suffered by District as a result of delay. Liquidated damages shall not cover the cost of completion of the Work, damages resulting from Defective Work, lost revenues or costs of substitute facilities, or damages suffered by others who then seek to recover their damages from District (for example, delay claims of other contractors, subcontractors, tenants, or other third-parties), and defense costs thereof. District may deduct from any money due or to become due to Contractor subsequent to time for completion of entire Work and extensions of time allowed pursuant to provisions hereof, a sum representing then-accrued liquidated damages.

- 5.08 Earthwork and Underground Facilities.** If any Work involves digging trenches or other excavations that extend deeper than four feet below the surface, Contractor shall notify District in writing of any material that Contractor believes may be hazardous waste that is required to be removed in accordance law, subsurface or latent physical conditions at the site differing from those indicated by information about the site made available to bidders prior to the deadline for submitting bids, or unknown physical conditions at the site of any unusual nature, different materially from those ordinarily encountered and generally recognized as inherent in work of the character provided for in the Contract Documents, pursuant to Public Contract Code Section 7104. For any Work involving trench shoring that costs in excess of \$25,000, Contractor shall submit and District (or a registered civil or structural engineer employed by District) must accept, in advance of excavation, a detailed plan showing the design of shoring, bracing, sloping, or other provisions to be made for worker protection from the hazard of caving ground during the excavation of such trench or trenches, pursuant to Labor Code Section 6705. If such plan varies from the shoring system standards, the plan shall be prepared by a registered civil or structural engineer. Consistent with Government Code Section 4215, as between District and Contractor, District will be responsible for the timely removal, relocation, or protection of existing main or trunk line utility facilities located on the Site only if such utilities are not identified in the Contract Documents or information made available for bidding.

6 LEGAL

- 6.01 Compliance with Laws; Conflict of Interests.** Contractor shall comply with all applicable federal and state laws, regulations and policies, as amended, including those regarding discrimination, unfair labor practices, anti-kick-back, collusion, prevailing wages, labor compliance, and the provisions of the Americans with Disability Act. Contractor shall comply with all applicable obligations under the Field Act, Education Code Sections 17280-17317, 17365-17374, 81050-81054, and 81130-81149, and California Code of Regulations, Title 24, Part 1 California Building Standards Administrative Code. If applicable, Contractor shall comply with Government Code Section 8546.7 which provides that any contract involving expenditure of public funds in excess of \$10,000 requires that the contracting parties shall be subject to the examination and audit of the Auditor General for a period of three years after final payment under the contract. Contractor, its officer, partners, associates, agents, and employees, shall not make, participate in making, or in any way attempt to use the position afforded them by the Contract Documents to influence any governmental decision in which he or she knows or has reason to know that he or she has a financial interest under applicable state, federal and local conflict of interest regulations. Contractor warrants that no person or agency has been employed or retained, or will be employed or retained, to solicit or obtain any contract with District, upon an agreement or understanding for a contingent fee, except a bona fide employee or agency.
- 6.02 Licenses, Patents, Permits.** Before commencing Work, Contractor shall apply for, obtain and maintain in current status, at its own expense, any license, permit or approval required from any agency for the performance

of Work. To the greatest extent permitted by law, Contractor shall not be entitled to any compensation for any Work performed while not properly licensed, etc.

6.03 Fair Employment Practices/Equal Opportunity Acts. District is an equal opportunity employer. By executing a CAFS Agreement or Order, Contractor certifies that it is in compliance with the Equal Employment Opportunity Requirement of Executive Order 11246, Title VII of the Civil Rights Act of 1973, the California Fair Employment Practices Act and any other Federal or State laws and regulations related to Equal Employment Opportunity. Contractor's personnel policies shall be made available to District upon request.

A. Employee / Prevailing Wages; Records; Apprentices. Pursuant to California Labor Codes 1771, 1774, and 1775, this Work is subject to compliance monitoring and enforcement by the Department of Industrial Relations. Contractor shall post job site notices as prescribed by regulation. Contractor and all subcontractors shall pay prevailing wages to its employees on any Order in excess of \$1,000.00. Copies of the prevailing rate of per diem wages are on file at District's principal office. Contractor shall comply with the 8-hours per day/40 hours per week/overtime/working hours restrictions for all employees, pursuant to the California Labor Codes 1813 and 1815. Contractor and all subcontractors shall keep and maintain accurate employee payroll records for Work performed. The payroll records shall be certified and submitted as required by law, including Labor Code Section 1771.4 and 1776, including (if the CAFS Agreement or any Order is awarded on or after April 1, 2015 or continues on or after January 1, 2016) to the Labor Commissioner no less frequently than monthly. Contractor shall comply fully with Labor Code Section 1777.5 in the hiring of apprentices for work relating to the CAFS Agreement. If any Order exceeds \$2,000 and is funded with federal funds, then Contractor shall pay federal Davis Bacon wages and comply with applicable federal requirements.

B. Are there any exceptions to the registration requirement?

The contractor registration requirement does not apply to contractors working solely on public works projects awarded prior to April 1, 2015. Some exceptions allow contractors to bid on federally funded projects or submit joint venture bids without first being registered, as long as the contractors that are parties to the joint venture and the joint venture are registered at the time the contract is awarded.

Contractors who work exclusively on small public works projects are not required to register as a public works contractor or file electronic certified payroll reports for those projects. Contractors are still required to maintain certified payroll records on a continuous basis, and provide them to the Labor Commissioner's Office upon request. Additionally, awarding agencies are not required to submit the notice of contract award through DIR's PWC-100 system on projects that fall within the small project exemption. **The small project exemption applies for all public works projects that do not exceed:**

- o \$25,000 for new construction, alteration, installation, demolition or repair
- o \$15,000 for maintenance

C. Who is eligible to register?

Contractors must meet the following requirements to register:

- o Have workers' compensation coverage for any employees and only use subcontractors who are registered public works contractors.
- o Have a Contractors State License Board license if applicable to trade.
- o Have no delinquent unpaid wage or penalty assessments owed to any employee or enforcement agency.
- o Not be under federal or state debarment.
- o Not be in prior violation of this registration requirement once it becomes effective. However, for the first violation in a 12-month period, a contractor may still qualify for registration by paying an additional penalty.

D. How much does registration cost, and how long does it last?

Registration costs \$400 and covers one fiscal year (July 1–June 30), regardless of the date on which a contractor registers. Registration is renewable annually.

E. What if I don't register (i.e., what are the consequences of noncompliance)?

Contractors who are required to register but fail to do so are ineligible to bid or work on a public works contract and can be removed from any public works project on which they currently are working. For a single violation in a 12-month period, a contractor who is otherwise eligible may still register by paying a \$2,000 penalty in addition to the \$400 registration fee. Registered contractors who inadvertently fail to renew by June 30, but continue to work on public works after that date, have a 90-day grace period to renew retroactively by paying a \$400 penalty in addition to the registration renewal fee.

F. How long does it take for DIR to process contractor registrations, verify submitted information, and post contractor information in the registration list that is accessible online?

This process can take less than 24 hours if registration fees (including penalties, if applicable) are paid by credit card. Verification of payment by other means can take up to eight weeks.

- 6.04 Mandatory Contractor and Subcontractor Registration.** Pursuant to Labor Code Section 1771.1(a), Contractor represents that it and all of its Subcontractors are currently registered and qualified to perform public work pursuant to Labor Code Section 1725.5. Contractor covenants that any additional or substitute Subcontractors will be similarly registered and qualified.
- 6.05 Indemnity/Liability.** Contractor shall defend, indemnify, and save harmless, to the fullest extent permitted by law, the District and each of its officers, directors, representatives, agents and employees, against all claims, suits, actions, loss, cost, damage, expense, and liability arising from or related to bodily injury to or death of any person or damage to any property, or resulting from any breach and/or Contractor's negligence in performing the Work pursuant to the Contract Documents. Notwithstanding any provision of the Contract Documents, District shall not be liable to Contractor or anyone claiming under it, in contract or tort, for any special, consequential, indirect or incidental damages arising out of or in connection with the Contract Documents or the Work. District's rights and remedies, whether under the Contract Documents or other applicable law, shall be cumulative and not subject to limitation.
- 6.06 Worker's Compensation.** Pursuant to Labor Code Sections 1860 and 1861, in accordance with the provisions of Section 3700 of the Labor Code, every contractor will be required to secure the payment of compensation to his employees. Contractor represents that it is aware of the provisions of Labor Code Section 3700 that require every employer to be insured against liability for workers' compensation or to undertake self-insurance in accordance with the provisions of that Code, and Contractor shall comply with such provisions before commencing the performance of the Work.

7 MISCELLANEOUS

- 7.01 No Modification or Waiver; Severability.** The Contract Documents may not be modified, nor may compliance with any of its terms be waived, except by written instrument executed and approved by fully authorized representatives of District and Contractor. Contract Documents headings are for convenience only and do not affect the construction of the Contract Documents. Should any part of the Contract Documents be declared invalid, void or unenforceable, all remaining parts, terms and provisions of the Contract Documents shall remain in full force and effect and shall in no way be invalidated, impaired or affected thereby.
- 7.02 Independent Contractor.** Contractor is an independent Contractor and does not act as District's agent in any capacity, whatsoever. Contractor is not entitled to any benefits that District provides to District employees including, without limitation, insurance, worker's compensation benefits or payments, pension benefits, health benefits or insurance benefits. Terms within the Contract Documents regarding directives apply to and concern the result of the Contractor's provision of Work not the means, methods, or scheduling of the Contractor's Work. Contractor shall be solely responsible for the means, methods, techniques, sequences and procedures with respect to its provision of Work under the Contract Documents. Contractor shall pay all payroll taxes imposed by any governmental entity and will pay all other taxes not specifically identified in the Contract Documents as District's responsibility.
- 7.03 Termination; Suspension; Disputes.** District may direct Contractor to terminate, suspend, delay, interrupt or accelerate Work, in whole or in part, for such periods of time as District may determine in its sole discretion. District will issue such directives in writing, and may do so, in whole or in part, for its convenience or due to Contractor's fault. District will compensate Contractor for extra costs resulting from such directives only to the extent that District issues such directives for its convenience and not due to Contractor's fault (but District shall not compensate Contractor for costs, profit or overhead anticipated to be earned or incurred on Work terminated for District's convenience.) Contractor shall continue its Work throughout the course of any dispute, and Contractor's failure to continue Work during a dispute shall be a material breach of the Contract Documents. All claims by Contractor against District shall be submitted in writing to District, and shall be governed by Public Contract Code Sections 20104 – 20104.6, after which time the one year time period in Government Code Section 911.2 shall be, pursuant to Government Code Section 930.2, reduced to 90 days. Should Contractor be terminated for default, and such termination is subsequently determined to be wrongful, such termination will be converted to a termination for convenience as provided herein.
- 7.04 Notices.** All notices between the parties hereto shall be in writing and may be served by commercial express/overnight courier service or by depositing the same in the United States mail, postage prepaid and certified receipt requested, and addressed as indicated beneath each party's signature in the CAFS Agreement, or as either party may otherwise provide to the other.
- 7.05 Dispute Resolution.** Before resorting to litigation, the parties shall use reasonable efforts to resolve any dispute between them in an amicable fashion. Such efforts may include, without limitation, a meeting between party principals.
- 7.06 Execution; Venue; Limitations.** The Contract Documents shall be deemed to have been executed in Yuba and/or Sutter County, California. Enforcement of the Contract Documents shall be governed by the laws of the State of California, excluding its conflict of laws rules. Except as expressly provided in the Contract Documents, nothing in the Contract Documents shall operate to confer rights or benefits on persons or entities other than District and Contractor. As between the parties to the Contract Documents, any applicable statute of limitations for any act or failure to act arising from or in connection with any Order shall commence to run on the date of District's issuance of the final Certificate for Payment for the Order, or termination of the

Contract Documents, whichever is earlier, except for latent defects, for which the statute of limitation shall begin running upon discovery of the defect and its cause.

7.07 List all first Tier Sub-Contractors, Contractor License Numbers, and Scope of Work:

No.	Sub-Contractor Name	Contractor License Number	Scope of Work Under Contract
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			

Attach pages as needed to describe additional sub-contractor information.

7.08 Change Order Cost Estimating: Provide rationale for cost estimating of change orders by either getting multiple quotes for the work, using unit pricing from MS Means cost data for the region, or by other methods that allow a thoughtful determination of maximum value to the District. See Section 01 26 00, Contract Modification Procedures

7.09 Change Order Mark-Ups. Provide change order mark-up percentage on all changes to cover profit and overhead by the general/prime contractor and sub-contractors.

General/Prime contractor mark-up percentage:_____.

Sub-contractor mark-up percentage:_____.

7.10 Schedule. Provide a preliminary schedule for the work to be completed with the proposal. Note any issues or considerations that may impact the schedule. Note if overtime is included or not.

(End of Appendix A)

APPENDIX B, TO CONTRACTORS AGREEMENT FOR SERVICES**INSURANCE**

1. Commercial General Liability Insurance, written on an “occurrence” basis, which shall provide coverage for bodily injury, death and property damage resulting from operations, liability for slander, false arrest and invasion of privacy, blanket contractual liability, broad form endorsement, and completed operations, personal and advertising liability, with limits of not less than **[\$2,000,000]** general aggregate and **[\$1,000,000]** each occurrence, subject to a deductible of not more than **[\$1,000]** payable by Contractor.
2. Excess Liability Insurance, on an “Occurrence” form, coverage should apply and follow form over primary coverages shown above. Limits must apply per any one occurrence and general aggregate annually; and Annual Aggregate Products and Completed Operations. The following are required excess limits of liability: **[\$3,000,000]** Bodily Injury and Property Damage Liability, **[\$3,000,000]** General Aggregate, **[\$3,000,000]** Products and Completed Operations.
3. Business Automobile Liability Insurance with limits not less than **[\$1,000,000]** each occurrence including coverage for owned, non-owned and hired vehicles, subject to a deductible of not more than **[\$1,000]** payable by Contractor.
4. Workers’ Compensation Employers’ Liability limits not less than **[\$1,000,000]** each accident, **[\$1,000,000]** per disease and **[\$1,000,000]** aggregate. Contractor’s Workers’ Compensation Insurance policy shall contain a Waiver of Subrogation against the YUBA COMMUNITY COLLEGE DISTRICT, its officers, directors, officials, agents, employees and volunteers. In the event Contractor is self-insured, it shall furnish Certificate of Permission to Self-Insure signed by Department of Industrial Relations Administration of Self-Insurance, State of California.
5. **[If applicable]** Builder’s Risk Insurance including, without limitation, coverage against loss or damage to the Work by fire, lightening, wind, hail, aircraft, riot, vehicle damage, explosion, smoke, falling objects, vandalism, malicious mischief, collapse, and other such hazards as are normally covered by such coverage. Such insurance shall be in amount equal to the replacement cost (without deduction for depreciation and subject to stipulated value in lieu of average clause) of all construction constituting any part of the Work, excluding the cost of excavations, of grading and filling of the land. Such insurance may be subject to deductible clauses not to exceed **[\$5,000]** for any one loss. Such insurance will not cover loss or damage to Contractor’s equipment, scaffolding or other materials not to be consumed in the performance of the Work. The insurer shall waive all rights of subrogation against District.

[Alternatively, if applicable] An Installation Floater including, without limitation, coverage against loss or damage to the Work by fire, lightening, wind, hail, vandalism, malicious mischief,-and other such hazards as are normally covered by such coverage. Such insurance shall be in amount equal to the replacement cost (without deduction for depreciation and subject to stipulated value in lieu of average clause) of the Work. Such insurance may be subject to deductible clauses not to exceed **[\$5,000]** for any one loss. Such insurance will not cover loss or damage to Contractor’s equipment, scaffolding or other materials not to be consumed in the performance of the Work. The insurer shall waive all rights of subrogation against District.
6. Insurance policies in Appendix B shall contain an endorsement containing the following terms:
 - 6.01 YUBA COMMUNITY COLLEGE DISTRICT, its officers, directors, officials, agents, employees, and volunteers, shall be named as additional insureds, but only with respect to liability arising out of the activities of the named insured, and there shall be a waiver of subrogation as to each named and additional insured.
 - 6.02 The policies shall apply separately to each insured against whom claim is made or suit is brought except with respect to the limits of the company’s liability.
 - 6.03 Written notice of cancellation, non-renewal or of any material change in the policies shall be mailed to District thirty (30) days in advance of the effective date thereof.

- 6.04** Insurance shall be primary insurance and no other insurance or self-insured retention carried or held by any named or additional insureds other than Contractor shall be called upon to contribute to a loss covered by insurance for the named insured.
7. Certificates of Insurance and Endorsements shall have clearly typed thereon the CAFS Agreement Name and Date, shall clearly describe the coverage and shall contain a provision requiring the mailing of written notices of cancellation described in clause 6.03 above.
8. All policies of insurance shall be placed with insurers acceptable to District. The insurance underwriter(s) must be duly licensed to do business in the State of California and (other than for workers' compensation) must have an A. M. Best Company rating of [**A-,X**] or better. Required minimum amounts of insurance may be increased should conditions of Work, in the opinion of District, warrant such increase. Contractor shall increase required insurance amounts upon direction by District.
9. All Contractor work completed at the District requires an Insurance Certificate per the following sample with the District listed as the "Certificate Holder".

APPENDIX C - SUPPLEMENT TO CONTRACTORS AGREEMENT FOR SERVICES

CONSTRUCTION LABOR AND MATERIAL PAYMENT BOND

KNOW ALL PERSONS BY THESE PRESENTS:

1. THAT WHEREAS, the **YUBA COMMUNITY COLLEGE DISTRICT**, a California community college district (**District**) has awarded to **(Name of Contractor)** _____ as Principal a Contractors Agreement For Services, dated the _____ day of _____, 20 ____, together with Work Order No. ____ (**Order**, and together with the Contractors Agreement For Services, the **CAFS Agreement**), in the amount of \$ _____ (**Contract Sum**), which Agreement is by this reference made a part hereof, for the work described as follows:

(Describe Agreement Work) _____

2. AND WHEREAS, Principal is required to furnish a bond in connection with the Agreement to secure the payment of claims of laborers, mechanics, material suppliers, and other persons as provided by law;
3. NOW, THEREFORE, we, the undersigned Principal and _____ as Surety, are held and firmly bound unto District in the sum of 100% OF THE CONTRACT SUM (\$ _____), for which payment well and truly to be made we bind ourselves, our heirs, executors, administrators, successors, and assigns, jointly and severally, firmly by these presents.
4. THE CONDITION OF THIS OBLIGATION IS SUCH, that if Principal, or its heirs, executors, administrators, successors, or assigns approved by District, or its subcontractors shall fail to pay any of the persons named in California Civil Code Section 9100, or amounts due under the State of California Unemployment Insurance Code with respect to work or labor performed under the Agreement, or for any amounts required to be deducted, withheld, and paid over to the State of California Employment Development Department from the wages of employees of Principal and subcontractors pursuant to California Unemployment Insurance Code Section 13020 with respect to such work and labor, that Surety will pay for the same in an amount not exceeding the sum specified in this bond, plus reasonable attorneys' fees, otherwise the above obligation shall become and be null and void.
5. This bond shall inure to the benefit of any of the persons named in California Civil Code Section 9100, as to give a right of action to such persons or their assigns in any suit brought upon this bond. The intent of this bond is to comply with the California Mechanic's Lien Law.
6. Surety, for value received, hereby expressly agrees that no extension of time, change, modification, alteration, or addition to the undertakings, covenants, terms, conditions, and agreements of the Agreement, or to the work to be performed thereunder, shall in any way affect the obligation of this bond; and it does hereby waive notice of any such extension of time, change, modification, alteration, or addition to the undertakings, covenants, terms, conditions, and agreements of the Agreement, or to the work to be performed thereunder.

- 7. Surety’s obligations hereunder are independent of the obligations of any other surety for the payment of claims of laborers, mechanics, material suppliers, and other persons in connection with Agreement; and suit may be brought against Surety and such other sureties, jointly and severally, or against any one or more of them, or against less than all of them without impairing District’s rights against the other.
- 8. Correspondence or claims relating to this bond shall be sent to Surety at the address set forth below.

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

CONTRACTOR AS PRINCIPAL

SURETY

Company: _____ (Corp. Seal)

Company: _____ (Corp. Seal)

Signature

Signature

Name

Name

Title

Title

Street Address

Street Address

City, State, Zip Code

City, State, Zip Code

(End of Appendix C)

Requisition# _____ G/L# _____

APPENDIX D – SUPPLEMENT TO CONTRACTORS AGREEMENT FOR SERVICES

CONSTRUCTION PERFORMANCE BOND

KNOW ALL PERSONS BY THESE PRESENTS:

1. THAT WHEREAS, **YUBA COMMUNITY COLLEGE DISTRICT**, a California community college district (**District**) has awarded to (**Name of Contractor**) _____ as Principal a Contractors Agreement For Services, dated the _____ day of _____, 20____, together with Work Order No. _____ (**Order**, and together with the Contractors Agreement For Services, the **CAFS Agreement**), in the amount of \$ _____ (**Contract Sum**), which Agreement is by this reference made a part hereof, for the work described as follows:

(Describe Agreement Work) _____

AND WHEREAS, Principal is required to furnish a bond in connection with the Agreement, guaranteeing the faithful performance thereof;

- 2. NOW, THEREFORE, we, the undersigned Principal and _____ as Surety are held and firmly bound unto District in the sum of 100% OF THE CONTRACT SUM to be paid to District or its successors and assigns; for which payment, well and truly to be made, we bind ourselves, our heirs, executors, administrators, successors, and assigns, jointly and severally, firmly by these presents.
- 3. THE CONDITION OF THIS OBLIGATION IS SUCH, that if Principal, or its heirs, executors, administrators, successors, or assigns approved by District, shall promptly and faithfully perform the covenants, conditions, and agreements of the Agreement during the original term and any extensions thereof as may be granted by District, with or without notice to Surety, and during the period of any guarantees or warranties required under the Agreement, and shall also promptly and faithfully perform all the covenants, conditions, and agreements of any alteration of the Agreement made as therein provided, notice of which alterations to Surety being hereby waived, on Principal’s part to be kept and performed at the time and in the manner therein specified, and in all respects according to their true intent and meaning, and shall indemnify, defend, protect, and hold harmless District as stipulated in the Agreement, then this obligation shall become and be null and void; otherwise it shall be and remain in full force and effect.
- 4. No extension of time, change, alteration, modification, or addition to the Agreement, or of the work required thereunder, shall release or exonerate Surety on this bond or in any way affect the obligation of this bond; and Surety does hereby waive notice of any such extension of time, change, alteration, modification, or addition.
- 5. Whenever Principal shall be and declared by District in default under the Agreement, Surety shall promptly remedy the default, or shall promptly:
 - 5.01 Undertake through its agents or independent contractors, reasonably acceptable to District, to complete the Agreement in accordance with its terms and conditions and to pay and perform all obligations of Principal

Requisition# _____ G/L# _____

under the Agreement including, without limitation, all obligations with respect to warranties, guarantees, indemnities, and the payment of liquidated damages; or

5.02 Obtain a bid or bids for completing the Agreement in accordance with its terms and conditions, and, upon determination by District of the lowest responsible bidder, reasonably acceptable to District, arrange for a contract between such bidder and District and make available as work progresses (even though there should be a default or a succession of defaults under the contract or contracts of completion arranged under this paragraph) sufficient funds to pay the cost of completion less the balance of the Contract Sum, and to pay and perform all obligations of Principal under the Agreement including, without limitation, all obligations with respect to warranties, guarantees, and the payment of liquidated damages; but, in any event, Surety’s total obligations hereunder shall not exceed the amount set forth in the third paragraph hereof. The term “balance of the Contract Sum,” as used in this paragraph, shall mean the total amount payable by District to the Principal under the Agreement and any amendments thereto, less the amount District paid to Principal.

- 6. Surety’s obligations hereunder are independent of the obligations of any other surety for the performance of the Agreement, and suit may be brought against Surety and such other sureties, jointly and severally, or against any one or more of them, or against less than all of them without impairing District’s rights against the others. Surety may not use Contractor to complete the Agreement absent District’s written consent.
- 7. No right of action shall accrue on this bond to or for the use of any person or corporation other than District or its successors or assigns.
- 8. Surety may join in any proceedings brought under the Agreement and shall be bound by any judgment.
- 9. Correspondence or claims relating to this bond shall be sent to Surety at the address set forth below.

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

CONTRACTOR AS PRINCIPAL

SURETY

Company: _____ (Corp. Seal)

Company: _____ (Corp. Seal)

Signature

Signature

Name

Name

Title

Title

Street Address

Street Address

City, State, Zip Code

City, State, Zip Code

Requisition# _____

G/L# _____

APPENDIX E, TO CONTRACTORS AGREEMENT FOR SERVICES

SUPPLEMENTAL CONDITIONS

Not Applicable on this Project

Requisition# _____

G/L# _____

APPENDIX F, Firm/Contractor Checklist



YUBA COMMUNITY COLLEGE DISTRICT

Maintenance & Operations

425 Plumas Blvd., Suite 200

Yuba City, CA 95991

Phone: (530) 740-1715

District Director: Dave Willis (916) 747-4262

Email: dwillis@yccd.edu

Bryan Epp, Asst. Dir(Yuba College): (530) 740-1722

Email: bepp@yccd.edu

Michael Sinn, Asst. Dir(Woodland C. College): (530) 575-0206

Email: msinn@yccd.edu;

Rita Ordiway, Secretary (530) 740-1715

Email: rordway@yccd.edu

Vendor Checklist

FIRM/VENDOR INFORMATION	
Contact Name:	
Company Name	
Address:	
Telephone number:	
Cell Phone Number:	
Email:	
Fax Number:	

CHECKLIST: Please put a check mark in the box next to each item listed

<input type="checkbox"/>	Agreement for Services Contract Completed & Signed	<input type="checkbox"/>	CUPCCA List Form Completed - emailed or Included
<input type="checkbox"/>	W-9 Form Completed and - emailed or included	<input type="checkbox"/>	List Registration Number with Dept. of Industrial Relations
<input type="checkbox"/>	Certificate of Liability Insurance - emailed (Certificate Holder Section Lists our name and address)	<input type="checkbox"/>	DIR Project Number will be emailed if applicable
<input type="checkbox"/>	Copy of California Contractor’s License	<input type="checkbox"/>	Subcontractor List with License Numbers and DIR Numbers including Contact Information – emailed or included

When all items on checklist have been completed, a PO will be issued and emailed and the project can then begin.

Comments: _____
Note: Contact Rita Ordiway at rordway@yccd.edu or call (530) 740-1715 to get parking permit information.

Revised 02/01/2018

Requisition# _____

G/L# _____

APPENDIX “G: Addendum No. _____ [OPTIONAL]

AFS # _____ Funding Source/GL code: _____ Req # _____

EXHIBIT “A”

Original _____
Addendum _____

Contract between Yuba Community College District and _____
_____, hereinafter called “Contractor”.

I. Detailed description of services to be performed and work product to be delivered to District by Contractor: (reference and attach additional pages, if necessary)

II. Amount and Method of Payment: (indicate lump sum payment or rate of pay; also include a list of tasks which must be completed prior to each progress payment and show the timeline for progress payments, if applicable)

In any event, the total payment for services of contractor shall not exceed \$_____ and District shall have the right to withhold payment if District determines that the quantity or quality of the work performed is unacceptable.

End of CAFS Agreement

SECTION 00 60 00
PROJECT FORMS

PART 1 - GENERAL

1.1 FORM OF AGREEMENT AND GENERAL CONDITIONS

A. The following form of Owner/Contractor Agreement and form of the General Conditions and Special Condition shall be used for Project:

1. See Section 00 52 00, "Agreement For Services", Including all appendices in that section

1.2 ADMINISTRATIVE FORMS

A. Administrative Forms: Administrative forms are specified in Divisions 00 and 01, General Requirements.

B. Information and Modification Forms:

1. Form for Requests for Information (RFIs): See Section 01 26 13, "Requests For Interpretation".

Form of Request for Proposal: AIA Document G709-2018 "Proposal Request", or approved equivalent.

Form website link:

<https://www.aiacontracts.org/contract-documents/6128712-proposal-request>

Alternative: RFI items can also be submitted in MS Word format.

2. Change Order Form: See Section 01 26 00, "Contract Modification Procedures".
3. Changes in the Approved Work shall be documented and approved by DSA as a DSA Form 140, "Application of Submittal of Post-Approval Document", CCD-A or CCD-B as required.
4. Substitution Request Form: See Section 01 25 00, "Substitution Procedures" and Section 01 25 00.10, "Substitution Request Form"

C. Payment Forms:

1. Schedule of Values Form: See Section 00 43 73, "Proposed Schedule of Values Form".
2. Payment Application: See Section 01 20 00, "Price and Payment Procedures".
3. Form of Contractor's Affidavit: AIA Document G706-1994 "Contractor's Affidavit of Payment of Debts and Claim", or approved equivalent.

Form website link:

<https://www.aiacontracts.org/contract-documents/18931-contractors-affidavit-of-payment>

4. Form of Affidavit of Release of Liens: AIA Document G706A-1994 "Contractor's Affidavit of Payment of Release of Liens", or approved equivalent.

Form website link:

<https://www.aiacontracts.org/contract-documents/18936-contractors-affidavit-of-release-of-liens>

5. Form of Consent of Surety: AIA Document G707-1994 "Consent of Surety to Final Payment", or approved equivalent.

Form website link:

<https://www.aiacontracts.org/contract-documents/18941-consent-of-surety-to-final-payment>

PART 2 - PRODUCTS

2.1 NOT USED

PART 3 - EXECUTION

3.1 NOT USED

END OF SECTION

SECTION 00 61 00

BID BOND

KNOW ALL MEN BY THESE PRESENTS that we, _____, as Surety and _____, as Principal, are jointly and severally, along with their respective heirs, executors, administrators, successors and assigns, held and firmly bound unto Yuba Community College District (“the Obligee”) for payment of the penal sum hereof in lawful money of the United States, as more particularly set forth herein.

THE CONDITION OF THIS OBLIGATION IS SUCH THAT:

WHEREAS, the Principal has submitted the accompanying Bid Proposal to the Obligee for the Work commonly described as the Yuba College New Softball Field Project.

WHEREAS, subject to the terms of this Bond, the Surety and the Principal are jointly and severally firmly bound unto the Obligee in the penal sum equal to Ten Percent (10%) of the maximum amount of the Bid Proposal submitted by the Principal to the Obligee, inclusive of amounts proposed for Alternate Bid Items, if any.

NOW THEREFORE, if the Principal shall not withdraw said Bid Proposal within the period specified therein after the opening of the same, or, if no period be specified, for **sixty (60) days** after opening of said Bid Proposal; and if the Principal is awarded the Contract, and shall within the period specified therefor, or if no period be specified, within **five (5) calendar days** after the prescribed forms are presented to him for signature, enter into a written contract with the Obligee, in accordance with the Bid Proposal as accepted and give such bond(s) with good and sufficient surety or sureties, as may be required, for the faithful performance and proper fulfillment of such Contract and for the payment for labor and materials used for the performance of the Contract, or in the event of the withdrawal of said Bid Proposal within the period specified for the holding open of the Bid Proposal or the failure of the Principal to enter into such Contract and give such bonds within the time specified, if the Principal shall pay the Obligee the difference between the amount specified in said Bid Proposal and the amount for which the Obligee may procure the required Work and/or supplies, if the latter amount be in excess of the former, together with all costs incurred by the Obligee in again calling for Bids, then the above obligation shall be void and of no effect, otherwise to remain in full force and effect.

Surety, for value received, hereby stipulates and agrees that no change, extension of time, alteration or addition to the terms of the Contract or the Call for Bids, the Work to be performed there under, the Drawings or the Specifications accompanying the same, or any other portion of the Contract Documents shall in no way affect its obligations under this Bond, and it does hereby waive notice of any such change, extension of time, alteration or addition to the terms of said Contract, the Call for Bids, the Work, the Drawings or the Specifications, or any other portion of the Contract Documents.

In the event suit or other proceeding is brought upon this Bond by the Obligee, the Surety and Principal shall be jointly and severally liable for payment to the Obligee all costs, expenses and fees incurred

[CONTINUED NEXT PAGE]

by the Obligee in connection therewith, including without limitation, attorneys' fees.

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

(Bidder-Principal Name)

By: _____
(Signature)

(Typed or Printed Name)

Title: _____

(Attach Notary Public Acknowledgement of Principal's Signature)

(Surety Name)

By: _____
(Signature of Attorney-In-Fact for Surety)

(Typed or Printed Name of Attorney-In-Fact)

(Attach: (i) Attorney-In-Fact Certification; (ii) Notary Public Acknowledgment of Authorizing Signature on Attorney-Fact Certification; and (iii) Notary Public Acknowledgement of Attorney-In-Fact's Signature)

Contact name, address, telephone number and email address for notices to the Surety

(Contact Name)

(Street Address)

(City, State & Zip Code)

(_____) _____ (_____) _____
Telephone Fax

(Email address)

END OF SECTION

**CERTIFICATION OF CERTIFIED PAYROLL RECORDS SUBMITTAL
TO LABOR COMMISSION**

I am the _____ for _____ in connection with
(Superintendent/Project Manager) (Contractor)

_____. This Certification is submitted to Yuba Community College District concurrently with the Contractor’s submittal of an Application for Progress Payment to the District, identified as Application For Progress Payment No. _____ (“the Pay Application”).

1. The Pay Application requests the District’s disbursement of a Progress Payment covering Work performed for the period between _____, 20__ and _____, 20__.
2. The Contractor has submitted Certified Payroll Records (“CPR”) to the (Department of Industrial Relations – DIR) Labor Commissioner for all employees of the Contractor engaged in performance of Work subject to prevailing wage rate requirements for the period of time covered by the Pay Application.
3. All Subcontractors who are entitled to any portion of payment to be disbursed pursuant to the Pay Application have submitted their CPRs to the Labor Commissioner for all of their employees performing Work subject to prevailing wage rate requirements for the period of time covered by the Pay Application.
4. I have reviewed the Contractor’s CPRs submitted to the Labor Commissioner; the CPRs submitted to the Labor Commissioner by the Contractor are complete and accurate for the period of time covered by the Pay Application.
5. I have reviewed the Subcontractors’ CPRs submitted to the Labor Commissioner; the CPRs submitted to the Labor Commissioner by the Subcontractors are complete and accurate for the period of time covered by the Pay Application.

I declare under penalty of perjury under California law that the foregoing is true and correct. I executed this Certification on the ____ day of _____, 20__ at

(City and State)

By: _____

(Typed or Printed Name)

END OF SECTION

SECTION 00 65 36

GUARANTEE

Project: Yuba College, New Softball Field

The Contractor hereby warrants and guarantees to the District that all work, materials, equipment and workmanship provided, furnished or installed by or on behalf of Contractor in connection with the above referenced Project (the "Work") have been provided, furnished and installed in strict conformity with the Contract Documents for the Work, including without limitation, the Drawings and the Specifications. Contractor further warrants and guarantees that all work, materials, equipment and workmanship as provided, furnished and/or installed are fit for use as specified and fulfill all applicable requirements of the Contract Documents including without limitation, the Drawings and the Specifications. Contractor shall, at its sole cost and expense, repair, correct and/or replace any or all of the work, materials, equipment and/or workmanship of the Work, together with any other items which may be affected by any such repairs, corrections or replacement, that may be unfit for use as specified or defective within a period of two (2) years from the date of the District's Final Acceptance of the Work, ordinary wear and tear and unusual abuse or neglect excepted.

In the event of the Contractor's failure and/or refusal to comply with the provisions of this Guarantee, within thirty (30) days after being notified in writing by the District of any defect(s) in the Work, materials, equipment or workmanship, Contractor authorizes the District, without further notice to Contractor, to repair, correct and/or replace any such defective item at the expense of the Contractor. The Contractor shall reimburse the District for all costs, expenses or fees incurred by the District in providing or performing such repairs, corrections or replacements within fifteen (15) days of the District's presentation of a demand to the Contractor for the same.

The provisions of this Guarantee and the provisions of the Contract Documents for the Work relating to the Contractor's Guarantee(s) and warranty(ies) relating to the Work shall be binding upon the Contractor's Performance Bond Surety and all successors or assigns of Contractor and/or Contractor's Performance Bond Surety.

The provisions of this Guarantee are in addition to, and not in lieu of, any provisions of the Contract Documents for the Work relating to the Contractor's guarantee(s) and warranty(ies) or any guarantee(s) or warranty(ies) provided by any material supplier or manufacturer of any equipment, materials or other items forming a part of, or incorporated into the Work, or any other guarantee or warranty obligation of the Contractor, prescribed, implied or imposed by law.

The undersigned individual executing this Guarantee on behalf of Contractor warrants and represents that he/she is duly authorized to execute this Guarantee on behalf of Contractor and to bind Contractor to each and every provision hereof.

Contractor

(Contractor Name)

(Signature of Contractor's Authorized Employee, Officer
Or Representative)

(Printed Name and Title)

(Date)

Date: _____ Signed _____
Subcontractor/Supplier

Local Representative to be contacted for services:

Name: _____ Phone No. _____

Address: _____

END OF SECTION

SECTION 00 65 37
CONTRACTOR CERTIFICATION OF SUBCONTRACTOR CLAIM

TO: Yuba Community College District (“DISTRICT”)

**RE: Yuba College, New Softball Field
Subcontractor Claim**

This Contractor Certification of Subcontractor Claim is submitted to the District by the contractor (“Contractor”) relating to the **Yuba College, New Softball Field** on behalf of the Subcontractor identified below.

1. I am the _____ of the Contractor in connection with the above-described Project.
2. _____ is a Subcontractor to the Contractor for the above-identified Project. The Subcontractor has submitted the accompanying Subcontractor Claim to the Contractor for presentation to the District pursuant to Public Contract Code §9204.
3. I have personally reviewed the entirety of the Subcontractor Claim and all substantiating documentation in support of the Subcontractor Claim.
4. The Subcontractor Claim is made by the Subcontractor in good faith.
5. The Subcontractor Claim is supported by reasonable documentation establishing entitlement to the relief requested and District liability therefor.
6. The Subcontractor Claim does not incorporate any request constituting a False Claim under applicable law, including the California False Claim Act (Government Code §§12650 et. seq.).
7. I am authorized: (i) to execute this Certification on behalf of the Contractor; and (ii) to submit this Certification and the accompanying Subcontractor Claim to the District.
8. I have personal first-hand knowledge of all of the foregoing.

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

Executed at _____, California, on _____, 20__.

(Signature)

(Print Name)

(Title)

SECTION 01 11 00

SUMMARY OF WORK

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Summary of Work Under This Contract
- B. Regulatory Requirements
- C. Contractor Use of Site and Premises.
- D. Owner Occupancy.

1.2 SUMMARY OF WORK

- A. Work under this contract includes the following task areas, as shown on the drawings, specified in the Project Manual, and defined in the project contract documents, including but not necessarily limited to:

A new softball field, all required underground water and drainage systems, all require underground electrical systems, dugouts, fencing, batters cage, storage containers, landscaping, concrete work, and all other items shown on the drawings.

- A. Perform all work in accordance with the requirements of the General Conditions and related Contract Documents.

1.3 REGULATORY REQUIREMENTS AND REFERENCE STANDARDS

A. Regulatory Requirements:

- 1. Architect has contacted governing authorities and reviewed design requirements of local, state and federal agencies for applicability to Project.
- 2. Contractor shall be responsible for contacting governing authorities directly for necessary information and decisions bearing upon performance of Work.

B. Reference Standards:

- 1. For Products specified by association or trade standards, comply with requirements of referenced standards, except when more rigid requirements are specified or are required by applicable codes.
- 2. Applicable date of each standard is that in effect as of date on proposal or date on Contract where no proposal is available, except when a specific date is specified.

C. California Code of Regulations:

1. Perform Work in accordance with the applicable provisions of California Code of Regulations, Title 24, Parts 1-6, and 10 - 12, 2019 editions, as applies.

Particular attention is directed to the following Sections of CCR, Title 24, Part 1, 2019 California Administrative Code, Chapter 4, "Safety of Construction of Public Schools".

- a. Section 4-335 – Structural Tests and Inspections.
- b. Section 4-336 - Verified Reports.
- c. Section 4-338 – Addenda and Construction Changes.
- d. Section 4-339 – Final Certification of Construction.
- e. Section 4-342 - Duties of the Project Inspector.
- f. Section 4-343 - Duties of the Contractor.

1.4 WORK SEQUENCE

- A. Coordinate construction schedule and operations with Owner.
- B. Construct the Work in a manner to provide for public convenience. Do not close off public use of facilities.

1.5 CONTRACTOR USE OF SITE AND PREMISES

- A. Coordinate use of premises and access to site under direction of Owner.
- B. Limit use of premises for Work and construction operations and to allow for work by other contractors.
- C. Contractors use of site and premises shall allow:
 1. Work by Others and Work by Owner.
 2. Use of site and premises by public.
- D. Access to Site: Coordinate with Owner.
- E. Building Exits During Construction: Maintain all exits. Do not obstruct at any time.
- F. Time and Construction Schedule Considerations:
 1. Schedule all construction operations with Owner.
 2. **(Not Applicable unless there is an event scheduled at the College in the Sports Complex Area)** Construction operations generating excessive noise, such as use of pneumatic tools and powder actuated fastener equipment, shall be scheduled with the Owner. Permitted hours of operation for demolition and excessive noise operations are limited to period from 7:00 AM to 9:00 AM or on Weekends.

3. Locate all noise generating equipment, such as cut-off saws, in a remote location away from administrative or classroom areas.
 4. **(Not Applicable unless there is an event scheduled at the College in the Sports Complex Area)** Schedule replenishing construction materials only during period of 7:00 AM to 9:00 AM.
 5. Owner reserves the right to modify such scheduled operations to accommodate school operations or classroom programs. Contractor shall be entitled to contract time extension per contract modification procedures.
 6. Provide Owner with **7 working days notice** prior to commencing such operations.
 7. Construction operations, such as material deliveries, debris removal, and crane operations, shall not occur when students, staff or visitors are present at construction site. Schedule such operations around school schedule, including recess and lunch periods. Where, in the sole opinion of the Architect, the construction site is sufficiently remote or isolated that students, staff or visitors are not exposed to such operations, construction operations may proceed as scheduled by Contractor in conformance with the Project Manual.
 8. After Owner takes beneficial occupancy of portions of project the Contractor, subcontractors and all support staff will not be allowed to enter such school facilities during hours school is in session. Where access is required to complete the work, coordinate access and scheduling with Owner's representative for non-school time.
 9. No interference with classroom or administrative activities will be permitted without approval of Owner, Inspector and School Administrator.
- G. Utility Outages and Shutdown: Utility Outages and Shutdown: All Contractor requests for a power, water, or utilities shut-down must be received in writing at least 10 days in advance prior to the shutdown date. No deviation to the commencement nor duration of the outage or shutdown from the schedule agreed upon is allowed.
- H. Corporation Yard and Storage Areas: Coordinate with Owner. Coordinate location with areas required by work performed under separate contract by others. Owner will establish acceptable path for products, staging areas, and trash disposal.
1. Coordinate location of all equipment parking, material and stockpile storage and construction parking with Owner.
- I. Furniture and Equipment Relocation:
1. Prior to beginning work in any one area, District will relocate all books, supplies, equipment and furniture in all areas of work.
 2. District will return books, supplies, and furniture to the classrooms after completion of work.

1.6 OWNER OCCUPANCY

- A. The Owner will occupy the site and existing facilities during entire period of construction for the conduct of normal school and business operations.

- B. Cooperate with Owner to minimize conflict, and to facilitate Owner's operations.
- C. The Owner will occupy portions of the project as individual rooms become available for outfitting, furniture and fittings installation, and related start-up tasks.
- D. **(Not Applicable on this Project)** Adjacent Floor/Area access: Coordinate scheduling of required access to adjacent rooms and floors incidental to not included in the work of this contract. Provide minimum **15 working days notice** to Owner for required access to such areas.
 - 1. Do not core or drill through walls or floors into adjacent occupied areas.

1.7 FEES, BONDS, AND PERMITS

- A. Contactor shall obtain all required permits required for work under this contract, if applies, including but not necessarily limited to the following:
 - 1. Encroachment permits.
 - 2. Shoring, trenching and grading permits.
- B. Contractor shall contact County and local agencies and arrange for all required improvement bonds, entitlement fees and County/local agency engineering fees, if offsite improvements are required. After submission of documentation to Owner, Owner will pay such costs. Provide Owner with notice of cost obligation as required to avoid delay in project completion.
- C. All costs associated with permits defined in General Conditions, Paragraph 1.7.2 shall be included in Contract amount. Costs associated with bonds, entitlement and inspection fees defined above shall be paid directly to County/Local jurisdictional authority.
- D. For the Owner's records, submit copies of permits, licenses, certifications, inspection reports, releases, jurisdictional settlements, notices, receipts for fee payments, judgments, and similar documents, correspondence and records established in conjunction with compliance with standards and regulations bearing upon performance of the Work.

1.8 FIELD ENGINEERING

- A. Provide field engineering services; if required by scope of work. Establish lines and levels by use of recognized engineering survey practices.
- B. Locate and protect control and reference points.
- C. See Section 01 71 23, "Field Engineering".

PART 2 - PRODUCTS

- A. Not Used

PART 3 - EXECUTION

A. Not Used

END OF SECTION

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END OF SECTION 00 65 37

SECTION 01 20 00
PRICE AND PAYMENT PROCEDURES

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Schedule of Values
- B. Applications for Payment
- C. Progress Payment Coordination
- D. Inspector of Record Payment Provisions
- E. Payment for Contract Modifications
- F. Retention
- G. Progress Payments – Owner Requirements
- H. Payments Withheld
- I. Final Completion and Final Payment Requirements

1.2 SCHEDULE OF VALUES

- A. Submit typed schedule on AIA Forms G702 and G703-Application and Certificate for Payment and Continuation Sheet, or approved equivalent.

Form Website Link – Form G702:

<https://www.aiacontracts.org/contract-documents/19661-application-and-certificate-for-payment>

Form website link – Form G703:

<https://www.aiacontracts.org/contract-documents/20631-continuation-sheet>

- B. Contractor's standard form or electronic print-out format may be considered, at Owners Representative's discretion. Submit within 15 days after award of Contract.
- C. Submit Schedule of Values per time periods defined in General Conditions.
- D. Include in each line item a directly proportional amount of Contractor overhead and profit.
- E. Revise schedule to list change orders for each Application for Payment.
- F. Identification: Include on schedule of values the following:
 - 1. Project name and Location.
 - 2. Name of Architect.
 - 3. Architect's Project Number.
 - 4. Contractor's Name and Address.
 - 5. Date of Submittal.
- G. Format: Type in tabular form with separate columns to indicate the following for each item listed.
 - 1. Table of Contents of this Project Manual, with modifications as pre-approved by Owner and Architect.

- a. Identify each line item with number and title of major Specification sections.
 - b. Name of Subcontractor.
 - c. Name of manufacturer or fabricator where applicable.
 - d. Name of supplier where applicable.
 - e. Change Order amounts allocated to the line item.
 - f. Total Dollar value of item.
 - g. Percentage of Contract sum represented by item, rounded to nearest one hundredth percent, adjusted to total 100 percent.
- H. Correlate line items with terms and identification used in other administrative work items, including schedules, list of subcontractors, list of products and suppliers, and submittal schedule.
- I. Provide schedules as follows.
1. Provide separate schedule of values for each building, and a single schedule for site work.
 2. Where an Application for Payment may include requests for equipment, components or materials purchased, stored or fabricated, but not yet installed, provide separate line item on the Schedule of Values for such items. Breakdown such line items to include component, equipment or material cost for each phase or sequence of construction, with associated staging, transport and installation cost.
- J. The total of the amounts of all scheduled line items shall equal the Contract Sum. Round amounts to nearest dollar.
- K. Provide separate line item for Contractor's overhead and profit.
- L. Revise schedule to list approved Change Orders and Construction Change Directives, and submit with each Application For Payment.
- M. The amounts shown on Schedule of Values may be used by Owner to determine the true value for additive or deductive change orders.

1.3 APPLICATIONS FOR PAYMENT

- A. Content and Format: Utilize Schedule of Values for listing items in Application for Payment.
- B. Payment Period: Monthly, scheduled as defined in General Conditions.
- C. Submit application on AIA Form G702, "Application and Certificate for Payment", or approved equivalent, as follows:
 1. Submit initial rough draft of pay application to Architect, Inspector of Record and Owner for review.
 2. Architect will return initial rough draft of pay application to Contractor, including continuation sheets when required, following review.
 3. Submit PDF of pay application to Architect.
 - a. Submit to Inspector of Record for signature prior to submittal to Architect.
 - b. Submit conditional lien releases for work covered by current application warranting that title to all work, labor, materials and equipment covered by the application is free and clear of all liens, claims, security interests or encumbrances, and notarized unconditional releases for work covered by previous months billings.

- c. Complete every entry on the form, including notarization and execution by person authorized to sign legal documents on behalf of the Contractor. Incomplete applications will be returned without action. Present required information in typewritten form.
 - d. Execute certification by signature of authorized officer.
 - e. Use data from approved Schedule of Values. Provide dollar value in each column for each line item for portion of work performed and for stored products.
 - f. List each authorized Change Order as an extension on continuation sheet, listing Change Order number and dollar amount as for an original item of Work.
 - g. Certificates for payment as recommended by the Architect or the Owner shall include a 5% retention that will be held by the Owner until such a time as outlined in Section 01 77 19, "Closeout Requirements".
4. Submit an updated construction schedule with each Application for Payment.
 5. Payment Period: Monthly.

1.4 SUBSTANTIATING DATA

- A. When Architect/Engineer requires substantiating information, submit data justifying dollar amounts in question.
- B. Provide one copy of data with cover letter for each copy of submittal. Show Application number and date, and line item by number and description.

1.5 PROGRESS PAYMENT COORDINATION

- A. See Section 01 77 19, "Closeout Requirements" for requirements and relationship between progress payment and maintenance of record drawings.
- B. See Section 01 33 00, "Submittal Procedures" for requirements and relationship between progress payment and construction schedule updates.

1.6 INSPECTOR OF RECORD PAYMENT PROVISIONS

- A. In the event Contractor's performance of the work activities requires the Owner's Inspector of Record to work overtime, holidays or weekends, Inspectors cost shall be reimbursed by Contractor to Owner by deductive contract adjustment.

1.7 PAYMENT FOR CONTRACT MODIFICATIONS

- A. The Contractor shall compensate the Owner, by Owner-Contractor Contract adjustment, for the Architect reasonable costs to modify Contract Documents required by work not performed in accordance with approved Contract Documents.

1.8 RETAINAGE

- A. Subject to the requirements of state law, each Application for Payment shall be subject to retainage in the amount of ten percent. The amounts so reserved will be subject to claims of liens provided by applicable state law.
- B. Pursuant to Section 22300 of the Public Contract Code of the State of California, the contract will contain provisions permitting the Contractor to substitute securities for any moneys withheld by the Owner to ensure performance under the contract.

- C. The Contractor warrants and guarantees herewith that title to all work, Materials and equipment covered by an application for payment will pass to the Owner either by incorporation in the construction or upon the receipt of payment by the Contractor, whichever occurs first, free and clear of all liens, claims, security interest or encumbrances, referred to in this article as “liens”; and that no work, materials or equipment covered by an application for payment will have been acquired by the Contractor, or by any other person performing work at the site or furnishing materials and equipment for the project, subject to an agreement under which an interest of an encumbrance is retained by the seller or otherwise imposed by the Contractor or such other person.

1.9 PROGRESS PAYMENTS – OWNER REQUIREMENTS

- A. After a certificate of payment has been issued, the Owner shall make payment in the manner and within the time provided in the Contract Documents.
- B. The contractor shall promptly pay each subcontractor (including suppliers, laborers and material men) performing labor or furnishing material for the work upon receipt of payment from the Owner out of the amount paid to the Contractor on account of the work of such subcontractor, supplier, laborer or material man, the amount to which said subcontractor is entitled, reflecting the percentage actually retained, if any, from payments to the Contractor on account of such work. The Contractor shall, by an appropriate agreement with each subcontractor, also require each subcontractor to make payments to his sub subcontractors in a similar manner.
- C. The Owner may, on request, furnish to any subcontractor, if practicable, information regarding the percentages of completion or the amounts applied for the Contractor and the action taken by the Architect on account of the work done by such subcontractor.
- D. Neither the Owner nor the Architect shall have any obligation to pay nor to see to the payment of any monies to a subcontractor except as may otherwise be required by law.
- E. No certificate for a progress payment nor any progress payment nor any partial or entire use or occupancy of the project by the Owner shall constitute an acceptance of any work which is not in accordance with the Contract Documents.
- F. The Contractor agrees to keep the work and the site on which work is to be performed free and clear of all liens and claims of liens on materials furnished pursuant to the Contract Documents.

1.10 PAYMENTS WITHHELD

- A. The Architect may decline to certify payment and may withhold their certificate in whole or in part, to the extent necessary to protect the Owner, if in their opinion they are unable to make representations to the Owner as provided in this Section.
- B. If the Architect is unable to make representations to the Owner and to certify payment in the amount of the application, the Architect will notify the Contractor as soon as possible. If the Contractor and the Architect cannot agree on a revised amount, the Architect will promptly issue a certificate for payment in the amount for which the Architect is able to make such representations to the Owner.
- C. The Architect may also decline to certify payment or any part thereof or, because of subsequent observations, Architect may nullify the whole or any part of any certificate for payment previously issued, to such extent as may be necessary in their opinion to protect the Owner from loss because of the following conditions.
 - 1. Defective work not remedied;
 - 2. Third party claims filed or reasonable evidence indicating probable filing of such claims;
 - 3. Failure of the Contractor to make payments property to subcontractors or for labor, materials or equipment;

4. Reasonable evidence that the work cannot be completed for the unpaid balance of the contract sum;
5. Damage to the Owner or another contractor;
6. Failure to execute the work in accordance with the Construction schedule;
7. Failure to provide, maintain, and update record drawings;
8. Reasonable evidence that the work will not be or had not been completed within the contract time;
9. Failure to carry out the work in accordance with the Contract Documents;
10. Liens filed, or reason to believe it is probable a lien will be filed for any portion of the work;
11. Failure or refusal of the Contractor to fully comply with Division 1.

1.11 FINAL COMPLETION AND FINAL PAYMENT

- A. Upon receipt of written notice from the Contractor as required in Section 01 77 19, "Closeout Requirements" that the work is ready for final inspection and acceptance and upon receipt of final application for payment, the Architect will promptly make such inspection, and when they find the work acceptable under the Contract Documents and the Contract fully performed, the Architect will issue a Final Certificate for Payment stating that to the best of their knowledge, information and belief, and on the basis of their observations and inspections, the work has been completed in accordance with the terms and conditions of the Contract Documents and that the entire balance found to be due the Contractor, and noted in said final certificate, is due and payable.
- B. Retention of funds withheld will be released to the Contractor within 60 days of the date of completion of a work of improvement. Completion is defined as occurring when a Owner begins occupancy, beneficial use, and enjoyment of work of improvement (excluding an operation for testing, startup, or commissioning) accompanied by a cessation of labor on the work of improvement.
- C. Neither final payment nor the remaining retainage percentage shall become due until the work is free and clear of any and all liens and the Contractor submits to the Owner:
 1. An affidavit that all payrolls, bills for materials and equipment and other indebtedness connected with the work for which the Owner or his property might in any way be responsible, have been paid or otherwise satisfied.
 2. Consent of surety, if any, to final payment.
 3. If required by the Architect, other data establishing payment or satisfaction of all such obligations, such as receipts, releases and waivers of liens arising out of the Contractor, to the extent and in such form as may be designated by the Architect.
- D. If, after substantial completion of the work, final completion thereof is materially delayed through no fault of the Contractor or by the issuance of change orders affecting final completion, and the Owner so confirms, the Owner shall, upon application by the Contractor and certification by the Architect, and without terminating the contract, make payment of the balance due for that portion of the work fully completed and accepted.
- E. The making of final payment shall constitute a waiver of all claims by the Owner against the Contractor except those arising from:
 1. Unsettled liens and claims against the Owner, the Architect, or their employees, agents or representatives;
 2. Faulty or defective work appearing after substantial completion;

3. Failure of the work to comply with the requirements of the Contract Documents;
4. Failure to provide fully updated and completes record drawings;
5. Any warranties contained in or required by the Contract Documents; or
6. Damages incurred by the Owner resulting from lawsuits brought against the Owner, the Architect, or their agents, employees or representatives because of failures or actions on the part of the Contractor, his subcontractors or sub subcontractors, or any of their employees, agents or representatives.
7. The acceptance of final payment shall constitute a waiver of all claims by the Contractor except those previously made in writing and identified by the Contractor as unsettled at the time of the final application for payment
8. All provisions of this Agreement, including, without limitation, those establishing obligations and procedures, shall remain in full force and effect notwithstanding the making or acceptance of final payment prior to the Date of Substantial Completion of the Project.

F. PREPARATION OF APPLICATION FOR FINAL PAYMENT

1. Administrative actions and submittals, which must precede or coincide with submittal of the final payment Application for Payment include the following:
 - a. Occupancy permits and similar:
 - b. Warranties (guarantees) and maintenance agreements.
 - c. Test/adjust/balance records.
 - d. Maintenance instructions.
 - e. Meter readings.
 - f. Start-up performance reports.
 - g. Change-over information related to
 - h. Owner's occupancy, use, operation and maintenance.
 - i. Final cleaning.
 - j. Completion of Project closeout requirements, including all reports and certifications required by Authorities Having Jurisdiction.
 - k. Completion of items specified for completion after Substantial Completion.
 - l. Assurance that unsettled claims will be settled.
 - m. Assurance that Work not complete and accepted will be completed without undue delay.
 - n. Transmittal of required Project construction records to Owner.
 - o. Proof that taxes, fees and similar obligations have been paid.
 - p. Removal of temporary facilities and services.
 - q. Removal of surplus materials, rubbish and similar elements.
 - r. Change of door locks to Owner's access.

1.12 APPLICATION FOR FINAL PAYMENT

- A. Prepare Application for Final Payment as specified in Section 01 77 19, "Closeout Requirements".

- a. Use continuation sheet for presenting the final statement of accounting.
 - b. Transmit a PDF copy with a transmittal form listing attachments, and recording appropriate information related to the application in a manner acceptable to the Architect.
 - c. Entries shall match data on the Schedule of Values and Contractor's Construction Schedule. Use updated schedules if revisions have been made. Include amounts of Change Orders and Construction Change Directives issued prior to the last day of the construction period covered by the application.
2. By signing a certificate for payment, the Architect shall not be deemed to represent that the Architect has made exhaustive or continuous on-site inspections to check the quality or quantity of the work, has reviewed the construction means, methods, techniques, sequences or procedures, or has made an examination to ascertain how or for what purpose the Contractor has used previous payments.
 3. Payments may be made by the Owner, in its sole discretion, on account of materials or equipment not incorporated into the work but delivered to the site and suitably stored and insured by the Contractor. Payments for materials or equipment stored shall only be considered upon submission by the Contractor of satisfactory evidence that it has acquired title to such material, that it will be utilized on the work under this contract and that it is satisfactorily stored, protected and insured, or such other procedures satisfactory to Owner (District Project Manager), Inspector, and Architect,

PART 2 - PRODUCTS

- A. NOT USED

PART 3 - EXECUTION

- A. (NOT USED)

END OF SECTION

SECTION 01 25 00
SUBSTITUTION PROCEDURES

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. General Requirements
- B. Definitions
- C. Product Options
- D. Substitution Procedures – Contractor’s Duties
- E. Substitution Procedures – Architect’s Duties

1.2 GENERAL REQUIREMENTS

- A. Provide products listed in Contract Documents, products by manufacturers listed in Contract Documents, and products meeting specified requirements.
 - 1. Contract Amount: Base on materials and products included in Contract Documents.
 - 2. Where listed in Contract Documents, materials and products by manufacturers not listed shall not be used without Owner’s and Architect’s approval of Contractor's written request for substitution.
- B. Procedures are described for requesting substitution of unlisted materials in lieu of materials named in Specifications or approved for use in addenda.

1.3 DEFINITIONS

- A. Substitutions: Changes in products, materials, equipment, and methods of construction from those required by the Contract Documents.
 - 1. "Approved Equal" or "Equal" shall mean in the opinion of the Architect and/or Owner.
 - 2. DSA – Division of the State Architect.
 - 3. Substitutions for Cause: Changes proposed by Contractor that are required due to changed Project conditions, such as unavailability of product, regulatory changes, or unavailability of required warranty terms.
 - 4. Substitutions for Convenience: Changes proposed by Contractor or Owner that are not required to meet other Project requirements but may offer advantage to Contractor or Owner.

1.4 PRODUCT OPTIONS

- A. **Products Specified by Reference Standards or by Description:** Select product meeting referenced standard for products specified only by reference standard.
- B. **Named Manufacturers and Named Products:** Provide Products of the Basis of Design manufacturer named in compliance with specifications.
 - 1. **Where another manufacturer is listed as an approved alternate manufacturer to the specified Basis of Design manufacturer, and a specific make and model is NOT provided, Contractor shall demonstrate compliance with the Basis of Design products supplied by listed alternate manufacturer by providing substitution documentation as required by this Section.**
 - 2. **If a specific make and model is provided with the Approved Alternate Manufacture(s) listed in each specification section, a substitution request will not be required, as the characteristics for those products have been compared by the Architect/Engineer and are considered equivalent.**
 - 3. Where the substituted manufacturers standard product is not equal to that specified, the substituted manufacturer shall provide custom or non-standard products, system components, fabrication and configuration as necessary to comply with specified criteria, whether or not such criteria are the substituted manufacturers standard or stock item.
 - 4. Consideration of whether a substituted product is equal to that specified will include all characteristics of the specified product, based on published data available from the specified manufacturer, whether listed in the specification or not. See Paragraph 1.5H, this Section for specific submittal procedures.
 - 5. Consideration of whether a substituted product is equal to that specified is solely the decision of the Architect.
 - 6. Provide substitution documentation as specified in this Section, submitted on the provided form in Section 01 25 00.10, "Substitution Request Form".
- C. Where product is specified followed by term "No Substitution Permitted", or similar phrase, do not submit alternate products for review. Any substitution request received will be returned rejected.

1.5 SUBSTITUTION PROCEDURES – CONTRACTOR’S DUTIES

- A. Substitutions, including requests for substitution during bidding period, will be considered in accordance with the General Conditions and this Section.
 - 1. Submit all Requests for Substitutions within **45 days** after Notice to Proceed. Substitutions received after **45 day** period will be rejected.
 - 2. Request for Substitution will only be considered when submitted within specified time period of Contract award, and when such request is accompanied by complete data substantiating compliance of proposed substitution with Contract Documents criteria and standard of quality.
- B. Substitutions may be considered when a Product becomes unavailable through no fault of the Contractor.

- C. Incomplete substitution requests will be rejected without explanation.
- D. **Substitutions are required for all substituted products.** Substitutions will not be considered for acceptance when:
 - 1. They are indicated or implied on shop drawings or product data submittals only, without separate written request, or when acceptance will require revision to the Contract Documents.
 - 2. They are requested directly by a subcontractor or supplier.
 - 3. Acceptance will require substantial revision of Contract Documents.
- E. By submitting a request, the Contractor stipulates that the Contractor:
 - 1. Has investigated proposed Product and determined that it meets or exceeds the quality level of the specified Product.
 - 2. Will provide the same warranty or longer warranty for the Substitution as for the specified Product.
 - 3. Will coordinate installation and make other changes that may be required for Work to be complete in all respects, at no additional cost to the Owner.
 - 4. Unless specifically noted in the Request for Substitution, waives claims for additional costs or time extension which may subsequently become apparent.
 - 5. Will pay costs of changes to Contract Documents, Drawings, details and Specifications required by accepted substitutions.
- F. Any substitutions that change or affect the Structural, Access or Fire & Life Safety portions of the project construction documents shall be submitted as a CCD and approved by DSA prior to fabrication and installation.
- G. Contractor agrees to compensate Architect, at Architect's current billing rates, for review of Substitution requests that require modification of the Contract Documents.
 - 1. Compensation shall be made by an adjustment to the Contract amount.
 - 2. Compensation as agreed upon shall be paid by the Contractor whether the change is approved or rejected.
 - 3. Where approval(s) are required by Division of State Architect (DSA), the Contractor shall pay all plan check fees or fees required to obtain approval.
 - 4. The Contractor shall pay the Architect and its Consultants for all services rendered for drawings, calculations, review time, and/or DSA plan check time for each substitute item(s) for approval.
- H. Substitution Submittal Procedure and Documentation:
 - 1. Procedure:

- a. A maximum of one substitution request shall be submitted for any one item. Submit with same section name and number in specification. **Do not combine specification sections.**
 - b. Document each request with complete data substantiating compliance of proposed Substitution with Contract Documents and as follows.
 - c. Where necessary, arrange the product information to provide a side-by-side comparison of test data and other comparative data of the proposed substitution with the same test data and other comparative data in the specified item or product.
 - d. Substitution requests without such documentation will be rejected without review.
 - e. Where substitution request is rejected, provide submittal for specified product within five days of receipt of notice rejection.
 - f. Where decision cannot be made within the time required for orderly and uninterrupted work progress, provide the specified product.
2. Documentation – Submit all substitution requests on the provided form in Section 01 25 00.10, “Substitution Request Form”:
- a. Substitutions shall be accepted in PDF format.
 - b. If physical copies of product data or samples are required, provide three copies of each, along with PDF submittal request.
 - c. Provide a typed, line by line comparison of the characteristics and attributes of the specified item with those of the proposed substitution.
 - d. For product data submitted, provide only those items that are applicable to the products being compared. Cross out, or otherwise note, any non-applicable items within the submittal to expedite review.
 - e. Show comparative documentation, illustrating compliance with requirements for substitutions and the following, as applicable (attach to Substitution Request Form in Section 01 25 00.10, if required):
 - 1) Specification Name and Number shall be clearly indicated in the Substitution Request Form.
 - 2) Statement indicating why specified product or fabrication or installation method cannot be provided, if applicable.
 - 3) Coordination of information, including a list of changes or revisions needed to other parts of the Work and to construction performed by Owner and separate contractors that will be necessary to accommodate proposed substitution.
 - 4) Detailed comparison of significant qualities of proposed substitutions with those of the Work specified. Include annotated copy of applicable Specification Section. Significant qualities may include attributes, such as performance, weight, size, durability, visual effect, sustainable design characteristics, warranties, and specific features and requirements indicated. Indicate deviations, if any, from the Work specified.

- 5) Product Data, including drawings and descriptions of products and fabrication and installation procedures.
 - 6) Samples, where applicable or requested.
 - 7) Certificates and qualification data, where applicable or requested.
 - 8) Material test reports from a qualified testing agency, indicating and interpreting test results for compliance with requirements indicated.
 - 9) Research reports evidencing compliance with building code in effect for Project, from appropriate approval and testing agencies, e.g. ICC-ES, ASTM, UL, Warnock Hersey, etc.
 - 10) Detailed comparison of Contractor's construction schedule using proposed substitutions with products specified for the Work, including effect on the overall Contract Time. If specified product or method of construction cannot be provided within the Contract Time, include letter from manufacturer, on manufacturer's letterhead, stating date of receipt of purchase order, lack of availability, or delays in delivery.
 - 11) Provide an indication of cost impacts, if any. If a possible cost increase is indicated, upon request, provide a Change Order Request for consideration and approval by the Owner..
 - 12) Contractor's certification that proposed substitution complies with requirements in the Contract Documents, except as indicated in substitution request, is compatible with related materials and is appropriate for applications indicated.
 - 13) Contractor's waiver of rights to additional payment or time that may subsequently become necessary because of failure of proposed substitution to produce indicated results.
- I. Substitutions for Convenience are not allowed.

INCLUDE OPTION BELOW ONLY IF THE ARCHITECT AND OWNER ARE WILLING TO ACCEPT SUBSTITUTIONS FOR CONVENIENCE

- J. Substitutions for Convenience: Architect will consider requests for substitution if received within **45 days** after the Notice to Proceed. **OR commencement of the Work OR the Notice of Award.** Requests received after that time may be considered or rejected at discretion of Architect.
1. Conditions: Architect will consider Contractor's request for substitution when the following conditions are satisfied. If the following conditions are not satisfied, Architect will return requests without action, except to record noncompliance with these requirements:
 - a. Requested substitution offers Owner a substantial advantage in cost, time, energy conservation, or other considerations, after deducting additional responsibilities Owner must assume. Owner's additional responsibilities may include compensation to Architect for redesign and evaluation services, increased cost of other construction by Owner, and similar considerations.
 - b. Requested substitution does not require extensive revisions to the Contract Documents.

- c. Requested substitution is consistent with the Contract Documents and will produce indicated results.
- d. Substitution request is fully documented and properly submitted.
- e. Requested substitution will not adversely affect Contractor's construction schedule.
- f. Requested substitution has received necessary approvals of authorities having jurisdiction.
- g. Requested substitution is compatible with other portions of the Work.
- h. Requested substitution has been coordinated with other portions of the Work.
- i. Requested substitution provides specified warranty.
- j. If requested substitution involves more than one contractor, requested substitution has been coordinated with other portions of the Work, is uniform and consistent, is compatible with other products, and is acceptable to all contractors involved.

1.6 SUBSTITUTION PROCEDURES – ARCHITECT’S DUTIES

- A. The Architect will review Substitution Request upon receipt with reasonable promptness and will request any additional data necessary to accept or reject substitution request.
- B. Substitution Requests received after 9:00 AM on Friday will be logged as received on the following Monday at 8:00 AM.
- C. Architect will recommend that Owner accept or reject substitution request based on, but not limited to, the following items:
 - 1. Requested substitution is consistent with the Contract Documents and will produce indicated results.
 - 2. Substitution request is fully documented and properly submitted.
 - 3. Requested substitution will not adversely affect Contractor's construction schedule.
 - 4. Requested substitution will not adversely affect the desired aesthetics for the Project.
 - 5. Requested substitution has received necessary approvals of authorities having jurisdiction.
 - 6. Requested substitution is compatible with other portions of the Work.
 - 7. Requested substitution has been coordinated with other portions of the Work.
 - 8. Requested substitution provides specified warranty.
 - 9. Requested substitution clearly indicates whether additional costs will be incurred by the Owner.
 - 10. If requested substitution involves more than one contractor, requested substitution has been coordinated with other portions of the Work, is uniform and consistent, is compatible with other products, and is acceptable to all contractors involved.

- D. The decision to accept or reject substitution request will be made within a reasonable period after Architect receives final documentation data.
 - 1. Architect and Owner will determine acceptability of proposed substitutions and reserve right to reject proposals due to insufficient information.
 - 2. The Architect may reject any substitution request on the basis of aesthetics.
- E. If changes to the Contract Documents require reapproval by DSA, Architect/Engineer will indicate to the Contractor in their review response that addition costs must be incurred for re-approvals.
- F. If the Contractor accepts that additional costs to be borne by Contractor for changes to Contract Documents, Drawings, details and Specifications that are required by substitutions are acceptable, then Architect/Engineer will provide a cost proposal for consideration. Written acceptance of charges by Contractor is required prior to any cost being incurred by the Architect/Engineer.
- G. Substitutions with material effect on the project will be submitted for approval by DSA as a Construction Change Document (CCD), prior to fabrication or installation.
- H. The Architect will notify Contractor, in writing on the Substitution Request Form, of decision to accept or reject request.

PART 2 - PRODUCTS

- A. NOT USED

PART 3 - EXECUTION

- A. NOT USED

END OF SECTION

SECTION 01 26 00

CONTRACT MODIFICATION PROCEDURES

PART 1 - GENERAL

1.1 SUMMARY

- A. Schedule of Values.
- B. Inspector of Record Payment Provisions
- C. Change Procedures
- D. Applications for Payment.
- E. Payment for Contract Document Modifications
- F. Requests for Information (RFIs)

1.2 SCHEDULE OF VALUES

- A. See Section 01 20 00, "Price and Payment Procedures" for Schedule of Values requirements.

1.3 INSPECTOR OF RECORD PAYMENT PROVISIONS

- A. In the event Contractor's performance of the work activities requires the Owner's Inspector of Record to work overtime, holidays or weekends, Inspectors cost shall be reimbursed by Contractor to Owner by deductive contract adjustment.

1.4 CHANGE PROCEDURES

- A. General
 - 1. Contractor shall establish measures as needed to assure familiarity of the Contractor's staff and employees with procedures for processing changes to the Contract Documents.
 - 2. The Contractor shall maintain and coordinate a Register of RFI's, ASI's, Contractor Change Order Requests, DSA CCD's and Change Orders at the job site, accurately reflecting current status of all pertinent data as submitted by the Contractor.
- B. Architect's Supplemental Instructions (ASI): The Architect will advise of minor changes in the Work that do not involve an adjustment to Contract Price or Contract Time by issuing supplemental instructions on AIA Form G710, DSA CCD-B, or other Architect issued document.
 - 1. If Contractor considers the minor change does represent a change in the contract, Contractor shall immediately notify the Architect of Contractor's intention to make a claim.

- C. Proposal Request (PR): The Architect may issue a Proposal Request which includes a detailed description of a proposed change with supplementary or revised Drawings and specifications. Contractor shall:
1. Analyze the described change and its impact on costs and time. Submit response within 10 days. If accepted by Owner, Architect will prepare Change Order.
 2. When requested, meet with the Architect as required to explain costs and, when appropriate, determine other acceptable ways to achieve the desired objective.
 3. Alert pertinent personnel and subcontractors as to the impending change and, to the maximum extent possible, avoid such work as would increase the Owner's cost for making the change, advising the Architect in writing when such avoidance no longer is practicable.
 4. Following review, and if accepted by Owner, Architect will prepare Change Order.
- D. Architect's Supplemental Instructions (ASIs):
1. ASIs issued for minor changes in the work:
 - a. The Architect will advise of minor changes in the Work that do not involve an adjustment to Contract Price or Contract Time by issuing supplemental instructions on Architect's ASIs document.
 - b. If Contractor considers the minor change does represent a change in the contract, Contractor shall proceed with the change and immediately notify the Architect of Contractor's intention to make a claim.
 2. ASIs issued as a Proposal Request:
 - a. The Architect may issue a ASI requesting Contractor's response to a proposed change, and which includes a detailed description of a proposed change with supplementary or revised Drawings and specifications. Contractor shall:
 - 1) Analyze the described change and its impact on costs and time. Submit response within 10 days. If accepted by Owner, Architect will prepare Change Order.
 - 2) When requested, meet with the Architect and Construction Manager as required to explain costs and, when appropriate, determine other acceptable ways to achieve the desired objective
 - 3) Alert pertinent personnel and subcontractors as to the impending change and, to the maximum extent possible, avoid such work as would increase the Owner's cost for making the change, advising the Architect through the Construction Manager in writing when such avoidance no longer is practicable.
 - b. Following review, and if accepted by Owner, Architect will prepare Change Order.
- E. Change Order Request (COR):
1. Contractor may submit a COR to the Architect for changes in conditions, Owner changes, or other direction from the Architect or Owner's inspector.

2. Document the proposed change and its complete impact, including its effect on the cost and schedule of the work.
 3. Present total cost and schedule impacts in documentation, including all mark-ups permitted by General Conditions. Provide detailed back-up as required by Architect, including supplier costs, sub-contractor labor time and rates, and all other data deemed necessary by Architect for Owner's and Architect's review of COR.
 4. Following final review by Architect and Owner of original and supplemental information, and if COR is accepted, no additional cost or schedule adjustments will be included.
 5. Architect will review COR. If accepted, Architect will prepare a Change Order or Construction Change Directive, or Owner may approve the Change Order Request at their option.
- F. Change Order (CO): Change Orders and Construction Change Directives will be issued by the Architect in accordance with procedures established in General Conditions.
1. Change Order Forms: Per attached form at end of this Section.
 2. Execution of Change Orders: Architect will issue Change Orders for signatures of Owner, Architect, and Contractor as provided in the General Conditions of the Contract.
- G. Construction Change Directives (CCD): DSA Form 140 CCD-A or CCD-B will be issued by the Architect in those cases where contract cost or time for the modification is in dispute.
1. Execution of Construction Change Directive: Architect will issue DSA approved CCD. Proceed with work as defined by CCD.
 2. Unless otherwise agreed, maintain detailed records of work done under the direction of a CCD on Time and Material basis. Provide full information required to substantiate costs for changes in the Work.
 3. Following agreement on cost of the work, a Change Order will be prepared.
- H. No payment on Time and Materials basis will be made without signature of Inspector of Record certifying time spent and materials used Architect and Inspector of Record shall establish documentation and reporting procedure for Time and Material certification.
- I. All DSA SSS, FLS, ACS changes in contract for construction, regardless of effect on Contract Price or Contract Time, require the approval of DSA in accordance with Section 4-338, Part 1, T-24 CCR, "Addenda and Change Orders".
- J. Architect will provide a single copy of all documents issued under this Article for transmission to Contractor. Contractor shall prepare copies as required for distribution to subcontractors, suppliers and others at no cost to Owner.

PAYMENT FOR CONTRACT DOCUMENT MODIFICATIONS

- K. **(Not Applicable on this project)** The Contractor shall compensate the Owner, by Owner-Contractor Contract adjustment, for the Architect reasonable costs to modify Contract Documents required by work not performed in accordance with approved Contract Documents.

1.5 REQUESTS FOR INFORMATION (RFIS)

- A. Refer to section 01 26 13, "Requests for Interpretation" for RFI procedures.

PART 2 - PRODUCTS

- a. Not Used

PART 3 - EXECUTION

- a. Not Used

END OF SECTION

SECTION 01 26 13
REQUESTS FOR INTERPRETATION

PART 1 - GENERAL

1.1. DESCRIPTION

- A. This section covers general requirements for Contractor's Requests for Interpretation (RFIs).

1.2. CONTRACTORS REQUESTS FOR INTERPRETATION

- A. Submit a Request for Interpretation to the Architect when:
1. An unforeseen condition or constructability question occurs.
 2. Questions regarding information in the Contract Documents arise.
 3. Information not found in the Contract Documents is required.
- B. When possible, request such clarification in writing at the next scheduled Project meeting. When the RFI is answered at the Project meeting, number the RFI and enter the response into the meeting minutes.
1. When the urgency of the need, or the complexity of the item makes clarification at the next scheduled Project meeting impractical, prepare and submit a formal written RFI to the Architect without delay.
- C. Submit RFIs within a reasonable time frame so as not to interfere with or impede the progress of the work. Keep the number of RFIs to a minimum. When the number and frequency of RFIs submitted becomes unwieldy, the Architect may require the Contractor to abandon the process and submit requests as either submittals, substitutions, or requests for change.
1. When an answer to an RFI has an effect on cost or time, notify the Architect and Owner in accordance with the Contract Documents at the time of submittal. Notification shall occur prior to commencing such work, so that the change order process can be initiated.
 2. At the time of submitting an RFI, alert the Architect to the time available before the response will cause an impact to the Project.
 3. Submit a PDF of the Request for Interpretation, in the format provided in Section 01 26.13.10 and include :
 - a. RFI number. For all revisions note the revisions with an underscore and a notation at the end of the RFI number equal to "R1", "R2", etc. (e.g. RFI 001_R1).
 - b. Include all references, such as drawing numbers, detail references or specification numbers, as appropriate.
 - c. Include importance factor with four available options: Urgent, High, Medium and Low
 - d. Describe subject of RFI in a concise form describing the nature of the problem
 - e. Clear, concise explanation of information or clarification requested.
 - f. Contractor's Suggested Resolution for the described request, if appropriate.

- g. Attach files, drawing references, sketches, images, any types of electronic information that pertain to the request.
- A. RFI's received in Architect's office after 9:00 AM Friday will be logged in as received by Architect on Monday, 8:00 AM. This applies to all forms of communication.
- B. The Architect will respond to legitimate and bonafide Requests for Information (RFIs) initiated by Contractor.
- C. The Architect's action will be taken with such reasonable promptness while allowing sufficient time in the Architect's professional judgment to permit adequate review.
- D. Allow a minimum of 5 working days for review and response time; the response time will be increased if inadequate information is provided, when the RFI is submitted out-of-sequence, or if in the opinion of the Architect, more time is needed to answer the RFI.

1.3. QUALITY ASSURANCE

- A. Carefully study the Contract Documents to assure that the requested information is not available therein. RFIs requesting information available in the Contract Documents may not be answered by the Architect.
- B. In all cases where an RFI is issued to request clarification of coordination issues, for example, pipe and duct routing, clearances, specific locations of work shown diagrammatically, and similar
- C. items, the Contractor shall fully lay-out a suggested solution using drawings or sketches drawing to scale and submit same with the RFI. An RFI which fails to include a suggested solution will not be answered.
- D. Do not use RFI for the following purposes:
 - 1. To request approval of submittals.
 - 2. To request approval of substitutions.
 - 3. To request changes to the Contract Documents to confirm action taken by the Contractor for requested changes/substitutions to the Contract Documents.
- E. If the Contractor believes that a clarification by the Architect may result in a change in Contract price, the contractor shall not proceed with the work indicated by the RFI until a change order or other acceptable tracking device is prepared and approved by the Owner.
 - 1. If the Contractor believes that a clarification by the Architect results in additional cost, the Contractor shall identify in the RFI the basis of the Contractor's bid as it relates to the RFI.
 - 2. Answered RFIs shall not be construed as an approval to perform extra work.

PART 2 - PRODUCTS

- A. Not Used

PART 3 - EXECUTION

A. Not Used

END OF SECTION

CONTRACTOR'S REQUEST FOR INFORMATION

RFI # _____

From: _____

Proj. # XXX _____ Date: _____

To: _____

Project: Yuba College **New Softball Field Complex** _____

Disciplines Impacted: Architectural Structural Mechanical
 Civil Landscape Electrical _____

Importance Factor Urgent High Medium Low

Reference: Drawing(s) _____ Spec Section(s) _____ Other _____

Please clarify or provide the following information (Attach additional pages, if required):

Possible Cost Impact Increase Decrease No Change Unknown

Possible Time Impact Increase Decrease No Change Unknown

This information is required as soon as possible,
but no later than _____

**PRIORITY ATTENTION
REQUIRED**

Copies to: _____

Contractor's Representative _____

Architect's Response (Attach additional pages, if required):

Date: _____

Copies to: _____

ARCHITECT Representative _____

END OF SECTION

SECTION 01 31 00

PROJECT MANAGEMENT AND COORDINATION

PART 1 - GENERAL

1.1 SUMMARY

- A. Coordination.
- B. Preconstruction Conference
- C. Preinstallation Conferences
- D. Progress Meetings
- E. Minutes of Meetings

1.2 RELATED SECTIONS:

- A. Section 00 52 00 – Agreement For Services
- B. Section 01 25 00 - Substitution Procedures
- C. Section 01 32 16 - Construction Progress Schedule
- D. Section 01 33 00 - Submittal Procedures
- E. Section 01 71 23 - Field Engineering
- F. Section 01 73 29 - Cutting and Patching
- G. Section 01 77 19 - Closeout Requirements

1.3 COORDINATION

- A. Contractor shall comply with the following project start-up and administrative requirements for work under the Contract:
 - 1. Coordinate the work and work of subcontractors with work by others under separate contract on Project.
 - 2. Establish procedures for the orderly progress and prosecution of the work, including, but not limited to, attendance at project meetings, communication and documentation procedures, submittal processing, and control of the site.
 - 3. Coordinate work with all inspection and testing, including compliance with all agency inspection criteria, including DSA inspections.

4. Coordinate and monitor use of temporary utilities, conserving energy where feasible.

Prepare detailed schedule for all subcontractors in compliance with Section 01 33 00, "Submittal Procedures" and Section 01 32 16, "Construction Progress Schedule".

5. Coordinate scheduling of work, submittals, and inspection/testing to assure the efficient and orderly sequence of installation of interdependent construction elements, with provisions for accommodating items installed later. Monitor schedules for compliance with completion dates, modify and recommend adjustments. Manage subcontractors work, including monitoring of work force, work completed and impact on schedule

B. Contractor shall comply with the following requirements for coordinating the Work:

1. Coordinate scheduling, submittals, and Work of the various Sections of specifications to assure efficient and orderly sequence of installation of interdependent construction elements, with provisions for accommodating items installed later.
2. Verify that utility requirements and characteristics of operating equipment are compatible with building utilities. Coordinate work of various Sections having interdependent responsibilities for installing, connecting to, and placing in service, such equipment.
1. Coordinate space requirements and installation of mechanical and electrical work which are indicated diagrammatically on Drawings. Follow routing shown for pipes, ducts, and conduit, as closely as practicable; place runs parallel with line of building. Utilize spaces efficiently to maximize accessibility for other installations, for maintenance, and for repairs.
 - a. Priority of right of way in attic and other interstitial spaces shall be as follows:
 - 1) First Priority: Electrical lights, electrical panels and sloped drain piping.
 - 2) Second Priority: Ductwork.
 - 3) Third Priority: Fire protection piping, domestic hot water, domestic cold water and condenser water piping.
 - 4) Other.
3. Unless otherwise indicated, where piping, ducts, and wiring occurs in finished areas, conceal such pipes, ducts, and wiring within the construction. Coordinate locations of fixtures and outlets with finish elements.
4. Coordinate completion and clean up the Work of separate Sections in preparation for Substantial Completion and for portions of Work designated for Owner's partial occupancy.
5. After Owner occupancy of premises, coordinate access to site for correction of defective Work and Work not in accordance with Contract Documents, to minimize disruption of Owner's activities.

1.4 PRECONSTRUCTION CONFERENCE

- A. Architect will schedule a conference upon execution of the Contract.
- B. Attendance Required: Owner, Owner's Project Inspector, Owner's Testing Service representative, Architect, Contractor and major Sub-contractors, including assigned superintendent and foreman. Obtain Architect's prior approval of major subcontractor's attendance.
- C. Agenda:
 - 1. Execution of Owner-Contractor Agreement.
 - 2. Submission of executed bonds and insurance certificates.
 - 3. Distribution of Contract Documents.
 - 4. Designation of personnel representing the parties in Contract, and the Architect/Engineer.
 - 5. Procedures and processing of submittals, substitutions, applications for payments, proposal request, Requests for Interpretation, Change Orders, record documents and Contract closeout procedures.
 - 6. Submission of list of subcontractors, list of products, schedule of values, and progress schedule.
 - 7. Submission of Construction Schedule.
 - 8. Submission of Schedule of Values.
 - 9. Scheduling activities of inspector and geotechnical Engineer.
 - 10. Use of premises by Owner and Contractor.
 - 11. Owner's requirements and any partial occupancy requirements.
 - 12. Construction facilities and controls provided by Owner.
 - 13. Temporary utilities provided by Owner.
 - 14. Survey and building layout.
 - 15. Security and housekeeping procedures.
 - 16. Procedures for testing.
 - 17. DSA-required notices
 - 18. Procedures and processing of field decisions, submittals, substitutions, proposal request, Change Orders and Contract closeout procedures.
 - 19. Scheduling, including coordination with work of others.

20. Use of premises by Owner and Contractor.
21. Owner's requirements and partial occupancy.
22. Construction facilities and controls provided by Owner.
23. Temporary utilities considerations.
24. Security and housekeeping procedures.
25. Procedures for maintaining record documents.
26. Requirements for start-up of equipment.
27. Inspection and acceptance of equipment put into service during construction period.

1.5 PRE-INSTALLATION CONFERENCES – SPECIFIC SECTIONS/PRODUCTS

- A. When required in individual specification Sections, convene a pre-installation conference at work site prior to commencing work of the Section.
- B. Require attendance of parties directly affecting, or affected by, work of the specific Section.
- C. Notify Architect, Owner and Inspector of Record a minimum four (4) days in advance of meeting date.
- D. Prepare agenda, preside at conference, record minutes, and distribute copies within two days after conference to participants, with two copies to Architect.
- E. Review conditions of installation, preparation and installation procedures, and coordination with related work.

1.6 PROGRESS MEETINGS

Coordinate with **District Project Manager** to schedule and administer meetings throughout progress of the Work at maximum weekly intervals ..

Contractor shall assign the same staff members to represent and act on behalf of the Contractor at all progress meetings.

The District Project Manager shall prepare agenda with copies for participants, preside at meetings, record minutes, and distribute copies within seven days to Contractor, Owner, participants, and those affected by decisions made.

- A. Attendance Required: Job superintendent, major Subcontractors and suppliers, Owner, Architect, Project Inspector and others as appropriate to agenda topics for each meeting.
- B. Progress Meeting Agenda:
 1. Review minutes of previous meetings.

2. Review of Work progress.
3. Field observations, problems, and decisions.
4. Identification of problems which impede planned progress.
5. Review of submittals schedule and status of submittals.
6. Review of off-site fabrication and delivery schedules.
7. Maintenance of progress schedule.
8. Corrective measures to regain projected schedules.
9. Planned progress during succeeding work period.
10. Coordination of projected progress.
11. Maintenance of quality and work standards.
12. Effect of proposed changes on progress schedule and coordination.
13. Other business relating to Work.

1.7 MINUTES OF MEETINGS

- A. Unless mutually agreed to otherwise, District Project Manager shall compile detailed minutes of the meetings, except pre-installation conferences, which shall be compiled by the Contractor, and furnish one copy to the Owner, Contractor, Architect and Inspector. Minutes shall record discussion, actions taken, and issues assigned to parties responsible for resolution.
- B. Recipients of minutes may make additional copies as they desire.
- C. Published minutes will be accepted as properly stating the activities and decision of the Meeting unless they are challenged in writing prior to the next regularly scheduled Progress Meeting.
 1. Persons challenging published minutes are responsible to convey to the person who prepared the minutes and that person shall redistribute copies of challenge to all recipients of the particular minutes being challenged.
- D. Contractor shall submit a copy of registered site drawing and certificate signed by the Land Surveyor that the elevations and locations of the Work are in conformance with the Contract Documents.

1.8 FIELD ENGINEERING

- A. See Section 01 71 23, "Field Engineering" for specific requirements related to field engineering.

1.9 CUTTING AND PATCHING

- A. See Section 01 73 29, "Cutting and Patching" for specific requirements related to cutting and patching.

PART 2 - PRODUCTS

- a. Not Used

PART 3 - EXECUTION

- a. Not Used

END OF SECTION

SECTION 01 32 00

CONSTRUCTION PROGRESS DOCUMENTATION

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Schedule Submittal Procedures.
- B. Baseline Construction Schedule
- C. Monthly Interval Updates
- D. Recovery Schedules
- E. Early Completion of a Project
- F. Time Extension Requests

1.2 SCHEDULE SUBMITTAL PROCEDURES

- A. Transmit required schedule to Architect per criteria in the General Conditions, and as specified.
- B. Failure to make timely submittals will not be reason for extension of Contract Time.
- C. Transmit each submittal separately with Architect accepted form.

1.3 BASELINE CONSTRUCTION SCHEDULE

- A. Submit Construction Schedule in accordance with the General Conditions.
- B. Initial/Baseline Schedule
 - 1. The Contractor shall prepare and submit to the Owner's Representative with copy to the Architect, the Contractor's Initial Construction Schedule within **fifteen (15) calendar days** after the issuance of the Notice to Proceed. The Initial Construction Schedule shall be in the form of a Critical Path Method (CPM) network diagram and shall be in sufficient detail to show the sequence of activities required for the complete performance of all work, including submittals affecting the critical path.
 - a. A construction sequence that does not exceed the contract completion date. Progress schedules submitted must show only actual working days, irrespective of weekends, holidays, etc. unless work is scheduled to actually be performed on those dates. The District anticipates that it is rare that work will be performed on weekends, holidays, etc., and as such anticipates that most progress schedules submitted will reflect only a 5 day work week on the schedule. Failure to exclude weekends, holidays, and other non-working days will result in the Progress Schedule being rejected and constitutes a material breach of the Contract.

2. Include submittal/approval/fabrication and delivery sequences for all key materials and equipment on the project.
 3. Activities shall reflect major inspections and testing of equipment.
 4. Utilize computerized software, such as **Microsoft Project**, Primavera, Promus, Aldegraph, or equal computerized CPM scheduling software.
 5. Use conventional critical path methods, principles, and definitions to satisfy the requirements of this specification.
 6. Contractor shall provide Initial Schedule in the proper Schedule Format.
 7. The Owner's Representative will comment on the Contractor's Initial Schedule **within five (5) days** of its receipt.
 8. The Contractor will finalize and re-submit the schedule within **five (5) days** of the review meeting on the specified media. Upon acceptance by the Owner Representative, the approved Initial Schedule will become the project Baseline Contract Schedule. The Baseline Schedule shall not be revised without written approval of the Owner Representative.
 9. The Owner shall have the right to withhold progress payments from the Contractor at its discretion if the Contractor fails to finalize and obtain approval for the Baseline Contract Schedule within the prescribed period.
 10. Rain days shall be anticipated and included in the schedule.
 - a. Rain days shall be anticipated and included in the schedule. Rain days shall be defined as a day with 0.1 inch of measurable rain or more, as per National Weather Service. The Inspector of Record will not be authorized to approve any rain day delay claims however; the Inspector of Record certifies that the rain day actually resulted in the delay of the prosecuting of the scope of work being performed on the project at the time of the rain day. Rain day delay claims will not be approved merely to afford an extension of time of completion of the contract.
 11. Email attachment of the Updated Schedule in the proper Schedule Format.
 12. A copy of the most recent CPM construction schedule shall be posted in the Contractor's job office and copies of all out of date schedules shall be kept at the job office at all times for perusal by the District.
- C. The Schedule Reports shall consist of:
1. Email PDF attachment of the entire Initial Schedule in the proper Schedule Format.
- D. Schedule Format
1. The Contractor shall use Microsoft Project, Primavera Project Planner software (current version) or have the means of providing the Owner's Representative with files on Flash Drive or other Owner-accepted format, in a form that can be completely restored into Primavera without requiring the use of a conversion program or utilizing other software.
- E. Short Interval Schedule

1. Short Interval Schedules (SIS) shall be submitted to the Owner Representative with copy to the Architect during the weekly site meetings.
2. The SIS interval shall be **three weeks** and shall include the past week, the week submitted and the week thereafter; the SIS may be hand generated.
3. The SIS shall be based on the Contract Schedule and shall be in bar chart form. The SIS shall be in sufficient detail to evaluate the Contractor's performance in the preceding week and planned progress in upcoming weeks vis a vis the Contract Schedule and Updates thereof.
4. Following review and revisions as necessary, the SIS will be accepted by the Owner Representative.

F. Float Time

1. Float or slack time is defined as the amount of time between the earliest start date and the latest start date of the earliest finish date and the latest finish date of a scheduled activity.
2. Float or slack time is not for the exclusive use or benefit of either the Contractor or the Owner. The Contractor acknowledges and agrees that actual delays affecting path of activities containing float, will not have any effect upon the Contract completion date, provided that the actual delay does not exceed the float time associated with those activities.

G. Construction Schedule Revisions

1. Updating the construction schedule to reflect actual progress shall not be considered to be a revision of the Schedule.

1.4 RECOVERY SCHEDULES:

1. If during the process of schedule updating it becomes apparent that the Construction Schedule no longer represents the actual prosecution and progress of the work, the Owner's Representative may require the Contractor to submit a revised schedule at no additional cost to the Owner. The Owner shall have the right to withhold progress payments from the Contractor at its discretion, if the Contractor fails to submit a timely, detailed and workable Recovery Schedule.
2. Once a Contractor determines or the District or Architect notifies the Contractor that based on his/her/its observations of the work completed and the work in progress that the Contractor is fifteen (15) calendar days or more behind schedule, the Contractor has a duty to prepare a **Recovery Schedule** and submit the same to the District within seven (7) calendar days of receipt of notice that the Contractor is off schedule by fifteen (15) calendar days or more or, if no such notice is received by Contractor, within seven (7) calendar days of the date it becomes known to Contractor that Contractor is off schedule by fifteen (15) calendar days or more. Failure to timely provide District with recovery schedules shall constitute a material breach of the contract and District may declare the Contractor in default and terminate the contract.

1.5 EARLY COMPLETION OF PROJECT:

- A. In the event the Contractor wishes to complete work earlier than the specified contract completion date, and the Owner/Architect approve such earlier completion, the following conditions apply:

1. The contract completion date shall not be amended by the Owner Representative approval of Contractor's proposed earlier completion date.
2. Contractor shall not, under any circumstances, receive additional compensation from the Owner for indirect, general, administrative or other forms of overhead costs, for the period between the time or earlier completion proposed by the Contractor and the official contract completion date.

1.6 TIME EXTENSION REQUESTS

- A. The monthly updated construction schedules submitted by the Contractor shall not show a completion date later than the Contract Time, subject to any time extensions granted by the Owner.
- B. If the Contractor believes that it is entitled to an extension of the Contract Time due to a Change Order of delay/disruption, the Contractor, within **ten (10) workdays** of the qualifying event(s), shall submit:
 1. A Time Extension Request notification letter with a detailed narrative justifying the time extension requested;
 2. Fragmentary Network (Fragnet) Analysis of the delay impact, identifying all schedule activities that are impacted by the subject occurrence;
 3. Tabular report of the qualifying update of the CPM schedule the analysis is based on; and
 4. A schedule analysis entitled "Time Extension Request Schedule" That incorporated the findings of the Fragnet analysis into the latest (qualifying) update of the CPM schedule;
 5. The Fragnet and time extension request schedules shall be time scaled, utilizing a computer generated network analysis unless otherwise approved by the Owner's Representative.
 6. The time extension request shall forecast the adjusted project completion date and impact to any intermediate milestones.
 7. Float is not for the exclusive use or benefit of either the Owner or Contractor. Contract time extensions shall be granted only to the extent the equitable time adjustments to the activity or activities affected by a change order of delay/disruption exceed the total float of a critical activity (or path) and extend the Contract Completion Date.
- C. When Contractor does not submit a Time Extension Request within ten (10) working days, it is mutually agreed that the particular Change Order (including Proposed Change Order) or delay/disruption does not impact the construction schedule and hence no time extension is due to the Contractor.
- D. The Owner shall not have any obligation to consider any time extension request unless the requirements of the contract documents are complied with. The Owner shall not be responsible or liable to the Contractor for any constructive acceleration due to failure of the Owner to grant time extensions under the terms of this contract, should Contractor fail to comply with the time extension submission and justification requirements stated herein.

PART 2 - PRODUCTS

A. NOT USED

PART 3 - EXECUTION

A. NOT USED

END OF SECTION

SECTION 01 33 00

SUBMITTAL PROCEDURES

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Submittal procedures
- B. Substitutions
- C. Submittals and Substitution Requests Requiring Agency Review
- D. Electronic Submittal Procedures.
- E. Product Data Submittals.
- F. Manufacturer's Instructions and Certificates
- G. Shop Drawing Submittals
- H. Physical Sample Submittals
- I. Construction Schedules
- J. Contractor Responsibilities
- K. Architect Responsibilities
- L. Deferred Approvals
- M. Electronic Documents for Contractor's Use

1.2 DESCRIPTION

- A. Types of Submittals: Submittal procedures specified in this section include construction progress schedules, shop drawings, product data, samples, manufacturers' certificates, manufacturer's installation instructions, and agency deferred approvals.
- B. Intent: Architect's review of shop drawings is intended to be a preview of what the Contractor intends to provide, and will function as an effort to foresee unacceptable materials or assemblies and to avoid the possibility of their rejection at the Project Site. Architect will review submittals only for conformance with the design concept of the Project and with the information given in the Contract Documents.

- C. The Architect's review of shop drawings will be general and shall not be construed:
1. As permitting departure from the Contract requirements except as otherwise provided for under Section 01 25 00, "Substitution Procedures".
 1. As relieving Contractor of responsibility for omissions or errors, including details, dimensions, materials, etc.
 2. That review of a separate item indicates acceptance of an assembly in which the item functions. Architect will only review acceptance of an assembly in which the item functions. Architect will only review submittals required by Contract Documents for conformance with design concept of the Project and with the information given in the Contract Documents.

1.3 SUBMITTAL PROCEDURES

- A. Submit completed documentation in accordance with scheduling criteria where defined in contract documents.
- B. The documents will be reviewed by Architect for consistency with specified criteria. If necessary, Architect will return submittal to Contractor for corrections. Any corrections, if any, shall be made by Contractor and returned to Architect within 7 days.
- C. No contract time extensions will be granted for document modification caused by non-conformance with specified criteria.
- D. Transmit required submittals to Architect per criteria in the General Conditions and as specified.
- E. Transmit each sample submittal with AIA Form G810 or other Architect-accepted form.

Form website link:

<https://www.aiacontracts.org/contract-documents/20041-transmittal-letter>

- F. All submittals shall be made electronically through the system agreed to by JKAE, the Owner and the Contractor. Only Samples for verification should be submitted physically – See Item 1.6 in this Section for "Electronic Submittal Procedures".
- G. Transmit submittals within time periods established by the General Conditions and as required to maintain orderly and sequential progress of the work.
- H. Maintain complete and current submittal log, indicating status of all submittals and re-submittals. Provide summary of submittal status at each periodic construction meeting.
- I. Failure to make timely submittals will not be reason for extension of Contract Time.
- J. Unless specifically requested, do not send submittals unless required by the project specifications. Submittals transmitted to Architect not required by specification will be returned without review.
- K. Sequentially number the submittals and transmittal forms as shown in each section requiring submittals with the project manual section number from which the submittal is being requested (e.g., 01 33 00A). Any required revisions and resubmittals shall be noted with an underscore and

“R1”, “R2”, etc. (e.g. 01 33 00_R1).

- L. Provide submittals with the same number as indicated in the project specifications.
- M. **Do not combine specification sections within submittals.**
- N. Identify Project, Contractor, Subcontractor or supplier; pertinent Drawing sheet and detail number(s), and specification Section name and number, as appropriate.
- O. Apply Contractor's stamp and signature or initial (electronically or physically) certifying that review, verification of products required, field dimensions, adjacent construction work, and coordination of information, is in accordance with the requirements of the Work and Contract Documents. See General Conditions, Section 00 72 00, Paragraph 4.7.1.2.
- P. Unless otherwise authorized by the Architect, all of the submittals required by a specification section shall be submitted together at the same time. Electronic submittals of product data, shop drawings, etc. may be submitted ahead of physical color samples with approval of the Architect. Submittals that do not include all required submittals for a given specification section will be returned without review.
- Q. Schedule submittals to expedite the Project. Late submittals shall not be considered a valid reason for product substitution. Deliver Samples to architect at business address. Coordinate submission of related items.
- R. Identify variations from Contract Documents and Product or system limitations that may be detrimental to successful performance of the completed Work. If variations occur, submit a substitution request.
- S. Provide space for Contractor and Architect review stamps.
- T. Samples: Provide samples as specified in each Section.
- U. Manufacturer's Data: Provide descriptive data on all accessory items and operation.
- V. Installation Data: Submit descriptive data on installation procedures.
- W. Revise and resubmit submittals as required, identify all changes made since previous submittal.
 - 1. Provide re-submittals within seven days of receipt of returned submittal.
- X. Distribute copies of reviewed submittals to concerned parties. Instruct parties to promptly report any inability to comply with provisions.
- Y. Architect's review of submittals shall not relieve the Contractor for compliance with the Contract Documents, or for responsibility for deviations from Contract Documents.
 - 1. In review of submittals, Architect will not provide dimensions or elevations for field conditions, or for conditions available from a detailed review of documents.
- Z. Revise and resubmit submittals as required, identify all changes made since previous submittal.

- AA. Distribute copies of reviewed submittals to concerned parties at no additional cost to Owner for duplication, blueprinting, mailing or other costs. Instruct parties to promptly report any inability to comply with provisions.
- BB. Architect will notify Contractor of availability of documents for pickup at Architect's office, and log such date as the date returned to Contractor. Architect is not obligated to transmit or deliver submittals to Contractor.

1.4 SUBSTITUTIONS

- A. Substitution requests will be considered in accordance with the General Conditions and must be submitted according to Section 01 25 00, "Substitution Procedures" on the provided substitution request form in Section 01 25 00.10.
- B. Substitutions submitted without following this procedure will be rejected.
- C. Substitutions will not be considered when indicated or implied on shop drawings or other forms of submittal without separate written request for substitution.

1.5 SUBMITTALS AND SUBSTITUTION REQUESTS REQUIRING AGENCY REVIEW

- A. Variations to Structural Safety, Fire and Life Safety and Access Compliance requirements require DSA review and approval.
- B. Architect will submit documents to DSA for review and comment in the form of a Construction Change Document (CCD). Architect will return documents to Contractor following DSA review and approval.
- C. Where required, Contractor shall make all changes or corrections required by DSA. Contractor shall pay all fees and provide all coordination and management necessary to obtain approval, including all meetings, correspondence and communications. Once corrections are made, Contractor shall return to Architect for resubmittal.
- D. After receiving DSA final approval, Architect will furnish Contractor a complete set of DSA approved documents in PDF format for Contractor's use in construction and for inspection by the Inspector of Record (IOR).

1.6 ELECTRONIC SUBMITTAL PROCEDURES

- A. All submittals shall be submitted electronically.
- B. Submittals shall be uploaded to the system agreed to by the Architect, the Owner and the Contractor in full size PDF format. Do not reduce Shop Drawings from original sheet size.
- C. One PDF copy of electronic submittals will be returned to the Contractor. Contractor may distribute submittals to the concerned parties electronically or physically. Any printing costs for physical distribution of submittals shall be borne by the Contractor. The Architect will not print copies for distribution.
- D. Follow all General Submittal Procedures as described above.

1.7 PRODUCT DATA SUBMITTALS

- A. Where specified in individual sections, submit complete list of major products proposed for use, with name of manufacturer, trade name, and model number for each product and supporting product data.
 - 1. For products specified only by reference standards, give manufacturer, trade name, model or catalog designation, and reference standards.
- B. Submit all product data electronically, in PDF format.
- C. Mark each copy to identify applicable products, models, options, and other data. Supplement manufacturers' standard data to provide information unique to this Project. Mark out items that are not applicable to the project.
- D. After review, distribute in accordance with Submittal Procedures and provide copies for Project Record Documents as described in Section 01 77 00, "Closeout Requirements".
- E. Show dimensions and clearances required.

1.8 MANUFACTURER'S INSTRUCTIONS AND CERTIFICATES

- A. When specified in individual specification Sections, submit manufacturers' certificates and printed instructions for delivery, storage, assembly, installation, start-up, adjusting, and finishing, in quantities specified for Product Data.
- B. Identify conflicts between manufacturers' instructions and Contract Documents.
- C. Indicate material or product conforms to or exceeds specified requirements. Submit supporting reference data, affidavits, and certifications as appropriate.
- D. Certificates may be recent or previous test results on material or Product, but must address current regulatory requirements and be acceptable to Architect.

1.9 SHOP DRAWING SUBMITTALS

- A. Submit all shop drawings electronically, in PDF format.
- B. Provide the following information on each sheet:
 - 1. Project name and location.
 - 2. Contractor name and address.
 - 3. Subcontractor, manufacturer, or fabricator name and address.
 - 4. Date and scale of drawings
 - 5. Space for Contractor's and Architect's review and approval stamp.
- C. After review and distribution in accordance with Submittal Procedures, retain one copy of all

reviewed shop drawings at the job and label them "PROJECT RECORD DOCUMENTS" as described in Section 01 77 00, "Execution and Close-out Requirements".

1.10 PHYSICAL SAMPLE SUBMITTALS

- A. Submit samples to illustrate functional and aesthetic characteristics of the Product, with integral parts and attachment devices. Provide units identical with final condition of proposed materials or products for the work. Coordinate sample submittals for interfacing work.
- B. Submit samples of finishes from the full range of manufacturers' standard colors textures, and patterns for Architect's selection.
- C. Submit the number of samples of selected finish color texture, and pattern as specified in individual specification Sections from the full range of manufacturers' standard colors, textures and patterns. Provide custom selections, as indicated in the Drawings and Specifications,
- D. Include identification on each sample, with full Project information.
- E. Submit the number or samples specified in individual specification Sections.
- F. If not specifically noted in individual specification Sections, submit a minimum of two (2) copies of each submittal including samples and resubmittals, as the Architect will retain one.
- G. Samples and Color Charts shall be physical submittals with accurate representation of color and other physical characteristics.
 - 1. Initial Submittal: Using manufacturers standard sample delivery system, in the number indicated within this Section submit samples of colors and finishes from the full range of manufacturers' standard colors (and custom colors if specified), textures, and patterns for Architect initial selection.
 - 2. The Architect will notify Contractor of initial selection by Architect's Supplemental Instructions (ASI), or other mutually agreed to format.
 - 3. Following receipt of initial selection, submit the number of samples of selected finish color, texture, and pattern as specified in individual specification Sections, with a minimum of five samples provided.
- H. Follow all General Submittal Procedures as described above.

1.11 CONSTRUCTION SCHEDULES

- A. Submit Construction Schedule in accordance with the General Conditions and as specified in Section 01 32 16, "Construction Progress Schedule".
- B. Contractor shall engage at his own expense all necessary personnel skilled in preparation of time and cost application of network techniques for construction projects.
- C. Initial Schedule preparation:
 - 1. Submit Initial Schedule within 14 days of date of Notice to Proceed.

2. Architect and Owner will meet with the Contractor to review and comment on the Contractor's Initial Schedule within five (5) days of its receipt.
3. The Contractor shall finalize and re-submit the schedule within five (5) days of the review meeting. Upon acceptance by the Owner, the accepted Initial Schedule will become the project Baseline Contract Schedule. The Baseline Schedule shall not be revised without written approval of the Owner.
4. Contractor's failure to incorporate all elements of work required for the performance of the contract or any inaccuracy in the Baseline Contract Schedule shall not excuse the Contractor from performing all work required for a completed project within the specified contract time period, notwithstanding the Owner's acceptance of the Baseline Contract Schedule.

D. Monthly and Periodic Interval Updates

1. The Contractor shall submit to the Owner each month, with one copy to the Architect, an updated Schedule of the work. The schedule shall be submitted no later than five (5) workdays from the status date.
2. The Updated Schedule shall include:
 - a. The Contractor's estimated percentage complete (progress) for each activity in progress.
 - b. Actual start/finish dates for activities.
 - c. Identification of errors, if any, from the previous updated schedule.
3. Submit updated schedule with each pay request, reflecting all adjustments in construction schedule and sequence.
4. Contractor shall submit a narrative report as part of his monthly review and update, in form agreed upon by Contractor and Architect. Narrative report shall include description of problem areas; current and anticipated delaying factors and their estimated impact on performance of other activities and completion dates; and an explanation of corrective action taken or proposed.
5. Provide three-week look-ahead schedule at each construction progress meeting.

E. Pay Requests will not be processed without submission of updated schedule.

F. Schedule Format and Content: Provide overall schedule in horizontal bar chart, critical path form, in PDF format, or other Architect approved format, for each building and site work, with separate line for each major work activity, and scheduled on a weekly basis. Integrate all portions of project to identify critical path. Where specified, prepare schedule based on Phases as shown on drawings and specified.

1. The data included on the bar chart shall consist of the activity number, activity description, early start and finish date, original duration, remaining duration, percent complete, resource units per day, and total float.

2. The schedule activities shall be coded to include activity responsibility and the area of work. Area codes shall distinguish construction activities related to individual buildings or areas within buildings (e.g. gymnasium classrooms, lobby, locker rooms), site work, increments, and phasing.
 - a. Coordinate durations with work by Rough Grading Package Contractor.
3. No activity in the schedule shall have a duration longer than twenty (20) workdays, with the exception of fabrication and procurement activities, unless otherwise approved by the Owner. Activity durations shall be the total number of actual days required to perform the work including consideration of weather impacts.
4. Group related and coordinated activities. Identify early/late start and finish dates, major milestones, float dates, and duration of each activity.
5. Identify all utility and service interruptions and connections, including disconnection of existing buildings.
6. Detailed network activities shall include, in addition, submittal and approval of shop drawings, procurement of critical materials and equipment, fabrication of special material and equipment and their installation and testing. All activities of the Owner that affect progress, and contract required dates for completion of all or parts of the work shall be shown.
7. If physical copies of schedules are provided, sheet size of diagrams shall be at least 30 by 42 inches. Each updated copy shall show a date of the last revision.
8. Initial submittal and complete revisions shall be submitted in PDF format and the same quantity as provided previously.

G. Float Time

1. Float or slack time is defined as the amount of time between the earliest start date and the latest start date or the amount of time between the earliest finish date and the latest finish date of a scheduled activity.
2. Float or slack time is not for the exclusive use or benefit of either the Contractor or the Owner. The Contractor acknowledges and agrees that actual delays affecting path of activities containing float, will not have any effect upon the Contract completion date, provided that the actual delay does not exceed the float time associated with those activities.

- H. For scheduling purposes, the Owner and campus will be officially closed on the following holidays during each school year:

HOLIDAYS - CAMPUS CLOSED

2023: 6/19, 7/4, 9/4, 11/10, 11/23-11/24, 12/22-12/29

2024: 1/1, 1/15, 2/16, 2/19, 4/1, 4/4, 4/5, 5/27, 6/19, 7/4

1. It shall be the responsibility of the Contractor to confirm the month, day, and year for the above holidays with the Owner facilities management. Contractor shall coordinate and schedule his work accordingly. The project site will be available to the Contractor during the holidays but there is no guarantee that other Owner and campus facilities or services will be made available to the Contractor during the holiday schedule.

I. Construction Schedule Revisions

1. Updating the construction schedule to reflect actual progress shall not be considered to be a revision of the Schedule.
2. If during the process of schedule updating it becomes apparent that the Construction Schedule no longer represents the actual prosecution and progress of the work by more than **10 calendar days**, the Owner may require the Contractor to submit a revised schedule at no additional cost to the Owner. The Owner shall have the right to withhold progress payments from the Contractor at its discretion, if the Contractor fails to submit a timely, detailed and workable schedule showing recovery necessary to achieve scheduled completion.

J. Final Schedule: At the completion of the contract and prior to the release of any bonds or final payment by the Owner, the Contractor shall submit to the Owner, with copy to the Architect for approval, a final schedule, showing the actual job history.

K. Time Extension Requests: The monthly updated construction schedules submitted by the Contractor shall not show a completion date later than the Contract Time, subject to any time extensions approved by the Owner.

1. Contractor shall submit Time Extension Requests within 10 days of an event Contractor believes qualifies for a contract time extension, including contract modifications provided by Architect or Owner.
2. The Time Extension Request shall include a notification letter with a detailed narrative justifying the time extension requested.
3. Accompanying letter, provide schedule analysis entitled "Time Extension Request Schedule" incorporating narrative analysis into the latest (qualifying) update schedule.
4. Time Extension Request shall forecast the adjusted project completion date and impact to any intermediate milestones.
5. When Contractor does not submit a Time Extension Request within ten (10) working days, it is mutually agreed that the particular event, including ASI's, RFI response, or CCD/Change Order (including Proposed Change Order) or delay/disruption does not impact the construction schedule and hence no time extension is due to the Contractor.
6. The Owner shall not be under any obligation to consider any time extension request unless the requirements of the contract documents are complied with. The Owner shall not be responsible or liable to the Contractor for any constructive acceleration due to failure of the Owner to grant time extensions under the terms of this contract, should Contractor fail to comply with the time extension submission and justification requirements stated herein.

1.12 CONTRACTOR RESPONSIBILITIES

- A. Review shop drawings, product data and samples prior to submission. Reject and correct submittals that contain errors prior to submitting to Architect.
- B. Determine and verify:
 - 1. Field measurements.
 - 2. Field construction criteria.
 - 3. Catalog numbers and similar data.
 - 4. Conformance with specifications.
 - 5. Conformance with applicable codes.
- C. Submittals giving inadequate indication of contractor review and approval will be returned without review, for resubmission.
- D. Coordinate each submittal with requirements of the Work and of the Contract Documents.
- E. Notify the Architect in writing, at time of submission, of any deviations in the submittals from requirements of the Contract Documents. See Item 1.3 in this Section for Substitution Request requirements.
- F. Begin no fabrication or construction activity that requires submittals until return of submittals with Architect's stamp and initials or signature indicating finish review.
- G. After Architect's final review, distribute copies.
- H. Provide submittals within the following time periods and as required for the orderly progress of the work. Where no time period is established, provide submittals no later than the midpoint between notice of award and scheduled start date of the work related to the submittal. Where submittals are not submitted within specified limits, the Architect may delay certification of Payment Request until submittals are received.
 - 1. Concrete, including Mix Designs: No later than 14 days after Notice to Proceed.
 - 2. Asphalt Paving, including Mix Designs: No later than 14 days after Notice to Proceed.
 - 3. Aggregate Base: No later than 14 days after Notice to Proceed.
 - 4. Mortar and Grout, including Mix Designs: No later than 14 days after Notice to Proceed.
 - 5. Concrete Masonry Units and related items: No later than 14 days after Notice to Proceed.
 - 6. Structural Steel: No later than 14 days after Notice to Proceed and as specified in Division 05.
 - 7. Metal Decking: No later than 14 days after Notice to Proceed and as specified in Division 05.
 - 8. Architectural Casework: No later than 60 days after Notice to Proceed.

9. Firestopping: No later than 60 days after Notice to Proceed.
 10. Roofing and Sheet Metal: No later than 60 days after Notice to Proceed.
 11. Doors, Door and Window Frames: No later than 60 days after Notice to Proceed.
 12. Door Hardware: No later than 60 days after Notice to Proceed. In addition, provide Owner required keying information no later than 30 days before scheduled occupancy date. Coordinate all keying requirements with Owner.
 13. All HVAC, Fire Protection, Plumbing and Electrical Fixtures, Products and Equipment: No later than 60 days after Notice to Proceed.
- I. The Architect's action will be taken within a reasonable time period, while allowing sufficient time, in the Architect's professional judgment, to permit adequate review.
- J. Transmit each submittal separately with Architect accepted form.
1. Combine required material for a single specification Section into a single submittal. Incomplete or partial submittals will be returned without action for re-submittal in proper form.
 2. Do not combine data from more than one specification section or drawing component into a single submittal. Such submittals received will be returned without action for re-submittal in proper form.
 3. Submittals not reviewed by General Contractor will be returned without action for proper review and re-submittal.
 4. Unless otherwise specified, submit product data in quantity required by Contractor for construction, plus three copies for Architect's use. Architect will review a maximum of six (6) copies of submittal.
- K. Sequentially number the transmittal forms. Re-submittals to have original number with an alphabetic or numeric suffix.
- L. Identify Project, Contractor, Subcontractor or supplier; pertinent Drawing sheet and detail number(s), and specification Section number, as appropriate.
- M. Apply Contractor's stamp, signed or initialed certifying that review, verification of Products required, field dimensions, adjacent construction Work, and coordination of information, is in accordance with the requirements of the Work and Contract Documents.
- N. Schedule submittals to expedite the Project, and deliver to Architect at business address. Coordinate submission of related items.
- O. Identify variations from Contract Documents and Product or system limitations which may be detrimental to successful performance of the completed Work.

- 1. Clearly identify, with bold clouding, or other graphic notation, all deviations from Contract Documents. Provide boxed note at clouded deviation specifically requesting approval of proposed change. Provide documentation of proposed change, including additional graphics and data as required by Architect.

1.13 ARCHITECT RESPONSIBILITIES

- A. Architect will review each submittal, mark with "Action" and where possible, return within a reasonable period of time from date of receipt. Where submittal must be held for coordination, Contractor will be so advised without delay. Action markings shall be interpreted as shown in the Architect’s submittal review stamp shown below (or similar review stamp):

<input type="checkbox"/>	REVIEWED – NO EXCEPTIONS TAKEN	<input type="checkbox"/>	MAKE CORRECTIONS NOTED
<input type="checkbox"/>	REJECTED	<input type="checkbox"/>	REVISE AND RESUBMIT
<input type="checkbox"/>	SUBMIT SPECIFIED ITEM	<input type="checkbox"/>	RETURNED WITHOUT REVIEW

This review is only for general conformance with the design concept of the project and general compliance with the information given in the Contract Documents. Corrections or comments made on the shop drawings/submittal during this review do not relieve the Contractor from compliance with all of the requirements of the plans and specifications. Review of a specific item shall not include approval of an assembly of which the item is a component. Contractor is responsible for: dimensions to be confirmed and correlated at the job site; information that pertains solely to the fabrication processes or to the means, methods, techniques, sequences and procedures of construction; coordination of, and with, the Work of all trades; and for performing all work in a safe and satisfactory manner.

DATE: _____ BY: _____

- B. Architect shall comply with previous provisions in this Section, as described herein
- C. See Section 01 25 00, “Substitution Procedures”, for Architect responsibilities for substitution requests.

1.14 DEFERRED APPROVALS

- A. Where shown on drawings and as specified in individual sections, submit documentation as required to obtain DSA approval of all deferred approval work.
- B. Submit deferred approval documentation under the provisions of Section 01 33 00 and as specified in the respective Sections.
 - 1. DSA Comply with the requirements of Section 4-317(g), Chapter 4, Part 1, Title 24, CCR.
 - 2. Submit documentation prepared under the direct supervision of a California licensed Engineer in the applicable discipline. All structural deferred approvals shall be prepared by California licensed Structural Engineer.
 - a. Provide Deferred Approval Number and DSA Project Number on the cover of each submittal.
 - b. Provide document format with sufficient space for Architect and DSA/OSHPD agency review stamps.
 - 3. All deferred approvals shall be stamped and sealed by the responsible engineer, licensed as specified. In accordance with DSA Section 4-317(g), Part 1, Title 24, CCR. Architect will review and mark with notation indicating that the deferred submittal documents have been reviewed and that they have been found to be in general conformance with the design of the project.
 - 4. Clearly identify all deviations and proposed alternates to materials and systems shown on drawings and specified in this Project Manual.
 - 5. Drawings: Produce drawings on substantial bond paper using media of archive quality. Indicate dimensional locations of the various parts of the construction, sizes and type of members, connections, attachments, and openings.
 - 6. Specifications: Provide specifications in an approved format illustrating materials and systems proposed for use in design.
 - 7. Structural Calculations: Produce calculations in booklet form, 8-1/2 x 11 inch size, minimum of 3 wet signed and sealed copies.
 - 8. Provide sufficient information with respect to design criteria, analysis methodology and material capacity to adequately evaluate documentation for compliance with applicable sections of Title 24, CCR.
 - 9. Where required by DSA 4-336, provide verified reports for work done under deferred approvals.

1.15 ELECTRONIC DOCUMENTS FOR CONTRACTOR'S USE.

- 1. At Architect's sole discretion, and upon request, Architect will provide a file containing selected electronic file backgrounds for Contractor's use in shop drawing preparation.

2. Contractor shall sign Architect provided release form regarding such electronic file information.
3. Electronic files will be provided in AutoCAD format, in the Architects current version, as background views only, without dimensions, doors, notes and similar information. No seals, title blocks or approval stamps will be included on backgrounds.
4. Unless otherwise established, and at Architects sole discretion, only plan and section views of architectural, structural, mechanical, and electrical documents will be provided. Under no circumstances will the complete project AutoCAD file be provided.
5. The Architect will provide a single Flash Drive based file containing backgrounds for all discipline for the contractors use. Contractor shall be responsible for distribution of background files to subcontractors and vendors.
6. The Architect will prepare a cost for preparation of electronic file package. If the Contractor agrees to such cost, the cost will be processed as a deductive change order to the contract.

PART 2 - PRODUCTS

- A. NOT USED

PART 3 - EXECUTION

- A. NOT USED

END OF SECTION

SECTION 01 42 29
REFERENCE STANDARDS

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Reference Standards
 - 1. Definitions
 - 2. Quality Assurance
 - 3. Standards and Regulations
 - 4. Schedule of References
 - 5. Project Manual and Specifications
 - 6. Jobsite Publications

1.2 DEFINITIONS

- A. General: Basic Contract definitions are included in the Conditions of the Contract.
- B. "Approved": The term "approved," when used in conjunction with Architect's action on Contractor's submittals, applications, and requests, is limited to Architect's duties and responsibilities as stated in the Conditions of the Contract.
- C. "Directed": Terms such as "directed," "requested," "authorized," "selected," "approved," "required," and "permitted" mean directed by Architect, requested by Architect, and similar phrases.
- D. The term "experienced," when used with the term "installer," means having successfully completed a minimum of five [5] previous projects similar in size and scope to this Project; being familiar with the special requirements indicated; and having complied with requirements of authorities having jurisdiction.
 - 1. Using a term such as "carpentry" does not imply that certain construction activities must be performed by accredited or unionized individuals of a corresponding generic name, such as "carpenter." It also does not imply that requirements specified apply exclusively to tradespeople of the corresponding generic name.
- E. "Furnish": The term "furnish" means to supply and deliver to Project site, ready for unloading, unpacking, assembly, installation, and similar operations.

- F. "Indicated": The term "indicated" refers to graphic representations, notes, or schedules on Drawings; or to other paragraphs or schedules in Specifications and similar requirements in the Contract Documents. Terms such as "shown," "noted," "scheduled," and "specified" are used to help the user locate the reference.
- G. "Install": The term "install" describes operations at Project site including unloading, temporary storage, unpacking, assembling, erecting, placing, anchoring, applying, working to dimension, finishing, curing, protecting, cleaning, and similar operations.
- H. "Installer": An installer is Contractor or another entity engaged by Contractor, as an employee, subcontractor, or contractor of lower tier, to perform a particular construction operation, including installation, erection, application, and similar operations.
- I. "Provide": The term "provide" means to furnish and install, complete and ready for the intended use.
- J. "Project Site": Space available for performing construction activities. The extent of Project site is shown on Drawings and may or may not be identical with the description of the land on which Project is to be built.
- K. "Regulations": The term "regulations" includes laws, ordinances, statutes, and lawful orders issued by authorities having jurisdiction, as well as rules, conventions, and agreements within the construction industry that control performance of the Work.

1.3 QUALITY ASSURANCE

- A. For products or workmanship specified by association, trade, or Federal Standards, comply with requirements of the standard, except when more rigid requirements are specified or are required by applicable codes.
- B. Conform to reference standard by date of issue current on date of Contract Documents unless specifically noted.
- C. Obtain copies of standards when required by Contract Documents directly from publication source.
- D. Maintain copy at jobsite during submittals, planning, and progress of the specific work, until Substantial Completion.
- E. Should specified reference standards conflict with Contract Documents, request clarification from Architect/Engineer before proceeding.
- F. The contractual relationship of the parties to the Contract shall not be altered from the Contract Documents by mention or inference otherwise in any reference document.
- G. Schedule of references is general in nature; disregard any reference standard listed that is not applicable to this project.

1.4 STANDARDS AND REGULATIONS

- A. Applicability of Standards: Unless the Contract Documents or applicable regulatory requirements include more stringent requirements, applicable construction industry standards have the same force and effect as if bound or copied directly into the Contract Documents to the extent referenced. Such standards are made a part of the Contract Documents by reference.
1. The contractual relationship of the parties to the Contract shall not be altered from the Contract Documents by mention or inference otherwise in any reference document.
 2. Referenced standards take precedence over standards that are not referenced but recognized in the construction industry as applicable.
 3. Non-referenced standards are not directly applicable to the Work, except as a general requirement of whether the Work complies with recognized construction industry standards.
 4. Non-referenced standards: Except as otherwise limited by the Contract Documents, standards not referenced but recognized in the industry as applicable will be evaluated for performance of the Work. The Architect will decide whether a code or standard is applicable, or which of several are applicable.
- B. Publication Dates: Conform to reference standard by date of issue current on date of project approval by DSA, or date specified in Product Sections.
- C. Conflicting Requirements: Where compliance with two or more standards is specified and the standards establish different or conflicting requirements for minimum quantities or quality levels, comply with the most stringent requirement. Refer uncertainties and requirements that are different, but apparently equal, to Architect for a decision before proceeding.
1. Minimum Quantity or Quality Levels: The quantity or quality level shown or specified shall be the minimum provided or performed. The actual installation may comply exactly with the minimum quantity or quality specified, or it may exceed the minimum within reasonable limits. To comply with these requirements, indicated numeric values are minimum or maximum, as appropriate, for the context of the requirements. Refer uncertainties to Architect for a decision before proceeding.
- D. Copies of Standards: Each entity engaged in construction on Project must be familiar with industry standards applicable to its construction activity. Copies of applicable standards are not bound with the Contract Documents.
1. Obtain copies directly from the publication source when required by Contract Documents.
 2. Although copies of standards needed for enforcement of requirements may be part of required submittals, the Architect reserves the right to require the Contractor to submit additional copies as necessary for use by others in the enforcement of requirements.
- E. Abbreviations and Acronyms for Industry Organizations: Where abbreviations and acronyms are used in Contract Documents, they shall mean the recognized name of the entities indicated in Gale Research's "Encyclopedia of Associations" or in Columbia Books' "National Trade & Professional Associations of the United States". Contact Architect regarding any questions regarding such abbreviations and acronyms.

F. Abbreviations and Acronyms for Standards and Regulations: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the standards and regulations in the following list.

1. ADA Americans with Disabilities Act (ADA)
2. ABA Architectural Barriers Act (ABA)
3. CFR Code of Federal Regulations
4. CRD Handbook for Concrete and Cement
5. DOD Department of Defense Military Specifications and Standards
6. DSA Division of the State Architect
7. FED-STD Federal Standard (See FS)
8. FS Federal Specification
9. FTMS Federal Test Method Standard (See FS)
10. ICC-ES ICC Evaluation Service, Inc.
11. MIL (See MILSPEC)
12. MIL-STD (See MILSPEC)
13. MILSPEC Military Specification and Standards
14. NES National Evaluation Service (See ICC-ES)
15. UFAS Uniform Federal Accessibility Standards

G. Schedule of Governing Codes:

1. California Code of Regulations (C.C.R.)
 - a. C.C.R. - Title 24, Part 1 – 2019 Building Standards Administrative Code.
 - b. 2019 CBC: 2018 IBC as Amended by 2019 California Amendments – C.C.R., Title 24, Parts 1 & 2
 - c. 2016 CEC: 2017 NEC as Amended by California 2019 Amendments - Part 3, Title 24, CCR
 - d. 2019 CMC: 2018 UMC as Amended by California 2016 Amendments - Part 4, Title 24, CCR
 - e. 2019 CPC: 2018 UPC as Amended by California 2016 Amendments - Part 5, Title 24, CCR
 - f. C.C.R. - Title 24, Part 6 - 2019 California Energy Standards
 - g. 2019 CFC: 2018 IFC as Amended by California 2016 Amendments, Part 9 - Title 24,

CCR.

- h. C.C.R. – Title 24, Part 11, 2016 California Green Building Standards Code
 - i. C.C.R. - Title 24, Part 12, 2016 California Referenced Standards Code
 - j. C.C.R. – Title 19
 - k. C.C.R. – Title 22, Social Security, latest register.
- 2. NFPA 101 - Life Safety Code.
 - 3. NFPA 72 – National Fire Alarm Code (California Amended) 2016 Edition.
 - 4. American Disability Act (ADA) or American Disability Act 2010 Standards
 - 5. Standard Specifications for Public Works Constructions.

1.5 SCHEDULE OF REFERENCES

- A. Industry Organizations: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the entities listed in the 2016 California Building Code Title 24, Part 2, Chapter 35.

1.6 PROJECT MANUAL AND SPECIFICATIONS

A. Format and structure

- 1. Specifications are organized into Divisions and Sections based on the Construction Specifications Institute's 49-Division format and 2018 Masterformat numbering system.
- 2. The sections are placed in the Project Manual in numeric sequence; however, this sequence is not complete and the Table of Contents of the specifications must be consulted to determine the total listing of sections.
- 3. The section title is not intended to limit the meaning or content of the section, nor to be fully descriptive of the requirements specified within the Section.
- 4. The organization of the specifications shall not control the division of the work among subcontractors or establish the extent of work to be performed by any trade.

B. Definitions

- 1. Related Work Described Elsewhere: The caption "Related Sections" or "Related Work Described Elsewhere" identifies some Sections of the Specifications which may involve work involving coordination or general relationships to the work of the Section at hand. The omission of a Section from "Related Sections: or ""Related Work Described Elsewhere" does not limit the Contractors obligation to perform all portions of the Work with all appropriate and reasonable coordination.

2. Section Includes: The caption "Section Includes" or "Description" or "Summary" paragraph is intended to be a broad, general statement of the work covered by an individual section. The listing of principal items of work shall not be construed as an exhaustive or complete list.

C. Language

1. Specification Language and Intent: The words "the", "shall", "will", and all may be omitted in specification Sections. Where such words as "perform", "install", "erect", "test", or words of similar import are used, it shall be understood such words include the meaning of the phrase, "The Contractor Shall". The requirements indicated and specified apply to all work of the same kind, class, and type, even though the word "all" is not stated.
2. Specifications use certain conventions regarding style of language and the intended meaning of certain terms, words, and phrases when used in particular situations or circumstances. These conventions are:
 - a. Language used in Specifications and other Contract Documents is abbreviated. Words and meanings shall be interpreted as appropriate. Words that are implied, but not stated, shall be interpolated as the sense requires. Singular words shall be interpreted as plural and plural words interpreted as singular where applicable to maintain the context of the Contract Document indicated.
 - b. Imperative and streamlined language is generally used in the Specifications. Requirements expressed in the imperative mode are to be performed by the Contractor. Subjective language is used for clarity to describe responsibilities that must be fulfilled indirectly by the Contractor, or by others when so noted.
 - c. The words "shall be" are implied wherever a colon (:) is used within a sentence or phrase.

1.7 JOB-SITE PUBLICATIONS

- A. Contractor shall keep a copy of Title 24, Parts 1 through 5, at the jobsite at all times.

PART 2 - PRODUCTS

- A. NOT USED

PART 3 - EXECUTION

- A. NOT USED

END OF SECTION

SECTION 01 45 00
QUALITY CONTROL

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Quality Assurance and Control of Installation
- B. Independent Testing and Laboratory Services
- C. Inspection Services
- D. Contractor Responsibility For Structural Tests and Special Inspections
- E. Field Samples and Field Mockups
- F. Manufacturer's Field Services and Reports

1.2 QUALITY ASSURANCE AND CONTROL OF INSTALLATION

- A. Monitor quality control over suppliers, manufacturers, Products, services, site conditions, and workmanship, to produce Work of specified quality.
- B. Comply fully with manufacturers' instructions, including each step in sequence. Should manufacturers' instructions conflict with Contract Documents, request clarification from Architect before proceeding.
- C. Secure products in place with positive anchorage devices designed and sized to withstand stresses, vibration, physical distortion or disfigurement.
- D. Comply with specified standards as a minimum quality for the Work except when more stringent tolerances, codes, or specified requirements indicate higher standards or more precise workmanship.
- E. The Division of the State Architect (DSA), will provide review per Section 4-334, Part 1, Title 24, CCR. Contractor shall verify with Owner that DSA has been notified prior to start of construction in compliance with section 4-331.
- F. The Owner will retain a general inspector to inspect all work performed by Contractor in compliance with Section 4-333 and 4-342 DSA, Section 7-144 and 7-145 OSHPD, Part 1, Title 24, CCR.
 - 1. The Owner will retain special inspectors for those portions of the work as shown on the drawings and specified in the respective sections in compliance with Part 2, Title 24, CCR.
- G. Perform work by persons qualified to produce workmanship of specified quality.

1.3 INDEPENDENT TESTING LABORATORY SERVICES

- A. Owner will employ and pay for services of a DSA approved independent testing laboratory to perform inspections, tests, and other services required by applicable codes and various Specification sections.
 - 1. Owner or Architect may also require independent testing of items where doubts exists that product or system conforms to Contract Documents.
 - a. Contractor shall employ and pay for testing laboratory under above circumstances.
- B. Services shall be performed in accordance with requirements of governing authorities and with specified standards.
- C. Reports will be submitted to Owner and Architect in duplicate giving observations and results of tests, indicating compliance or non-compliance with specified standards and with Contract Documents.
 - 1. Where required, testing laboratory will submit copy of test results directly to enforcing agency.
- D. Contractor shall cooperate with testing laboratory personnel; furnish tools, samples of materials, design mix, equipment, storage and assistance as requested.
 - 1. Notify Owner, Architect and testing laboratory sufficiently in advance of expected time for operations requiring testing services.
- E. See Section 01 45 29, "Testing Laboratory Services" for specific requirements.

1.4 INSPECTION SERVICES

- A. Owner will employ and pay for services of a DSA certified project inspector, approved by the Division of the State Architect, to provide continuous, full time inspection of the project per CCR Title 24, Part 1, 2019 California Administrative Code (CAC), Section 4-333. The duties of the inspector are defined in CAC Section 4-342.
 - 1. Notify Architect and Inspector 48 hours prior to expected time for operations requiring specific inspection.
 - 2. Make arrangements with independent firm and pay for additional samples and tests required for Contractor's use.
 - 3. See Section 01 45 29, "Testing Laboratory Services" for specific requirements.

1.5 CONTRACTOR RESPONSIBILITY FOR STRUCTURAL TESTS AND SPECIAL INSPECTIONS

- A. Each Contractor responsible for the construction of a main wind-or seismic-force-resisting system, designated seismic system or a wind- or seismic-resisting-component listed in the statement of special inspections shall submit a statement of responsibility to the Architect and the Owner prior to commencement of work on the system or component. The Contractor's statement of responsibility shall contain the following:
 - 1. Acknowledgment of awareness of the special requirements contained in the statement of special inspections;
 - 2. Acknowledgment that control will be exercised to obtain conformance with the construction documents approved by the building official;
 - 3. Procedures for exercising control within the Contractor's organization, the method and frequency of reporting and the distribution of the reports;
 - 4. Identification and qualifications of the person(s) exercising such control and their position(s) in the organization.

1.6 FIELD SAMPLES AND FIELD MOCK-UPS

- A. Erect field samples and field mock-ups at locations on site as approved in advance and in accordance with requirements where included in Specifications section.
- B. Acceptable samples represent a quality level for the Work.
- C. Remove field sample or mock-up when specified in individual Sections.
- D. Test mock-ups requiring special equipment may be erected at location having access to necessary equipment; coordinate with Architect.
- E. Field samples and mock-ups not approved and not capable of being acceptably revised shall be removed from site.
- F. Approved field samples and mock-ups may be used as part of Project, only if specifically noted in individual specification Sections.
- G. For all approved sample submittals, such as color selections, material, finish or texture samples maintain those samples in the field office for Owner and Architect reference and comparison to field-installed work.

1.7 MANUFACTURER'S FIELD SERVICES AND REPORTS

- A. When specified in individual specification Sections, require material or Product suppliers or manufacturers provide qualified staff personnel to observe site conditions, conditions of surfaces and installation, quality of workmanship, start - up of equipment, test, adjust, and balance of equipment as applicable, and to initiate instructions when necessary.
 - 1. Observe field conditions, including conditions of surfaces and installation.

2. Observe quality of workmanship.
 3. Provide recommendations to assure acceptable installation and workmanship.
 4. Where required, start, test, and adjust equipment as applicable.
- B. Representative shall submit written report to Architect or Owner listing observations, recommendations, site decisions or instructions given to applicators or installers that are supplemental or contrary to manufacturers' written instructions.
- C. Submit reports within 5 days of observation.

PART 2 - PRODUCTS

- A. NOT USED

PART 3 - EXECUTION

- A. NOT USED

END OF SECTION

SECTION 01 45 29
TESTING LABORATORY SERVICES

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Selection and Payment
- B. Quality Assurance
- C. Laboratory Responsibilities
- D. Laboratory Reports
- E. Limits on Testing Laboratory Authority.
- F. Contractor Responsibilities
- G. Additional Tests
- H. Schedule of Tests and Inspections

1.2 REFERENCES

- A. Title 24, CCR, All parts, current editions, as applies.
- B. ASTM D3740 - Standard Practice for Minimum Requirements for Agencies Engaged in Testing and/or Inspection of Soil and Rock as Used in Engineering Design and Construction
- C. ASTM E329 - Standard Specification for Agencies Engaged in Construction Inspection, Testing, or Special Inspection
- D. American Concrete Institute (ACI)
- E. American Welding Society – AWS QC1 - Specification for AWS Certification of Welding Inspectors

1.3 SELECTION AND PAYMENT

- A. Owner will employ and pay for services of an independent LEA accepted testing laboratory, approved by DSA, to perform specified inspection and testing as specified in this Section and CCR Title 24, Part 1, 2019 California Administrative Code, Sections 4-333, 4-335, 4-336 and 4-339.
 - 1. Unless specified as the Owner's responsibility, all other testing, mix design preparation and related quality control and certification requirements shall be paid by the Contractor at no additional cost to Owner.

2. All concrete mix designs shall be prepared at Contractor's cost and in compliance with Section 03 30 00, "Cast-In-Place Concrete" and 32 13 13, "Concrete Paving".
 3. All grout and mortar mix designs shall be prepared at Contractor's cost and in compliance with Section 04 05 13' "Masonry Mortaring".
 4. All asphalt concrete mix designs and aggregate base course shall be prepared at Contractor's cost and in compliance with 32 11 23, "Aggregate Base Courses" and Section 32 12 16, "Asphalt Paving and Striping".
- B. Only DSA, local legally constituted public authorities having jurisdiction over the Work, the Architect, and the Owner or their designated representatives shall be authorized to direct testing and inspection to determine compliance or non-compliance to the requirements of the Work.
- C. The Contractor shall reimburse the Owner, through Contract adjustment, for inspection and testing costs caused by the following Contractor actions:
1. All testing costs incurred after initial test established non-conformance with contract requirements.
 2. Inspection costs caused by Contractor's scheduling of work requiring inspections of less than 4 hours duration.
 3. Inspection costs caused by Contractor's failure to complete work requiring inspection within the scheduled duration period shown on Contractor's initial construction schedule.
 4. Inspection costs caused by Contractor's failure to order sufficient or required quantity of material.
 5. Inspection costs of items repaired following damage caused by Contractor.
 6. Inspection costs caused by Contractor's substitution of material, system or process, where such inspection and testing is required by the Architect, Owner or jurisdictional authority to demonstrate compliance with specified criteria.
 7. Inspection costs caused by Contractor's use of batch plant that does not comply with criteria waiving batch plant inspection.
 8. Inspection costs caused by Contractor's use of a supplier or subcontractor requiring inspection services to be performed at a location exceeding a 100 mile radius of project site.
 9. Inspection costs caused by Contractor's failure to complete work within normal hours and days, requiring overtime costs.

1.4 QUALITY ASSURANCE

- A. Comply with requirements of ASTM E329 and ASTM D3740.
- B. Laboratory: Authorized to operate in State in which Project is located, and currently approved by DSA (LEA).

- C. Laboratory Staff: Maintain a full-time registered Engineer or approved technician on staff to review services.
- D. Testing Equipment: Calibrated at reasonable intervals with devices of an accuracy traceable to either National Bureau of Standards (NBS) Standards or accepted values of natural physical constants.
- E. Tests and inspections shall be conducted in accordance with the requirements of the Specifications or, if not specified, in accordance with the latest standards of ASTM, ACI or other recognized authorities.
- F. Welding Inspectors shall be certified in accordance with AWS QC1 Standard for AWS Certification of Welding Inspectors.

1.5 LABORATORY RESPONSIBILITIES

- A. Test samples of mixes submitted by Contractor.
- B. Provide qualified personnel at site. Cooperate with Architect, Inspector of Record and Contractor in performance of services.
- C. Perform specified inspection, sampling, and testing of Products in accordance with specified standards.
- D. Ascertain compliance of materials and mixes with requirements of Contract Documents.
- E. Promptly notify Architect, Inspector of Record and Contractor of observed irregularities or non-conformance of Work or Products. Such nonconforming items shall not be incorporated in the finished Work unless specifically approved by Architect.
- F. Perform special inspections for areas of work as shown on drawings and specified in respective sections of the specifications in compliance with CCR Title 24, Part 1, 2019 California Administrative Code, Section 4-335 and DSA Form 3, "Structural Tests and Inspections" and as indicated in the Structural Drawings.
- G. Perform additional inspections and tests required by Architect.
- H. Attend preconstruction conferences and progress meetings, as required and requested.

1.6 LABORATORY REPORTS

- A. After each inspection and test, promptly submit copies of DSA-required laboratory report to Architect, Structural Engineer, Contractor, Owner, Project Inspector, DSA, and other parties as required by referenced sections and applicable regulations.
- B. Include:
 - 1. Date issued.
 - 2. Project title, JKAE project number and DSA File Number and Application Number.

3. Name of inspector.
 4. Date and time of sampling or inspection.
 5. Method of obtaining sample.
 6. Identification of product and specifications Section.
 7. Location in the Project.
 8. Type of inspection or test.
 9. Date of test.
 10. Results of tests.
 11. Conformance with Contract Documents.
 12. Indicate samples taken but not tested.
- C. When requested by Architect, provide interpretation of test results.
- D. Testing agency shall provide verified reports in compliance with CCR Title 24, Part 1, 2019 California Administrative Code, Section 4-336.
1. Provide such reports in duplicate, on approved form.
 2. Provide reports each time work on the project is suspended and at completion of project.
 3. Reports shall document actions taken, tests made, and other aspects of the construction operations for the period prescribed.
- E. In addition, Testing Agency shall provide semi-monthly reports as required by CCR Title 24, Part 1, 2019 California Administrative Code, Section 4-337.

1.7 LIMITS ON TESTING LABORATORY AUTHORITY

- A. Laboratory may not release, revoke, alter, or enlarge on requirements of Contract Documents.
- B. Laboratory may not approve or accept any portion of the Work.
- C. Laboratory may not assume any duties of Contractor.
- D. Laboratory has no authority to stop the Work.

1.8 CONTRACTOR RESPONSIBILITIES

- A. Deliver or make available to laboratory at designated location, adequate samples of materials proposed to be used which require testing, along with proposed mix designs.

- B. Do not incorporate material or products requiring compliance with specified testing and inspection criteria without receiving documentation of compliance from approved agency.
- C. Cooperate with laboratory personnel and provide access to the Work and to manufacturer's facilities.
- D. Provide incidental labor and facilities to provide access to Work to be tested, to assist testing laboratory in obtaining and handling samples, to obtain and handle samples at the site or at source of Products to be tested, to facilitate tests and inspections, storage and curing of test samples.
 - 1. Upon completion of inspection, testing, sample taking and similar services, repair damaged construction and restore substrates and finishes.
 - 2. Comply with requirements of Section 01 35 16, "Alteration Project Procedures" and Section 01 73 29, "Cutting and Patching".
 - 3. Protect construction exposed by or for quality-control service activities and protect repaired construction.
 - 4. Repair and protection is Contractor's responsibility, regardless of the assignment of responsibility for inspection, testing, or similar services.
- E. Contractor shall prepare integrated schedule for the course of construction showing all required inspection and testing. Determine the time required for the laboratory to perform testing and to issue reports and findings. Provide all required testing and inspection time within the construction schedule.
 - 1. Notify Architect, Project Inspector and laboratory minimum 48 hours prior to expected time for operations requiring inspection and testing services.
 - 2. Coordinate the sequence of activities to accommodate required services with a minimum of delay. Coordinate activities to avoid the necessity of removing and replacing construction to accommodate inspections and tests.
- F. Notify the Owner's representative a sufficient time in advance of the manufacture or material to be supplied by Owner under the Contract Documents, which must by terms of the Contract be tested, in order that the Owner may arrange for testing at the source of supply.

1.9 ADDITIONAL TESTS

- A. The Architect reserves the right to require additional tests to those specified, or upon materials not herein specified for testing.
- B. If the results of any test disclose noncompliance with the Drawings or requirements of the Specifications, the Architect reserves the right to require additional tests at the expense of the Contractor.
- C. The Contractor shall compensate the Architect or Engineers, at their standard hourly rates, for any additional services provided to analyze or justify non-compliant test results caused by substitutions, materials other than those specified or poor workmanship.

1.10 SCHEDULE OF TESTS AND INSPECTIONS

- A. Test and inspection list as approved by the Division of the State Architect, per DSA Form 103, “Structural Tests and Inspections” and as indicated in the Structural Drawings.

PART 2 - PRODUCTS

- A. NOT USED

PART 3 - EXECUTION

- A. NOT USED

END OF SECTION

SECTION 01 50 00

TEMPORARY FACILITIES AND CONTROLS

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Temporary Utilities, including: Electricity, Lighting, Heating and Ventilation, Telephone/Copy/Data Services, Water Service, Sanitary Sewer Service and Removal of Utilities, Facilities and Controls
- B. Protection of Installed Work
- C. Parking, Traffic Control, Access Roads and Noise Pollution Control
- D. Barriers and Fencing
- E. Tree Protection
- F. Progress Cleaning
- G. Field Offices and Storage Facilities
- H. Record Documents
- I. Documentation of Existing Conditions
- J. Security
- K. Project Identification and Signage
- L. Storm Water Control (reference to related section)
- M. Use of Elevators
- N. Use of Explosives

1.2 TEMPORARY ELECTRICITY

- A. Provide electrical service required for construction operations, with branch wiring and distribution boxes located to allow service and lighting by means of construction-type power cords.
 - 1. Connect to existing power service unless specified otherwise. Power consumption shall not disrupt Owner's need for continuous service. Coordinate location of connection with Owner.
- B. Owner will pay cost of energy used. Exercise measures to conserve energy. OR Pay cost of all temporary electricity, including connection costs from point of connection designated by serving utility.

1. Provide all required disconnects, overcurrent protection devices, branch circuits, power cords, and outlets as required for the Work.
 2. Comply with NEMA, NECA and UL standards and regulations for temporary electric service. Install service in compliance with NFPA 70.
 3. Where approved by Architect, permanent convenience outlets may be used during construction.
- C. Provide temporary power service as required to implement the work under this contract, including where required, self-contained engine generators. Provide temporary power service in compliance with all applicable regulations for temporary power connections as required by serving utility. Coordinate location of temporary power sources, including poles, generators and disconnect panels, with Owner.
1. Provide self-contained engine generators of sufficient capacity to provide required service in the event power is not available to conduct school operations. Coordinate location of temporary generators, including poles, generators and disconnect panels, with Owner. Generators shall not be located within 50 feet of air intakes, doorways or operable windows. Provide engine generators with maximum muffler capacity to minimize noise in teaching areas.
 2. Maintain engine generator capacity on-site as required to accommodate potential power loss. In the event of power loss or inability to restore power after shutdown, implement engine generators as required to provide power for Owner operations. Comply with all required codes and regulations, including serving utility criteria for generator use.

1.3 TEMPORARY LIGHTING

- A. Contractor shall provide and maintain temporary lighting for all construction operations.
1. Existing permanent lighting fixtures may be utilized during construction, supplemented by temporary lighting as required or connect temporary lighting to existing power service.
 2. Power consumption shall not disrupt Owner's need for continuous service.
 3. Coordinate location of connection with owner.
 4. Owner will pay cost of energy used. Exercise measures to conserve energy.
 5. Provide all required disconnects, overcurrent protection devices, branch circuits, power cords, and outlets as required for the Work.
 6. Where approved by Architect, permanent convenience outlets may be used during construction.
 7. Provide adequate lighting for security of construction operations and storage areas.
 8. Provide all lighting required for safety and security of paths and areas affected by construction, including pedestrian walkways.

9. Provide and maintain, at all times, temporary lighting and exit light/path devices in corridor areas shall be provided as required by applicable codes.
10. Maintain lighting and provide routine repairs.

1.4 TEMPORARY HEAT AND VENTILATION

- A. Contractor shall provide temporary heating, ventilating and air conditioning (HVAC) systems as necessary for the drying out of the building, the proper installation of Work and materials, and the protection of Work and materials against injury from condensation, dampness and cold. Refer to all sections for temperature and material maintenance requirements, as they apply to specific materials.
 1. Ventilate enclosed areas to assist cure of materials, to dissipate humidity, and to prevent accumulation of dust, fumes, vapors, or gases.
 2. Where necessary to comply with requirements of this Section, provide ducted ventilation system.
 3. Use of permanent equipment for temporary construction heat and ventilation is prohibited without prior approval by Architect.
 4. All ductwork, vents and diffusers shall be completed sealed from construction.
 5. Contractor shall be responsible for replacement of equipment and other operational criteria.
 6. Utilize equipment as required to exhaust noxious fumes directly to the outside of the building at an approved location.
 7. Locate ventilation discharge point at an approved location, away from walkways, HVAC intakes, windows of occupied areas, and other similar locations.
 8. No internal combustion engines will be allowed within the building or within 50 feet of the building without prior written authorization from the Owner.
 9. Maintain temperatures as required by occupational safety regulations.

1.5 TELEPHONE/COPY/DATA SERVICE

- A. Provide, maintain and pay for telephone service and associated office equipment to field office and to Owners/Inspectors field office.
 1. Telephone service shall be in place at time of project mobilization.
 2. Provide two separate phone service lines, one for inspector's office and one for Owner's office, each providing private unlimited local calling service. Provide loud exterior bell, different in tone from Contractor's phone service.
 3. Provide two separate new answering machines or voicemail service, one for inspector's office and one for Owner's office. Answering machines/voicemail shall have remote message pickup feature.

4. Provide portable phone, pager, or similar device for use by Superintendent when away from field office.
 5. Provide, maintain and pay for xerographic copy machine, with 11 x 17 copy capability and enlargement and reduction capacity, able to scan up to 300 dpi to PDF format, with e-mail export capability, located in Contractors and Field Inspector's field offices.
- B. Provide, maintain and pay for internet data service to Contractor's and Field Inspector's field offices.
1. Provide separate internet service line for inspector's office. Service shall be high-speed cable. DSL is acceptable if no cable service is available.
 2. Coordinate with Owner and Project Inspector on all required connection protocols, including security. Modify service as required to comply with Owner requests. Provide data jack type and location as required by Owner.
 3. Data service shall be in place prior to start of construction.

1.6 TEMPORARY WATER SERVICE

- A. The Contractor shall provide and maintain and pay for suitable water source for construction operations, including cost of connection, temporary meters, distribution to point of use, and associated components. Provide temporary potable water service in compliance with all applicable regulations. The District will pay the cost of potable and irrigation water utilities. The Contractor shall manage water use to be at reasonable managed levels.
1. Provide and maintain connection to existing water service.
 2. Owner will pay cost of water used. Exercise measures to conserve water. OR Contractor shall provide, maintain, and pay for all temporary potable water piping as required to implement the work. Provide temporary potable water service in compliance with all applicable regulations. Coordinate location, including point of connection, with Architect.
 3. Provide non-potable water source for dust control and other construction operations as required by local jurisdictional authority regulations. Do not apply to any areas used by students or staff without Architects prior approval.
 4. Use of on-site existing water service for potable drinking water is acceptable. Coordinate point of connection with Owner.

1.7 TEMPORARY SANITARY FACILITIES

- A. Provide, maintain, and pay for all temporary toilet facilities as required to implement the work in compliance with all regulations, including CAL OSHA, and as specified.
1. Provide two toilet facilities at site, one each for male and female employees, or as required for all Contractor and subcontractor forces on each site, whichever is greater.
 2. In addition, provide lockable toilet facility for Architect and Inspector of Record exclusive use.

3. Locate toilet facilities as directed by Architect. Relocate when required by Architect.
 4. Maintain in a clean and sanitary condition at all times, with all required supplies.
- B. Use of existing toilet facilities, or toilets constructed as a part of this Contract, is prohibited.

1.8 REMOVAL OF UTILITIES, FACILITIES, AND CONTROLS

- A. Remove temporary utilities, equipment, facilities, and materials, prior to Final Application for Payment.
- B. Clean and repair damage caused by installation or use of temporary work.
- C. Restore existing facilities used during construction to original condition. Restore permanent facilities used during construction to specified condition.

1.9 PROTECTION OF INSTALLED WORK

- A. Protect installed Work and provide special protection where specified in individual specification Sections.
- B. Provide temporary and removable protection for installed Products. Control activity in immediate work area to minimize damage.
- C. Provide protective coverings at walls, projections, jambs, sills, and soffits of openings.
- D. Provide and maintain all required dams, screens and collection systems necessary to prevent water used in interior demolition or construction operations from damaging adjacent areas.
- E. Take all means required to prevent damage to project, including interior areas, resulting from inclement weather, water, wind or other environmental impacts. Provide temporary coverings or enclosures as required for all roof and wall penetrations. Where moisture from condensation, rain or high winds is forecast or present, Contractor shall take all means to eliminate or prevent danger to the Work and to adjacent property, including covering unprotected surfaces, making all openings weather tight, removing loose materials, tools or equipment from exposed locations and removing or securing scaffolding.
- F. Provide, operate, and maintain pumping equipment required to remove water from the site, roof and interior flooded areas.

1.10 PARKING, TRAFFIC CONTROL, ACCESS ROADS AND NOISE POLLUTION CONTROL

- A. Parking:
 1. Contractor shall coordinate with the Owner all required on-site parking, as required for construction activities.
 - a. Coordinate location and number of parking spaces to be made available for Contractors forces with Owner.

- b. Do not permit parking on adjacent public streets.
- c. Parking for workmen employed on the work may be provided on the site, when approved by the Owner, and to the extent that space for that purpose is available without interference with activities related to performance of the Work. Additional parking spaces required by the Contractor shall be secured at Contractors own expense.

B. Traffic Control:

1. Traffic maintenance: Prior to start of work, determine the routing of construction vehicles, and the safeguards and procedures necessary to carry out the work. Obtain the Owner's approval of the traffic routes, and for any removal, temporary relocation and reinstallation of traffic control signal. In addition:
 - a. Be responsible for controlling construction traffic within and adjacent to the site.
 - b. Provide entrances, lifts and safeguards required or necessary to the progress of the work, and effectively control such traffic to provide minimum hazard to the work and all persons.
 - c. Route construction equipment, trucks, and similar vehicles via existing public streets to and from the site as approved by the governing authorities.
 - d. Where construction traffic occurs when Owner personnel, students and staff are on site campus, provide "spotter" responsible for leading construction traffic through site campus areas.
 - e. Obtain and pay for permits and inspections made necessary by use of public street, sidewalks, curbs, and paving. Post guarantees and bonds that may be required, and repair and make good any damages thereto acceptable to the authorities having jurisdiction.
 - f. Construct and maintain temporary walks for pedestrians. Keep streets adjacent to the site open to vehicular and pedestrian traffic.
 - g. Maintain constant access for police, fire and ambulance service.
 - h. Provide and maintain for proper control of traffic and safety of all concerned. Provide all necessary barricades, suitable and sufficient lights, reflectors, and danger signals.
 - i. Provide warning and closure signs, directional and detour signs, and whatever additional measures are necessary.
 - j. Indicate on a 24-hour basis restricted and dangerous conditions existing on or adjacent to the site. Illuminate barricades, danger signals, warning signs and obstructions at night. Keep warning lights burning from sunset until sunrise.
 - k. Access Roads:
2. Contractor shall provide access roads as required for all construction activities.

- a. Coordinate location of access roads to be used for construction activities with Owner.
 - b. If required, construct and maintain temporary roads accessing public thoroughfares to serve construction area.
 - c. Contractor shall maintain temporary access roads as required to implement the work under this contract, including currently developed access road.
 - d. Extend and relocate as Work progress requires. Provide detours necessary for unimpeded traffic flow.
 - e. Designated existing on-site roads may be used for construction traffic.
 - f. Provide means of removing mud from vehicle wheels before entering streets. Coordinate requirements for mud removal with Section 01 57 23, "Temporary Storm Water Pollution Control", as required.
 - g. Provide trench plates as required to resist traffic loads, including fire department vehicles.
 - h. Where trench plates occur in pedestrian paths, install with transitions as required to comply with accessibility regulations.
 - i. Maintain on-site fire protection facilities as required by applicable authorities and insurance requirements.
 - j. Provide and maintain access to fire lanes and fire hydrants at all times, free of obstructions. Coordinate location, locking device and dimension of gates with fire department having jurisdiction.
 - k. Provide and maintain access to fire hydrants, free of obstructions.
 - l. Obtain Fire Marshal approval of all fire lanes used during construction and trench plate installations.
 - m. Do not permit delivery trucks to block, park or wait on public streets.
3. Noise, Dust and Pollution Control:
- a. Provide materials and equipment necessary to comply with local requirements for noise, dust and pollution control.

1.11 BARRIERS AND FENCING

A. Barriers - Exterior:

1. Provide barriers to prevent unauthorized entry to construction areas, to allow for Owner's use of site, and to protect existing facilities and adjacent properties from damage from construction operations and demolition.
 2. When regulated by codes, such legal requirements for protection shall be considered as minimum requirements. Provide protective measures in excess of such minimum requirements as specified or required.
 3. Provide barricades around excavations.
 4. Provide protection for all plant life designated to remain.
 - a. Replace damaged plant life with approved equivalent.
 - b. Erect tree protection within 3 days of mobilization. Enclose trees designated to remain with 2 x 4 wood frame. Install frame minimum 6 feet from trunk diameter, all sides. Provide 4x4 post supports, minimum 3 feet high, embedded 3 feet, at 3 foot on center maximum. Wrap frame with snow type fencing, in bright iridescent color visible at night.
 5. Protect non-owned vehicular traffic, stored materials, site and structures from damage.
- B. Barriers - Interior
1. After beneficial occupancy, and where required to permit Owners on-going operations, provide barriers as specified.
 - a. Construct barriers as metal framed/fire-resistive gypsum board fire resistive corridor construction, with self-closing, latching door assembly. Provide temporary partition and door assembly fire resistivity rating equal to the assembly being replaced. Close joints and seal edges at intersections with existing surfaces.
 - b. Use of sheet plastic dust barriers in place of rated assemblies is prohibited.
 2. Protect existing surfaces, equipment and furnishings from damage from construction operations and demolition. Where necessary, remove and store in separate area.
 3. Where demolition or construction operations generate fine dust or air-borne particulates, provide fire retardant drop cloths, screening or other approved barriers to prevent dust intrusion into existing cabinet interiors, equipment, drawers, and similar conditions.
 4. Provide contamination control mats at construction area access locations to prevent tracking of construction dust and dirt into Owner-occupied portion of building and elevator cars.
- C. Paint surfaces exposed to view from Owner-occupied areas with approved water based paint and in color as selected by Owner.

D. Fencing and Gates:

1. Prior to starting construction, provide chain link fence around perimeter of work under this contract within 3 days of mobilization, including storage areas and each individual building, at locations as directed by Architect so as to provide for complete segregation of construction and Owner operations.
 - a. Submit detailed plan of fence, including gates, for review and approval by Architect and Owner. Show flow of construction traffic.
 - b. Provide 6 or 8 foot high chain link fencing, with top rail and bottom wire. Provide fabric with selvedge edge and line posts at maximum 9 feet on center.
 - c. Equip fencing with gates with locks. Coordinate locking with Owner and Local Fire Marshal to allow for Owner and Fire Marshal access after hours.
 - d. Obtain Architect approval of embedment method at paving areas. Provide portable T-frame fencing panels with concrete base supports, where embedment is not possible.
 - e. Provide chain link fencing fabric and supports free of sags, breaks, rust and distortion.
 - f. Following Owners beneficial occupancy of portions of project, erect chain link fence at locations as approved by Architect to provide for complete segregation of construction and Owner operations.
2. Provide gates affording access as required by fire department having jurisdictional authority.
3. Obtain and pay for required permits and inspections, if required.
4. Protect against stored materials, dumping, chemically injurious materials, and puddling or continuous running water.

E. Removal:

1. Remove construction fence and other related construction upon completion of Work, or sooner if so authorized by the Owner, or as required to maintain Project progress.

1.12 TREE PROTECTION

- a. No parking of vehicles will be allowed under trees.
- b. Provide barriers around trees and plants designated to remain; protect plants at their drip lines against vehicular traffic.

1.13 PROGRESS CLEANING

- A. Control accumulation of waste materials and rubbish; recycle or dispose of off-site.

- B. Maintain areas free of dust and other contaminants, waste materials, debris, and rubbish during finishing operations. Maintain site in a clean and orderly condition.
- C. Use cleaning materials which do not create hazards to health or property, and which will not damage surfaces. Use only those cleaning materials and methods recommended by manufacturer of the surface material to be cleaned. Use cleaning materials only on surfaces recommended by cleaning material manufacturer.
- D. Provide for all dumpsters, haul fees and dump charges as required. Do not use Owners collection facilities at any time.
- E. Remove waste materials, debris, and rubbish from interior spaces daily and deposit in approved dumpster location. Remove from site monthly or as needed. Dispose off-site in a legal manner.
 - a. Broom and vacuum clean interior areas prior to start of all surface finishing, including painting, and continue cleaning on an as-needed basis until painting and surface finishes are complete.
 - b. Clean interior areas prior to start of finish work, maintain areas free of dust and other contaminants during finishing operations.
 - c. Broom and vacuum clean interior areas prior to start of surface finishing and continue cleaning to eliminate dust.
 - d. Remove debris and rubbish from pipe chases, plenums, attics, crawl spaces, and other closed or remote spaces, prior to enclosing the space.
- F. Schedule operations so that dust and other contaminants resulting from cleaning procedures or construction operations will not fall on wet or newly coated surfaces.
- G. Maintain all public streets free of dust, mud, and debris as required by jurisdictional authority. Maintain parking lots, drives and walkways free of dust, mud and debris when Owner takes beneficial occupancy of a portion of project prior to final completion.
- H. Provide watering, dust palliative admixture or other methods as required to minimize dust generation during work. Where required by Owner, provide dust screen netting at property line temporary fencing.

1.14 TEMPORARY ENCLOSURES

- A. Provide temporary weather-tight closures for exterior openings for acceptable working conditions, for protection for materials, to protect interior materials from dampness, for temporary heating, and to prevent unauthorized entry.
- B. Provide doors with self-closing hardware and locks.
- C. Provide temporary partitions and ceilings as required to separate work areas from Owner occupied areas, to prevent penetration of dust and moisture into Owner occupied areas, and to prevent damage to existing materials and equipment.

1.15 FIELD OFFICES AND STORAGE FACILITIES

A. Contractor and Inspector of Record Field Offices:

1. Inspector Space: Provide separate office for District's Project Inspector.
2. If existing facilities are available for use as a field office, coordinate with Owner the use and maintenance of existing interior space for field office purposes.
3. If existing facilities are not available for field office use, provide and maintain a weatherproof and waterproof field office trailer, with lockable exterior access, for the Owner's, Architect's and Inspector's use, complying with the following criteria:
4. For Each Field Office:
 - a. Provide an office area, a minimum area of 120 square feet, with sufficient dimension to accommodate furniture as specified below.
 - b. Locate offices and sheds as directed by Owner and/or Architect.
 - c. Provide a 3x5 foot desk and a 3x6 foot lay out table, minimum.
 - d. Provide adequate heating and cooling, including air conditioning.
 - e. Provide overhead fluorescent lighting.
 - f. Provide separate phone service for inspector's exclusive use. Provide a data outlet.
 - g. Provide a 3x5 foot desk and a 3x6 foot lay out table, a 4 drawer file cabinet, and 2 office chairs. Provide plan rack suitable for 3 sets of 30 x 42 drawings in inspectors office.
 - h. Meeting Space: Provide adequate separate space for Project meetings with table and chairs to accommodate a minimum of six persons, with access with through 3 foot doorways.
 - i. Telephone Service: Provide telephone service to field office. Cellular service is acceptable. See Paragraph 1.5, this Section, for requirements.
 - j. Copier: Provide separate plain paper copier with enlargement and reduction capability.
 - k. Internet Service: Provide broadband internet service to field office.
 - l. Computer: Provide desktop computer system at Project field office with e-mail capacity and word processing system compatible with Architect's systems.
 - m. Digital Camera: Maintain operational digital camera on-site during construction along with software allowing transmission of digital pictures taken on-site via e-mail to Owner and Architect.

B. Architect, Owner, and their representatives shall have free access to the Owners and Inspectors office at all times.

- C. All field offices shall remain the property of the Contractor and shall be removed from the site upon completion of the work.
- D. Storage Facilities:
 - 1. Provide weather-tight storage, with heat and ventilation for products requiring controlled conditions.
 - 2. Furnish, install and maintain tool cribs, sheds and storage units for the Contractors use as necessary for the proper execution of the work.
 - 3. Limit on-site storage to Project area.
 - 4. Provide all necessary barricades, warning devices and enclosures required to protect and direct visitors and staff around tool and equipment located in passageways and corridors.
 - 5. Return all small tools and secure in locked compartments or cribs at close of work day.
 - 6. Safe-off or lock all equipment and large tools. Disable from malicious or accidental start-up and operation.
 - 7. Storage facilities shall provide protection of all products from damage due to environmental conditions, abuse, or theft.
 - 8. Requirements of regulatory agencies: Comply with requirements of regulatory agencies having jurisdiction. Obtain and apply for permits required by governing authorities.
 - 9. Job Conditions: Locate temporary structures to avoid interference with Work. Relocate temporary structures as required by job progress.

1.16 RECORD DOCUMENTS:

- A. Contractor shall maintain, on site, one copy of the following contract documents, defined as the Record Job Set. Stamp set "RECORD JOB SET - DO NOT REMOVE". During the course of construction, use this set to record actual revisions to the Work.
 - 1. Construction Drawings.
 - 2. Project Manual/Specifications.
 - 3. Addenda.
 - 4. Change Orders and other Modifications to the Contract.
 - 5. Reviewed shop drawings, product data, and samples.
- B. Store Record Job Set separate from documents used for construction.
- C. Transfer information concurrent with construction progress. Record Job Sets will be reviewed at each Progress Meeting.

1. Where Record Job Sets do not reflect actual field conditions, the Architect may delay certification of Payment Request until sets are updated to the Architects satisfaction.
 2. Record Job Set information reflecting engineering elevations, locations and alignments shall be prepared by competent staff experienced in surveying methods a licensed Land Surveyor or Civil Engineer, licensed in State where project is located.
 3. Cost of Record Job Set preparation shall be paid by Contractor at no additional cost to Owner.
 4. Cost of all civil engineering and surveying associated with Record Job Set preparation shall be paid by Contractor at no additional cost to Owner. Other than the payment for services related to work of this contract, the Civil Engineer or Surveyor shall have no financial or business relationship with Contractor.
- D. Specifications: Legibly mark and record at each Part 2 Product section description of actual Products installed, including the following:
1. Manufacturer's name and product model and number.
 2. Product substitutions or alternates utilized.
 3. Changes made by Addenda and Modifications.
- E. Recording Data: Legibly mark each item to record actual construction including:
1. Measured actual horizontal and vertical locations of underground utilities, sub-drains, services and appurtenances, to a tolerance of 2 inches plus/minus, referenced to permanent surface improvements. Include elevations of all water lines, utilities, sanitary and storm drain inverts and storm drain/sub-drain/canyon drain system outfalls.
 2. Field changes of dimension and detail, including alignments, gutter slopes, slope bank locations, drainage structures, and related site improvements.
 3. Earthwork Engineering Record Documents, consisting of actual field elevations of grading and earthwork, to a tolerance of 0.1 feet. The actual elevation of each elevation shown on drawings shall be recorded. In addition, provide actual elevations at 50 foot intervals along all finish grade contours as shown on drawings, including all grade breaks and the top and toe of all slopes.
 - a. Where actual field elevations exceed specified tolerances, correct field condition and re-survey prior to preparation of final Record Set.
 - b. Record actual elevation in a rectangular box directly above the elevation or contour shown on drawings, using red, permanent ink.
 4. Measured locations of internal utilities, services, and appurtenances concealed in construction, to a tolerance of 1 inch plus/minus, referenced to visible and accessible features of the Work.
 5. Field changes of major architectural features, such as door relocation, wall furring, field changes of dimension and detail, and material transitions.

6. Details not on original Contract Drawings.

F. Maintenance of Record Documents and Samples:

1. Store Record Documents and Samples in the field office apart from the Contract Documents used for construction. Do not use Project Record Documents for construction purposes. Maintain Record Documents in good order and in a clean, dry, legible condition, protected from deterioration and loss. Provide access to Project Record Documents for Architect's reference during normal working hours.

1.17 DOCUMENTATION OF EXISTING CONDITIONS

A. Prior to beginning any alterations, including grading, wall demolition or fixture removal, prepare a record of existing improvements affected by the work of this contract, including but not limited to the following:

1. Off-site street and frontage improvements, identifying all evidence of existing settlement, cracking, and other signs of damage, distress or failure.
2. Condition of adjacent properties, including fencing, retaining walls, pools, paving, and structures. Clearly identify all evidence of existing settlement, cracking, alignment and other signs of damage, distress or failure.
3. Condition of landscaping, including canopy overhang, shrubbery and grass/groundcover. Clearly identify all evidence of existing trunk damage, grass compaction, crushed and broken shrubs and other signs of distress or failure.

B. Format

1. Prepare record document using digital color video, recorded on Flash Drive, and any other means of documentation necessary to describe existing condition.
2. Prepare digital color video at such scale and detail as required to document existing damage occurred prior to beginning work. If the record documents do not clearly show damage as a pre-existent condition, Contractor shall be responsible for repair or replacement of such damaged improvements.
3. Obtain Owners' Inspector of Record certification that documents were prepared prior to beginning construction. Deliver Flash Drive and associated documentation to Owner prior start of construction.

1.18 SECURITY

A. Provide security and facilities as necessary to protect work and personnel from vandalism, unauthorized entry, theft, damage, or assault.

1. Security Service: Contractor shall provide licensed and bonded on-site security service, approved by Owner, at all times the work is not being prosecuted, including nights, inclement weather, holidays and weekends. Such security service shall be responsible for maintaining the premises in a secure condition at all times, and shall include roaming tours and inspection of all work under construction. Owner reserves right to require replacement of service for non-performance.
- B. Within a 48 hour period, replace or repair, to specified condition Architect's satisfaction, all surfaces or items damaged by graffiti during course of construction.
- C. Where Owner has given approval to take fire detection system off-line, return system to active status at completion of work or end of each work period.
 1. Fire Safety During Construction: Comply with provisions of CCR, Title 24, 2019 California Fire Code, Chapter 33, "Fire Safety During Construction and Demolition", but not limited to, access roads, fire extinguisher and fire watch regulations.
 2. Coordinate all requirements for fire safety during construction with Fire Marshal.
- D. Where security or fire detection systems are disabled for any reason, including where Owner has given approval for such system shut down, provide fire watch or security guard service as directed by Owner and at no additional cost to the Owner.
- E. After beneficial occupancy by Owner, all Contractor staff, subcontractors and suppliers shall notify Owners administrative staff when on site and sign in and out with staff, as directed by Owner. Notify staff when work is completed or shut down for that work period.
 1. Wear badges with photo identification, as directed by Owner, at all times. In addition, wear orange safety vests or other approved shirt design at all times, hard hats, etc. as required by occupational safety regulations.
 2. Do not enter staff rooms at any time without approval of staff.
 3. All Contractor's staff, subcontractors and suppliers shall avoid interaction, contact and communication with students. Under no circumstances shall Contractors staff, subcontractors and suppliers be in contact with patients/students without Owner staff present.
 4. All work, including work of subcontractors, shall be conducted under the observation of the Contractor's supervisory personnel complying with all required fingerprinting regulations.
- F. Remove all radio or other music generating devices operated sufficiently loud so as to be objectionable, as determined solely by the Owner, to neighbors, or Owner's operations.
 3. Dogs and other pets are not permitted on site campus without prior approval by Owner.
 4. No smoking or use of any tobacco products is permitted on Owner's property.

5. All Contractor staff, subcontractors and suppliers shall present a professional and civil manner to staff, visitors, neighbors and students. Use of language or behavior judged offensive, obscene or suggestive by the Owner is not permitted. Clothing that is suggestive, is marked with images that suggest or promote drug, alcohol or tobacco use, or represents behavior judged offensive, obscene or suggestive by the Owner is not permitted. Immediately remove from site campus any Contractor personnel exhibiting such behavior.
6. Persons under the influence of or engaged in the use of drugs or controlled substances, as defined by Schedules I through V of Section 202 of the Controlled Substances Act and regulations defined at 21 CFR 1308 - 1308.15, shall be immediately removed from site campus.
7. Use of alcoholic beverages is prohibited on site campus. Persons under the influence of or engaged in the use of alcoholic beverages shall be immediately removed from site campus.

1.19 STORM WATER CONTROL (**NOT APPLICABLE**)

- A. Contractor shall obtain all necessary permits, including preparation of engineering documentation, as required to comply with jurisdictional authority regulations regarding storm run-off and erosion control. Compliance with requirements of the federal Clean Water Act, associated State Water Resources Board and local regulations is specifically required. See Section 01 57 23, "Temporary Storm Water Pollution Control" for requirements.
- B. Dewatering:
 1. Provide and operate drainage and pumping equipment; as required, to maintain excavations and site free of standing water.

1.20 PROJECT IDENTIFICATION AND SIGNAGE (**NOT APPLICABLE**)

- A. Provide 4 x 8 sign, constructed of marine grade plywood, mounted on wood frame construction with concrete footings. Provide professional sign painter quality painted design and message as approved by Architect.
- B. Message will include project identification, name of client, architect, and contractor, and miscellaneous data as determined by Architect.
- C. Install sign at location directed by Architect. Remove at end of project and deliver to Owner.
- D. No other signs are permitted except those noted in the Section and as required by law.

1.21 USE OF ELEVATORS (WHERE PROVIDED) (**NOT APPLICABLE**)

- A. Coordinate all use of all existing elevators for construction operations with Owner. Owner will designate specific elevators for use during construction period.
- B. Protect interior wall surfaces with pads and flooring with removable sheet goods.
- C. Remove protective pads and floor covering and vacuum clean interior after each period of use.

PART 2 - PRODUCTS

2.1 MATERIALS

- a. NOT USED

PART 3 - EXECUTION

- a. NOT USED

END OF SECTION

SECTION 01 60 00
PRODUCT REQUIREMENTS

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Products
- B. Submittals
- C. Quality Assurance
- D. Delivery, Storage and Handling
- E. Protection After Installation
- F. Owner-Provided/Owner-Installed Work (OFOI)
- G. Owner-Provided/Contractor Installed Work (OFCI)

1.2 PRODUCTS

- A. Products: Means new material, machinery, components, equipment, fixtures and systems forming Work. Does not include machinery and equipment used for preparation, fabrication, conveying and erection of Work. Products may also include existing materials or components required for reuse.
- B. Comply with Specifications, referenced standards, and applicable codes and regulations as minimum requirements.
- C. Provide new materials except as specifically allowed by Contract Documents.
- D. Materials to be supplied in quantity within a Specification section shall be by one manufacturer, shall be the same, and shall be interchangeable.
- E. Provide equipment and systems composed of materials from a single manufacturer except where otherwise recommended by equipment or systems manufacturer or where otherwise indicated in Contract Documents.
- F. Do not use materials and equipment removed from existing premises, except as specifically permitted by Contract Documents.

1.3 SUBMITTALS

- A. Submittals: Provide submittals per Section 01 33 00, "Submittal Procedures".
 - 1. Submittal 01 60 00 A: Product List: Prior to submittal of second Request for Payment, submit to Architect complete list of major products that are proposed for installation, with name of manufacturer, trade name, and model.
 - a. Tabulate products by Specification number and title.
- B. Substitutions: Provide per Section 01 25 00, "Substitution Procedures"

1.4 QUALITY ASSURANCE

- A. Comply with industry standards and applicable codes except when more restrictive tolerances or requirements indicate more rigid standards or precise workmanship.
- B. Comply with manufacturer's instructions.
- C. Perform work by persons qualified to produce workmanship of specified quality.
- D. Install products straight, true-to-line, and in correct relationship to adjacent materials, with hairline joints, free of rough, sharp and potentially hazardous edges.
- E. Secure products in place with positive anchorage devices designed and sized to withstand stresses, vibration, and racking.
 - 1. Seismic Anchors: Conform to code requirements.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Transport products by methods to avoid product damage, deliver in undamaged condition in manufacturer's unopened containers or packaging.
- B. Promptly inspect shipments to assure that products comply with requirements, quantities are correct and products are undamaged.
- C. Provide equipment and personnel to handle products by methods to prevent soiling, disfigurement or damage.
- D. Store products in accordance with manufacturer's instructions, with seals and labels intact and legible.
- E. Store sensitive products in weather-tight enclosures; maintain within temperature and humidity ranges required by manufacturer's instructions.
- F. Cover products subject to deterioration with impervious sheet covering. Provide ventilation to avoid condensation.
- G. For exterior storage of fabricated products, place on sloped supports above ground and protect as necessary to prevent deterioration or damage to the product.
- H. Store loose granular materials on solid surfaces in a well-drained area; prevent mixing with foreign matter.
- I. Arrange storage to provide access for inspection; periodically inspect to assure products are undamaged and are maintained under required conditions.
- J. Provide equipment and personnel to handle products by methods to prevent soiling and prevent damage.
- K. Promptly inspect shipments to assure products comply with requirements, quantities are correct, and products are undamaged.
- L. Immediately remove from Project products damaged, wet, stained, and products with mold and products with mildew.
- M. Take special care to prevent absorbent products such as gypsum board and acoustical ceiling units from becoming wet.
- N. Store loose granular materials on solid flat surfaces in well drained area. Prevent mixing with foreign matter.
- O. Provide equipment and personnel to store products by methods to prevent soiling, disfigurement or damage.

- P. Arrange storage of products to permit access for inspection. Periodically inspect to ensure products are undamaged and are maintained under specified conditions.
- Q. When approved by the District's Representative, provide off site storage and protection in a bonded warehouse approved by District when site does not permit on site storage or protection at no cost to District.

1.6 PROTECTION AFTER INSTALLATION

- A. Protect installed products and control traffic in immediate area to prevent damage from subsequent operations.
- B. Provide protective covers at walls, projections, corners, jambs, sills and soffits in and adjacent to traffic areas.
- C. Cover walls and floors of elevator cabs, and jambs of cab doors, when elevators are used by construction personnel.
- D. Protect finished floors and stairs from dirt, wear and damage:
 - 1. Secure heavy sheet goods or similar protective materials in place, in areas subject to foot traffic.
 - 2. Lay planking or similar rigid materials in place, in areas subject to movement of heavy objects.
 - 3. Lay planking or similar grid materials in place in areas where storage of products will occur.
 - 4. Distribute loads of heavy stockpile materials, such as gypsum wall board, to prevent floor loading conditions in excess of loading capacity.
- E. Protect waterproofed and roofed surfaces:
 - 1. Restrict use of surfaces for traffic of any kind, and for storage of products.
 - 2. When an activity is mandatory, obtain recommendations for protection of surfaces from installer or manufacturer. Install protection and remove on completion of activity. Restrict use of adjacent unprotected areas.
- F. Restrict traffic of any kind across planted lawn and landscape areas.

1.7 OWNER-FURNISHED/OWNER-INSTALLED WORK (OFOI)

- A. Indicate in construction progress schedule Owner-Furnished/Owner-Installed items and schedule time for installation.
- B. Items indicated on Drawings as OFOI will be furnished by Owner (District) and installed by Owner (District).
- C. Work indicated as OFOI shall be performed under separate contract employees by Owner (District) at its discretion.
- D. Where work of this Contract adjoins or conflicts with OFOI, work, Contractor shall cooperate with Owner (District) and its employees in manner that will provide for reasonable and accurate completion of this Contract and work under separate contract.

1.8 OWNER-FURNISHED/CONTRACTOR-INSTALLED WORK (OFCI)

- A. Indicate in construction progress schedule Owner (District)-Furnished/Contractor-Installed items and schedule time for its installation.
- B. Contractor shall verify exact sizes and services required for each item of equipment indicated on Drawings or in project manual as OFCI and shall obtain from Owner (District) rough-in drawings, diagrams, setting templates and other necessary information to ensure proper mating of assemblies.
- C. Contractor shall receive at project site each item of equipment from Owner (District) and from that time on shall assume full responsibility for items and equipment until one year from date of Certified Completion.
- D. Contractor shall give District 15 days prior notice of requirements for delivery to site of all OFCI equipment.
- E. Contractor shall be responsible for receiving OFCI items and equipment and shall uncrate, inspect and notify Owner (District) in writing within 7 days of receiving said items or equipment of acceptance or rejection of items or equipment. Owner (District), after receiving notice, will take appropriate action to have items or equipment made acceptable for Contractor's use. Rejected items shall be carefully stored and protected from damage by Contractor until District takes appropriate action.
- F. Contractor shall be responsible for final placing, installation, connection, start-up, checking, testing and demonstrated satisfactory operation. Owner (District) will provide names of manufacturer's representatives, who shall assist the Contractor in checking, testing and demonstrating equipment.

PART 2 - PRODUCTS

2.1 NOT USED

PART 3 - EXECUTION

3.1 NOT USED

END OF SECTION

SECTION 01 71 23 FIELD ENGINEERING

PART 1 - GENERAL

1.1 SECTION INCLUDES:

- A. Field Engineering/Surveying – General Requirements
- B. Qualifications of Surveyor or Engineer
- C. Submittals
- D. Project Survey Requirements
- E. Survey Reference Points
- F. Horizontal and Vertical Controls
- G. Records

1.2 FIELD ENGINEERING/SURVEYING – GENERAL REQUIREMENTS

- A. Provide field engineering in accordance with the General Conditions and as specified.
- B. Provide field engineering as required to generate Record Drawing data as specified in Section 01 77 19, “Project Record Documents”.
- C. Provide licensed Civil Engineer, currently registered in California, and acceptable to the Architect. Where approved by jurisdictional authority and Architect, a licensed Land Surveyor may be acceptable.
- D. Maintain and protect all control datum and reference points established by Owner's survey.
- E. Provide field engineering services as required to implement the work in accordance with industry standards and specified tolerances. Establish elevations, lines, and levels, utilizing recognized engineering survey practices.

1.3 QUALIFICATIONS OF SURVEYOR OR ENGINEER

- A. Qualified California registered professional engineer or registered land surveyor, acceptable to Architect.
- B. Registered professional engineer of discipline required for specific service on Project, licensed in State of California.

1.4 SUBMITTALS

- A. Submittals: Provide submittals per Section 01 33 00, “Submittal Procedures”.
- B. Submit name, address, and license of surveyor and professional engineer to Architect, via the Construction Manager

1.5 PROJECT SURVEY REQUIREMENTS

- A. Prior to the start of work, Contractor shall review and verify the existing horizontal and vertical controls as provided in the Contract Documents. Any discrepancies are to be reported to the Architect.
 - 1. Provide the same review and verification for all underground utilities.
- B. Establish and safeguard minimum of two permanent benchmarks on project site, referenced to data established by survey reference points. Record locations, with horizontal and vertical data, on Project Record Documents.
- C. Establish and maintain lines and levels to locate and layout entire scope of work.
- D. Preserve and protect all on-site underground utilities lines and existing on-site improvements in the area of construction.

1.6 SURVEY REFERENCE POINTS

- A. Where shown or available, existing basic horizontal and vertical survey reference points for Project are those designated on Drawings.
- B. Contractor shall establish horizontal and vertical survey control lines and points on site prior to commencement of contractors' work. Include a minimum of one north-south and one east-west grid line along with two permanent benchmarks for vertical data. These controls shall be maintained by Contractor throughout the course of construction.
- C. Locate and protect survey reference points prior to starting site work and preserve all permanent reference points during construction.
 - 1. Make no changes or relocations without prior written notice to Architect for their review and interpretation.
 - 2. Replace Project survey reference points which may require relocation because of necessary changes in grades or locations. Establish replacements based on original survey control.

1.7 HORIZONTAL AND VERTICAL CONTROLS

- A. Within two (2) weeks of Notice to Proceed, and prior to the start of work, Contractor shall review and verify the existing horizontal and vertical controls as provided in the Contract Documents. Additionally, Contractor shall review the following record documents as prepared by Increment 1 contractor:
 - 1. Certified Pad Survey
 - 2. Utility piping plans and points of connection.
- B. All discrepancies are to be reported to the Architect.
- C. Contractor to include Field Survey in Schedule of Values and project schedule.
- D. Contractor to provide and pay for field engineering services required for the execution of work, including, but not limited to:

1. Survey Work required in execution of the work under this contract.
 2. Civil, structural or other professional engineering services specified, or required to execute Contractor's construction methods.
- E. Provide field staking of all improvements; where existing, identify existing survey reference points and property line corner stakes indicated on Drawings.
- F. Locate and be aware of all existing on-site utility lines and improvements.

1.8 RECORDS

- A. Maintain complete, accurate log of all control and survey work as it progresses.
- B. On completion of final site improvements, prepare certified survey and record (as-built) drawing including the following information:
1. All boundary dimensions at perimeter of site, building pads, and parking lots.
 2. Locations and elevations of all underground utilities and site drainage piping and structures, Point of connection, including manholes and drain inlets, and locations of stub outs of building services for each individual building.
 3. Elevations of entire site, shown on a maximum 25 foot grid within building and central site area and a maximum 50 foot grid on balance of site, but in any event the distance between survey points should be no more than is necessary to accurately portray as-built conditions.
 4. Submit record survey and drawings for review by the Inspector and Architect, including certificate signed by registered engineer or surveyor certifying that elevations and locations of improvements are in conformance, or non-conformance, with Contract Documents.

PART 2 - PRODUCTS

- A. NOT USED

PART 3 - EXECUTION

- A. NOT USED

END OF SECTION

EXECUTION REQUIREMENTS (NOT APPLICABLE)

PART 1 - GENERAL

1.1. SUMMARY

- A. This section describes execution requirements.
 - 1. Installer qualifications.
 - 2. Examination.
 - 3. Manufacturer's instructions.
 - 4. Installation.
 - 5. Final Cleaning.
 - 6. Protection.

1.2. INSTALLER QUALIFICATIONS

- A. Experienced Installers: Unless noted otherwise by a particular specification Section, installers shall have minimum of five years successful experience installing items similar to those required for Project, except for individuals in training under direct supervision of experienced installer.

1.3. EXAMINATION

- A. Acceptance of Conditions: Beginning installation of a product signifies installer has examined substrates, areas, and conditions for compliance with manufacturer requirements for tolerances and other conditions affecting performance.
- B. Field Measurements: Take field measurements as required to fit Work properly; recheck measurements prior to installing each product.
 - 1. Where portions of Work are to fit to other construction verify dimensions of other construction by field measurements before fabrication; allow for cutting and patching in order to avoid delaying Work.
- C. Space Requirements: Verify space requirements and dimensions of items shown diagrammatically on Drawings.

1.4. MANUFACTURERS' INSTRUCTIONS

- A. Manufacturer's Recommendations: When work is specified to comply with manufacturers' recommendations or instructions, distribute copies to persons involved and maintain one set in field office.
 - 1. Conform to requirements specified in Section 01 33 00, "Submittal" Procedures for submittal of recommendations or instructions to Architect; submit to Architect only where specified or where specifically requested.
- B. Perform work in accordance with details of recommendations and instructions and specified requirements.

1. Should a conflict exist between Specifications and recommendations or instructions consult with Architect.
- C. Where manufacturer's information notes special recommendations in addition to installation instructions, comply with both recommendations and instructions.
- D. Pre-Installation Meetings: Installers and suppliers are to attend pre-installation meetings scheduled by Contractor.
- E. Comply with manufacturers written recommendations and installation instructions unless more restrictive requirements are specified.
- F. Locate Work and components accurately, in correct alignment and elevation.
 1. Make vertical work plumb and horizontal work level.
 2. Install components to allow space for maintenance and ease of removal for replacement.
- G. Install products at time and under conditions to ensure best possible results; maintain conditions required for product performance until Substantial Completion.
- H. Conduct operations so no part of Work is subject to damaging operations or loading in excess of that expected during normal conditions.
- I. Securely anchor permanent construction in place, accurately located and aligned with other portions of Work.
- J. Allow for building movement including thermal expansion and contraction.
- K. Make joints of uniform width; arrange joints as indicated, for best visual effect where not otherwise indicated; fit exposed connections together to form hairline joints except where otherwise indicated.

1.5. FINAL CLEANING

- A. Cleaning During Construction: Specified in Section 01 50 00, "Temporary Facilities and Controls".
- B. Progress Cleaning: Keep installed areas clean using cleaning materials specifically recommended by manufacturers of product being cleaned; where not otherwise recommended use nontoxic materials that will not damage surfaces.
 1. Remove debris from concealed spaces before enclosing space.
 2. Supervise construction operations to assure no part of construction, completed or in progress, is subject to harmful, dangerous, damaging, or otherwise deleterious exposure during construction period.
- C. Final Cleaning: Execute final cleaning at Substantial Completion.
 1. Clean interior and exterior surfaces exposed to view; remove temporary labels, stains and foreign substances; polish transparent and glossy surfaces; vacuum carpeted and soft surfaces.
 - a. Vacuuming Equipment: Type with high efficiency particulate arrestor (HEPA) type filters; properly maintained.
 2. Clean equipment and fixtures to a sanitary condition, clean filters of

mechanical equipment, replace filters where cleaning is impractical.

- a. Clean ducts.
3. Clean site; sweep paved areas.
4. Remove waste, surplus materials and rubbish from Project and site; recycle to maximum extent feasible.

1.6. PROTECTION

- A. See Section 01 60 00, "Product Requirements" for specific requirements.
 - a. Protect products subject to deterioration with impervious cover. Provide ventilation to avoid condensation and trapping water.
 - b. Take care to use protective covering and blocking materials that do not soil, stain, or damage materials being protected.
 - c. After installation, provide coverings to protect products from damage from traffic and construction operations, remove when no longer needed.
 - d. Protect interior materials from water damage; immediately remove wet materials from site to prevent growth of mold and mildew on site.

PART 2 - PRODUCTS

- A. NOT USED

PART 3 - EXECUTION

- A. NOT USED

END OF SECTION

SECTION 01 74 19

CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Environmental Issues and Waste Management Goals: Requirements For Special Site Waste Management Program.
 - 1. Definitions
 - 2. Performance Requirements
 - 3. Recycling Program
 - 4. Submittals

1.2 DEFINITIONS

- A. Inert Fill: A permitted facility that accepts inert waste such as asphalt and concrete exclusively.
- B. Class III Landfill: A landfill that accepts non-hazardous waste such as household, commercial, and industrial waste, including construction, remodeling, repair, and demolition operations.
- C. Construction and Demolition Waste: Building and site improvement materials and other solid waste such as building materials, packaging, rubbish, debris, and rubble resulting from construction, remodeling, renovation, or repair operations. Construction waste includes packaging. Alternative Daily Cover (ADC) does not qualify as material diverted from disposal. Land-clearing debris is not considered construction, demolition, or renovation waste that can contribute to waste diversion. Building and site improvement materials resulting from demolition or selective demolition operations.
 - 1. Rubbish: Includes both combustible and noncombustible wastes, such as paper, boxes, glass, crockery, metal and lumber scrap, tin cans, and bones.
 - 2. Debris: Includes both combustible and noncombustible wastes, such as leaves and tree trimmings that result from construction or maintenance and repair work.
- D. Chemical Waste: Includes petroleum products, bituminous materials, salts, acids, alkalis, herbicides, pesticides, organic chemicals and inorganic wastes.
- E. Disposal: Removal off-site of demolition and construction waste and subsequent sale, recycling, reuse, or deposit in landfill or incinerator acceptable to authorities having jurisdiction.
- F. Recycle: Recovery of demolition or construction waste for subsequent processing in preparation for reuse.
- G. Salvage: Recovery of demolition or construction waste and subsequent sale or reuse in another facility.
- H. Salvage and Reuse: Recovery of demolition or construction waste and subsequent incorporation into the Work.

I. Sanitary Wastes:

1. Garbage: Refuse and scraps resulting from preparation, cooking, distribution, or consumption of food.
2. Sewage: Domestic sanitary sewage.

1.3 PERFORMANCE REQUIREMENTS

- A. General: Develop and implement a construction and demolition waste management plan that results in end-of-Project rates for salvage/recycling of at least 50 percent by weight of total waste generated by the Work.

1.4 QUALITY ASSURANCE

- A. Waste Management Coordinator Qualifications: Minimum 2 years construction experience.
- B. Refrigerant Recovery Technician Qualifications: Certified by EPA-approved certification program.
- C. Waste Management Conference: Conduct conference at Project site.

1.5 RECYCLING PROGRAM

- A. Recycling: Implement recycling program that includes separate collection of waste materials of following types as applicable to Project:
1. Asphalt.
 2. Land clearing debris.
 3. Soil.
 4. Trees and shrubs.
 5. Concrete and concrete blocks.
 6. Brick and masonry materials.
 7. Untreated lumber.
 8. Clean dimensional wood and palette wood.
 9. Plywood, oriented strand board, and medium density fiberboard.
 10. Paper – bond.
 11. Paper (e.g. newsprint).
 12. Cardboard and paper packaging materials.
 13. Plastics.
 14. Rigid foam.
 15. Insulation.
 16. Ferrous metal.
 17. Non-ferrous metals (e.g. copper, aluminum, etc.).
 18. Glass.
 19. Gypsum board (unpainted).

20. Carpet and pad.
 21. Paint.
 22. Beverage containers.
 23. Plumbing fixtures.
 24. Electrical fixtures and wires.
 25. Others as appropriate.
- B. Separation of Waste: Contractor and subcontractors are both required to separate recyclable materials into bins and to arrange for delivery of recyclable materials to recycling depot. Clearly label all recycling containers and list acceptable and unacceptable materials.
- C. Handling: Keep materials free of dirt, adhesives, solvents, petroleum contamination, and other substances deleterious to recycling process.
1. Clean materials that are contaminated prior to placing in collection containers.
 2. Arrange for collection by or delivery to appropriate recycling center or transfer station that accepts construction and demolition waste for purpose of recycling.
- D. Participate in Re-Use Programs: Rebates, tax credits, and other savings obtained for recycled or re-used materials shall accrue to Contractor.

1.6 SUBMITTALS

- A. Waste Management Plan: Submit PDF of plan within 14 days of date established for the Notice to Proceed.
- B. Site Waste Management Program: Prevent environmental pollution and damage. Prior to commencement of Work, schedule and conduct meeting with Owner and Architect to discuss proposed Site Waste Management Program. Include separate sections in plan for demolition and construction waste. Indicate quantities by weight or volume, but use same units of measure throughout waste management plan.
1. Develop mutual understanding relative to details of recycling, and rebate programs.
 2. Effect optimum control of solid wastes.
- C. Submit Qualification data for Waste Management Coordinator.
1. Prepare and submit a written and graphic Site Waste Management Program including, but not limited to, the following:
 - a. Submit permit or license and location of waste disposal areas.
 - b. Submit procedures for recycling/re-use program.
 - c. Submit procedures for rebate programs.
 - d. Specify whether materials will be separated or comingled.
 - e. Indicate procedures to be implemented.
 - 1) Salvaged Materials for Reuse: For materials that will be salvaged and reused in this Project, describe methods for preparing salvaged materials before incorporation into the Work.
 - 2) Salvaged Materials for Sale: For materials that will be sold to individuals and

- organizations, include list of their names, addresses, and telephone numbers.
- 3) Salvaged Materials for Donation: For materials that will be donated to individuals and organizations, include list of their names, addresses, and telephone numbers.
 - 4) Recycled Materials: Include list of local receivers and processors and type of recycled materials each will accept. Include names, addresses, and telephone numbers.
 - 5) Disposed Materials: Indicate how and where materials will be disposed of. Include name, address, and telephone number of each landfill and incinerator facility.
 - 6) Handling and Transportation Procedures: Include method that will be used for separating recyclable waste including sizes of containers, container labeling, and designated location on Project site where materials separation will be located.
- f. Identify at least five materials (both structural and nonstructural) targeted for diversion.
- g. Estimate total Project waste to be generated, and estimated cost of disposing of Project waste in landfills.
- 1) Estimate total cubic yards of following waste categories to be diverted from landfill.
 - a) Clean dimensional wood, palette wood.
 - b) Plywood, oriented strand board, and medium density fiberboard.
 - c) Cardboard, paper, packaging.
 - d) Other items as directed by Owner and Architect.
 - 2) Estimate amounts of following waste categories in appropriate units (weight, feet, square yards, gallons).
 - a) Metals.
 - b) Gypsum board.
 - c) Carpet.
 - d) Paint.
 - e) Other items as directed by Owner and Architect.
- h. Revise and resubmit Site Waste Management Program, as required by Owner and Architect.
- i. Review of Contractor's Site Waste Management Program will not relieve Contractor of responsibility for control of pollutants and other environmental protection measures.
- D. Waste Reduction Progress Reports: Concurrent with each Application for Payment, submit PDF report with summary of solid waste generated. Include separate reports for demolition and construction waste.
1. Provide documentation to show evidence that waste management, recycling, and reuse of recyclable and reusable materials have been maximized. Include the following information:
 - a. Name of firm accepting the recovered materials or waste materials.
 - b. Specify type of facility (e.g. recycler, processor, Class III landfill, MRF).
 - c. Location of the facility.
 - d. Types of material/material category.

- e. Date of delivery.
 - f. Generation point of waste.
 - g. Value of the materials or tipping fee paid.
 - h. Quantity of waste salvaged, both estimated and actual in tons.
 - i. Quantity of waste recycled, both estimated and actual in tons.
 - j. Total quantity of waste recovered (salvaged plus recycled) in tons.
 - k. Total quantity of waste recovered (salvaged plus recycled) as a percentage of total waste.
- E. Project Closeout Submittals:
- F. Waste Reduction Calculations: Before request for Substantial Completion, submit three copies of calculated end-of-Project rates for salvage, recycling, and disposal as a percentage of total waste generated by the Work.
- G. Records of Donations: Indicate receipt and acceptance of salvageable waste donated to individuals and organizations. Indicate whether organization is tax exempt.
- H. Records of Sales: Indicate receipt and acceptance of salvageable waste sold to individuals and organizations. Indicate whether organization is tax exempt.
- I. Recycling and Processing Facility Records: Indicate receipt and acceptance of recyclable waste by recycling and processing facilities licensed to accept them. Include manifests, weight tickets, receipts, and invoices.
- J. Landfill and Incinerator Disposal Records: Indicate receipt and acceptance of waste by landfills and incinerator facilities licensed to accept them. Include manifests, weight tickets, receipts, and invoices.
- K. Statement of Refrigerant Recovery: Signed by refrigerant recovery technician responsible for recovering refrigerant, stating that all refrigerant that was present was recovered and that recovery was performed according to EPA regulations. Include name and address of technician and date refrigerant was recovered.
- 1. Prepare 3-ring binder with all required documentation, including rebate information and product documentation as required for Owner to qualify for rebate programs.
 - 2. Submit binder with final closeout submittals per Section 01 77 19, "Closeout Requirements".

PART 2 - PRODUCTS

- A. NOT USED

PART 3 - EXECUTION

3.1 PLAN IMPLEMENTATION

- A. General: Implement waste management plan as approved by Architect. Provide handling, containers, storage, signage, transportation, and other items as required to implement waste management plan during the entire duration of the Contract.
- B. Waste Management Coordinator: Engage a waste management coordinator to be responsible for implementing, monitoring, and reporting status of waste management work plan. Coordinator shall be present at Project site full time for duration of Project.
- C. Training: Train workers, subcontractors, and suppliers on proper waste management procedures, as appropriate for the Work occurring at Project site.
 - 1. Distribute waste management plan to everyone concerned within three days of submittal return.
 - 2. Distribute waste management plan to entities when they first begin work on-site. Review plan procedures and locations established for salvage, recycling, and disposal.
- D. Site Access and Temporary Controls: Conduct waste management operations to ensure minimum interference with roads, streets, walks, walkways, and other adjacent occupied and used facilities.
 - 1. Designate and label specific areas on Project site necessary for separating materials that are to be salvaged, recycled, reused, donated, and sold.
 - 2. Comply with Division 01 Section "Temporary Facilities and Controls" for controlling dust and dirt, environmental protection, and noise control.

3.2 SALVAGING DEMOLITION WASTE

- A. Salvaged Items for Reuse in the Work:
 - 1. Clean salvaged items.
 - 2. Pack or crate items after cleaning. Identify contents of containers.
 - 3. Store items in a secure area until installation.
 - 4. Protect items from damage during transport and storage.
 - 5. Install salvaged items to comply with installation requirements for new materials and equipment. Provide connections, supports, and miscellaneous materials necessary to make items functional for use indicated.
- B. Salvaged Items for Sale and Donation: Not permitted on Project site.
- C. Salvaged Items for Owner's Use:
 - 1. Clean salvaged items.
 - 2. Pack or crate items after cleaning. Identify contents of containers.
 - 3. Store items in a secure area until delivery to Owner.
 - 4. Transport items to Owner's storage area on-site.
 - 5. Protect items from damage during transport and storage.

3.3 RECYCLING DEMOLITION AND CONSTRUCTION WASTE, GENERAL

- A. General: Recycle paper and beverage containers used by on-site workers.

- B. Recycling Receivers and Processors: List below is provided for information only; available recycling receivers and processors include, but are not limited to, the following:
 - 1. County of Shasta
- C. Recycling waste materials shall accrue to Contractor.
- D. Procedures: Separate recyclable waste from other waste materials, trash, and debris. Separate recyclable waste by type at Project site to the maximum extent practical.
 - 1. Provide appropriately marked containers or bins for controlling recyclable waste until they are removed from Project site. Include list of acceptable and unacceptable materials at each container and bin.
 - a. Inspect containers and bins for contamination and remove contaminated materials if found.
 - 2. Stockpile processed materials on-site without intermixing with other materials. Place, grade, and shape stockpiles to drain surface water. Cover to prevent windblown dust.
 - 3. Stockpile materials away from construction area. Do not store within drip line of remaining trees.
 - 4. Store components off the ground and protect from the weather.
 - 5. Remove recyclable waste off Owner's property and transport to recycling receiver or processor.

3.4 RECYCLING DEMOLITION WASTE

- A. Asphaltic Concrete Paving: Grind asphalt to maximum 1-1/2-inch size, or as required by recycling facility.
- B. Asphaltic Concrete Paving: Break up and transport paving to asphalt-recycling facility.
- C. Concrete: Remove reinforcement and other metals from concrete and sort with other metals.
 - 1. Pulverize concrete to maximum 1-1/2-inch size, or as required by recycling facility.
- D. Masonry: Remove metal reinforcement, anchors, and ties from masonry and sort with other metals.
 - 1. Pulverize masonry to maximum 1-1/2-inch size, or as required by recycling facility.
 - 2. Clean and stack undamaged, whole masonry units on wood pallets.
- E. Wood Materials: Sort and stack members according to size, type, and length. Separate lumber, engineered wood products, panel products, and treated wood materials.
- F. Metals: Separate metals by type.
 - 1. Structural Steel: Stack members according to size, type of member, and length.
 - 2. Remove and dispose of bolts, nuts, washers, and other rough hardware.
- G. Asphalt Shingle Roofing: Separate organic and glass-fiber asphalt shingles and felts. Remove and dispose of nails, staples, and accessories.

- H. Gypsum Board: Stack large clean pieces on wood pallets and store in a dry location. Remove edge trim and sort with other metals. Remove and dispose of fasteners.
- I. Acoustical Ceiling Panels and Tile: Stack large clean pieces on wood pallets and store in a dry location.
 - 1. Separate suspension system, trim, and other metals from panels and tile and sort with other metals.
- J. Carpet and Pad: Roll large pieces tightly after removing debris, trash, adhesive, and tack strips.
 - 1. Store clean, dry carpet and pad in a closed container or trailer provided by Carpet Reclamation Agency or carpet recycler.
- K. equipment from exposure to weather.
- L. Plumbing Fixtures: Separate by type and size.
- M. Piping: Reduce piping to straight lengths and store by type and size. Separate supports, hangers, valves, sprinklers, and other components by type and size.
- N. Lighting Fixtures: Separate lamps by type and protect from breakage.
- O. Electrical Devices: Separate switches, receptacles, switchgear, transformers, meters, panel boards, circuit breakers, and other devices by type.
- P. Conduit: Reduce conduit to straight lengths and store by type and size.

3.5 RECYCLING CONSTRUCTION WASTE

- A. Packaging:
 - 1. Cardboard and Boxes: Break down packaging into flat sheets. Bundle and store in a dry location.
 - 2. Polystyrene Packaging: Separate and bag materials.
 - 3. Pallets: As much as possible, require deliveries using pallets to remove pallets from Project site. For pallets that remain on-site, break down pallets into component wood pieces and comply with requirements for recycling wood.
 - 4. Crates: Break down crates into component wood pieces and comply with requirements for recycling wood.
- B. Site-Clearing Wastes: Chip brush, branches, and trees on-site at location indicated by owner.
- C. Wood Materials:
 - 1. Clean Cut-Offs of Lumber: Grind or chip into small pieces.
 - 2. Clean Sawdust: Bag sawdust that does not contain painted or treated wood.
- D. Gypsum Board: Stack large clean pieces on wood pallets and store in a dry location.
 - 1. Clean Gypsum Board: Grind scraps of clean gypsum board using small mobile chipper or hammer mill. Screen out paper after grinding.

3.6 DISPOSAL OF WASTE

- A. General: Except for items or materials to be salvaged, recycled, or otherwise reused, remove waste materials from Project site and legally dispose of them in a landfill or incinerator acceptable to authorities having jurisdiction.
 - 1. Except as otherwise specified, do not allow waste materials that are to be disposed of accumulate on-site.
 - 2. Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and areas.
- B. Burning: Do not burn waste materials.
- C. Burning: Burning of waste materials is permitted only at designated areas on Owner's property, provided required permits are obtained. Provide full-time monitoring for burning materials until fires are extinguished.
- D. Disposal: Transport waste materials and dispose of at designated spoil areas on Owner's property.
- E. Disposal: Transport waste materials off Owner's property and legally dispose of them.

END OF SECTION

SECTION 01 75 00
STARTING AND ADJUSTING

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Starting Systems
- B. Testing, Adjusting and Balancing
- C. Demonstration and Instructions (cross-reference provide to section)

1.2 STARTING SYSTEMS

- A. Coordinate schedule for start-up of various equipment and systems.
- B. Notify Inspector and Architect 48 hours prior to start-up of each item.
- C. Verify that each piece of equipment or system has been checked for proper lubrication, drive rotation, belt tension, control sequence or other conditions which may cause damage.
- D. Verify that tests, meter readings, and specified electrical characteristics agree with those required by the equipment or system manufacturer.
- E. Verify wiring and support components for equipment are complete and tested.
- F. Execute start-up under supervision of responsible manufacturer's representative and/or Contractor personnel in accordance with manufacturers' instructions.
- G. When specified in individual specification Sections, require manufacturer to provide authorized representative to be present at site to inspect, and check equipment or system installation prior to start-up and to supervise placing equipment or system operation.
- H. Submit a written report to the Architect that equipment or system has been properly installed and is functioning correctly.
- I. Provide advance notice to Architect and Inspector of Record regarding all coordination for utility and service systems hook-ups.

1.3 TESTING, ADJUSTING, AND BALANCING

- A. Contractor shall employ services of an independent firm to perform testing, adjusting and balancing. Contractor shall pay for services.
- B. The independent firm will perform services specified in Electrical and Mechanical sections.
- C. Reports will be submitted by the independent firm to the Architect indicating observations and

results of tests and indicating compliance or non-compliance with specified requirements and with the requirements of the Contract Documents.

1.4 DEMONSTRATION AND INSTRUCTIONS

- A. Coordinate with all requirements in Section 01 79 00, "Demonstration and Testing".

PART 2 - PRODUCTS

2.1 NOT USED

PART 3 - EXECUTION

3.1 NOT USED

END OF SECTION

SECTION 01 77 19
CLOSEOUT REQUIREMENTS

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Substantial Completion and Punchlist Procedures
- B. Final Completion Procedures
- C. Project Record Documents
- D. Operation and Maintenance Data
- E. Warrantees
- F. Spare Parts and Maintenance Materials
- G. Final Cleaning
- H. Adjusting and Training (cross references provided)

1.2 SUBSTANTIAL COMPLETION AND PUNCH LIST PROCEDURES

- A. When Contractor considers the Work or a designated portion thereof is substantially complete, notify Architect and Owner with list of items to be completed or corrected, and request Punch List Inspection.
 - 1. Punch List Format: Pre-approved by Owner and Architect - tabular form with each space listed required.
- B. Within a reasonable time Architect, Architect's Consultants, Inspector and Owner will conduct an inspection in order to determine Architect, Architect's Consultants and Owner will conduct an inspection in order to determine acceptance of work and identify items remaining to complete.
- C. The Architect will prepare a Punch List of such items and transmit to Contractor.
- D. Should Architect determine Work is not substantially complete, Contractor will be promptly notified in writing, giving reasons.
- E. Contractor shall remedy deficiencies and send a second written notice of substantial completion; Architect, Architect's Consultants, Inspector and Owner will re-inspect Work.
- F. If Architect determines that punch list items remaining are sufficiently minor, and that Owner can occupy work and use it for its intended purpose, then Architect will prepare a Notice of Substantial Completion for Owner's signature.

1. If work is not substantially complete, Contractor shall continue construction until such time as project status justifies subsequent inspection. Architect and Project Manager and Architect's Consultant costs incurred in such subsequent inspections will be paid by Contractor by Owner-Contractor contract adjustment.
2. Contractor shall complete all items on Punch List within 30 days, or as stated on Notice of Substantial Completion.

1.3 FINAL COMPLETION PROCEDURES

- A. At such time as Contractor believes project is complete and following completion of Punch List items, notify Architect and request Final Inspection
 1. Submit written certification that Contract Documents have been reviewed, Work has been inspected, and that Work is complete in accordance with Contract Documents and ready for Architect Final inspection.
 2. Upon receipt of request for final inspection, Architect will perform a Final Inspection and recommend actions as defined by the General Conditions.
 3. If Architect determines work is acceptable under the Contract Documents, Contractor shall submit Final Application for Payment and close-out documents.
- B. Contractor shall provide all close-out documents required by Contract Documents, per Section 01 77 19, "Closeout Requirements", and as required in this Section, with transmittal letter containing date, Project title, Contractor's name and address, list of documents, and signature of Contractor, within ten days of the last day of the contract period.
 1. Close out documents include, but are not necessarily limited to:
 - a. Project Record Set: Indicate actual work on Drawings and in Project Manual; indicate actual products used in Project Manual, including manufacturer, model number and options.
 - a. Operational and maintenance manuals and data.
 - b. Warranties and Guarantees.
 - c. Keys and keying schedules.
 - d. Spare parts, extra stock and materials.
 - e. All jurisdictional approval documents, including Final Verified reports (DSA 6 Forms, certification of fire alarm and related documents.

1.4 FINAL PAYMENT

- A. When, in the opinion of the Architect, the project is complete (after all punch list items are complete as described in Item 1.2 Substantial Completion), the Architect will advise the Owner and the Owner will file the Notice of Completion with the County Recorder.

- B. Should there be items not available due to delays in delivery, or should work remain incomplete, the Architect and the Owner may require the Contractor to post a certified check in an agreed upon amount sufficient to cover such incomplete or uncorrected items. Such certified check shall be held until completion of all incomplete Work.
- C. The final payment, including retention, outlined in Section 01 20 00, “Price and Payment Procedures” shall be held by the Owner until forty (40) days after the date of recording of the Notice of Completion by the County Recorder. If no stop notices or encumbrances are filed and if all required forms have been filed and approved by DSA and work is complete, the retention shall be paid the contractor. Assessed liquidated damages and extra services provided by the Architect and Inspector of Record due to additional inspections of incomplete work shall be deducted from the retention.
- D. Final payment to the Contractor will not be made until all requirements have been met and all documents set forth herein have been received, including but not limited to: Record Drawings, Warranties, Operation and Maintenance Manuals, Demonstration/Training and extra stock.
- E. Final Application for Payment Coordinate with Section 01 20 00, “Price and Payment Procedures”.
 - 1. After final submittals have been submitted and approved, Contractor shall submit final Application for Payment identifying total adjusted Contract Sum, previous payments, and sum remaining due.
 - 2. Final Application for Payment shall be submitted to Inspector of Record and approved, prior to being sent to Architect for review.
 - 3. When requested by Architect, provide evidence of payment, lien releases and consent of surety to make final payment to Contractor.
 - 4. The District’s Board will take an action to accept the project and authorize the filing of a Notice of Completion.

1.5 RECORD PROJECT DOCUMENTS

- A. Provide Record Drawings, Record Specifications, and Other Record Documents as described in Section 01 78 39, “Project Record Documents”

1.6 OPERATION AND MAINTENANCE DATA

- A. Provide Operation and Maintenance Data as described in Section 01 78 23, “Operations and Maintenance Data”.

1.7 WARRANTIES

- A. Compile required and incidental warranties required by Contract Documents.
- B. These warranties shall be in addition to and not a limitation of other rights Owner may have against Contractor under Contract Documents and which may be prescribed by law, regardless of wording of warranty.

- C. Provide duplicate notarized copies.
- D. Assemble documents executed by subcontractors, installers, suppliers, and manufacturers.
- E. Provide table of contents and assemble in binder with durable plastic cover, clearly identified regarding extent of contents.
- F. Electronic Format: Submit warranties on electronic media in PDF format.
- G. Warranty Form: Use form acceptable to Owner; completed form shall not detract from or confuse interpretations of Contract Documents. (See Section 00 65 36)
 - 1. General Contractor shall sign warranty.
 - 2. Subcontractor and installer shall sign warranty where specified.
 - a. Provide required manufacturer's warranties for waterproofing and roofing systems countersigned by subcontractor and installer.
- H. Submit final warranties prior to final application for payment.
 - 1. For equipment put into use with Owner's permission during construction, submit within ten days after first operation.
 - 2. For items of Work delayed materially beyond Date of Substantial Completion, provide updated submittal within ten days after acceptance, listing date of acceptance as start of warranty period.
- I. Provide information for Owner's personnel regarding proper procedure in case of failure and instances that might affect validity of warranty.
- J. Size: 8-1/2" by 11" for three-ring binder; fold larger sheets to fit 8 1/2" x 11 format.
- K. Warrantees - General Requirements:
 - 1. Warranties are intended to protect Owner against failure of work and against deficient, defective and faulty materials and workmanship, regardless of sources.
 - 2. Limitations: Warranties are not intended to cover failures that result from:
 - a. Unusual or abnormal phenomena of the elements.
 - b. Owner's misuse, maltreatment or improper maintenance of work.
 - c. Vandalism after substantial completion.
 - d. Insurrection or acts of aggression including war.
 - 3. Related Damages and Losses: Remove and replace work which is damaged as result of failure, or which must be removed and replaced to provide access for correction of warranted work.

4. Warranty Reinstatement: After correction of warranted work, reinstate warranty for corrected work to date of original warranty expiration, but not less than half original warranty period.
5. For items of Work delayed beyond date of Substantial Completion, provide updated submittal within ten days after acceptance, listing date of acceptance as start of warranty period.
6. Replacement Cost: Replace or restore failing warranted items without regard to anticipated useful service lives.
7. Rejection of Warranties: Owner reserves right to reject unsolicited and coincidental product warranties that detract from or confuse interpretations of Contract Documents.

1.8 SPARE PARTS AND MAINTENANCE MATERIALS

- A. Provide products, spare parts, maintenance and extra materials in quantities specified in individual specification Sections.
- B. Deliver to Project site and place in location as directed; obtain receipt prior to final payment.

1.9 FINAL CLEANING

- A. Contactor shall conduct all final cleaning required to comply with requirements of this Section prior to final inspection.
- B. Use cleaning materials which do not create hazards to health or property and which will not damage surfaces. Use only those cleaning materials and methods recommended by manufacturer of the surface material to be cleaned. Use cleaning materials only on surfaces recommended by cleaning material manufacturer.
- C. Employ experienced workers or professional cleaners for final cleaning. Comply with instructions of manufacturer for surface being cleaned.
- D. Comply with regulations of authorities having jurisdiction and safety standards for cleaning. Do not burn waste materials. Do not bury debris or excess materials on the Owner's property. Do not discharge volatile, harmful or dangerous materials into drainage systems. Remove waste materials from the site and dispose of in a lawful manner
- E. Contractor shall clean all completed interior work, including but not necessarily limited to, surfaces exposed to view in final construction, all cabinet/casework interiors and surfaces, and all equipment and fixtures.
 1. Remove temporary labels, stains and foreign substances. Where stain cannot be removed, replace item to the satisfaction of the Project Manager and Architect.
 2. Polish transparent and glossy surfaces.
 3. Wet wipe painted and prefinished surfaces. Do not leave residue or wipe marks.

4. Where HVAC system was operated during construction, clean permanent filters and replace disposable filters immediately prior to final inspection. Clean ducts, blowers and coils if units were operated without filters during construction.
 5. Perform final cleaning of all plumbing and electrical components. Polish all glossy surfaces, wet wipe all other finished exposed surfaces and elements.
- F. Clean all completed building exterior surfaces and site work, including but not necessarily limited to, surfaces exposed to view in final construction, all roof surfaces, all site paving surfaces, and all equipment and fixtures.
1. Remove temporary labels, stains and foreign substances from exterior surfaces.
 2. Polish exterior signage components and similar glossy surfaces.
 3. Remove dirt and dust from all exterior surfaces by approved means. Clean all sealant joints and similar applications.
 4. Remove debris, construction products, fasteners, and trash from all roof surfaces.
 5. Rake grounds that are neither paved nor planted to a smooth even-textured surface.
 6. Clean all paving surfaces as necessary to remove construction dust and dirt, including debris from joints using approved methods. Remove all construction stains by approved means. Remove asphalt and seal coat splatter from curb faces.
- G. Remove waste and surplus materials, rubbish, and construction facilities from the site and legally dispose of.

1.10 ADJUSTING AND TRAINING

- A. Adjust operating products and equipment to ensure smooth and unhindered operation and provide adequate training for continued maintenance. See Section 01 75 00 "Starting and Adjusting" and Section 01 79 00, "Demonstration and Testing".

PART 2 - PRODUCTS

2.1 NOT USED

PART 3 - EXECUTION

3.1 NOT USED

END OF SECTION

SECTION 01 78 23
OPERATION AND MAINTENANCE DATA

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. Section includes administrative and procedural requirements for preparing operation and maintenance manuals, including the following:
 - 1. Operation and maintenance documentation directory manuals.
 - 2. Emergency manuals.
 - 3. Systems and equipment operation manuals.
 - 4. Systems and equipment maintenance manuals.
 - 5. Product maintenance manuals.
- B. Related Requirements:
 - 1. Section 01 33 00 "Submittal Procedures" for submitting copies of submittals for operation and maintenance manuals.

1.3 DEFINITIONS

- A. System: An organized collection of parts, equipment, or subsystems united by regular interaction.
- B. Subsystem: A portion of a system with characteristics similar to a system.

1.4 CLOSEOUT SUBMITTALS

- A. Submit operation and maintenance manuals indicated. Provide content for each manual as specified in individual Specification Sections, and as reviewed and approved at the time of Section submittals. Submit reviewed manual content formatted and organized as required by this Section.
 - 1. Architect will comment on whether content of operation and maintenance submittals is acceptable.
 - 2. Where applicable, clarify and update reviewed manual content to correspond to revisions and field conditions.
- B. Format: Submit operation and maintenance manuals in the following format:
 - 1. Submit on digital media acceptable to Architect. Enable reviewer comments on draft submittals.

- C. Initial Manual Submittal: Submit draft copy of each manual at least 30 days before commencing demonstration and training. Architect will comment on whether general scope and content of manual are acceptable.
- D. Final Manual Submittal: Submit each manual in final form prior to requesting inspection for Substantial Completion and at least 15 days before commencing demonstration and training. Architect will return copy with comments.
 - 1. Correct or revise each manual to comply with Architect's. Submit copies of each corrected manual within 15 days of receipt of Architect's comments and prior to commencing demonstration and training.
- E. Comply with Section 01 77 19 "Closeout Requirements" for schedule for submitting operation and maintenance documentation.

1.5 FORMAT OF OPERATION AND MAINTENANCE MANUALS

- A. Prepare binder covers with printed title "OPERATION AND MAINTENANCE INSTRUCTIONS", with title of project, and subject matter of binders
 - 1. Electronic Files: Use electronic files prepared by manufacturer where available. Where scanning of paper documents is required, configure scanned file for minimum readable file size.
 - 2. File Names and Bookmarks: Bookmark individual documents based on file names. Name document files to correspond to system, subsystem, and equipment names used in manual directory and table of contents. Group documents for each system and subsystem into individual composite bookmarked files, then create composite manual, so that resulting bookmarks reflect the system, subsystem, and equipment names in a readily navigated file tree. Configure electronic manual to display bookmark panel on opening file.
 - 3. Contents: Prepare a Table of Contents for each volume, with each Product or system description identified, type on 24 pound white paper.
 - a. Directory, listing names, addresses, and telephone numbers of Architect, Contractor, Subcontractors, and major equipment suppliers.
 - b. Operation and maintenance instructions, arranged by system and subdivided by specification section. For each category, identify names, addresses, and telephone numbers of Subcontractors and suppliers. Identify the following:
 - 1) Significant design criteria.
 - 2) List of equipment, including trade names, model or type numbers.
 - 3) Parts list for each component.
 - 4) Operating instructions.
 - 5) Maintenance instructions for equipment and systems.
 - 6) Cleaning instructions.
 - 7) Maintenance instructions for special finishes, including recommended cleaning methods and materials and special precautions identifying detrimental agents.
 - c. Project documents and certificates, including the following:

- 1) Shop drawings.
 - 2) Provide product data.
 - 3) Certificates.
 - 4) Photocopies of warranties.
- d. Provide a separate volume for each of the following systems, with a table of contents and index tabs for each volume:
- 1) Electrically operated items.
 - 2) Mechanical equipment and controls.
 - 3) Electrical equipment and controls.
- B. Manuals, Paper Copy: Submit manuals in the form of hard-copy, bound and labeled volumes.
1. Binders: Heavy-duty, three-ring, vinyl-covered, loose-leaf, post-type binders, in thickness necessary to accommodate contents, sized to hold 8-1/2-by-11-inch paper; with clear plastic sleeve on spine to hold label describing contents and with pockets inside covers to hold folded oversize sheets.
 - a. If two or more binders are necessary to accommodate data of a system, organize data in each binder into groupings by subsystem and related components. Cross-reference other binders if necessary to provide essential information for proper operation or maintenance of equipment or system.
 - b. Identify each binder on front and spine, with printed title "OPERATION AND MAINTENANCE MANUAL," Project title or name, subject matter of contents, and indicate Specification Section number on bottom of spine. Indicate volume number for multiple-volume sets.
 2. Internally subdivide the binder contents with permanent page dividers, logically organized as described below; with tab titling clearly printed under reinforced laminated plastic tabs.
 3. Provide heavy-paper dividers with plastic-covered tabs for each section of the manual. Mark each tab to indicate contents. Include typed list of products and major components of equipment included in the section on each divider, cross-referenced to Specification Section number and title of Project Manual.
 4. Protective Plastic Sleeves: Transparent plastic sleeves designed to enclose diagnostic software storage media for computerized electronic equipment. Enclose title pages and directories in clear plastic sleeves.
 5. Supplementary Prepared on 8-1/2-by-11-inch white bond paper.
 6. Drawings, If Required: Attach reinforced, punched binder tabs on drawings and bind with text.
 - a. If oversize drawings are necessary, fold drawings to same size as text pages and use as foldouts.
 - b. If drawings are too large to be used as foldouts, fold and place drawings in labeled envelopes and bind envelopes in rear of manual. At appropriate locations in manual,

insert typewritten pages indicating drawing titles, descriptions of contents, and drawing locations.

- C. Submit one copy of completed Volumes in final form to Architect 15 days prior to final inspection. This copy will be returned after final inspection, with Architect comments.
- D. Revise content of documents as required prior to final submittal.
- E. Submit final volumes, **ONE hard copy set each**, with corresponding electronic format set, in PDF format, revised, within 15 days after final inspection.
- A. Manuals, Electronic Files: Submit manuals in the form of a multiple file composite electronic PDF file for each manual type required, on a Flash Drive in each hard copy binder.

1.6 REQUIREMENTS FOR EMERGENCY, OPERATION, AND MAINTENANCE MANUALS

- A. Organization of Manuals: Unless otherwise indicated, organize each manual into a separate section for each system and subsystem, and a separate section for each piece of equipment not part of a system. Each manual shall contain the following materials, in the order listed:
 - 1. Title page.
 - 2. Table of contents.
 - 3. Manual contents.
- B. Title Page: Include the following information:
 - 1. Subject matter included in manual.
 - 2. Name and address of Project.
 - 3. Name and address of Owner.
 - 4. Date of submittal.
 - 5. Name and contact information for Contractor.
 - 6. Name and contact information for Architect.
 - 7. Names and contact information for major consultants to the Architect that designed the systems contained in the manuals.
 - 8. Cross-reference to related systems in other operation and maintenance manuals.
- C. Table of Contents: List each product included in manual, identified by product name, indexed to the content of the volume, and cross-referenced to Specification Section number in Project Manual.
 - 1. If operation or maintenance documentation requires more than one volume to accommodate data, include comprehensive table of contents for all volumes in each volume of the set.
- D. Manual Contents: Organize into sets of manageable size. Arrange contents alphabetically by system, subsystem, and equipment. If possible, assemble instructions for subsystems, equipment, and components of one system into a single binder.
- E. Identification: In the documentation directory and in each operation and maintenance manual, identify each system, subsystem, and piece of equipment with same designation used in the Contract Documents. If no designation exists, assign a designation according to

ASHRAE Guideline 4, "Preparation of Operating and Maintenance Documentation for Building Systems."

1.7 OPERATION AND MAINTENANCE DOCUMENTATION DIRECTORY MANUAL

- A. Operation and Maintenance Documentation Directory: Prepare a separate manual that provides an organized reference to emergency, operation, and maintenance manuals. List items and their location to facilitate ready access to desired information. Include the following:
 - 1. List of Systems and Subsystems: List systems alphabetically. Include references to operation and maintenance manuals that contain information about each system.
 - 2. List of Equipment: List equipment for each system, organized alphabetically by system. For pieces of equipment not part of system, list alphabetically in separate list.
 - 3. Tables of Contents: Include a table of contents for each emergency, operation, and maintenance manual.

1.8 EMERGENCY MANUALS

- A. Emergency Manual: Assemble a complete set of emergency information indicating procedures for use by emergency personnel and by Owner's operating personnel for types of emergencies indicated.
- B. Content: Organize manual into a separate section for each of the following:
 - 1. Type of emergency.
 - 2. Emergency instructions.
 - 3. Emergency procedures.
- C. Type of Emergency: Where applicable for each type of emergency indicated below, include instructions and procedures for each system, subsystem, piece of equipment, and component:
 - 1. Fire.
 - 2. Flood.
 - 3. Gas leak.
 - 4. Water leak.
 - 5. Power failure.
 - 6. Water outage.
 - 7. System, subsystem, or equipment failure.
 - 8. Chemical release or spill.
- D. Emergency Instructions: Describe and explain warnings, trouble indications, error messages, and similar codes and signals. Include responsibilities of Owner's operating personnel for notification of Installer, supplier, and manufacturer to maintain warranties.
- E. Emergency Procedures: Include the following, as applicable:
 - 1. Instructions on stopping.
 - 2. Shutdown instructions for each type of emergency.

3. Operating instructions for conditions outside normal operating limits.
4. Required sequences for electric or electronic systems.
5. Special operating instructions and procedures.

1.9 SYSTEMS AND EQUIPMENT OPERATION MANUALS

- A. Systems and Equipment Operation Manual: Assemble a complete set of data indicating operation of each system, subsystem, and piece of equipment not part of a system. Include information required for daily operation and management, operating standards, and routine and special operating procedures.
 1. Engage a factory-authorized service representative to assemble and prepare information for each system, subsystem, and piece of equipment not part of a system.
 2. Prepare a separate manual for each system and subsystem, in the form of an instructional manual for use by Owner's operating personnel.
- B. Content: In addition to requirements in this Section, include operation data required in individual Specification Sections and the following information:
 1. System, subsystem, and equipment descriptions. Use designations for systems and equipment indicated on Contract Documents.
 2. Performance and design criteria if Contractor has delegated design responsibility.
 3. Operating standards.
 4. Operating procedures.
 5. Operating logs.
 6. Wiring diagrams.
 7. Control diagrams.
 8. Piped system diagrams.
 9. Precautions against improper use.
 10. License requirements including inspection and renewal dates.
- C. Descriptions: Include the following:
 1. Product name and model number. Use designations for products indicated on Contract Documents.
 2. Manufacturer's name.
 3. Equipment identification with serial number of each component.
 4. Equipment function.
 5. Operating characteristics.
 6. Limiting conditions.
 7. Performance curves.
 8. Engineering data and tests.

9. Complete nomenclature and number of replacement parts.
- D. Operating Procedures: Include the following, as applicable:
1. Startup procedures.
 2. Equipment or system break-in procedures.
 3. Routine and normal operating instructions.
 4. Regulation and control procedures.
 5. Instructions on stopping.
 6. Normal shutdown instructions.
 7. Seasonal and weekend operating instructions.
 8. Required sequences for electric or electronic systems.
 9. Special operating instructions and procedures.
- E. Systems and Equipment Controls: Describe the sequence of operation, and diagram controls as installed.
- F. Piped Systems: Diagram piping as installed, and identify color coding where required for identification.

1.10 SYSTEMS AND EQUIPMENT MAINTENANCE MANUALS

- A. Systems and Equipment Maintenance Manuals: Assemble a complete set of data indicating maintenance of each system, subsystem, and piece of equipment not part of a system. Include manufacturers' maintenance documentation, preventive maintenance procedures and frequency, repair procedures, wiring and systems diagrams, lists of spare parts, and warranty information.
1. Engage a factory-authorized service representative to assemble and prepare information for each system, subsystem, and piece of equipment not part of a system.
 2. Prepare a separate manual for each system and subsystem, in the form of an instructional manual for use by Owner's operating personnel.
- B. Content: For each system, subsystem, and piece of equipment not part of a system, include source information, manufacturers' maintenance documentation, maintenance procedures, maintenance and service schedules, spare parts list and source information, maintenance service contracts, and warranties and bonds as described below.
- C. Source Information: List each system, subsystem, and piece of equipment included in manual, identified by product name and arranged to match manual's table of contents. For each product, list name, address, and telephone number of Installer or supplier and maintenance service agent, and cross-reference Specification Section number and title in Project Manual and drawing or schedule designation or identifier where applicable.
- D. Manufacturers' Maintenance Documentation: Include the following information for each component part or piece of equipment:
1. Standard maintenance instructions and bulletins; include only sheets pertinent to product or component installed. Mark each sheet to identify each product or component incorporated into the Work. If data include more than one item in a tabular format, identify each item

using appropriate references from the Contract Documents. Identify data applicable to the Work and delete references to information not applicable.

- a. Prepare supplementary text if manufacturers' standard printed data are not available and where the information is necessary for proper operation and maintenance of equipment or systems.
2. Drawings, diagrams, and instructions required for maintenance, including disassembly and component removal, replacement, and assembly.
3. Identification and nomenclature of parts and components.
4. List of items recommended to be stocked as spare parts.
- E. Maintenance Procedures: Include the following information and items that detail essential maintenance procedures:
 1. Test and inspection instructions.
 2. Troubleshooting guide.
 3. Precautions against improper maintenance.
 4. Disassembly; component removal, repair, and replacement; and reassembly instructions.
 5. Aligning, adjusting, and checking instructions.
 6. Demonstration and training video recording, if available.
- F. Maintenance and Service Schedules: Include service and lubrication requirements, list of required lubricants for equipment, and separate schedules for preventive and routine maintenance and service with standard time allotment.
 1. Scheduled Maintenance and Service: Tabulate actions for daily, weekly, monthly, quarterly, semiannual, and annual frequencies.
 2. Maintenance and Service Record: Include manufacturers' forms for recording maintenance.
- G. Spare Parts List and Source Information: Include lists of replacement and repair parts, with parts identified and cross-referenced to manufacturers' maintenance documentation and local sources of maintenance materials and related services.
- H. Maintenance Service Contracts: Include copies of maintenance agreements with name and telephone number of service agent.
- I. Warranties and Bonds: Include copies of warranties and bonds and lists of circumstances and conditions that would affect validity of warranties or bonds.
 1. Include procedures to follow and required notifications for warranty claims.
- J. Drawings: Prepare drawings supplementing manufacturers' printed data to illustrate the relationship of component parts of equipment and systems and to illustrate control sequence and flow diagrams. Coordinate these drawings with information contained in record Drawings to ensure correct illustration of completed installation.
 1. Do not use original project record documents as part of maintenance manuals.

1.11 PRODUCT MAINTENANCE MANUALS

- A. Product Maintenance Manual: Assemble a complete set of maintenance data indicating care and maintenance of each product, material, and finish incorporated into the Work.
- B. Content: Organize manual into a separate section for each product, material, and finish. Include source information, product information, maintenance procedures, repair materials and sources, and warranties and bonds, as described below.
- C. Source Information: List each product included in manual, identified by product name and arranged to match manual's table of contents. For each product, list name, address, and telephone number of Installer or supplier and maintenance service agent, and cross-reference Specification Section number and title in Project Manual and drawing or schedule designation or identifier where applicable.
- D. Product Information: Include the following, as applicable:
 - 1. Product name and model number.
 - 2. Manufacturer's name.
 - 3. Color, pattern, and texture.
 - 4. Material and chemical composition.
 - 5. Reordering information for specially manufactured products.
- E. Maintenance Procedures: Include manufacturer's written recommendations and the following:
 - 1. Inspection procedures.
 - 2. Types of cleaning agents to be used and methods of cleaning.
 - 3. List of cleaning agents and methods of cleaning detrimental to product.
 - 4. Schedule for routine cleaning and maintenance.
 - 5. Repair instructions.
- F. Repair Materials and Sources: Include lists of materials and local sources of materials and related services.
- G. Warranties and Bonds: Include copies of warranties and bonds and lists of circumstances and conditions that would affect validity of warranties or bonds.
 - 1. Include procedures to follow and required notifications for warranty claims.

PART 2 - PRODUCTS

2.1 NOT USED

PART 3 - EXECUTION

3.1 NOT USED

END OF SECTION

SECTION 01 78 39
PROJECT RECORD DOCUMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section includes administrative and procedural requirements for Project Record Documents, including the following:
 - 1. Record Drawings.
 - 2. Record specifications.
 - 3. Record Product Data.
 - 4. Miscellaneous record submittals.
- B. Related Requirements:
 - 1. Section 01 73 00 – Execution Requirements
 - 2. Section 01 75 00 - Starting and Adjusting
 - 3. Section 01 77 00 - Closeout Procedures
 - 4. Section 01 78 23 - Operation and Maintenance Data
 - 5. Section 01 78 39 - Project Record Documents

1.3 RECORD DRAWINGS

- A. Record Prints: Maintain one set of marked-up paper copies of the Contract Drawings and Shop Drawings, 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.
 - e. Cross-reference record prints to corresponding photographic documentation.
 - 2. Content: Types of items requiring marking include, but are not limited to, the following:

- a. Dimensional changes to Drawings.
 - b. Revisions to details shown on Drawings.
 - c. Depths of foundations.
 - d. Locations and depths of underground utilities.
 - e. Revisions to routing of piping and conduits.
 - f. Revisions to electrical circuitry.
 - g. Actual equipment locations.
 - h. Duct size and routing.
 - i. Locations of concealed internal utilities.
 - j. Changes made by Change Order or Construction Change Directive.
 - k. Changes made following Architect's written orders.
 - l. Details not on the original Contract Drawings.
 - m. Field records for variable and concealed conditions.
 - n. Record information on the Work that is shown only schematically.
3. Mark the Contract Drawings and Shop Drawings completely and accurately. Use personnel proficient at recording graphic information in production of marked-up record prints.
 4. Mark record prints with erasable, red-colored pencil. Use other colors to distinguish between changes for different categories of the Work at same location.
 5. Mark important additional information that was either shown schematically or omitted from original Drawings.
 6. Note Construction Change Directive numbers, alternate numbers, Change Order numbers, and similar identification, where applicable.

1.4 RECORD PROJECT DRAWINGS

- A. Record Drawings: Upon completion of the Work, submit one set of reproducible drawings made from DSA approved stamped originals from the Architect for preparation of Record Set. In addition, provide scanned copy of the final set.
- B. Format: Identify and date each Record Drawing; include the designation "PROJECT RECORD DRAWING" in a prominent location.
 1. Record Prints: Organize record prints into manageable sets. Bind each set with durable paper cover sheets. Include identification on cover sheets.
 2. Format: Annotated PDF electronic file on a Flash Drive.
 3. Record Digital Data Files: Organize digital data information into separate electronic files that correspond to each sheet of the Contract Drawings. Name each file with the sheet identification. Include identification in each digital data file.
 4. Identification: As follows:
 - a. Project name.

- b. Date.
 - c. Designation "PROJECT RECORD DRAWINGS."
 - d. Name of Architect
 - e. Name of Contractor.
5. Neatly and accurately transfer data from record job set prints specified in Section 01 50 00, "Temporary Facilities & Controls".
 6. Mark Record Prints to show the actual installation where installation varies from that shown originally.
 - a. Require individual or entity who obtained record data, whether individual or entity is Installer, subcontractor, or similar entity, to prepare the marked-up Record Prints.
 - b. Give particular attention to information on concealed elements that would be difficult to identify or measure and record later.
 - c. Record data as soon as possible after obtaining it. Record and check the markup before enclosing concealed installations.
 7. Mark the Contract Drawings or Shop Drawings, whichever is most capable of showing actual physical conditions, completely and accurately. If Shop Drawings are marked, show cross-reference on the Contract Drawings.
 8. Mark record sets with erasable, red-colored pencil. Use other colors to distinguish between changes for different categories of the Work at same location.
 9. Note Construction Change Directive numbers, alternate numbers, Change Order numbers, and similar identification, where applicable.
 10. Graphic quality shall be equal to that of the original document.
 11. Incorporate changes and additional information previously marked on record prints. Delete, redraw, and add details and notations where applicable.
 12. Refer instances of uncertainty to Architect for resolution.
 13. Organize Record Prints and newly prepared Record Drawings into manageable sets. Bind each set with durable paper cover sheets. Include identification on cover sheets.
 14. Provide PDF files on a flash drive to Architect.
- C. Record Specifications: Submit one copy of Project's Specifications, including addenda and contract modifications.
1. Preparation: 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. Note related Change Orders, Record Product Data, and Record Drawings where applicable.
2. Miscellaneous Record Submittals:
 - a. Assemble miscellaneous records required by other Specification Sections for miscellaneous record keeping and submittal in connection with actual performance of the Work. Bind or file miscellaneous records and identify each, ready for continued use and reference.
- D. Final Record Drawing Submittals:
 1. Cost of Record Set reproducibles and all preparation shall be paid by Contractor at no additional cost to Owner.
 2. Sign and date Record Job Sets and Record Sets, certifying that the information and data added is accurate and complete.
 3. Record drawings and specifications not complying with specified criteria shall be rejected.
 4. Prior to submission for final payment, review Record Drawing Set and Project Manual(s) with Architect and obtain approval of the scope of transfer. Architect will provide a list of corrections required. If corrections are required, update Record Set with all requested updates and resubmit to Architect. Following approval, submit Record Job Sets and Record Set to Architect with claim for final Application for Payment.
 5. Coordinate preparation of Record Job Sets and Record Drawing Set and Project Manual(s) with work under separate contract. Coordinate preparation of interim Job Record Sets and Record Sets to coincide with completion of work areas. At completion of project, assemble all interim sets into final composite Job Record Set, Record Set and Record Project Manual(s).
 6. Provide PDF files on a flash drive to Architect.
- A. Reports: Submit written report indicating items incorporated into Project Record Documents concurrent with progress of the Work, including revisions, concealed conditions, field changes, product selections, and other notations incorporated.
 1. Incorporate changes and additional information previously marked on record prints. Delete, redraw, and add details and notations where applicable.
 2. Refer instances of uncertainty to Architect for resolution.
 3. Architect will furnish Contractor with one set of digital data files of the Contract Drawings for use in recording information.
 - a. See Section 01 31 00, "Project Management and Coordination" for requirements related to use of Architect's digital data files.
 - b. Architect will provide data file layer information. Record markups in separate layers.

1.5 RECORD SPECIFICATIONS

- A. Preparation: Mark Specifications to indicate the actual product installation, where installation varies from that indicated in Specifications, addenda, and Contract modifications.
 1. Give particular attention to information on concealed products and installations that cannot be readily identified and recorded later.

2. Mark copy with the proprietary name and model number of products, materials, and equipment furnished, including substitutions and product options selected.
 3. Record the name of manufacturer, supplier, Installer, and other information necessary to provide a record of selections made.
 4. For each principal product, indicate whether Record Product Data has been submitted in operation and maintenance manuals instead of submitted as Record Product Data.
 5. Note related Change Orders, Record Product Data, and Record Drawings where applicable.
- B. Format: Submit record specifications as **annotated PDF electronic file** scanned PDF electronic file(s) of marked-up paper copy of Specifications.

1.6 RECORD PRODUCT DATA

- A. Recording: Maintain one copy of each submittal during the construction period for Project Record Document purposes. Post changes and revisions to Project Record Documents as they occur; do not wait until end of Project.
- B. Preparation: Mark Product Data to indicate the actual product installation where installation varies substantially from that indicated in Product Data submittal.
1. Give particular attention to information on concealed products and installations that cannot be readily identified and recorded later.
 2. Include significant changes in the product delivered to Project site and changes in manufacturer's written instructions for installation.
 3. Note related Change Orders, Record Specifications, and Record Drawings where applicable.
- C. Format: Submit Record Product Data as **annotated PDF electronic file** scanned PDF electronic file(s) of marked-up paper copy of Specifications.
1. Include Record Product Data directory organized by Specification Section number and title, electronically linked to each item of Record Product Data.

1.7 MISCELLANEOUS RECORD SUBMITTALS

- A. Assemble miscellaneous records required by other Specification Sections for miscellaneous record keeping and submittal in connection with actual performance of the Work. Bind or file miscellaneous records and identify each, ready for continued use and reference.
- B. Format: Submit miscellaneous record submittals as scanned PDF electronic file(s) of marked-up paper copy of Specifications.
1. Include miscellaneous record submittals directory organized by Specification Section number and title, electronically linked to each item of miscellaneous record submittals.

1.8 MAINTENANCE OF RECORD DOCUMENTS

- A. Maintenance of Record Documents: Store Record Documents in the field office apart from the Contract Documents used for construction. Do not use Project Record Documents for construction purposes. Maintain Record Documents in good order and in a clean, dry, legible condition, protected from deterioration and loss. Provide access to Project Record Documents for Architect's and Owner's reference during normal working hours.

PART 2 - PRODUCTS

2.1 NOT USED

PART 3 - EXECUTION

3.1 NOT USED

END OF SECTION

SECTION 01 79 00
DEMONSTRATION AND TRAINING (NOT APPLICABLE ON THIS PROJECT)

PART 1 - GENERAL

1.1 SECTION INCLUDES

1. Requirements for seminars and system demonstrations.

1.2 DEMONSTRATION AND INSTRUCTIONS

- A. Demonstrate operation and maintenance of Products to Owner's personnel within seven (7) calendar days of Substantial Completion, prior to occupancy.
- B. Demonstrate Project equipment by a qualified manufacturers' representative who is knowledgeable about the Project.
- C. For equipment or systems requiring seasonal operation, perform demonstration for other seasons within six months.
- D. Utilize operation and maintenance manuals as basis for instruction. Review contents of manual with Owner's personnel in detail to explain all aspects of operation and maintenance.
- E. Demonstrate start-up, operation, control, adjustment, trouble-shooting, servicing, maintenance and shutdown of each item of equipment at agreed-upon times at equipment location.
- F. Prepare and insert additional data in operations and maintenance manuals when need for additional data becomes apparent during instruction.
- G. The amount of time required for instruction on each item of equipment and system is that specified in individual sections.

1.3 DESCRIPTION

A. Seminar Agenda and Outline:

1. Prepare a seminar agenda and outline in consultation and cooperation with Architect, Architect's consultants, and Owner. Include following:
 - a. Equipment and systems which will be included in seminars.
 - b. Name of companies and representatives presenting at seminars.
 - c. Outline of each seminar's content.
 - d. Time and date allocated to each system and item of equipment.
2. Submit a preliminary seminar agenda and outline for review and comment by Owner.
3. Revise and resubmit agenda and outline until all seminar requirements have been satisfied and seminar dates and presenters have been finalized.
4. Submit a final seminar agenda and outline no later than eight weeks before date of Acceptance of Work.

B. Seminar Organization:

1. Coordinate qualification of training personnel, seminar contents, and presentations with Owner.

2. Coordinate individual presentations and ensure manufacturer's representatives scheduled to be at training seminars are present.
 3. Qualified Contractor or Sub-contractor personnel familiar with design, operation, maintenance and troubleshooting of equipment and systems shall lead seminars.
 4. Coordinate individual presentations and ensure manufacturer's representatives scheduled to be at training seminars are present.
 5. All presentation leaders shall be familiar with design, operation, maintenance and troubleshooting of equipment and systems.
 6. Where a single person is not familiar with all aspects of equipment or system; arrange for specialists familiar with each aspect.
 7. Coordinate proposed seminar dates with Owner and select mutually agreeable dates.
 8. Videotaping: Arrange for videotaping of training seminars and system demonstrations, including seminar and demonstration questions and answers.
- C. Seminar Content:
1. Contractor or manufacturer's representative will explain design philosophy of primary systems.
 2. Include following information in presentations dealing with specific systems:
 - a. An overview of how system is intended to operate.
 - b. Describe design parameters, constraints and operational requirements.
 - c. Describe system operation strategies.
 - d. Provide information to help in identifying and troubleshooting problems.
 - e. Explanation of how equipment operates.
 - f. Recommended preventative and routine maintenance.
- D. System Demonstration:
1. Demonstrate operation of equipment and systems when specified in individual technical sections. Include following in demonstration.
 - a. Start-up and shut down.
 - b. Operation.
 - c. Scheduled and preventative maintenance.
 - d. Troubleshooting.
 2. Demonstration may be conducted at time of original starting with Owner's prior approval.
 3. Use manufacturer's operation and maintenance data as basis of instruction.
- E. Seminar and Demonstration Questions:
1. Be prepared to answer questions raised by attendees at demonstrations and seminars.
 2. If unable to satisfactorily answer questions immediately, provide written response within three days.
 3. Be prepared to answer questions raised by Owner's personnel at demonstrations and seminars.

1.4 SUBMITTALS **DISTRICT TO VERIFY IF THEY WANT VIDEO RECORDS ON ANY PROJECTS**

- A. Provide closeout submittals per Section 01 77 19, “Closeout Requirements”, Section 01 78 23, “Operation and Maintenance Data” and Section 01 78 39, “Project Record Documents”
 - a. Video-records: Submit two copies; include label on each video disc and on each container identifying Project and Seminar content.

PART 2 - PRODUCTS

2.1 NOT USED

PART 3 - EXECUTION

3.1 NOT USED

END OF SECTION

SECTION 02 41 00

SITE DEMOLITION

PART 1 – GENERAL

1.01 INCLUSION OF OTHER CONTRACT DOCUMENTS

- A. The General Conditions, Supplementary Conditions and Division 1 are fully applicable to this Section, as if repeated herein.

1.02 RELATED WORK SPECIFIED ELSEWHERE

- A. Division 1 – District General Conditions and Contractual Requirements
- B. Section 31 00 00, Earthwork.
- C. Section 31 25 00, Erosion Control

1.03 REGULATORY REQUIREMENTS

- A. Conform to applicable jurisdictional authority regulations and codes for disposal of debris.
- B. Coordinate clearing Work with utility companies.
- C. Maintain emergency access ways at all times.
- D. Contractor shall comply with all applicable laws and ordinances regarding hazardous materials, including contaminated soils, hazardous material transformers, and similar materials or components.

1.04 SUBMITTALS:

- A. Schedule: Submit a detailed sequence of demolition and removal work, including dates for shutoff, capping, and continuance of utility services.
- B. Procedures: Submit written procedures documenting the proposed methods to be used to control dust and noise.

1.05 EXISTING CONDITIONS

- A. Contractor shall acquaint himself with all site conditions. If unknown active utilities are encountered during work, notify Architect promptly for instructions. Failure to notify will make Contractor liable for damage to these utilities arising from Contractor's operations subsequent to discovery of such unknown active utilities.
- B. Conduct demolition to minimize interference with adjacent structures or items to remain. Maintain protected egress and access at all times.

1.06 PROTECTION

- A. Adequate protection measures shall be provided to protect workmen and passers-by on and off the site. Adjacent property shall be fully protected throughout the operations. Blasting will not be permitted. Prevent damage to adjoining improvements and properties both above and

below grade. Restore such improvements to original condition should damage occur. Replace trees and shrubs outside building area disturbed by operations.

- B. In accordance with generally accepted construction practices, the Contractor shall be solely and completely responsible for working conditions at the job site, including safety of all persons and property during performance of the work. This requirement shall apply continuously and shall not be limited to normal working hours.
- C. Safety Precautions Prevent damage to existing elements identified to remain or to be salvaged, and prevent injury to the public and workmen engaged on site. Demolish roofs, walls and other building elements in such manner that demolished materials fall within foundation lines of building. Do not allow demolition debris to accumulate on site. Pull down hazardous work at end of each day; do not leave standing or hanging overnight, or over weekends.
 - 1. Protect existing items which are not indicated to be altered. Protect utilities designated to remain from damage.
 - 2. Protect trees, plant growth, and features designated to remain as final landscaping as shown on drawings.
 - 3. Protect bench marks from damage or displacement.
- D. Trees: Carefully protect existing trees that are to remain. Provide temporary irrigation as necessary to maintain health of trees.
- E. Fire Safety: The contractor shall conform to chapter 33 of the California Fire Code (CFC), "Fire Safety During Construction and Demolition", at all times during the construction process. A copy of this chapter can be provided.
- F. Any construction review of the Contractor's performance conducted by the Geotechnical Engineer is not intended to include review of the adequacy of the Contractor's safety measures, in, on, or near the construction site.
- G. Surface Drainage: Provide for surface drainage during period of construction in manner to avoid creating nuisance to adjacent areas. The contractor shall make a reasonable effort on a daily basis to keep all excavations and the site free from water during entire progress of work, regardless of cause, source, or nature of water.
- H. Adjacent streets and sidewalks shall be kept free of mud, dirt or similar nuisances resulting from earthwork operations.
- I. The site and adjacent influenced areas shall be watered as required to suppress dust nuisance. Dust control measures shall be in accordance with the local jurisdiction.

PART 2 - PRODUCTS

Not Used

PART 3 – EXECUTION

3.01 EXAMINATION

- A. Examine conditions of work in place before beginning work; report defects.
- B. Report existence of hazardous materials or unsafe structural conditions.

3.02 PREPARATION

- A. Scheduling:
 - 1. General: Coordinate and schedule demolition work as required by the Owner and as necessary to facilitate construction progress.
- B. Hazardous Materials:
 - 1. General: Identify chemicals, gases, explosives, acids, flammables, or other dangerous materials before proceeding with demolition operations, and notify such jurisdictional agencies as may be required. Collect and legally dispose of such materials at official disposal locations away from the site.
 - 2. Asbestos: If asbestos or materials containing asbestos are encountered, stop work immediately and contact the Owner. Do not proceed with demolition until directed by Owner.
- C. Utility and Service Termination
 - 1. Locate and identify existing utility, service and irrigation system components affected by work of this contract. Review existing record drawings, conduct site investigations, contact Underground Service Alert and other qualified cable/pipe/line locator services, and implement all other means necessary to define the location of underground systems.
 - 2. Prior to beginning any demolition, properly disconnect all water, gas and electrical power supply at appropriate disconnect locations. Obtain all necessary releases and approvals from serving utility companies.
 - 3. Prior to demolition or disconnect, obtain Owners approval that such system does not impact facilities or systems beyond the extent of this contract.
 - 4. Mark location of disconnected systems. Identify and indicate stub-out locations on Project Record Documents.
- D. Verify that existing plant life and features designated to remain are tagged or identified.
 - 1. The Architect will mark the features, trees, and shrubs to remain within the construction area. Contractor shall not commence clearing and grubbing operations until authorized by the Owner and all protective measures are in place.
- E. Coordinate the time and duration of all system disconnects with Owner.

3.03 DEMOLITION

- A. General Requirements

1. Clear areas required for access to site and execution of Work, including pavements, structures, foundations, vegetation, trash and debris.
 2. Coordinate with Owner the time of day and route to remove demolished materials from premises.
 3. Remove demolished materials from site as work progresses. Upon completion of work, leave areas of work in clean condition.
 4. Remove all buried debris, rubble, trash, or other material not deemed suitable by the Geotechnical Engineer.
 5. Fill all voids or excavations resulting from clearing, demolition, or removal of vegetation with specified fill material.
- B. Fixture and Equipment Removal:
1. Remove existing fixtures and equipment as identified and shown on drawings and required by Architect.
 2. Verify all service connections to fixtures and equipment designated for removal have been properly disconnected.
 3. Remove all conductors from conduit at all abandoned circuits.

3.04 UTILITY AND BUILDING SERVICES REMOVAL AND RE-INSTALLATION

- A. Where crossing paths and potential points of interference with existing utility services are shown or can be reasonably inferred from surface conditions or evidence of subsurface systems, such as meter boxes, vaults, relief vents, cleanouts and similar components.
1. Review all contract documents showing crossing paths and potential points of interference.
 2. Pot-hole or determine by other means the accurate depth and location of such utilities.
 3. Incorporate all costs required to complete work under this contract, including additional trenching, re-routing of existing and new utilities, and all means necessary to construct work under this contract.
 4. No additional cost to the Owner will be allowed for work necessary to accommodate utility conflicts where such crossing paths are shown on contract drawings or can be reasonably inferred from surface conditions or components.
- B. Remove all conductors from conduit at all abandoned electrical circuits.
- C. Seal off ends of all piping, drains and other components as directed by Architect and serving utility.
- D. Where necessary to maintain service to existing utility and building systems, relocate or redirect all conduit and conductors, piping, drains, and associated system components.
1. Re-circuit all electrical as required.
 2. Re-circuit all landscape irrigation valving and control systems as required.
 3. Temporarily terminate landscape system components in approved boxes or with approved caps, suitable for re-connection or extension.
 4. Extend or otherwise modify all site drainage systems, including catch basins, drain inlets and piping. Fine grade to maintain proper drainage flow pattern to drains.
- E. Demolish structure in an orderly and careful manner.
1. Use of explosives prohibited.

3.05 SITE PAVEMENT REMOVAL

- A. Remove sidewalk and curb where required for new construction as specified and as indicated on the Drawings.
 - 1. Remove all paving by saw-cutting.
 - 2. Remove concrete paving and curbing at locations shown on drawings. Locate closest adjacent expansion or weakened plane joint to define start of removal or saw-cutting.
- B. Remove asphalt concrete paving areas where required for new construction as specified and as indicated on the Drawings.
 - 1. Remove all paving by saw-cutting.
 - 2. Remove paving assembly as required to expose subgrade.

3.06 LANDSCAPE AND IRRIGATION SYSTEMS DEMOLITION AND RENOVATION

- A. Clearing, grubbing, and planting demolition.
 - 1. Remove grass and grass roots to a minimum depth of two inches below existing grade.
 - 2. Remove all shrubs, plants and other vegetation within the area of the work unless designated to remain. Grub and remove all roots of all vegetation to a depth of 24 inches below existing grade.
 - 3. Remove only those trees which are specifically designated for removal, or as shown on the drawings, within the construction area. Remove all stumps. Remove root ball and root systems larger than 1 inch in diameter to a depth of two feet below existing or finished grades, whichever is lower and a minimum of five feet beyond the edge of paving, structure, wall or walkway.
 - 4. Hand cut existing tree roots over 1 inch in diameter as necessary for trenching or other new construction, apply multiple coats of emulsified asphalt sealant especially made for horticultural use on cut or damaged plant tissues to cut faces and adjacent surfaces. Cover exposed roots with wet burlap to prevent roots from dying out until backfilling is complete.
 - 5. Disking and mixing of vegetation, trash, debris, and other deleterious materials with surface soils prior to grading is not permitted.
 - 6. Remove all buried debris, organic material, rubble, trash, or other material not deemed suitable by the Geotechnical Engineer.
 - 7. Fill all voids or excavations resulting from clearing, demolition, or removal of vegetation with fill material in compliance with Section 310000.
 - 8. Selected equipment of such sizes and capacities that the existing environment is disturbed as little as possible, and to afford ease of mobility within limited and relatively confined work areas. Make every effort to preserve the topography in its natural state.
 - 9. Keep drains, catch basins, surface drainage courses and related drainage system components clear of debris and construction materials.
 - 10. Remove irrigation piping and appurtenances as necessary within area of work, unless noted otherwise to remain. Replace irrigation piping and appurtenances to irrigate new and/or existing landscaping. Contractor shall be responsible for temporary landscape irrigation until such time that irrigation system is restored and operational.

3.07 DISPOSAL

Demolished materials become property of the Contractor and shall be removed from premises, except those items specifically listed to be retained by Owner.

- A. Dispose of all demolished material, trash, debris, and other materials not used in the work in accordance with the regulations of jurisdictional authority.
- B. It is recommended that all materials that are of a recyclable nature, be transported to a suitable legal recycling facility instead of a dump or refuse facility (unless they are one-in-the same). Refer to Cal-Green Construction Debris requirements. Most Government operated dump or transfer facilities comply with Cal Green Requirements by default, however usage of private sump facilities may be subject to additional requirements and documentation.
- C. Burning and Burying of Materials: NOT ALLOWED.
- D. Haul Routes:
 - 1. Obtain permits as required by jurisdictional agencies. Establish haul routes in advance; post flagmen for the safety of the public and workmen.
 - 2. Keep streets free of mud, rubbish, etc.; assume responsibility for damage resulting from hauling operations; hold Owner free of liability in connection therewith.
- E. Remove demolished materials and debris from site on a daily basis.

3.08 CLEANING

- A. Upon completion of work of this Section promptly remove from the working area all scraps, debris.
- B. Clean excess material from surface of all remaining paved surfaces and utility structures.
- C. Power wash all concrete surfaces to remove stains, dried mud, tire marks, and rust spots.

END OF SECTION

SECTION 03 21 00 Reinforcing Steel

PART 1 - GENERAL

1.1 GENERAL REQUIREMENTS

A. Requirements of Division 1 apply to all work of this Section.

1.2 SCOPE

A. Unless noted otherwise, furnish and install reinforcing for all concrete, including dowels, chairs, spacers, bolsters, etc., necessary for supporting and fastening reinforcement in place as shown on the Drawings and specified herein.

1.3 RELATED WORK (See also Table of Contents)

A. Concrete Formwork: Section 03 10 00.

B. Cast-In-Place Concrete: Section 03 30 00.

C. Clay Unit Masonry: Section 04 21 00.

D. Concrete Unit Masonry: Section 04 22 00.

1.4 QUALITY ASSURANCE

A. General:

1. Acceptable Manufacturers: Regularly engaged in the manufacture of steel bar and welded wire fabric reinforcing.
2. Installer Qualifications: 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.
3. Welding Qualifications: Welding procedures, welding operators and welders shall be qualified in accordance with AWS D1.4 - "Structural Welding Code Reinforcing Steel".
 - a. Welders whose work fails to pass inspection shall be re-qualified before performing further welding.
4. Reinforcement Work shall conform to ACI 301 and ACI 318 Chapter 25, as minimum standards.
5. Allowable Tolerances:
 - a. Fabrication:

- 1) Sheared length: 1 inch.
 - 2) Depth of truss bars: Plus or minus ½-inch.
 - 3) Ties: Plus or minus ½-inch.
 - 4) All other bends: Plus or minus 1 inch.
- b. Placement:
- 1) Concrete cover to form surfaces: Plus or minus ¼-inch.
 - 2) Minimum spacing between bars: Plus or minus ¼-inch.
 - 3) Crosswise of members: Spaced evenly within 2 inches of stated separation.
 - 4) Lengthwise of members: Plus or minus 2 inches.
- c. Maximum bar movement to avoid interference with other reinforcing steel, conduits, or embedded items: 2 bar diameters.
- B. Standards and References: (Latest Edition unless otherwise noted):
1. 2019 California Building Code (CBC).
 2. American Concrete Institute (ACI).
 - a. ACI 301 – “Specifications for Structural Concrete”
 - b. ACI 315R - "Guide to Presenting Reinforcing Steel Design Details".
 - c. ACI 318 – “Building Code Requirements for Structural Concrete”
 3. American Society for Testing and Materials (ASTM).
 - a. ASTM A82 - "Cold Drawn Wire for Concrete Reinforcement".
 - b. ASTM A1064 - "Carbon-Steel Wire and Welded Wire Reinforcement, Plain and Deformed, for Concrete".
 - c. ASTM A615 - "Deformed and Plain Billet-Steel Bars for Concrete Reinforcement".
 - d. ASTM A706 – “Low Alloy Steel Deformed Bars for Concrete Reinforcement”.
 4. Concrete Reinforcing Steel Institute (CRSI) - "Manual of Standard Practice".
 5. American Welding Standard (AWS).
 - a. AWS D1.4 - "Structural Welding Code – Reinforcing Steel".
- C. Submittals: (Submit under provisions of Section 01 33 00)
1. Shop Drawings: Prepare in accordance ACI 315R. 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.
 - a. Do not use scaled dimensions from Contract Drawings in determining the lengths of reinforcing bars.
 - b. No reinforcing steel shall be fabricated without approved shop drawings.
 - c. Any deviations from the contract documents must be clearly indicated as

- a deviation on the shop drawings.
 - d. 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.
2. 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 A615.
 3. Product Data:
 - a. Manufacturer's specifications and installation instructions for splice devices.
 - b. Bar Supports.
 4. Certificates of Compliance with specified standards:
 - a. Reinforcing bars.
 - b. Welded wire fabric.
 - c. Welding electrodes.
 5. Samples: Only as requested by Architect.
- D. Tests and Inspections:
1. A testing program is required prior to start of construction. Testing program to be done in compliance with the CBC requirements and in collaboration with Testing Laboratory, Design team, contractor, owner and submitted for review by the agency in charge of building enforcement. Requirements below are minimum requirements; additional requirements may be required in final testing program.
 2. All reinforcing steel whose properties are not identifiable by mill test reports shall be tested in accordance with ASTM A615. One Series of tests for each missing report to be borne by the Contractor.
 3. When inspections are indicated for reinforcement placement on the Structural drawings, a special inspector shall be employed to inspect reinforcing placement per CBC Section 1704.
 4. When tests are indicated for reinforcing steel on the structural drawings, the reinforcing steel used shall be tested in accordance with ASTM A615. One tensile and one bend test for each 2-1/2 tons of steel or fraction thereof, shall be made.
 5. Inspect shop and field welding in accordance with AWS D1.4, including checking materials, equipment, procedure and welder qualification 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.
 6. Tests and inspection shall be performed by Owners testing agency except

when needed to justify rejected work, in which case the cost of retests and reinspection shall be paid by the Owner and backcharged to the Contractor.

1.5 PRODUCT DELIVERY, STORAGE AND HANDLING

- A. Deliver reinforcement to project site in bundles marked with metal tags indicating bar size and length.
- B. Handle and store materials to prevent contamination.
 - 1. Store reinforcement in a manner that will prevent excessive rusting or coating with grease, oil, dirt, and other objectionable materials. Storage shall be in separate piles or racks so as to avoid confusion or loss of identification after bundles are broken.
- C. Deliver and store welding electrodes in accordance with AWS D1.4.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Reinforcement Bars: ASTM A615, Grade 60 for all bars.
 - 1. Bar reinforcement to be welded shall meet chemical requirements of ASTM A706.
 - 2. Longitudinal reinforcement in columns and beams of special moment-resisting frames and special reinforced shear walls shall meet the chemical requirements of ASTM A706.
- B. Stirrups and Ties: ASTM A615, Grade 60 for all bars.
- C. Steel Dowels: Same grade as bars to which dowels are connected.
- D. Welded wire Fabric: ASTM A1064.
- E. Tie Wires: FS-QQ-W-461, annealed steel, black, 16 gauge minimum.
- F. Welding Electrodes: AWS D1.4, low hydrogen, E70XX series.
- G. Bar Supports:
 - 1. Typical, unless noted otherwise; CRSI Class 2 wire supports.
 - a. Do not use wood, brick or other objectionable materials.
 - b. Do not use galvanized supports.

2. Supports placed against ground: Pre-cast concrete blocks not less than 4 inches square with embedded wire.

H. Mechanical Couplers: Comply with ACI 318 section 25.5.7.1

PART 3 - EXECUTION

3.1 FABRICATION

- A. Shop fabricate reinforcement to meet requirements of Drawings.
- B. Fabricate reinforcement in accordance with the requirements of ACI 315R where specific details are not shown or where Drawings and Specifications are not more demanding.
- C. 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 for bending will not be permitted.
- D. Reinforcing shall not be field bent or straightened without structural engineer's review.
- E. Provide offsets in rebar (1:6 maximum) where required to maintain clearances.

3.2 CONDITION OF SURFACES

- A. Examine surfaces and conditions receiving or affecting the work. Do not proceed until unsuitable conditions have been corrected.

3.3 GENERAL

- A. Concrete shown without reinforcing shall be reinforced as similar parts shown with reinforcing except where concrete is specifically noted to be unreinforced.

3.4 PLACEMENT

- A. All reinforcement shall be accurately set in place, lapped, spliced, spaced rigidly and securely held in place and tied with specified wire at all splices and crossing points. All wire tie ends shall point away from the form. Carefully locate all dowel steel to align with wall and column steel.
 1. Bars shall be in long lengths with laps and splices as shown. Offset laps in

adjacent bars. Place steel with clearances and cover as shown. Bar laps shall be as indicated on the Drawings. Tie all laps and intersections with the specified wire.

2. Maintain clear space between parallel bars not less than 1-1/2 times nominal diameter, but in no case shall clear space be less than 1-1/2 times maximum size concrete aggregate.
 3. Reinforcing dowels for slabs shall be placed as detailed. Sleeves may be used if reviewed by the Structural Engineer before installation. Install dowel through all construction and expansion joints for all slabs on grade.
- B. Bar Supports: Support and securely fasten bars with chairs, spacers and ties to prevent displacement by construction loads or placement of concrete beyond the tolerances specified. Conform to CRSI as a minimum standard.
- C. Steel Adjustment:
1. Move within allowable tolerances to avoid interference with other reinforcing steel, conduits, or embedded items.
 2. Do not move bars beyond allowable without concurrence of Structural Engineer.
 3. Do not heat, bend, or cut bars without concurrence of Structural Engineer.
 4. Reinforcement shall not be bent after being embedded in hardened concrete.
- D. Splices:
1. Splice reinforcing as shown.
 2. Lap Splices: Tie securely with wire to prevent displacement of splices during placement of concrete.
 3. Splice Devices: Install in accordance with manufacturer's written instructions. Obtain Structural Engineer's review before using.
 4. Do not splice bars except at locations shown without concurrence of Structural Engineer.
 - a. Where splices in addition to those indicated are required, indicate location on shop drawings clearly and highlight "for Engineer's approval".
- E. Welding:
1. Welding is not permitted unless specifically detailed on Drawings or approved by Engineer.
 2. Employ shielding metal-arc method and meet requirements of AWS D1.4.
 3. Welding is not permitted on bars where the carbon equivalent is unknown or is determined to exceed 0.55.
 4. Welding shall not be done within two bar diameters of any bent portion of a bar which has been bent cold.

- 5. Welding of crossing bars is not permitted.

- F. Welded Wire Fabric: Install in long lengths, lapping 24 inches at end splices and one mesh at side splices. Offset laps in adjacent widths. Place fabric in approximately the middle of the slab thickness unless shown otherwise on the Drawings by dimension. Wire tie lap joints at 12-inch centers. Use concrete blocks to support mesh in proper position.

- G. Reinforcement shall be free of mud, oil or other materials that may reduce bond at the time concrete is placed. Reinforcement with tightly adhered rust or mill scale will be accepted without cleaning provided that rusting has not reduced dimensions and weights below applicable standards. Remove loose rust.

- H. Protection against rust:
 - 1. Where there is danger of rust staining adjacent surfaces, wrap reinforcement with impervious tape or otherwise prevent rust staining.
 - 2. Remove protective materials and clean reinforcement as required before proceeding with concrete placement.

- I. Drawing Notes: Refer to notes on Drawings for additional reinforcement requirements.

- J. Mechanical and Electrical Drawings: Refer to Mechanical and Electrical Drawings for formed concrete requiring reinforcing steel. All such steel shall be included under the work of this Section.

END OF SECTION

SECTION 03 30 00
Cast-In-Place Concrete

PART 1 – GENERAL

1.1 GENERAL REQUIREMENTS

A. Requirements of Division 1 apply to all Work of this Section.

1.2 SCOPE

- A. Furnish, place and finish cast in place concrete and related work as indicated on the Drawings and specified here.
1. Install miscellaneous metal and other items furnished by other trades to be installed in concrete work.
 2. Provide facilities for job curing of test cylinders and transporting to Testing Laboratory.
- B. Provide grouting of steel base plates as indicated on the Drawings and specified here.

1.3 RELATED WORK (See also Table of Contents)

- A. Concrete Formwork: Section 03 10 00.
- B. Reinforcing Steel: Section 03 21 00.
- C. Mortar and Grout: 04 05 00.
- D. Structural Steel: Section 05 12 00.
- E. Metal Decking: Section 05 30 00.
- F. Metal Fabrications: Section 05 50 00.

1.4 QUALITY ASSURANCE

- A. Standards and References: (Latest Edition unless otherwise noted)
1. 2019 California Building Code (CBC).
 2. American Concrete Institute (ACI)
 - a. ACI 117 – “Specification for Tolerances for Concrete Construction and Materials”
 - b. ACI 211.1 – “Standard Practice for Selecting Proportions for Normal, Heavyweight, and Mass Concrete”
 - c. ACI 211.2 – “Standard Practice for Selecting Proportions for Structural Lightweight Concrete”

- d. ACI 301 – “Specifications for Structural Concrete”
 - e. ACI 302.1R – “Guide to Concrete Floor and Slab Construction”
 - f. ACI 305R – “Guide to Hot Weather Concreting”
 - g. ACI 306R – “Guide to Cold Weather Concreting”
 - h. ACI 318 – “Building Code Requirements for Structural Concrete”
 - i. ACI 360R – “Guide to Design of Slabs-On-Ground”
3. American Society for Testing and Materials (ASTM)
- a. ASTM C31 – “Making and Curing Concrete Test Specimens in the Field”
 - b. ASTM C33 – “Concrete Aggregates”
 - c. ASTM C39 – “Compressive Strength of Cylindrical Concrete Specimens”
 - d. ASTM C42 – “Obtaining and Testing Drilled Cores and Sawed Beams of Concrete”
 - e. ASTM C94 – “Ready-Mixed Concrete”
 - f. ASTM C109 – “Test of Hydraulic Cement Concrete”
 - g. ASTM C143 – “Slump of Hydraulic Cement Concrete”
 - h. ASTM C150 – “Portland Cement”
 - i. ASTM C172 – “Sampling Freshly Mixed Concrete by the Volumetric Method”
 - j. ASTM C192 – “Making and Curing Concrete Test Specimens in the Laboratory”
 - k. ASTM C260 – “Air-Entraining Admixtures for Concrete”
 - l. ASTM C330 – “Lightweight Aggregates for Structural Concrete”
 - m. ASTM C494 – “Chemical Admixtures for Concrete”
 - n. ASTM C567 – “Standard Test Method for Determining Density of Structural Lightweight Concrete”
 - o. ASTM C618 – “Fly Ash and Raw or Calcined Natural Pozzolan for Use as a Mineral Admixture in Portland Cement Concrete”
 - p. ASTM C685 – “Volumetric Batching and Continuous Mixing”
 - q. ASTM C1157 – “Hydraulic-Cement”
 - r. ASTM C989 – “Standard Specification for Slag Cement for Use in Concrete and Mortars”
- B. Submittals: (Submit under provisions of Section 01 33 00)
- 1. Concrete mix designs. See “Mix Design” below. Include results of test data used to establish proportions.
 - 2. Certificates of Compliance from Manufacturer
 - a. Cement certificates per CBC Section 1910
 - 1. Cement without certificate shall not be used.
 - b. Aggregates
 - c. Admixtures
 - 3. Data regarding hardeners and sealers.
 - 4. Grout samples for sacked surface textures and colors upon Architects request only.
 - 5. Layout drawings for construction, control and expansion joints.
 - 6. Transit-mix delivery slips:

- a. Keep record at the job site showing time and place of each pour of concrete, together with transit-mix delivery slips certifying contents of the pour.
 - b. Make the record available to the Architect for his inspection upon request.
 - c. Upon completion of this portion of the work, deliver the record and the delivery slips to the Architect.
7. See Section 03 21 00 for reinforcing steel submittals.

C. Tests and Inspections:

1. Provide special inspections and testing as described in the "Statement of Structural Special Inspections and Testing" within the structural drawings and as required by this section.
2. A testing program is required prior to start of construction. Testing program to be done in Compliance with the CBC requirements and in collaboration with Testing Laboratory, Design team, contractor, owner and submitted for review by the agency in charge of building enforcement. Requirements below are minimum requirements; additional requirements may be required in final testing program.
3. The following tests shall be made by a recognized testing laboratory selected by the Owner and approved by the governing agency. All tests shall be in accordance with the previously mentioned standards and ACI 318 Section 26.12. A complete record of all tests and inspections shall be kept per CBC Section 1910.
 - a. Compressive Strength: Make and cure in accordance with ASTM C-31. Test in accordance with ASTM C-39 and ACI 318 Section 26.12.
 - 1) A record shall be made of time and of locations of concrete from which samples were taken.
 - 2) Four identical cylinders shall be taken from each pour of 150 cubic yards or 5000 square feet or part thereof, being placed each day per ACI 318 Section 26.12.2. One cylinder shall be tested at age 7 days, and two at age 28 days unless otherwise specified. Preserve remaining cylinder for future use.
 - b. Drying Shrinkage: (applies to lightweight concrete only unless noted otherwise)
 - 1) A record shall be made of time cylinders and of locations of concrete from which samples were taken.
 - 2) Three identical 4" x 4" x 11" specimens shall be made from same concrete as used in structure. Percent of shrinkage shall be reported at 21 days after 7 day moist curing period. Average results of 3 specimens shall be used as the accepted value. The value for laboratory cast specimens shall not exceed .075%. If field test specimens are used in lieu of laboratory specimens, a tolerance of +33% may be used.
 - 3) Test specimens in accordance with ASTM C157.
 - c. Concrete consistency (slump) shall be tested in accordance with ASTM C143.

4. Provide full time inspection per CBC Section 1705.3 during the taking of test specimens and during the placing of all concrete and embedded steel.
5. See Section 03 21 00 for reinforcing steel tests and inspections.
6. Provide concrete batch plant inspections per ASTM C685.

PART 2 - PRODUCTS

2.1 MATERIAL

- A. Portland Cement: ASTM C 150, Type II or Type V. One brand of cement shall be used throughout to maintain uniform color for all exposed concrete.
- B. Concrete Aggregate: Fine and coarse aggregates shall be regarded as separate ingredients. Each size of coarse aggregate, as well as combination of sizes when two or more are used, shall conform to grading requirements of appropriate ASTM Standards and ACI 318 Section 26.4.1.2.
 1. Concrete Aggregates for Standard Weight Concrete: ASTM C 33. Aggregate shall be crushed granite or Perkins type.
 2. Concrete Aggregates for Lightweight Concrete: ASTM C330 to produce concrete weighing no more than 116 pcf at 28 days. Aggregate shall be vacuum saturated expanded shale as produced through the rotary kiln method.
- C. Water: Clean and free from injurious amounts of oil, acids, alkali, organic matter and other deleterious substances; suitable for domestic consumption.
- D. Admixtures shall be subject to prior approval by the Architect, in accordance with ACI 318 Section 26.4.1.4. Calcium Chloride is not permitted.
 1. Water Reducing
 - a. ASTM C494 Type A - for use in cool weather.
 - b. ASTM C494 Type D - for use in hot weather.
 2. Air Entraining
 - a. Conform to ASTM C 260
 3. Fly Ash
 - a. Conform to ASTM C 618
 4. Mid-Range Water-Reducers
 - a. Master Builders "Polyheed" or approved equal.
 5. Fly Ash Pozzolan
 - a. Conforming to ASTM A-618 Class F
 6. Slag Cement
 - a. Conform to Grade 80, 100, or 120.
- E. Slab on Grade Vapor Retarder
 1. Vapor Retarder must have the following qualities:
 - a. 15 mil thickness minimum
 - b. WVTR less than 0.008 as tested by ASTM E 96
 - c. ASTM E 1745 Class A (Plastics)

2. Vapor Retarder Products
 - a. Stego Wrap Vapor Retarder by STEGO Industries LLC.
 - b. Perminator by W.R. Meadows.

3. Vapor Retarder Tape
 - a. Water Vapor Transmission Rate: ASTM E 96, 0.3 perms or lower
 - b. Minimum 6-mils thick
 - c. Minimum 3 3/4 inches wide
 - d. Manufactured from High Density Polyethylene
 - e. Pressure Sensitive Adhesive

- F. Sand: Clean, dry, well graded.

- G. Abrasive aggregate for non-slip finish: Fused aluminum oxide grits, graded 12/30. Use factory-graded rustproof and non-glazing material that is unaffected by freezing, moisture and cleaning materials.
 1. Products offered by manufacturers to comply with the above requirements include: A-H Alox; Anti-Hydro Waterproofing Co., Toxgrip; Toch Div. - Carbolite, or approved equal.

- H. Expansion Joint Filler:
 1. Joint fill shall be a preformed non-extruded resilient filler, saturated with bituminous materials and conforming to ASTM D 1751. Products shall be equivalent to Burke "Fiber Expansion Joint", W.R. Meadows "Fibrated Expansion Joint Filler", or approved equal.

- I. Bonding Agent: Sonneborn "Sonobond"; the Euclid Chemical Company "Euco-Weld"; Larsen Products Corp., "Weld-Crete" or approved equivalent.

- J. Concrete Sealer: Cure and Seal, as manufactured by the Euclid Chemical Company "Aqua-Cure VOX", Sonneborn "Kure-N-Seal WB", Burke "Spartan-Cote", W.R. Meadows "Intex" or approved equal conforming to ASTM C-309, Type I, Class B requirements, and conforming to State of California Air Resources Board VOC Regulations.

- K. Concrete Hardener/Sealer: Clear, water soluble, sprayable in-organic silicate based hardener/sealer or acrylic co-polymer resin. Products shall be equal to Euclid Chemical Company "Eucosil", Burke "Spartan-Cote", Sonneborn "Sonosil", W.R. Meadows "Pena-Lith", or approved equal and must conform to State of California Air Resources Board VOC Regulations.

- L. Concrete Cure: Water based curing compound conforming to ASTM C-309, Type 1, Class A and B, and AASHTO Specification M-148; Type 1, Class A and B requirements, and State of California Air Resources Board VOC Regulations. Product shall be equivalent to Euclid Chemical Company "Kurez VOX", Burke "No. 1127" or "Aqua-Resin Cure", W.R. Meadows "1100 Clear", or approved equal.

M. Non-Shrink Grout: See Section 2.2.A.6.

2.2 CONCRETE

A. Concrete Mixes:

1. Type A Concrete:

Strength: 3000 lbs. per square inch at 28 days.

Maximum Aggregate Size: 1-1/2 inch.

Cement Content: As required by mix design (ACI 318 Section 26.4.3).

5.0 sacks per yard minimum.

Maximum Water to Cement Ratio: 0.58

Admixture: Water Reducing.

Weight: 145 lbs. per cubic foot

Use for unexposed foundation concrete except as otherwise specified. At Contractor's option, Type B concrete may be substituted for this.

2. Type B Concrete:

Strength: 3500 lbs. per square inch at 28 days.

Maximum Aggregate Size: 1 inch.

Minimum Cement Content: As required by mix design. (ACI 318 Section 26.4.3).

5.5 sacks per yard minimum.

Maximum Water to Cement Ratio: 0.45

Admixture: Water reducing.

Weight: 145 lbs. per cubic foot

Use for building slab on grade

3. Grout shall be non-shrink, non-metallic, flowable Type "713" or "928" by BASF.

a. Metallic grout equivalent to Master Builders "Embeco" may be used only where covered by earth, concrete, or masonry.

b. Acceptance by Architect required before using.

B. Consistency of Concrete: Concrete slump, measured in accordance with ASTM C 143, shall fall within following limits.

1. For General concrete placement (with no admixtures): 4 inch \pm 1 inch.

2. Mixes employing the specified mid-range water reducer shall provide a measured slump not to exceed 7 inch \pm 1 inch after dosing, 2 inch \pm 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 at the jobsite without written review by the structural engineer.

C. Mix Design:

1. Initial mix design shall be prepared for all concrete in accordance with ACI 318 Section 26.4.3. Mix proportions shall be determined in accordance with ACI 318 Section 26.4.3 or 26.4.4. 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. Fly ash shall not exceed 25% of the total cementitious material. Where slag is used to replace cement, slag shall not exceed 25% of the total cementitious material by mass. Ternary systems where more than one supplementary cementitious material is used are prohibited without consent of SEOR.
4. Provide 6% air entrainment typical for exterior concrete exposed to freeze-thaw cycles.
5. Owner's testing laboratory shall review all mix designs before submittal. A registered civil engineer with experience in concrete mix design shall review the concrete mixes.

D. 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:
 - a. Transit Mixing: Comply with ASTM C 94. Ready mixed concrete shall be used throughout, except as specified below.
 - b. On-Site Mixing: Use only if method of storing material, mixing of material and type of mixing equipment is approved by Architect. Approval of site mixing does not relieve Contractor of any other requirements of Specifications.
 - c. Mixing shall be in accordance with ASTM C94 or ASTM C685.
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. Air entraining and chemical 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%.
 - b. 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.
 - c. All admixtures are to be reviewed by Structural Engineer prior to commencing this work.
5. Retempering:

- a. Concrete shall be mixed only in quantities for immediate use. Concrete which has set shall be discarded, not retempered.
 - b. Indiscriminate addition of water to increase slump is prohibited.
 - c. When concrete arrives at project with slump below that suitable for placing, water may be added only if neither maximum permissible water-cement ratio nor maximum slump is exceeded. Water shall be incorporated by additional mixing equal to at least half of total mixing time required. 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. Such additions shall only be used if approved by Architect. 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 design mix, shall be added.
6. Cold Weather Batching: When average of the highest and lowest air temperature falls below 40 degrees F for more than three consecutive days, provide adequate equipment for heating concrete materials. No frozen materials or materials containing ice shall be used. When placed in forms, concrete placed in these temperatures shall have a minimum temperature based on dimensions of concrete sections placed per ACI 301.
 7. Hot Weather Batching: Concrete deposited in hot weather shall have a placing temperature below 90 degrees F per ACI 301. If necessary, ingredients shall be cooled to accomplish this.

2.3 FLOOR LEVELING AND FILL MATERIALS

- A. Epoxy Concrete Mortar: Floor leveling, non-shrink trowel applied epoxy concrete mortar; TPM 115 General Polymers Corp., A-H Emery Epoxy Topping #170 Anti-Hydro Corp., or approved equal, where areas to fill are less than 1/4 inch thick.
- B. Concrete Mortar: Floor leveling, patching and repair, non-shrink trowel applied concrete mortar; Master Builders EMBECO 885, Euclid EUCO, or approved equal, where areas of fill are greater than 1/4 inch thick.
- C. Cementitious Floor Leveling Material: Shall be self-leveling or trowelable with a minimum 28 day compressive strength of 3000 psi in accordance with ASTM C-109. Material shall be equal to Quickrete No. 1249, Ardex V-800/K-55, Mapei "Ultra/Flex" or approved equal.

PART 3 - EXECUTION

3.1 PLACEMENT

- A. Before any concrete is placed, the following items of work shall have been completed in the area of placing.

1. Forms shall have been erected, adequately braced, cleaned, sealed, lubricated if required, and bulkheaded where placing is to stop.
 2. Any wood forms other than plywood shall be thoroughly water soaked before placing any concrete. The wetting of forms shall be started at least 12 hours before concreting.
 3. Reinforcing steel shall have been placed, tied and supported.
 4. Embedded work of all trades shall be in place in the forms and adequately tied and braced.
 5. The entire place of deposit shall have been cleaned of wood chips, sawdust, dirt, debris, hardened concrete and other foreign matter. No wooden ties or blocking shall be left in the concrete except where indicated for attachment of other work.
 6. 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.
 7. 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.
 8. 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.
 9. No concrete shall be placed until formwork and reinforcement has been approved by Architect. Clean forms of all debris and remove standing water. Thoroughly clean reinforcement and all handling equipment for mixing and transporting concrete. Concrete shall not be placed against reinforcing steel that is hot to the touch. Notify Structural Engineer 48 hours in advance of concrete pour.
- B. Conveying: Handle concrete from mixer to place of final deposit by methods which will prevent separation or loss of ingredients. Deposit concrete in forms as nearly as practicable at its final position in a manner which will insure that required quality is obtained. Chutes shall slope not less than 4 inches and not more than 6 inches per foot of horizontal run.
- C. Depositing: Deposit concrete into forms in horizontal layers not exceeding 24 inches in thickness around building, proceeding along forms at a uniform rate and consolidating into previous pour. In no case shall concrete be poured into an accumulation of water ahead of pour, nor shall concrete be flowed along forms to its final place of deposit. Fresh concrete shall not be permitted to fall from a height greater than 6 feet without use of adjustable length pipes or, in narrow walls, of adjustable flexible hose sleeves. Concrete shall be scheduled so that placing is a continuous operation for the completion of each section between predetermined construction joints. If any concreting operation, once planned, cannot be carried on in a continuous operation, concreting shall stop at temporary bulkheads, located where resulting construction joints will least impair the strength of the structure. Location of construction joints shall be as shown on the drawings or as

- approved by Structural Engineer. The rate of rise in walls shall not be less than 2 feet per hour.
1. Consolidation: Concrete shall be thoroughly compacted and worked to all points with solid continuous contact to forms and reinforcement to eliminate air pockets and honeycombing. Power vibrators of approved type shall be used immediately following pour. Spading by hand, hammering of forms or other combination of methods will be allowed only where permitted by Structural Engineer. In no case shall vibrators be placed against reinforcing steel or used for extensive shifting of deposited fresh concrete. Provide and maintain standby vibrators, ready for immediate use.
 2. Hot Weather Concreting: Unless otherwise directed by the Architect, perform all work in accordance with ACI 305 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.
Aggregate: Keep aggregate piles continuously moist by sprinkling with water.
Temperature of Concrete: The temperature of the concrete mix at the time it is being placed in the forms shall not exceed 90 degrees F per ACI 301. The method employed to provide this temperature shall in no way alter or endanger the design mix or the design strength required.
Dampen subgrade and formwork before placing concrete. Remove all excess water before placing concrete. Keep concrete continuously wet when air temperature exceeds 85 degrees F for a minimum of 48 hours after placing concrete. For slab on grade construction, see Section 3.1.E.
Protection: Minimize evaporation from concrete in place by providing shade and windbreaks. Maintain such protection in place for 14 days minimum.
 3. Cold Weather Concreting: Follow recommended ACI 306 procedures when average of the highest and lowest air temperature falls below 40 degrees F for more than three consecutive days, as approved by Architect. Concrete placed in these temperatures shall have a minimum temperature based on dimensions of concrete sections placed as shown in ACI 301. No chemicals or salts shall be used to prevent freezing and no accelerating agents shall be used without prior approval from Architect.
- D. Construction Joints: Install only as indicated and noted on Drawings. Joints not indicated on Drawings shall be so located, when approved, as to least impair strength of structure, and shall conform to typical details. Construction joints shall have level tops, vertical sides. Horizontal construction joints shall be thoroughly cleaned and roughened by removing entire surface film and exposing clean aggregate solidly embedded in mortar matrix. Joints between concrete and masonry shall be considered construction joints. Vertical construction joints need not be roughened. See Drawings for doweling and required keys.
1. Roughen construction joints by any of 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.
2. All decisions pertaining to adequacy of construction joint surfaces and to compliance with requirements pertaining to construction joints shall be reviewed with the Structural Engineer.
 3. Just before starting new pour, horizontal and vertical joint surfaces shall be dampened (but not saturated).
 4. Before placing regular concrete mix, horizontal construction 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.
 5. For slabs, construction joints shall be in locations shown on plan. If not shown, locate at intervals not exceeding 150 feet in each direction. Refer to drawings for proper details for reinforcing at construction joints.
- E. Concrete Slabs on Grade:
1. Exterior and interior concrete slabs on grade shall be poured as required under this Section. Base shall be accurately leveled and compacted prior to placing of concrete.
 2. Typically, interior slabs on grade shall be poured over a minimum of four (4 inch) inches of compacted crushed rock, unless otherwise indicated, over a vapor retarder.
 3. Protect slab on grade subbase from moisture prior to placing concrete. Avoid wetting rock layer to allow adequate concrete curing and avoid future vapor transmission. If the subbase has been wet excessively, verify that water has been eliminated prior to placement of concrete.
 4. Vapor Retarder installation shall be in accordance with manufacturer's instructions and ASTM E 1643.
 - a. Unroll Vapor Retarder with the longest dimension parallel with the direction of the pour.
 - b. Lap Vapor Retarder over footings and seal to foundation walls.
 - c. Overlap joints 6 inches and seal with specified tape.
 - d. Seal all penetrations (including pipes) per manufacturer's instructions.
 - e. No penetration of the Vapor Retarder is allowed except for reinforcing steel and permanent utilities.
 - f. Repair damaged areas by cutting patches of Vapor Retarder, overlapping damaged area 6 inches and taping all four sides with tape.
- F. Control Jointing - Slabs on Grade:
1. Joints shall be in locations indicated on Drawings, or as directed by Architect.
 2. Joints in interior slabs shall be made by one of following methods:

- a. By use of construction joints laid out in checkerboard pattern; pour and allow alternate slabs to set; fill out balance of checkerboard pattern with second pour.
 - b. By use of dummy groove joints at least 1/4 depth of slab, and at least 1/8 inch wide. These joints may be sawcut as soon as wet concrete can support the weight of the equipment and operator. Delaying sawcutting past this point will make jointing ineffective.
 3. Control jointing in exterior paving slabs shall be laid out in a checkerboard pattern; pour as described above, but with joint edges tooled to provide a uniform joint at least 3/8 inch in depth.
 4. Slab reinforcing need not be terminated at control joints.
 5. Construction and expansion joints shall be counted as control joints.
- G. Expansion Joints:
1. Unless otherwise indicated, use 3/8 inch thick expansion joint filler. See Section 2.1.H
 2. Joints in interior slabs on grade shall be only in locations indicated.
 3. Joints in exterior slabs on grade shall be installed at each side of structures, at curb transitions opposite apron joints, at ends of curb returns, at back of curb when adjacent to sidewalk, and at uniformly spaced intervals not exceeding 20 feet.
 4. Edges of concrete at joints shall be edger finished to approximately 3/8 inch radius.
 5. Interrupt reinforcing at all expansion joints.
- H. Score markings on exterior slabs on grade shall be located as indicated. Where not indicated, mark slabs into rectangles of not less than 12 square feet nor more than 20 square feet using a scoring tool which will leave edges of score markings rounded.

3.2 CURING AND PROTECTION

- A. Curing: Exposed surfaces of all concrete used in structure shall be maintained in a moist condition for at least 7 days after placing. The following final curing processes shall normally be considered to accomplish this. Concrete shall be maintained at not less than 50 degrees F nor more than 100 degrees F for a period of 72 hours after being deposited.
1. Flatwork to be exposed, stained, or painted shall have curing process submitted and approved by the architect prior to construction.
 2. Initial Curing Process - Flat Work:
 - a. Mist Spraying: As soon as troweling of concrete surfaces is completed, exposed concrete shall be sprayed continuously with a special atomizer spray nozzle, capable of producing a fine mist. Spraying shall be done without any dripping of water from nozzle. Amount of spraying shall be such as to maintain surface of concrete moist without any water accumulating on

surface. Maintain spraying for a minimum of 12 hours, or until such time as hereinafter described curing process is applied. Mist spraying will not normally be required when the ambient air temperature is below 90 degrees F.

3. Final Curing Process - Flatwork: Except as noted, use any of following:
 - a. Water Curing: Concrete shall be kept wet by mechanical sprinklers or by any other approved method which will keep surfaces continuously wet.
 - b. Saturated Burlap Curing: Finished surfaces shall be covered with a minimum of two layers of heavy burlap which shall be kept saturated during the curing period.
 - c. Curing Compounds: Membrane curing compounds of chlorinated rubber or resin type conforming to ASTM C309 may be used only if specifically approved by Architect. Use of membrane curing compound will not be permitted on surfaces to be painted, or to receive ceramic tile, membrane water-proofing or hardeners and sealers. Membrane curing compound may be used in areas to receive resilient floor tile, provided it is wax-free, compatible with adhesive used and approved by adhesive manufacturer. Agitate curing compounds thoroughly by mechanical means continuously during use and spray or brush uniformly in accordance with manufacturer's recommendations. Apply immediately following final finishing operation. All curing compounds shall conform to State of California Air Resources Board VOC Regulations.
 - d. Waterproof paper conforming to ASTM C 171, or opaque polyethylene film, may be used. Concrete shall be covered immediately following final finishing operation. Anchor paper or film securely and seal all edges in such a manner as to prevent moisture escaping from concrete.
 4. Curing Process - Formed Surfaces: Forms heated by sun shall be kept moist during curing period. If forms are to be removed during curing period, curing as described for flatwork shall be commenced immediately.
- B. Refer to Drawings for areas of concrete slab not to receive curing compounds or hardening compounds. Where concrete floors are to receive heavy duty coatings, waterproof coatings and the like, verify with coating installer the type of finish required for specified coating.
- C. Protection: Contractor shall be responsible for protection of finished concrete against injury by rain, cold, vibration, animal tracks, marking by visitors, vandalism, etc.
- D. Provide additional curing agents or compounds, not necessarily listed herein, but as recommended and or required for use with shake type hardeners or other special coatings and coverings by their manufacturers for a complete and proper installation.

3.3 FINISHES

A. Formed Surfaces:

1. Rough Form Finish: Surfaces shall be reasonably true to line and plane with no specified requirements for selected facing materials. Tie holes and defects shall be patched and fins exceeding 1/4 inch in height shall be rubbed down with wooden blocks. Fins and other rough spots at surfaces to receive membrane waterproofing shall be completely removed and the surfaces rubbed smooth. Otherwise, surfaces shall be left with the texture imparted by forms.
 - a. Rough finish shall be used for the following areas:
 - 1) Below grade and unexposed surfaces.
- 2.. Smooth Plywood Form Finish: Finish shall be true to line and plane. Tie holes and defects shall have been patched and ground with surface fins removed. Arrangement of plywood sheets shall be orderly, symmetrical, as large as practical and free of torn grain or worn edges. Surface concrete shall be treated with 1 part muriatic acid, in three parts water solution, followed immediately by a thorough rinsing with clear water. Surfaces which are glazed, have efflorescence, or traces of form oil, curing compounds or parting compounds shall be cleaned or treated to match other formed surfaces, except as otherwise indicated or specified.
 - a. Smooth Plywood Form Finish shall be used for the following areas:
 - 1) All surfaces above grade unless otherwise specified.
 - 2) At Contractor's option, may also be used in lieu of rough form finish.
3. Smooth Plastic Liner Finish: Surface shall be smooth, concrete free of honeycombing, air pockets larger than 1/8 inch in diameter, and fins.
 - a. This finish shall be used only where indicated on the Drawings.

B. Flatwork:

1. Unless otherwise indicated or specified, flatwork shall have an integral monolithic finish.
2. Integral Monolithic Finish: Apply as soon as freshly poured concrete slabs will bear weight of workers. Pour slabs full thickness to finish floor elevations indicated. At proper time, tamp surface repeatedly with a wire mesh or grid tamper in a manner to force aggregate down below surface and to bring sufficient mortar to surface to provide for a smooth coating of cement mortar over entire surface. Allow surface mortar to partially set, then float with wooden floats and finish with one of following, as required.
 - a. Broom Finish: Steel trowel surface to a smooth dense surface free of lines, tool marks, cat faces and other imperfections. After troweling, and before final set, give surface a broom finish, brushing in direction noted on Drawings, or as directed. A slip-resistant broom finish shall be used typically on exterior flatwork except as otherwise indicated or specified and shall be "medium" texture as approved by Architect.
 - b. Smooth Steel Trowel Finish: Apply 2 steel trowelings to obtain hard, smooth surface. All lips, irregularities, uneven levels, etc. shall be worked out before

last troweling. All interior flatwork shall have a smooth steel trowel finish unless specified otherwise.

3. Tolerances:
 - a. For tolerances not indicated, refer to ACI 117.
 - b. Slabs on grade – Comply with F_F & F_L as specified by Architect, or at a minimum shall be sufficiently even to contact a 10' long straightedge with a tolerance of 1/8 inch.
 - c. Concrete over metal deck – Refer to Section 05 30 00 for minimum requirements.
 - d. Elevated slabs – Comply with Architectural requirements.
 - e. Finished surfaces of exterior integral finished flatwork shall not vary more than 1/4 inch from a 10' long straightedge, except at grade changes.

- C. Sacked Surfaces: Exposed surfaces that are unacceptable in appearance to the Architect shall be sacked.
 1. Prepare concrete surfaces in accordance with the referenced standards. Remove any form release materials by stoning by hand, power grinding or other method approved by the Architect.
 2. Prepare concrete surfaces to receive sack finishing with a light sand blasting.
 3. For best results, grout application and rubbing should be performed when areas to be treated are shaded and during cool, damp weather. When work is to be performed in hot and dry weather, a fog spray should be available for continuous use.
 4. Prepare grout samples for matching of concrete surfaces for approval by the Architect. These shall be made in the following proportions of gray cement to white cement to sand: 1:1:2, 1:2:3, and 2:1:3, etc. until the correct matching color is obtained on the test areas. Sand should be fine enough to pass the Number 30 sieve. Mixes should be made to a good workable consistency in a clean container and the mix with the best color chosen, or modified if needed.
 5. Provide sufficient quantities of sand and cement from the same source for the complete work at the job site.
 6. Mixing and Application:
 - a. Mixing of grout on the job should be timed for it to be used up within 1 to 1-1/2 hours.
 - b. Let the grout stand 20 to 30 minutes after mixing, and then remixed before applying.
 - c. Soak the concrete surface thoroughly with water at least 15 minutes before applying grout and again just before application so that the surface is adequately wet during the operation.
 - d. Apply grout with plasterer's trowel or sponge rubber float in sweeping strokes from the bottom up. Brush or spray gun applications may be used when approved by the Architect.
 - e. Work in freshly applied grout vigorously with a sponge rubber float, then let sit until some of its plasticity is gone but not until it loses its damp appearance. At this point it shall be rubbed with clean, dry burlap to remove

- the excess grout, leaving no visible film on the surface but filling all air holes.
- f. Keep the surface wet for a day after grouting and sack rubbing are completed.
7. Alternate methods of application and materials shall be subject to the approval of the Architect.

3.4 PATCHING

- A. Formed Surfaces:
 1. Promptly upon removal of contact forms and after concrete surfaces have been inspected, form ties shall be removed and all necessary patching and pointing shall be expertly done.
 2. Honeycombed areas shall be removed down to sound concrete, coated with a bonding grout or approved compound and patched using a low shrinkage high bond mortar. Patched areas shall be cured by being kept damp for at least 5 days.
 3. Tie holes shall be cleaned, dampened and filled solid with patching mortar or cement plugs of an approved variety.
- B. Slabs on Grade: After entire slab is finished, shrinkage cracks that may appear shall be patched as follows:
 1. Where slab is not exposed or where appearance is not important, cracks larger than 1/32 inch wide shall be filled with cement grout and struck off level with surface.
 2. Where slab is exposed and appearance is important, unsightly cracks shall be repaired in a manner satisfactory in appearance to Architect. If this cannot be accomplished, concrete shall be considered defective.

3.5 DEFECTIVE CONCRETE

- A. Defective concrete shall mean any of the following:
 1. Concrete not meeting 100 percent of the specified 28 day compressive strength.
 2. Concrete exhibiting rock pockets, voids, spalls, streaks, cracks, exposed reinforcing to extent that strength, durability, or appearance is adversely affected.
 3. Concrete significantly out of place, line, or level.
 4. Concrete not containing the required embedded items.
- B. Upon determination that concrete strength is defective:
 1. 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.

- a. Cores of hardened concrete shall be taken and tested in accordance with ASTM C 42 and C 39. Number and location of such cores shall be subject to the approval of Architect.
 - b. Cost of core sampling and testing will be paid for by the Contractor.
 - c. "85 percent" reduction in ACI 318 Section 26.12.4 will not justify low cylinder tests.
- C. Upon determining that concrete surface is defective, Contractor may restore concrete to acceptable condition by cutting, chipping, pointing, patching, grinding, if this can be done without significantly altering strength of structure. 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.
- D. If core tests indicate that concrete is below the strength specified, or 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.
- E. No repair work shall begin until procedure has been reviewed by the Architect and Structural Engineer.

3.6 SURFACE HARDENER AND SEALER

- A. Seal all interior exposed flatwork with clear sealer, except surfaces receiving ceramic tile, quarry tile, poured flooring or other special finishes specified, or as scheduled on the Drawings.
1. Apply sealer in 2 or 3 coats, in accordance with manufacturer's directions, using the maximum quantity recommended.
 - a. Concrete floors must be thoroughly cured for a minimum of 30 days and completely dry before treatment.
 - b. Surfaces to be treated must be clean, free of membrane curing compounds, dust, oil, grease and other foreign matter.
 - c. Upon completion, concrete surfaces shall be clean and without discoloration or traces of excess hardener left on the surface.
- B. Apply sprayable hardener/sealer at locations as scheduled or as indicated on the Drawings. Apply in accordance with the manufacturer's favorably reviewed application instructions and recommendations.

3.7 GROUTING

- A. Prepare and place grout materials at locations as indicated on the Drawings in accordance with the manufacturer's recommendations and installation instructions.
- B. Pack grout materials solidly between bearing surfaces and bases or plates as indicated and to ensure no voids.

3.8 ADJUSTING AND CLEANING

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

END OF SECTION

SECTION 04 05 00
Mortar and Grout

PART 1 - GENERAL

1.1 GENERAL REQUIREMENTS

A. The requirements of Division 1 apply to all Work of this Section.

1.2 SCOPE

A. Provide all materials, labor and accessories as required and specified for complete mortar and grout installation in masonry walls.

1.3 RELATED WORK (See also Table of Contents):

- A. Reinforcing Steel: Section 03 21 00.
- B. Cast-In-Place Concrete: Section 03 30 00.
- C. Concrete Unit Masonry: Section 04 22 00.

1.4 QUALITY ASSURANCE

- A. Standards and References: (Latest Edition unless otherwise noted)
 - 1. 2019 California Building Code (CBC)
 - 2. TMS 402-16 – Building Code Requirements for Masonry Construction
 - 3. TMS 602-16 – Specification for Masonry Structures
 - 4. ASTM C144 – Aggregate for Masonry Mortar.
 - 5. ASTM C150 – Portland Cement.
 - 6. ASTM C207 – Hydrated Lime for Masonry Purposes
 - 7. ASTM C270 – Standard Specification for Mortar for Unit Masonry
 - 8. ASTM C404 – Aggregates for Grout
 - 9. ASTM C476 – Standard Specification for Grout for Masonry
 - 10. ASTM C1019 – Method of Sampling and Testing Grout
- B. Tests and Inspections:
 - 1. A testing program is required prior to start of construction. Testing program to be done in Compliance with CBC requirements and in collaboration with Testing Laboratory, Design team, contractor, owner and submitted for review by the agency in charge of building enforcement. Requirements below are

minimum requirements; additional requirements may be required in final testing program.

2. All tests and inspections herein are to be performed by an independent testing laboratory approved by the building official.
 3. Sample panel construction: For masonry governed by Level 2 or 3 Quality Assurance, construct sample panels of masonry walls per TMS 602 Article 1.6 D. The specifier has the option of permitting a segment of the masonry construction to serve as a sample panel or requiring a separate stand-alone panel.
 4. Mortar and Grout Tests: If mortar and grout tests are indicated as required on the Structural drawings, at the beginning of Masonry Work, at least 1 test sample each of mortar and grout shall be taken on 3 successive working days, then once per week with at least one sample taken for each 5000 square feet of wall area, or fraction thereof.
 - a. Test specimens shall be made in accordance with ASTM C1019 for grout and ASTM C780 for mortar.
 - b. Test specimens shall be continuously stored in moist air until tested.
 5. If masonry placement and grouting inspection is indicated as required on the Structural Drawings, a special inspector shall be employed per CBC Section 1704 during the placement of all units, placement of all reinforcing steel, during all grouting operations and during taking of all test specimens.
- C. Submittals:
1. Mix design for mortar and grout shall be submitted for review.
 2. Supplier's certificates indicating materials comply with the specifications below. They shall include but are not necessarily limited to:
 - a. Aggregates
 - b. Cement
 - c. Admixtures

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Cement: ASTM C150, Type I or II, low alkali; natural gray.
- B. Hydrated Lime: ASTM C207, Type S.
- C. Quicklime: ASTM C5.
- D. Lime Putty: Made from hydrated lime or quicklime.

1. If made from quicklime, other than processed pulverized quicklime, slake lime and then screen through a No. 16 mesh sieve. Before using, store and protect slaked and screened lime putty for not less than 10 days.
 2. Processed pulverized quicklime shall be slaked for not less than 48 hours, and shall be cool when used.
 3. Lime putty prepared from hydrated lime may be used immediately after mixing.
 4. Lime putty prepared from quicklime or pulverized quicklime shall have a plasticity figure, after slaking and screening, of not less than 200, and shall weigh not less than 80 lbs. per cubic foot and not more than 90 lbs. per cubic foot. Lime putty prepared from hydrated lime shall conform to ASTM C207, Type S.
- E. Aggregate:
1. For Mortar: ASTM C144.
 2. For Grout: ASTM C404.
- F. Admixture: "Sika Grout Aid", "BASF MasterPel 240MA"
- G. Water: Suitable for domestic consumption.

2.2 MORTAR

- A. Mortar shall be Cement-lime, Type S and shall conform to CBC Section 2103.2.
- B. Mortar shall be made with admixtures that are proportioned, added and mixed in strict accordance with manufacturer's directions. Calcium Chloride cannot be used in mortar mixes.
- C. Refer to architectural drawings for mortar color requirements.

2.3 GROUT

- A. Grout shall have a 28-day compressive strength of 2000 psi or $f'm$, whichever is greater. Grout shall conform to CBC Section 2103.3
- B. Fine Grout or Coarse Grout: The contractor is to determine the proper application of Fine Grout or Coarse Grout based on the grout pour height used and the clear grout space width for multi-wythe construction or clear grout space dimensions for hollow units in accordance with TMS 402 Table 3.2.1.

- C. Add grout admixture in accordance with the manufacturer's recommendations. Calcium Chloride cannot be used in grout mixes.

PART 3 - EXECUTION

3.1 MIXING MORTAR AND GROUT

- A. Mix mortar and grout in accordance with TMS 602 Articles 2.6A and 2.6B.
- B. Accurately measure materials in suitably calibrated devices; shovel measurements are not acceptable.
- C. Place sand, cement and water in mixer in that order and mix for at least 2 minutes; then add lime putty and continue mixing as long as necessary to secure a uniform mass, but in no case less than 10 minutes.
- D. Use mixers of at least 1 sack capacity; batches requiring fractional sacks will not be permitted unless cement is weighed for each batch.

3.2 GROUTING PROCEDURES

- A. Specified under Sections 04 22 00.

3.3 RETEMPERING

- A. When necessary to retemper mortar, add water and remix; retempering by dashing water over mortar will not be permitted.
- B. Any mortar which is unused within 2-1/2 hours after initial mixing and any mortar that has begun to set shall not be used.

3.4 DEFECTIVE MORTAR OR GROUT

- A. Should the strength of mortar or grout fall below that specified, remainder of Work shall be adjusted to reach required strength. Work in place representing inferior grout and mortar and indicating a strength less than the minimum specified shall be tested by taking and testing core samples. Number and location of cores shall be determined by Structural Engineer.
- B. Should compression tests of cores fail to meet required strength, masonry shall be deemed to be defective and shall be removed and replaced at no cost to Owner.

- C. Costs relative to taking and testing of core samples shall be paid by Owner and will be deducted from Contract Amount. Cost of patching core holes shall be borne by Contractor.

END OF SECTION

SECTION 04 22 00
Concrete Unit Masonry

PART 1 - GENERAL

1.1 GENERAL REQUIREMENTS

A. The requirements of Division 1 apply to all Work of this Section.

1.2 SCOPE

- A. Furnish and install all concrete unit masonry, reinforcement, and all required accessories and materials as shown on the Drawings and specified here.
1. Cooperate with other trades for embedded items, furnished under those sections and installed here.
 2. Supervise setting of dowels for masonry furnished and installed under Section 03 21 00, Reinforcing Steel.

1.3 RELATED WORK (See also Table of Contents):

- A. Reinforcing Steel: Section 03 21 00.
- B. Cast-in-Place Concrete: Section 03 30 00.
- C. Mortar and Grout: Section 04 05 00.
- D. Structural Steel: Section 05 12 00.
- E. Miscellaneous Metal: Section 05 50 00.

1.4 QUALITY ASSURANCE

- A. Allowable Tolerances: Place masonry in accordance with section 3.3B.
- B. Standards and References: (Latest Edition unless otherwise noted):
1. 2019 California Building Code (CBC)
 2. TMS 402-16 – Building Code Requirements for Masonry Construction
 3. TMS 602-16 – Specification for Masonry Structures
 4. ASTM C90 – Specification for Loadbearing Concrete Masonry Units
 5. ASTM C140 – Standard Test Methods for Sampling and Testing of Concrete Masonry Units and Related Units
 6. ASTM C426 – Standard Test Method for Linear Drying Shrinkage of Concrete Masonry Units
- C. Submittals: Refer to Section 01 33 00 for submitting the following items:

1. Suppliers certificate indicating units comply with material standards indicated below:
2. See Section 03 21 00 for reinforcing steel submittals.

D. Tests and Inspections:

1. A testing program is required prior to start of construction. Testing program to be done in Compliance with CBC requirements and in collaboration with Testing Laboratory, Design team, contractor, owner and submitted for review by the agency in charge of building enforcement. Requirements below are minimum requirements; additional requirements may be required in final testing program.
2. All tests and inspections herein are to be performed by an independent testing laboratory approved by the Building Official.
3. Sample panel construction: For masonry governed by Level 2 or 3 Quality Assurance, construct sample panels of masonry walls per TMS 602 Article 1.6 D. The specifier has the option of permitting a segment of the masonry construction to serve as a sample panel or requiring a separate stand-alone panel.
4. If masonry tests are indicated as required on the structural drawings, three sample units will be tested during construction for each 5,000 square feet of wall area. Test also three sample units prior to construction.
 - a. Units will be tested for compressive strength on both the net and gross area per ASTM C140.
 - b. Units will be tested for linear drying shrinkage per ASTM C426.
5. If masonry placement and grouting inspection is indicated as required on the structural drawings, a special inspector shall be employed per CBC Section 1704 to inspect the placement of all units, placement of all reinforcing steel, during all grouting operations and during taking of all test specimens.
6. See Section 03 21 00 for reinforcing steel tests and inspections.

1.5 PRODUCT HANDLING

- A. Scaffolding, runways and ladders required for work under this Section shall be provided by masonry contractor, and shall be heavy trades type substantially built and in compliance with State labor laws, safety codes and other regulatory agencies as applicable to this project.
- B. Store masonry units off the ground in a dry location, covered and protected from absorbing moisture.
- C. Store masonry accessories, including metal items, in such a way as to prevent corrosion or accumulation of dirt and oil.

PART 2 - PRODUCTS

2.1 MASONRY UNITS

- A. Masonry units shall be hollow load bearing masonry units conforming to ASTM C90 and CBC Section 2103.1.
 - 1. Weight: Medium weight.
 - 2. Maximum lineal shrinkage from saturated to oven dry condition of not more than 0.065 percent.
 - 3. Twenty-eight day compressive strength of 2000 psi.
 - 4. Moisture controlled units.
- B. Unit Type
 - 1. 8" wide by 8" high x 16" long unless specified otherwise.
- C. Provide bond beam units, open end units, lintel units and other special units as indicated. Use open end units at cells containing vertical reinforcement wherever possible.

2.2 MORTAR AND GROUT

- A. Specified under Section 04 05 00.

2.3 ACCESSORY MATERIALS

- A. Reinforcing Bars: ASTM A615, Grade 40 or 60, as indicated in Section 03 21 00, deformed bars. Where bars are to be welded, ASTM A706 Grade 60 bars shall be used.
 - 1. Tie Wire: Black annealed steel wire not lighter than 16 gauge.
- B. Ladder-type Joint Reinforcing: ASTM A951. Ladder-type joint reinforcing shall be comprised of 9-gauge side rods and 9-gauge cross rods at 16" on center and shall conform to ASTM A951. Crossrods are to be butt welded to side rods. Ladder-type joint reinforcement shall be hot dip galvanized or stainless steel.
 - 1. Width: Fabricate joint reinforcement in units with widths a minimum of 2" less than nominal width of walls. Provide mortar coverage over joint reinforcement of not less than 5/8" on joint faces exposed to exterior and 1/2" elsewhere.
- C. Provide spacers to firmly hold reinforcement in place.
- D. Anchor Bolts: All anchor bolts cast in masonry shall be headed studs or headed bolts with cut threads conforming to ASTM F1554 Grade 36 or ASTM A307 or ASTM A36 - as indicated on drawings.
- E. Expansion Anchors: All expansion bolts installed in masonry shall be Hilti Kwik Bolt 3 per ICC ESR-1385, Simpson Wedge-All per ICC ESR-1396 or Dewalt/Powers Power-Stud+ SD1 per ICC ESR-2966. See Structural Drawings for installation requirements, testing and special head requirements as applicable. Substitution of other brands or anchors shall proceed only after written approval from the Structural Engineer and the Building Official has been obtained.

- F. Adhesive Anchors: All drill and epoxy threaded rods shall be ASTM F1554 Grade 36 or Grade 50, as indicated on drawings, and installed in masonry with Hilti HIT-HY 270 per ICC ESR-4143, Simpson SET-XP per UES ER-265 or Dewalt/Powers AC100+ Gold per ICC ESR-3200. See Structural Drawings for installation requirements, testing and special head requirements as applicable. Substitution of other brands or anchors shall proceed only after written approval from the Structural Engineer and the Building Official has been obtained.
- G. Screw Anchors: All screw anchors installed in masonry shall be Hilti Kwik HUS-EZ per ICC ESR-3056, Simpson Titen HD per ICC ESR-1056 or Dewalt/Powers Screwbolt+ per ICC ESR-4042. See Structural Drawings for installation requirements, testing and special head requirements as applicable. Substitution of other brands or anchors shall proceed only after written approval from the Structural Engineer and the Building Official has been obtained.
- H. Anchor Finish:
1. Interior Exposure: All anchors, nuts and washers for use in interior environments free of potential moisture shall be manufactured from carbon steel and zinc coated.
 2. Exterior or Exposed Use: All anchors, nuts, and washers for use in exposed or potentially wet environments, or for attached of exterior cladding materials shall be galvanized or stainless steel. Galvanized anchors, nuts and washers shall conform to ASTM A 153. Stainless steel anchors shall be manufactured from 300 series stainless steel. and nuts and washers from 300 series or Type 18-8 stainless steel.
- G. Non-Metallic Expansion Joint Strips: Premolded, flexible cellular neoprene rubber filler strips complying with ASTM D1056, Grade RE 41E1, capable of compression up to 35% of width and thickness indicated.
- H. Premolded Control Joint Strips: Material as indicated below, designed to fit standard sash block and maintain lateral stability in masonry wall; size and configuration as indicated.
1. Premolded PVC Control Joint Strips. Strips shall be polyvinyl chloride complying with ASTM D 2287, Type PVC 654-4 with a durometer hardness or 90.

2.4 JOINTS

- A. All joints shall be 3/8" thick joints for concrete block. Tool exposed interior and exterior joints and concealed exterior joints to produce a dense slightly concave surface that is well bonded to unit at edges. Tool joints behind room base, switches, and outlet plates to produce a smooth dense joint flush with the face of adjacent masonry units, where occurring on the job. Cut joints flush on concealed interior surfaces and surfaces to be plastered.

2.5 SEALER

- A. Contractor shall provide and install minimum two coats, BASF MasterProtect H107 masonry sealer, or equal, at all CMU walls. BASF MasterProtect H107 product, or equal, shall meet all state vapor requirements. Sealer shall be clear and non-gloss product.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine areas to receive masonry and verify following:
 - 1. That foundation surface is level to permit bed joint with range of 1/4 minimum to 3/4 inch maximum for partially grouted or 1-1/4" maximum for fully grouted.
 - 2. That edge is true to line to permit projection of masonry to less than 1/4-inch.
 - 3. That projecting dowels are free from loose scale, dirt, concrete, or other bond-inhibiting substances and properly spaced and located.
- B. Do not begin work before unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Clean concrete surfaces to receive masonry. Remove laitance or other foreign material lodged in surfaces by sandblasting or other means as required. Joints between concrete and masonry shall be considered construction joints. See Concrete specifications.
- B. Ensure masonry units are clean and free from dust, dirt, or other foreign materials before laying. Do not use damaged masonry units, damaged components of structure, or damaged packaged materials.
- C. Establish lines, levels, and coursing. Protect from disturbances.
- D. Provide temporary bracing during erection of masonry work. Maintain in place until masonry has set to provide permanent bracing.

3.3 COURSING

- A. Erect masonry in accordance with CBC Section 2104.
- B. Place masonry to lines and levels indicated to the following tolerances:
 - 1. Variation from Unit to Adjacent Unit: 1/32-inch max.
 - 2. Variation from Plane of Wall: 1/4-inch in 10 feet.
 - 3. Variation from Plumb: 1/4-inch in 10 feet; 1/2-inch maximum.
 - 4. Variation from Level Coursing: 1/8-inch in 3 feet; 1/4-inch in 10 feet; 1/2-inch maximum.

- 5. Variation of Joint Thickness: 1/8-inch between masonry courses.
- C. Bond: Unless noted otherwise in Drawings, lay concrete masonry units in running bond with vertical joints located over score of unit in course below (and vice versa).
- D. Maintain masonry courses to uniform width. Make vertical and horizontal joints equal and of uniform thickness.
- E. Preserve the vertical continuity of cells in concrete unit masonry per Article 3.3E of TMS 602.

3.4 PLACING AND BONDING

- A. Do not install cracked, broken or chipped masonry units.
- B. Lay only dry concrete masonry units. Do not wet concrete masonry prior to laying up units unless written permission is obtained from the Engineer.
- C. Lay masonry in full bed of mortar, properly jointed with other work. Buttering corners of joints, and deep or excessive furrowing of mortar joints are not permitted.
 - 1. Block Cap: Lay with full mortar coverage on horizontal and vertical joints.
 - 2. Install grout cap where and as indicated.
- D. Fully bond intersections and external and internal corners.
- E. Do not shift or tap masonry units after mortar has taken initial set. Where adjustment must be made, remove mortar and replace.
- F. Remove excess mortar.
- G. Perform job-site cutting with proper tools to provide straight unchipped edges. Take care to prevent breaking masonry unit corners or edges. Install cut units with cut surfaces and, where possible, cut edges concealed.
- H. Step back unfinished work for joining with new work. Do not use tothing.
- I. Provide cleanouts as indicated in "grouting" below.
- J. Matching Existing Masonry Work: Match coursing, bonding, color and texture of new masonry work with existing work wherever possible.

3.5 JOINTS

- A. Horizontal and vertical joints at masonry units shall be 3/8-inch wide and as follows:

1. Point joint tight in unpurged masonry below ground.
2. All end joints shall be fully filled with mortar and joints squeezed in bed joints shall be held back approximately ½-inch from cell to provide positive bond with grout.
3. Joints shall be struck flush at all areas to receive plaster, stucco and any other finish material other than paint.

3.6 MASONRY REINFORCEMENT

- A. Place reinforcement in accordance with Article 3.4 B of TMS 602.
- B. Reinforcing steel shall not be bent or straightened in a manner that will damage the material. Bars with kinks or bends not shown on the plans shall not be used. Heating of bars for bending is not permitted.
 1. Bars shall conform accurately to the sizes, shapes, lines and dimensions shown on drawings and with hooks and beds made as detailed. Bars shall be placed as indicated on the drawings and centered on grout space.
 2. At the time grout is place around it, reinforcing steel shall be clean of mill scale or other coatings that will destroy or reduce bond.
 3. All vertical reinforcing steel shall be installed in one piece whenever practical, full height of wall, and braced throughout its height in a manner that will retain the steel in proper position and provide the proper clearance.
- C. Foundation dowels that interfere with unit webs are permitted to be bent to a maximum of 1 inch horizontally for every 6 in of vertical height.
- D. Reinforcing steel shall be secured to all foundation dowels and held in place at spacing not to exceed 192 bar diameters.

3.7 GROUTING

- A. General Requirements:
 1. All cells shall be grouted solid.
 2. Use of grout lifts above or below 5 feet 4 inches at Contractor's option.
 3. Use grout pump, hopper or bucket to place grout.
 4. Place grout in final position within 1-1/2 hours after introduction of mixing water.
 5. Stop grout approximately 1 ½ inches below top of last course; except at top course bring grout to top of wall. Do not form grout keys within beams.
- B. Grout pours 5 feet 4 inches or less:
 1. Do not lay units higher than 64 inches before grouting.
 2. If mortar has been allowed to set prior to grouting, remove all fins protruding more than ½-inch into grout space.

3. Consolidate each lift with mechanical vibration twice per Article 3.5 E of TMS 602. Once while placing grout and once more after initial absorption of water but before set.
- C. Grout pours greater than 5 feet 4 inches:
1. Layup walls, subject to maximum height limitations of Table 6 under Article 3.5 of TMS 602.
 2. Provide clean out holes at the bottom of every pour in cells containing vertical reinforcement. Construct clean out courses with open-bottom bond beam units inverted to permit cleaning of all cells by flushing. Cleanouts shall be not less than 3x4inch openings cut from one face shell. Do not plug clean out holes until masonry work, reinforcement, and final cleaning of the grout spaces have been completed and inspected.
 3. Clean mortar droppings from the bottom of the grout space and from reinforcing steel. Remove mortar fins protruding more than 1/2-inch into the grout space by dislodging the projections with a rod or stick as the work progresses or by washing the grout space at least twice a day during erection using a high-pressure stream of water.
 4. Do not place grout in hollow unit masonry until mortar joints have set for at least 24 hours and clean out plugs have cured 24 hours.
 5. Place grout in lifts not to exceed 12 feet 8 inches in height, with a waiting period between lifts, dependent on weather and absorption rate of the masonry, in order to place the succeeding lift after the preceding lift becomes plastic but prior to initial set. The first lift shall be consolidated using mechanical vibrators. After the required waiting period, place the second lift and consolidate with the vibrator, reconsolidating the lift below to a depth of 12 to 18 inches. Repeat the waiting, placing and consolidating process until the top of the grout pour is reached. Reconsolidate the top lift after the required waiting period. The high-lift grouting of any section of wall between lateral flow barriers shall be completed to the top of a pour in one working day unless a new series of clean out holes is established and the resulting horizontal construction joint cleaned.

3.8 WEATHER PROVISIONS FOR CONSTRUCTION

- A. Cold Weather Construction to be in accordance with Article 1.8 C of TMS 602.
- B. Hot Weather Construction to be in accordance with Article 1.8 D of TMS 602.

3.9 EXPANSION AND CONTROL JOINTS

- A. See drawings for type and location of expansion and/or control joints.
- B. Where control joints are not indicated on the drawings the Contractor shall submit a proposed control joint layout for Architect and Engineer approval. General guidelines for control joint locations are as follows:
 1. At major changes in wall height.

2. At changes in wall thicknesses.
 3. At corresponding control joints in foundations, floors, or roof construction.
 4. Near wall intersections.
 5. At column centerlines.
- C. Maximum Spacing: Maximum control joint spacing in concrete masonry construction shall be such that the ratio of wall length to height shall not exceed 1.5 with a maximum spacing of 25 feet.

3.10 BOND BEAMS

- A. Bond beams shall be located where shown and detailed on the drawings, and shall be reinforced as indicated and as herein after specified.

3.11 BUILT-IN WORK

- A. Miscellaneous Embedded Items: All items indicated to be embedded in masonry shall be carefully located and anchored to prevent movement during grouting operations. Solidly grout spaces around built-in items. Consult other trades in advance and make provisions for installation of their work to avoid cutting and patching. Install chases minimum of one full masonry unit length for jambs.

3.12 CUTTING AND FITTING

- A. Obtain approval prior to cutting or fitting any area not indicated or where appearance or strength of masonry work may be impaired.

3.13 REPAIR, POINTING AND CLEANING

- A. Remove and replace masonry units which are loose, chipped, broken, stained or otherwise damaged, or if units do not match adjoining units.
- B. Pointing: During the tooling of joints, enlarge any voids or holes and completely fill with mortar.
- C. Dry brush masonry surface after mortar has set, at each day's work and after final pointing.
- D. Leave work and surrounding surface clean and free of mortar spots and droppings.
- E. Cleaning: Upon completion of masonry installation, repair all holes. Defective joints shall be cut out and rejointed. Exposed masonry surfaces shall be cleaned free of mortar, green stain and efflorescence.

3.14 SEALER

- A. Contractor shall install sealer as directed by the manufacturer. Coverage and installation rates shall be as per manufacturer's recommendations. Install sealer in minimum two coats at the rates required.

3.15 DEFECTIVE MASONRY

- A. Materials or workmanship not conforming to appearance or strength specified, will be deemed defective and shall be removed and replaced at no cost to Owner.
- B. Defective mortar and grout, as defined under Section 04 05 00; "Mortar and Grout" shall constitute defective masonry.

END OF SECTION

SECTION 05 12 00
Structural Steel

PART 1 - GENERAL

1.1 GENERAL REQUIREMENTS

A. Requirements of Division 1 apply to all Work of this Section.

1.2 SCOPE

A. Furnish and install all structural steel as shown and specified including, but not necessarily limited to the following:

1. Prime coat painting and touch up.
2. All cast-in-place anchor bolts, nuts, plates, etc.
3. 10 gauge steel or 3/4 inch plywood templates for column anchor bolts.

1.3 RELATED WORK (See also Table of Contents)

- A. Metal Decking: Section 05 30 00.
- B. Metal Fabrications: Section 05 50 00.
- C. Cast-In-Place Concrete: Section 03 30 00.
- D. Welding of Moment Resisting Frames: Section 05 12 24.
- E. Metal Stairs: Section 05 50 10.

1.4 QUALITY ASSURANCE

A. General:

1. Comply with the referenced ASTM standards for materials.
2. Perform all welding only with AWS certified welders.
3. Verification of accuracy:
 - a. Engage and pay for a registered civil engineer or licensed land surveyor to check the alignment, plumbness, elevation, and overall accuracy of the erected framing at appropriate stages during construction and at completion of erection. Prior to erection, a survey shall be made of the as-built locations of all anchor rods and other embedded items associated with the attachment of structural steel. The party providing the survey

shall submit written verification that the entire installation is in accordance with the contract documents and meets the allowable erection tolerances as set forth in the AISC "Code of Standard Practice for Steel Buildings and Bridges".

- b. Columns shall be verified at each lift. Column shim details and procedures shall be submitted for review.
4. Paint:
- a. Single Source Responsibility: Provide primers and other undercoat paint produced by same manufacturer as finish coats. Use thinners approved by paint manufacturer, and use within recommend limits.
 - b. Coordination of Work: Review other Sections in which prime paints are to be provided to ensure compatibility of coatings system for various substrates. Upon request, furnish information or characteristics of finish materials to be used.
 - c. Requirements of Regulatory Agencies: Comply with applicable rules and regulations of governing agencies for air quality control.
- B. Except where other requirements are specified, comply with the following standards (latest edition unless noted otherwise):
1. AISC 360 "Specification for Structural Steel Buildings".
 2. AISC 303 "Code of Standard Practice for Steel Buildings and Bridges".
 3. AISC 341 "Seismic Provisions for Structural Steel Buildings"
 4. AISC 358 "Prequalified Connections for Special and Intermediate Steel Moment Frames for Seismic Applications"
 5. RCSC "Specifications for Structural Joints Using High Strength Bolts".
 6. AISC 303Section 10, Architecturally Exposed Structural Steel, Code of Standard Practice for Steel Buildings and Bridges
 7. AWS D1.1 "Structural Welding Code - Steel" – latest edition
 8. AWS D1.8 "Structural Welding Code – Seismic Supplement" – latest edition
 9. ASTM A6 "General Requirements for Delivery of Rolled Steel Plates, Shapes, Sheet Piling and Bars for Structural Use".
 10. SSPC-Vis 1 Pictorial Surface Preparation Standards for Painting Steel Structures
 11. SSPC-SP2 Hand Tool Cleaning
 12. SSPC-SP3 Power Tool Cleaning
 13. SSPC-SP6 Commercial Blast Cleaning
 14. SSPC-PA2 Measurement of Dry Paint Thickness with Magnetic Gauges
 15. California Building Code (CBC) – latest edition
- C. Submittals: (Submit under provisions of Section 01 33 00)
1. Product Data: Include laboratory test reports and other data to show

compliance with specifications (include specified standards). Include certified copies of mill reports covering chemical and physical properties of each type of structural steel.

2. Shop Drawings:
 - a. Shop drawings shall include complete details and schedules for fabrication and assembly of structural steel members, procedures, and diagrams.
 - b. Include details of cuts, connections, camber, holes, and other pertinent data. Indicate welds by standard AWS symbols, and show size, length, and type of each weld.
 - c. Provide setting drawings, templates, and directions for installation of anchor bolts and other anchorages to be installed by others.
 - d. Dimensions required to locate structural steel for manufactured items such as mechanical equipment, electrical equipment, dock levelers, etc., shall be coordinated and provided by the General Contractor. General Contractor shall also coordinate and provide dimensions to locate structural steel for window washing supports such as davits, tie-backs, etc.
 3. Procedures:
 - a. Provide welding procedure specifications (WPS) for shop and field prequalified weld joints and weld joints qualified by test for review by the Structural Engineer and the Owner's Testing Laboratory prior to fabrication. All welding procedure items such as base metals, welding processes, filler metals and joint details that meet the requirements of AWS D1.1 section 3 shall be considered as prequalified. Any change or substitution that is beyond the range or tolerance or requirements for prequalification shall be qualified by test per AWS D1.1 section 4, part b. Submit test reports showing successful passage of qualification tests for all non-prequalified welding procedure specifications.
 - b. Provide installation procedure and inspection for direct tension indicator washers detailed in supplemental specifications provided by the manufacturer for approval.
 - c. Procedures shall be submitted for both shop and field welds.
- D. Tests and Inspections:
1. Provide special inspections and testing as described in the "Statement of Structural Special Inspections and Testing" within the structural drawings and as required by this section.
 2. Testing Laboratory:
 - a. All materials, work, methods and equipment shall be subject to inspection at the mill, fabricating plant and at the building site. Material or workmanship not complying fully with the Contract Documents will not be accepted. The Contractor shall give the Testing Laboratory reasonable

- notice when ready for inspection and shall supply samples and test pieces and all facilities for inspection without extra charge. The Owner will assume the expense of making the tests and inspection except as otherwise specified in Division 1.
3. Cost of Testing and Inspection: Costs of testing and inspection of structural steel, except as specified hereunder and in Division 1, will be paid for by the Owner.
 - a. All transportation costs and per diem living costs for inspection at fabricators' plant further than 75 miles from the job site will be back-charged to the Contractor.
 - b. It is assumed that all fabrication will take place in one shop location only. All additional inspection costs will be back-charged to the Contractor.
 - c. All mill tests and costs of re-test of plain materials shall be at the expense of the Contractor.
 - d. Costs of tests required due to Contractor's failure to provide steel identifiable in accordance with the indicated ASTM designation shall be at the expense of the Contractor.
 4. Structural Steel Testing and Inspection:
 - a. Structural Steel: If structural steel tests are indicated as required on the structural drawings, one tension test shall be made for each size of structural shape, plate and for each tube and pipe size. Tests shall be made in accordance with requirements of appropriate ASTM designations.
 - b. If structural steel tests are not indicated as required on the structural drawings, then for shapes, plates, bars, pipe and tubing, manufacturer's certified mill test reports and analysis for each heat will be acceptable for steel identifiable in accordance with indicated ASTM designation. Mill test reports shall indicate the physical and chemical properties of all structural steel used. Correlate individual heat numbers with each specified structural section.
 - c. Unidentifiable Steel:
 - 1) For F_y less than or equal to 36.0 ksi : Provide one tension and elongation test for each 5 tons or fraction thereof for each size.
 - 2) For F_y greater than 36.0 ksi : Provide one tension and elongation test for each piece.
 - 3) Weld procedure specifications (WPS) using unidentified steel as a base material shall be qualified in accordance with AWS D1.1, Section 4.
 - d. Costs of retests and additional testing required by the use of unidentifiable steels shall be the Contractor's responsibility. Additional costs of testing incurred by the Owner shall be deducted from the Contract Final Payment.
 5. Expansion Anchors: Load test as indicated on drawings.
 6. Welding Inspection:

- a. For Moment Resisting Frame Welding inspection and testing requirements, see specification Section 05 12 24 - Welding of Moment Resisting Frames.
- b. If shop or field welding inspection is indicated on the structural drawings or required by the applicable referenced standards, shop and field welded operations shall be inspected in accordance with AISC 360 by a qualified welding inspector employed by the Testing Laboratory. Such inspector will be a person trained and thoroughly experienced in inspection of welds. The inspector's ability to distinguish between sound and unsound welding will be reliably established
- c. The welding inspector will make a systematic record of all welds. This record shall include:
 - 1) Identification marks of welders.
 - 2) List of defective welds.
 - 3) Manner of correction of defects.
- d. The welding inspector will check the material, equipment and procedure, as well as the welds. He will also check the ability of the welder. He will furnish the Architect with a report, duly verified by him that the welding which is required to be inspected is proper, and has been done in conformity with the Contract Documents, and that he has used all means to determine the quality of the welds.
- e. All full penetration groove welds will be subject to ultrasonic testing, as per AWS D1.1. All defective welds shall be repaired and retested with ultrasonic equipment at the Contractor's expense.
- f. Column Flanges: An area extending 6 inches above and below point where girder flanges are attached will be inspected. Column flange edges will be inspected visually and entire area ultrasonically for lamination, plate discontinuities, and non-metallic inclusions.
- g. When ultrasonic indications arising from the weld root can be interpreted as either a weld defect or the backing strip itself, the Engineer will be notified. The Engineer may require the removal of backing strip. The backing strip will be removed at the expense of the Contractor, and if no root defect is visible the weld will be retested. If no defect is indicated on this retest, and no significant amount of base and weld metal have been removed, no further repair of welding is necessary. If a defect is indicated, it will be repaired and retested at Contractor's expense.
- h. The ultrasonic instrumentation will be calibrated by the technician to evaluate the quality of the welds in accordance with AWS D1.1.
- i. Other methods of inspection, for example, X-Ray, gamma ray, magnetic particle, or dye penetrant, may be used on welds if felt necessary by the inspection laboratory, and with the approval of the Engineer.

- j. Base metal thicker than 1-1/2 inches, when subjected to through thickness weld shrinkage strains, shall be ultrasonically inspected for discontinuities directly behind such weld before and after joint completion.
- k. End-welded studs shall be sampled, tested, and inspected per the requirements of AWS D1.1.
- l. At the discretion of the owner's testing agency, the ultrasonic testing frequency may be reduced but may not be less than the following:
 - 1) Initially, all welds requiring ultrasonic testing will be tested at the rate of 100 percent in order to establish the qualifications of each individual welder. If the reject rate is demonstrated to be less than 5 percent of the welds tested for each welder, then the frequency of testing for that welder may be reduced to 25 percent. If the reject rate increases to 5 percent or more, 100 percent testing will be re-established until the rate is reduced to less than 5 percent. The percentage of rejects will be calculated for each welder independently.
 - 2) A sampling of a least 40 completed welds will be made for such reduction evaluation. Reject rate is defined as the number of welds containing rejectable defects divided by the number of welds completed. For evaluating the reject rate of continuous welds over 3 ft in length where the effective throat is 1" or less, each 12 inch increment or fraction thereof shall be considered as one weld. For evaluating the reject rate of continuous welds over 3 ft in length where the effective throat is greater than 1", each 6 inch of length or fraction thereof shall be considered one weld.
- 7. High Strength Bolting Tests and Inspection:
 - a. Furnish certified test reports for each lot of bolts in accordance with ASTM A325 and A490. Install bolts under the supervision of a qualified inspector in accordance with, Research Council "Specifications for Structural Joints using ASTM A325 or A490 Bolts".
 - b. If high strength bolting inspection is indicated on the structural drawings or required by the applicable referenced standards, the testing laboratory shall provide inspection in accordance with AISC 360.
 - c. While the work is in progress, the Inspector shall determine that the requirements of this Specification are met in the work. The Inspector shall observe the calibration procedures and shall monitor the installation of bolts to determine that all plies of connected material have been drawn together and that the selected procedure is properly used to tighten all bolts.
 - 1) In addition to the requirement of the foregoing paragraph, for all connections specified to be slip critical (SC), the Inspector shall assure that the specified procedure was followed to achieve the pretension

specified in the AISC. The pretension shall be verified by the inspector for these bolts.

- 2) Bolts in connections identified as not being slip-critical nor subject to direct tension need not be inspected for bolt tension other than to ensure that the piles of the connected elements have been brought into snug contact.

1.5 PRODUCT HANDLING

- A. Store materials to permit easy access for inspection and identification. Keep steel members off the ground, using pallets, platforms, or other supports. Protect steel members and packaged materials from erosion and deterioration.
- B. Do not store materials on structure in a manner that might cause distortion or damage to members or supporting structures. Repair or replace damaged materials or structures as directed.

1.6 SEQUENCING/SCHEDULING

- A. Cooperate and coordinate this work with other trades for anchor bolts, and other required inserts, templates, etc. Align this work prior to installation of other materials.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. All hot-rolled steel shapes, plates and bars shall be new steel conforming to ASTM A6, unless noted otherwise in the specifications or structural drawings. Structural steel shall be as follows:
 1. Wide Flange and WT Shapes: ASTM A992
 2. M- and S- Shapes: ASTM A36
 3. C- and MC- Shapes: ASTM A992
 4. L- Shapes: ASTM A572 Grade 50
 5. Round HSS: ASTM A500 Grade C (Fy = 46 ksi)
 6. Rectangular HSS: ASTM A500 Grade C (Fy = 50 ksi)
 7. Pipe: ASTM A53, Grade B (Fy = 35 KSI)
 8. Base Plates up to 4" thick: ASTM A572 Grade 50
 9. All Other Plate Material: ASTM A572 Grade 50, unless noted otherwise in the specifications or structural drawings.
 10. Built-Up Columns: ASTM A572 Grade 50

11. Plate Girders: ASTM A572 Grade 50
12. Connection Material
 - a. Column Continuity Plates and Doubler Plates: ASTM A572 Grade 50
 - b. Braced Frame Gusset Plates: ASTM A572 Grade 50

- B. AISC group 4 and 5 shapes and plates greater than 2 inches thick: ASTM A36 and/or ASTM A572 Grade 50 with supplementary requirements S91 Fine Austenitic Grain Size and S5 Charpy V-Notch Impact Test. For location of Charpy V-Notch test, see ASTM A6 Supplementary Requirement S30. Charpy V-Notch test shall be per ASTM A673, frequency P and shall meet a minimum average value of 20 ft-lbs absorbed energy at 70° F.

- C. Anchor Rods: All anchor rods cast in concrete or masonry shall be headed bolts with cut thread, full diameter body style conforming to ASTM F1554 grade 36, 55 (weldable per S1 Supplementary Requirements), or 105 as indicated on drawings. In lieu of headed anchor rods, threaded rod conforming to the above specifications may be used with a single nut welded to the rod or double nuts tightened to prevent rotation.

- D. High Strength Bolts, Nuts and Washers: Install in accordance with requirements for A325 and A490 slip critical and snug tight conditions as indicated on drawings. Install high strength bolts with snug tight type connections with threads included in shear plane except as otherwise noted. Install hardened washers in conformance with AISC Specifications.
 1. Bolt Specifications: Bolts shall conform to the requirements of the current edition of the Specifications of the American Society for Testing and Materials for High-Strength Bolts for Structural Steel Joints, ASTM F3125 Grade A325, Heat Treated Steel Structural Bolts, 120 ksi Minimum Tensile Strength, or ASTM F3125 Grade A490, Heat Treated Steel Structural Bolts, 150 ksi Minimum Tensile Strength as indicated on drawings.
 2. Bolt Geometry: Bolt dimensions shall conform to the current requirements of the American National Standards Institute for Heavy Hex Structural Bolts, ANSI Standard B18.2.1. The length of bolts shall be such that the end of the bolt will be flush with or outside the face of the nut when properly installed.
 3. Nut Specifications: Nuts shall conform to the current chemical and mechanical requirements of the American Society for Testing and Materials Standard Specification for Carbon and Alloy Steel Nuts, ASTM A563, Appendix Table X1.1. Provide Grade A Heavy Hex nuts for Grade 36 and 55 threaded rods. Provide Grade DH or ASTM A194-2H Heavy Hex nuts for Grade 105 threaded rod.
 4. Washers: Flat circular washers and square or rectangular beveled washers shall conform to the current requirements of the American Society for Testing

and Materials Standard Specification for Hardened Steel Washers, ASTM F436. Washers for base plates shall be placed top and bottom of plate and shall be ASTM A36 square or circular unless ASTM F844 are permitted on the drawings.

5. Tension Control Fastener System: Bolts shall conform to the requirements of the current edition of the Specifications of the American Society for Testing and Materials for Twist Off Type Tension Control Structural Bolt/Nut/Washer Assemblies, ASTM F1852, providing equivalent properties to ASTM A325 or A490 as indicated on drawings.

- E. Headed Stud-Type Shear Connectors: ASTM A29-12, Grade 1010 through 1020, cold-drawn carbon steel with dimensions complying with AWS D1.1 Specifications, with minimum physical properties as follows:
 1. Ultimate Tensile strength: 65,000 psi.
 2. Yield strength – 0.2% offset: 51,000 psi
 2. Elongation in 2 inches: 20 percent
 3. Reduction of area: 50 percent.

- F. Provide hexagonal heads and nuts for all connections per ASTM A563, Appendix Table X1.1.

- G. Electrodes for Welding: Comply with AWS Code, E70 Series minimum. Fabricator to select proper electrodes according to weld procedures as submitted.

- H. Shop Primer – See Section 3.4, Painting and Cleaning

- I. Power-Actuated Fasteners: Tempered steel pins with special corrosive resistant plating or coating. Pins shall have guide washers to accurately control penetration. Fastening shall be accomplished by low-velocity piston-driven power activated tool. Pins and tool shall be as manufactured by Hilti Fastening Systems.

- J. Expansion Bolts: Hilti Fastening Systems “Kwik-Bolt Concrete Expansion Anchors” to concrete; Ramset “Dynabolt Sleeve Anchors” to masonry or approved equal.

PART 3 - EXECUTION

3.1 FABRICATION

- A. Shop Fabrication and Assembly: Fabricate and assembly structural assemblies in shop to greatest extent possible. Fabricate items of structural steel in accordance with AISC Specifications and as indicated on final shop drawings. Provide camber

in structural members where indicated to provide the flattest floor possible. The contractor shall coordinate member tolerances with finishes.

Properly mark and match-mark materials for field assembly. Fabricate for delivery sequence which will expedite erection and minimize field handling of materials.

Where finishing is required, complete assembly, including welding of units, before start of finishing operations. Provide finish surfaces of members exposed in final structure free of markings, burrs, and other defects.

- B. Connections: Weld or bolt shop connections, as indicated. Bolt field connections, except where welded connections or other connections are indicated.
- C. Unless noted otherwise, make holes 1/16 inches larger than the nominal bolt diameter.
- D. Welding, Shop and Field: Weld by shielded arc method, submerged arc method, flux cored arc method, or other method approved by AWS. Perform welding in accordance with AWS Code. All welders, both manual and automatic, shall be certified in accordance with AWS "Standard Qualification Procedure" for the Work to be performed. See paragraph "welding" herein, for detailed requirements. If sizes of fillet welds are not shown on drawings, use AWS minimum weld size but not less than 3/16 inch fillet welds.
- E. Bolt Holes for Other Work: Provide holes required for securing other work to structural steel framing.

Provide threaded nuts welded to framing, and other specialty items as indicated to receive other work.

Cut, drill, or punch holes perpendicular to metal surfaces and remove all burrs. Do not flame cut holes or enlarge holes by burning. Drill holes in bearing plates.

- F. AISC Group 4 and 5 shapes and built up members shall meet the requirements for joints in AISC Sections J1.5, J1.6, J2.7 and M2.2.
- G. High Strength Bolts:
 - 1. Installation and Tightening:
 - a. Handling and Storage of Fasteners: Fasteners shall be protected from dirt and moisture at the job site. Only as many fasteners as are anticipated to be installed and tightened during a work shift shall be taken from protected storage. Fasteners not used shall be returned to protected

storage at the end of the shift. Fasteners shall not be cleaned of lubricant that is present in as-delivered condition.

- b. Tension Calibrator: A tension measuring device shall be required at all job sites where bolts in slip-critical joints are being installed and tightened. The tension measuring device shall be used to confirm: (1) the suitability to satisfy the requirements of AISC for the complete fastener assembly, including lubrication if required to be used in the work, (2) calibration of wrenches, if applicable, and (3) the understanding and proper use by the bolting crew of the method to be used. The frequency of confirmation testing, the number of tests to be performed and the test procedure shall be as specified in 1.d. below, as applicable. The accuracy of the tension measuring device shall be confirmed through calibration by an approved testing agency at least annually.
- c. Joint Assembly and Tightening of Shear/Bearing Connections: Bolts in connections not within the slip-critical category shall be installed in properly aligned holes, but need only be tightened to the snug tight condition. The snug tight condition is defined as the tightness that exists when all plies in a joint are in firm contact. This may be attained by a few impacts of an impact wrench or the full effort of a man using an ordinary spud wrench. If a slotted hole occurs in an outer ply, a flat hardened washer or common plate washer shall be installed over the slot.
- d. Joint Assembly and Tightening of Connections Requiring Full Pre-tensioning. Slip-critical connections shall be installed in properly aligned holes and tightened by one of the following methods.
 - 1) Turn-of-nut Tightening: When turn-of-nut tightening is used, hardened washers are not required except as specified in the AISC. A representative sample of not less than three bolts and nuts of each diameter, length and grade to be used in the work shall be checked at the start of work in a device capable of indicating bolt tension. The test shall demonstrate that the method of estimating the snug-tight condition and controlling turns from snug tight to be used by the bolting crews develops a tension not less than five percent greater than the tension required for slip-critical connections.
 - 2) Installation of Alternate Design Bolts: A representative sample of not less than three bolts of each diameter, length and grade shall be checked at the job site in a device capable of indicating bolt tension. The test assembly shall include flat hardened washers, if required in the actual connection, arranged as in the actual connections to be tensioned. The calibration test shall demonstrate that each bolt develops a tension not less than five percent greater than the tension required by AISC. Manufacturer's installation procedure shall be

followed for installation of bolts in the calibration device and in all connections. When alternate design features of the fasteners involve an irreversible mechanism such as yield or twist-off of an element, bolts shall be installed in all holes of the connection and initially brought to a snug tight condition. All fasteners shall then be tightened, progressing systematically from the most rigid part of the connection to the free edges in a manner that will minimize relaxation of previously tightened fasteners prior to final twist-off or yielding of the control or indicator element of the individual fasteners. In some cases, proper tensioning of the bolts may require more than a single cycle of systematic tightening.

- e. Mark bolts that have been completely tightened with an identifying symbol.

3.2 WELDING

- A. General: Quality of materials and design and fabrication of all welded connections shall conform to AISC "Specifications for the Design, Fabrication and Erection of Structural Steel for Building," "AWS Code for Welding in Building Construction," and requirements of this section. Where members and connections are noted in the construction documents as being part of the seismic lateral force resisting system (LFRS), the requirements of AWS D1.8 Structural Welding Code – Seismic Supplement shall apply.

Location and type of all welds shall be as shown. Make no other welded splices, except those shown on drawings, without prior approval of the architect.

- B. Automatic Welding: Use electrode wire and flux for automatic and semi-automatic welding acceptable to Structural Engineer. All methods, sequences, qualification and procedures, including preheating, and post heating if necessary, shall be detailed in writing and submitted to the Structural Engineer for review.
- C. Qualification of Welders:
 - 1. Structural steel welding: Manual and automatic welds for structural steel construction shall be made only by operators who have been previously qualified by tests, as prescribed in AWS D1.1 to perform type of work required.
 - 2. Welders shall be checked by welding inspector. Those not doing satisfactory work may be removed, and may be required to pass qualification tests again. All qualification testing shall be at the Contractor's expense.
 - 3. Only welders whose weld procedures and pre-qualification by testing that have passed shall be considered qualified for such welds.

- D. Control cooling process after weld is completed by either step down post heat or thermal blankets as determined by procedures and prequalification.
- E. Box columns and built-up members shall have ultrasonic testing before and after welding.
- F. Flame cut surfaces shall be ground to remove contaminated steel layer to provide welds proper fusion without impurities.
- G. Preparation of surface: Surfaces to be welded shall be free of loose scale, slag, rust, grease, paint, and any other foreign material.
- H. Welding equipment: Welding equipment to be used in each case shall be acceptable to welding inspector. Use equipment with suitable devices to regulate speed, and manually adjust operating amperage and voltage. The amperage capacity shall be sufficient to overcome line drop, and to give adequate welding heat.
- I. Remove runoff tabs and grind surfaces smooth where the tabs would interfere with fireproofing and architectural finishes.
- J. End-welded studs:
 - 1. Automatic end-welded studs: Automatically end-weld in accordance with the manufacturer's recommendations in such a manner as to provide complete fusion between the end of the stud and the plates. There shall be no porosity or evidence of lack of fusion between the welded end of the stud and the plate. The stud shall decrease in length during welding approximately 1/8 inch for 5/8 inch, and 3/16 inch for 3/4 inch diameter. Stud sizes indicated on drawings represent the finish stud height.
 - 2. Fillet-end welded studs: Studs may be welded using prequalified FCAW, GMAW, or SMAW processes provided the requirements of the AWS D1.1.
- K. Provide mill camber as shown on the construction documents within AISC tolerance. Place mill tolerance upward for all beams specified no camber.

3.3 ERECTION

- A. Structural steel erection: Comply with AISC "Specification for the Design, Fabrication and Erection of Structural Steel for Building", latest edition.

- B. Erection Sequence: Erect steel in accordance with special erection sequences where special erection sequences are indicated on the contract documents.
- C. Before and during erection, keep all structural steel clean. Ship, handle and store steel in manner to avoid injury to members. Steel members showing evidence to rough handling or injury will be rejected.
- D. Mark each member with erection identification corresponding to mark shown on erection drawings. Carefully plan erection of structural steel so that no cutting and removal of material will be necessary. Do not torch burn in the field, unless specifically permitted by Engineer.
- E. Provide sufficient bracing, shoring and guys to effect safe and satisfactory erection. Provide bracing and shoring capable of holding steel work plumb and properly aligned while field connections are being made, and until lateral force resisting elements are deemed by Architect capable of bracing structure. Temporary bracing shall be adequate to resist lateral forces from wind or seismic prior to the completion of the lateral resisting system.
- F. Set bearing and base plates with extreme care. Bring level, to line and grade with leveling plates or by leveling nuts and bolts. Grout below base plates shall be non-metallic, non-shrink grout – see Cast-In-Place Concrete section 03 30 00 for additional requirements. Column base plates shall be promptly grouted after steel frame has been plumbed and prior to installation of metal decking.
- G. Field Assembly: Set structural framing accurately to the lines and elevations indicated. Align and adjust the various members forming a part of a complete frame or structure before permanently fastening. Before assembly, clean bearing surfaces and other surfaces which will be in permanent contact. Perform necessary adjustments to compensate for discrepancies in elevations and alignment.

Shimming or other adjustments not indicated on drawings shall be approved by the Engineer prior to installation. Level and plumb individual members of the structure within specified AISC tolerances except as noted herein. Column shimming shall be 1/4 inch.
- H. All welds shall be full and clean, and conform to AISC and AWS specifications.
- I. Erection Tolerances: Individual pieces shall be erected so that the deviation from plumb, level and alignment shall not exceed 1 to 500 plus:

1. The maximum displacement of the center line of columns adjacent to elevator shafts, from the established column line, shall not be more than 1 inch at any point.
 2. In order to provide a true, flat plane for the exterior elevations, install all steel framing at the exterior walls of the building, so that the center lines of such framing does not vary by more than 1 inch for the length of the building. Also install each vertical member on such grids so that its vertical center line does not vary by more than 1/2 inch from a vertical line for each story and 1 inch for its full height.
 3. All columns and beams shall adhere to Section M2.7 of the referenced "Specification for Structural Steel for Buildings" which states that completed members shall be free of twists, bends, and open joints. Take special care that column base plates are parallel and perpendicular to faces of columns and that bolt holes are accurately placed.
- J. Temporary Flooring:
1. Provide planking and scaffolding necessary in connection with erection of structural steel, support of erection machinery, and construction materials. Temporary floors and use of steel shall be as required by applicable regulatory requirements.
 2. If steel decking is used as a working platform, it shall be temporarily tack-welded to supports to extent necessary for such use in accordance with applicable regulatory requirements. The concentrated loading from welding machines and other heavy machinery required for steel erection shall be distributed by planking or other approved means. Metal decking that becomes damaged as the result of being used as a working platform shall be replaced at no additional cost to the Owner.
- K. Tower Crane: The design for the support and bracing for a tower crane shall be the responsibility of the General Contractor. The design shall be prepared by a structural engineer licensed in the state of California. Drawings and calculations shall be stamped and signed by the structural engineer. Concentric, torsional, and/or eccentric loading to the main structure shall be resolved by the addition of structural steel for shear tabs, stiffeners, drag ties, bracing struts, etc., Such items shall be designed, detailed, furnished and installed by the contractor.

3.4 PAINTING AND CLEANING

- A. Prior to prime coat application, clean all loose rust, mill scale, oil, dirt, and all other materials from all steel to be left exposed. Use hand tool, power tool,

sandblasting, chemical cleaning, and any other method necessary to provide a smooth, sound surface for painting.

- B. Shop prime all steel except the following:
 - 1. Steel encased in concrete.
 - 2. Contact surfaces for slip-critical (sc) high strength bolts.
 - 3. Areas within 4 inches of field welds.
 - 4. Tops of members to receive metal decking.
 - 5. Steel to be fireproofed.
 - 6. Surfaces to be galvanized.

- C. Use the following Type A shop painting systems on all normal environment interior steelwork:
 - 1. Surface Preparation: SSPC-SP2 Hand Tool Cleaning or SSPC-SP3 Power Tool Cleaning. Where jobsite exposure is expected to exceed 6 months, SSPC-SP6 Commercial Blast Cleaning is required.
 - 2. Application: Follow coating manufacturer's printed directions.
 - 3. Material: Type A Tnemec Company, Inc., Series V10; Sherwin Williams Steel Spec Universal; Metal Case 94-231 Series or approved equal
 - 4. Number of Coats: One
 - 5. Dry Film Thickness: 2.0 mils minimum.
 - 6. Volume Solids: 56.0 +/- 2.0% minimum
 - 7. Generic Description: Modified Alkyd.

- D. Unless noted otherwise in subsection H, use the following Type B shop painting systems on all exterior steelwork and interior steelwork subjected to wet conditions or fumes (see subsection H for additional requirements)
 - 1. Surface Preparation: SSPC-SP6 Commercial Blast Cleaning
 - 2. Application: Follow coating manufacturer's printed directions.
 - 3. Material: Type B Tnemec 90-97 Tnemec-Zinc primer or approved equal
 - 4. Number of Coats: One
 - 5. Dry Film Thickness: 2.5 to 3.5 mils
 - 6. Volume Solids: 63% +/- 2%
 - 7. Generic Description: Zinc-Rich Urethane

- E. Unless noted otherwise in subsection H, use the following finish painting systems on all exterior steelwork and interior steel work subjected to wet conditions or fumes (see subsection H for additional requirements):
 - 1. Application: Follow coating manufacturer's printed directions. Apply over Type B primer system above.
 - 2. Material: Tnemec Series 750 UVX paint or approved equal
 - 3. Number of Coats: One

4. Dry Film Thickness: 2.5 to 5 mils
 5. Volume Solids: 72% +/- 2%
 6. Generic Description: Polyfunctional Hybrid Polyurethane
- F. Primers and paints shall meet all federal and state environmental and air quality requirements.
- G. Apply two shop prime coats to areas which will be inaccessible after erection.
- H. All exterior steelwork and all interior steelwork subjected to wet conditions or fumes, including all welds, bolts, washers and other connection components, shall be primed and painted or hot-dip galvanized, as specified by the Architectural finish specifications. In the absence of Architectural finish specifications, all exterior steelwork and all interior steelwork subjected to wet conditions and fumes, including all welds, bolts, washers and other connection components, shall be hot-dip galvanized, conforming to the requirements set forth in ASTM A123/A123M and ASTM A153/A153M.
- I. Clean contact surfaces of high strength bolts of all burrs and material which might prevent solid seating of the parts. Steel to receive bolts shall be primer painted except beneath the contact area of slip-critical bolts.
- J. After erection, field touch up all welded areas, high strength bolts and damaged areas. For all steel to remain exposed, remove all blemishes, paint drips, and touch up prime coat.

3.5 HOISTING AND BRACING

- A. Provide all hoisting and erecting equipment and power.
- B. Provide and maintain any and all safety railings, toe boards, etc., required for the erection of steel framing and metal decking.
- C. Brace the erected frame in a manner which will assure safety and proper alignment to receive the metal decking and until the concrete slabs have been poured and have set.
- D. Erect building frame true and level. Erect columns in a manner to allow for movement due to welding shrinkage and thermal expansion and contraction of framing. Check plumbness after erection of each level. Maintain structural stability of frame during erection. Provide temporary bracing where necessary to

maintain frame stability and to support required loads, including equipment and its operation.

END OF SECTION

SECTION 06 10 00 Rough Carpentry

PART 1 - GENERAL

1.1 GENERAL REQUIREMENTS

A. The requirements of Division I apply to all Work of this Section.

1.2 SCOPE

- A. Provide all labor, materials, tools, facilities and equipment required for the fabrication and installation of rough carpentry and associated items (except that which is specified elsewhere) indicated on Drawings and necessary to complete the Work. Items include, but are not necessarily limited to, the following:
1. Blocking, backing, stripping, furring, and nailers.
 2. Rough hardware.
 3. Wood framing.
 4. Wood sheathing.
 5. Preservative treatment.
 6. Drilling, saw cuts, knock-outs and framing for ventilation.
 7. Wood sheathing backing at tile walls.

1.3 RELATED WORK (See also Table of Contents)

- A. Concrete Formwork: Section 03 10 00.
- B. Cast-in-Place Concrete: Section 03 30 00.
- C. Structural Steel: Section 05 12 00.
- D. Wood I-Joists: Section 06 17 33.
- E. Open Web Wood Chord Joist: Section 06 17 36.
- F. Shop-Fabricated Wood Trusses: Section 06 17 53.
- G. Glued Laminated Construction: Section 06 18 00.
- H. Structural Composite Lumber: Section 06 71 13.

1.4 QUALITY ASSURANCE

A. General:

1. Coordinate the work of all trades to ensure proper placement of all materials, anchors, etc., as well as providing for openings and anchors for the installation of surface mounted materials and equipment.
 2. Qualifications for Workmen: Provide sufficient skilled workmen and supervisors who shall be present at all times during execution of this portion of the work and who shall be thoroughly familiar with the type of construction involved and the materials and techniques specified.
 3. Rejection: In the acceptance or rejection of rough carpentry, no allowance will be made for lack of skill on the part of the workmen.
- B. Standards and References: (Latest Edition unless otherwise noted)
1. 2019 California Building Code (CBC).
 2. 2018 National Design Specification for Wood Construction (NDS)
 3. 2015 Special Design Provisions for Wind & Seismic (SDPWS)
 4. Lumber: West Coast Lumber Inspection Bureau (WCLIB); Standard Grading Rules for West Coast Lumber No. 17.
 5. Lumber: Western Wood Products Association (WWPA); Western Lumber Grading Rules 05.
 6. Redwood: Redwood Inspection Service (RIS); Standard Specifications for Grades of California Redwood Lumber.
 7. Wood Sheathing: The Engineered Wood Association; Specifications and Grades.
 - a. Structural Plywood: United States Product Standard PS1, Group 1 Douglas Fir.
 - b. APA rated sheathing: United States Product Standard PS2.
 8. Wood Preservative: American Wood-Preservers' Association (AWPA):
 - a. U1, Use Category System: User Specification for Treated Wood.
 - b. M4, Standard for the Care of Preservative-Treated Wood Products.
- C. Submittals: (Submit under provisions of Section 01 33 00)
1. Certification:
 - a. Preservative Treated Wood: Certification for waterborne preservative and that moisture content was reduced to 19 percent maximum, after treatment.
- D. Tests and Inspections:
1. A testing program is required prior to start of construction. Testing program to be done in Compliance with the CBC requirements and in collaboration with Testing Laboratory, Design team, contractor, owner and submitted for review by the agency in charge of building enforcement. Requirements below are minimum requirements; additional requirements may be required in final testing program.
 2. If indicated on the Structural Drawings, load test expansion and epoxy anchors as indicated on the drawings.

1.5 PRODUCT DELIVERY, STORAGE AND HANDLING

A. Protection:

1. After delivery, store all materials off the ground, covered, and in such a manner as to ensure proper ventilation and drainage and to protect against damage and the weather. Maintain wood at the maximum moisture levels indicated in Materials Section.
2. Keep all material clearly identified with all grade marks legible; keep all damaged material clearly identified as damaged, and separately store to prevent its inadvertent use. Do not allow installation of damaged or otherwise non-complying material.
3. Use all means necessary to protect the installed work and materials of all other trades.
4. Replacements: In the event of damage, immediately make all repairs and replacements necessary to the approval of the Architect and at no additional cost to the Owner.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Sawn Lumber:

1. Lumber (Wood Framing): Meet requirements of following minimum grades. All grades to WCLIB Grading Rules No. 17. Species shall be Douglas Fir - Larch

<u>Item</u>	<u>Sizes</u>	<u>Grade</u>	<u>Maximum Moisture Content at Initial Use</u>	<u>Notes</u>
All Material	2x	No. 2	19%	Unless Noted Otherwise
All Material	3x,4x	No. 2	19%	Unless Noted Otherwise
All Material	6x	No. 1	19%	Unless Noted Otherwise
Decking	2x	Select Dex	19%	

2. "At initial use" shall be that point at which nails, screws, bolts, split rings, shear plates or other fasteners or the holes for said fasteners are placed in the wood.
3. All sawn lumber is assumed to be enclosed in the dry building envelope in the final service condition, unless noted otherwise, and free to dry to moisture content less than 19%.
4. The Contractor shall use whatever means necessary, including site drying to ensure that the moisture contents above are not exceeded.
5. All studs, plates, joists, rafters and beams 3x and thicker shall be free of heart center in accordance with the specified grading standards.

B. Wood Sheathing:

1. Roof and Wall Structural Sheathing: PS1 and PS2 APA rated sheathing with exterior glue. Thickness type and grade shall be as indicated on Drawings.

2. Where indicated on the Architectural Drawings as interior wall backing behind tile and in all toilet rooms behind sheet rock, to be C-C APA rated sheathing with exterior glue. Thickness shall be 5/8-inch at all locations.
 3. Flooring: C-C APA Performance rated tongue and groove with exterior glue. Thickness type and grade shall be as indicated on the Drawings.
- C. Building Paper: Fed. Spec. UU-B-790a, Type I, Grade B (15 lb. min. unless noted elsewhere.).
- D. Rough Hardware Fastenings and Connections: All types including bolts, lag screws, nails, spikes, screws, washers and other rough hardware, of kinds that may be purchased and that require no further fabrication, shall be furnished and installed for all finish and rough carpentry and shall conform to NDS Standards and dimensions. All hardware exposed to weather shall be hot-dipped galvanized per ASTM A153 Standards. All nails used into pressure treated lumber shall be hot-dipped galvanized per ASTM A153 or stainless steel.
1. Common wire nails or spikes shall be used unless noted otherwise on the Drawings. Box nails and sinker nails are not permitted. Vinyl coating is permitted on nails when not exposed to weather. Nails and staples shall conform to requirements of CBC Section 2303.6.
 2. Bolts: Bolt material shall conform to ASTM A307, Grade A. Bolt dimensions shall conform to ANSI/ASME B18.2.1 with hex head of sizes indicated.
 3. Lag Screws: Lag screws shall conform to ASTM 307, Grade A. All lag screws shall have hex heads where exposed.
 4. Washers: Standard flat washers shall conform to ANSI B18.22.1, Type A, Wide Pattern. Steel plate washers shall be Simpson BP or BPS or equivalent. Malleable iron washers shall be standard malleable iron washers.
 5. Power-Actuated Fasteners: Tempered steel pins with special corrosive resistant plating or coating. Pins shall have guide washers to accurately control penetration. Fastening shall be accomplished by low-velocity piston-driven power activated tool. Pins and tool shall be as manufactured by Hilti Fastening Systems or equivalent. See Drawings for size, type and embedment.
 6. Expansion Anchors: See Section 03 30 00 for anchors to concrete and Section 04 20 00 for anchors to masonry.
 7. Adhesive Anchors: See Section 03 30 00 for anchors to concrete and Section 04 20 00 for anchors to masonry.
 8. Fabricated Metal Timber Framing Connectors: Connectors shall be punched for nailing and bolting. Nails and nailing shall conform to the manufacturer's instructions with a nail provided for each punched hole. All connectors must have specific ICC approval. Types as noted on Drawings are Simpson Strong-Tie. Hardware suppliers other than Simpson shall submit a comparative material list itemizing product designation, load rating and supported member size for review by the enforcement agency and the Structural Engineer.

2.2 FABRICATION

- A. Lumber:
 - 1. All lumber shall be air or kiln-dried to the maximum moisture content indicated in Materials Section.
 - 2. Furnish S4S unless otherwise noted.
 - 3. Size to conform to rules of governing standard. Sizes shown are nominal unless otherwise noted.

- B. Wood Treatment:
 - 1. Preservative Treatment: The treating process and results thereof shall conform to the appropriate AWPA Standards for exterior, above ground use (3B) and as indicated in CBC Section 2303.1.9.
 - 2. After treatment and prior to shipping, air or kiln-dry lumber to maximum 19 percent moisture content.
 - 3. All treated wood shall be identified with a label meeting the requirements of CBC Section 2303.1.9.1.
 - 4. The amount of preservative to be injected into the wood shall be as required by the AWPA standard for each type of installation.
 - 5. All wood in contact with concrete or masonry shall be preservative treated.
 - 6. Cut surfaces and bored holes in pressure treated wood shall be protected in accordance with AWPA Standard M4.

- C. Fire Treatment: All fire-retardant-treated wood shall be identified with a label meeting the requirements of CBC Section 2303.2.4. The treating process and results thereof shall meet the requirements of CBC Section 2303.2. Moisture content of fire-retardant-treated wood shall meet CBC Section 2303.2.8. Treater shall submit design and fastener values for treated wood to Structural Engineer for review. See Drawings for location of fire-retardant-treated wood.

2.3 SOURCE QUALITY CONTROL

- A. Grade Mark each piece of lumber. Marking must be done by recognized agency.
 - 1. Douglas Fir shall bear WCLIB or WWPA grade stamp.
 - 2. Pressure treated Douglas Fir shall bear AWPA Quality mark.

- B. Wood Sheathing: Each panel shall be legibly identified as to type, grade and specie by APA grade. If plies are spliced, the slope of the scarf shall not be steeper than 1:8. White pockets will not be permitted in face plies.

PART 3 - EXECUTION

3.1 SURFACE CONDITIONS

- A. Inspection:
 - 1. Prior to all work of this Section, carefully inspect the installed work of all other trades and verify that all such work is complete to the point where this installation may properly proceed.

2. Verify that rough carpentry may be performed in strict accordance with the original design and all pertinent codes and regulations.
- B. Discrepancies: In the event of discrepancy, immediately notify Architect. Do not proceed with installation in areas of discrepancy until all such discrepancies have been fully resolved.

3.2 WORKMANSHIP

- A. General: All rough carpentry shall produce joints true, tight, and well nailed with all members assembled in accordance with the Drawings and with all pertinent codes and regulations.
- B. Selection of Lumber Pieces: Carefully select all members. Select individual pieces so that knots and obvious defects will not interfere with placing bolts or proper nailing or making proper connections. Cut out and discard all defects which will render a piece unable to serve its intended function.
- C. Lumber may be rejected by the Architect, whether or not it has been installed, for excessive warp, twist, bow, crook, mildew, fungus, or mold, as well as for improper cutting and fitting.
- D. Shimming: do not shim any framing component.
- E. Care shall be taken that notching and boring of members is in strict conformance with the Drawings and that there are no over-cuts.

3.3 FASTENING

- A. Nailing: Except as otherwise indicated on Drawings or specified, all nailing shall be as required by CBC Table 2304.10.1 - Fastening Schedule.
1. Nails or Spikes shall be common wire unless noted otherwise. Penetration of nails or spikes shall be one-half the length of the nail or spike into the piece receiving the point. However, to connect pieces 2" in thickness, 16d nails shall be used unless noted otherwise.
 - a. Bore holes for nails wherever necessary to prevent splitting.
 - b. Use finish or casing for finish work.
 - c. Use of machine nailing is subject to a satisfactory installation of nails. Minimum edge distances shall be maintained. Nails installed through sheathing with nail guns shall not penetrate into the outer plies deeper than hand nailing. Submittal of guns and nails is required.
 - d. All nailing into Pressure-Treated lumber shall utilize hot-dipped zinc coated galvanized nails or stainless steel nails per CBC Section 2304.10.5.
- B. Bolts and Lag Screws: Bolts shall be sizes indicated on Drawings. Holes for bolts shall be 1/16-inch larger than the bolt diameter. Malleable, Steel plate or standard

flat washers shall be used where heads or nuts would otherwise bear directly on wood surfaces. Malleable or plate washers shall be used on all anchor bolts. Cut washers are not permitted. Lag screws shall be screwed (not driven) into place. For the shank, holes shall be bored the same depth and diameter as shank. For threaded portion, holes shall be pre-drilled as follows:

Lag Screw Size	Thread Portion Pre-Drill
1/2" diameter	1/4" diameter
5/8" diameter	5/16" diameter
3/4" diameter	3/8" diameter
7/8" diameter	1/2" diameter
1" diameter	5/8" diameter

Soap Lag screws prior to installation. Tighten all bolts and screws before closing in.

- C. Framing Devices: Install according to the manufacturer's instructions unless otherwise noted.

3.4 FRAMING AND ROUGH CARPENTRY

- A. Sills: Shall be in long lengths of sizes shown, fastened with anchor bolts as indicated, a minimum of two anchor bolts per piece. Place steel plate washers (but not standard flat or malleable iron washers) under nuts bearing on wood. Set sills level and true.
- B. Studs, Posts and Columns: Shall be full length. Corners shall be as detailed. Partitions or walls containing plumbing, heating or other piping shall be so formed as to give proper clearance for materials. Cut members as required to provide full bearing at ends. Connect to structure as indicated.
- C. Plates: Shall be full length of wall segment or 12-foot minimum and spliced as shown.
- D. Blocking: Blocking shall be same thickness and width of studs or joists unless shown otherwise. Blocking shall not be spaced over 8'-0" c.c. Install fire blocking in accordance with CBC. Horizontal fire blocking in walls shall be placed at floor lines and ceiling lines unless noted otherwise. Install blocking at all plywood joints where noted on the Drawings. Install wall width full height solid blocking at floor joists beneath all posts in walls. Blocking shall be installed around all wall, floor and roof penetrations.
- E. Joists and Beams: Shall be full span length and spliced over bearings unless shown otherwise. Install with crown side up. Beams or headers indicated to be built up of two or more joists shall be fabricated on the job using full length members. For two piece 2x members, stitch nail pieces together with 16d common nails spaced not over 12 inches c.c. and staggered. Clinch nails protruding through members. For

- three or more piece members, stitch bolt pieces together with 1/2" bolts spaced not over 12 inches c.c. and staggered.
1. Provide double joists and headers at all openings through roof unless otherwise shown on Drawings.
 2. Provide typical headers at all openings through walls where one or more studs are required to be cut. For penetration through walls narrower than stud spacing, provide solid blocking on all sides for fastening finish materials.
- F. Wood Sheathing: Install to pattern indicated and provide blocking at joints where noted on the Drawings. Center all joints over bearing supports. Nail to framing as indicated. Install wood sheathing with face plies perpendicular to joists unless indicated otherwise. Wall wood sheathing shall continue uninterrupted by ceilings or soffit from floor to floor or floor to roof unless specifically detailed on the Structural Drawings.
- G. Wood Furring, Stripping: Install as shown or required to provide nailing materials or passage of pipes, conduits, etc., not otherwise accommodated including ceiling stripping for gypsum drywall construction.
- H. Bridging: Space not over 8'-0" c.c. for spans over 16'-0". Joists 8 inches or less in depth shall not require bridging unless specifically indicated.
- I. Solid Wood Backing: Solid wood backing shall be provided for all wall and ceiling finishes and for supporting of mounted items for all trades, including but not limited to metal toilet partitions, toilet room accessories, frames, cabinets, casework, mirrors, trim, applied wall finishes, athletic equipment, food service equipment, piping, conduit, ducts, etc. Contractor shall coordinate placement of backing and supports with Subcontractor supplying mounted items.
- J. Building Paper: Install in all locations indicated except where included in other sections of the specifications.
- K. Cant Strips and Crickets: Shape to sizes shown. Rigidly fasten to construction. Form neat mitered corners.
- L. Wood Sheathing Backing: All toilet rooms, restrooms, single or joint occupancy shall have all walls backed with 5/8-inch thick wood sheathing with no surface voids. Install sheathing between the framing members and wallboard. The same wood sheathing shall also be provided and installed at all tile locations. At tile locations wood sheathing shall be installed between the framing members and the resin-cement backing board.

3.5 MISCELLANEOUS CARPENTRY WORK

- A. Install all items under other sections specified to be furnished and installed in other sections which relate to the rough carpentry work.

- B. Miscellaneous Carpentry Work not included under other sections but, indicated or required yet not specified elsewhere shall be furnished and installed hereunder, including appropriate fastening devices. Contractor shall provide miscellaneous carpentry work for all sections and divisions of work identified.
- C. Wood Curbs for Equipment: Construct all wood curbs for roof mounted equipment as detailed. Provide all miscellaneous blocking, bracing, supports, and other wood items as shown or required to complete the work.
- D. Plywood Backing for Electrical, telephone, and similar types of wall mounted equipment shall be provided hereunder where required. Plywood shall be 3/4-inch thick exterior A-C plywood with 'A' face exposed.
- E. Fire/Draft Stops: Construct fire and drafts stops in furred attic spaces where indicated or required by CBC code. Unless otherwise indicated on Drawings construct of not less than 5/8-inch Type 'X' gypsum wallboard or 1/2" wood sheathing, adequately supported by 2x4's at 24 inches c.c., braced diagonally to the roof structure. Draft stop and installation work shall conform to code requirements.
- F. Shoring and Bracing: Shore or brace for temporary support of all work as required during the construction period except any shoring and bracing specified and included under other sections of these specifications.
- G. Temporary Enclosures: Provide and maintain all barricades and enclosures required to protect the work in progress.
- H. Protect all work in progress and all work installed, as well as the work of all other trades. Any work damaged as a result of the work under this section shall be corrected to its original condition or replaced if directed by the Architect at no increase in cost to the Owner.
- J. Ventilation: Contractor shall include all labor and materials necessary to provide ventilation requirements of roof overhangs, eaves, attics, and all other components of the building required by codes to be ventilated. Work shall include removing knock-outs in wood I-joists for cross ventilation, drilling of blocking, wood sheathing, and other wooden components of the structure necessary to comply with requirements of the CBC for ventilation of buildings.

END OF SECTION

SECTION 06 18 00
Glued Laminated Construction

PART 1 - GENERAL

1.1 GENERAL REQUIREMENTS

A. The requirements of Division 1 apply to all Work of this Section.

1.2 SCOPE

A. Provide all labor, materials, tools, appliances, facilities and equipment required for the fabrication and delivery to job site of all glued laminated wood members.

1.3 RELATED WORK INCLUDED IN OTHER SECTIONS

- A. Rough Carpentry: Section 06 10 00.
- B. Wood I-Joists: Section 06 17 33.
- C. Open Web Wood Chord Joists: Section 06 17 36.
- D. Shop-Fabricated Wood Trusses: Section 06 17 53.
- E. Structural Composite Lumber: Section 06 71 13.

1.4 QUALITY ASSURANCE

- A. General:
 - 1. Qualifications of Manufacturer: The fabricator shall have been engaged in the continuous manufacturing of glued laminated timbers for a minimum of at least two years and shall have the authority to use the AITC "Quality Inspected Stamp". Each timber member shall be stamped and placed in such a position not to be visible on finished erected members.
- B. Standards and References: (Latest Edition unless specified otherwise)
 - 1. 2019 California Building Code (CBC).
 - 2. 2018 National Design Specification for Wood Construction (NDS).
 - 3. American Institute of Timber Construction, "Standard Specifications for Structural Glued Laminated Timber of Softwood Species, ANSI 117.
 - 4. ANSI/AITC Standard A190.1

5. ASTM D3737 "Design and Manufacture of Structural Glued Laminated Timber".
- C. Submittals: (Submit under provisions of Section 01 33 00):
1. Shop drawings showing full dimensions of each member and layout of entire structural system.
 2. Show large scale details of connections, connectors and other accessories.
 3. Indicate species and laminating combination, adhesive type, and other variables in required work.
- D. Tests and Inspections:
1. A testing program is required prior to start of construction. Testing program to be done in Compliance with the CBC requirements and in collaboration with Testing Laboratory, Design team, contractor, owner and submitted for review by the agency in charge of building enforcement. Requirements below are minimum requirements; additional requirements may be required in final testing program.
 2. Each structural glued-laminated member shall be stamped with an identifying mark. Mark shall include all pertinent data, such as grade and species of lumber, type of glue, extremes of moisture content and other such information as may be required.
 3. Certificate of compliance with the above data.

1.5 DELIVERY, STORAGE AND HANDLING

- A. Deliver undamaged products to site in manufacturer's protective wrappings with legends intact. Store on site secure from weather, soil and physical damage.
- B. Transport, handle and store in strict accordance with the manufacturer's recommendations. Use padded, non-marring slings.
- C. Architectural Appearance Grade members shall be shipped, handled and stored with complete weather and damage protection wrapping. Maintain wrappings in place until immediately prior to deck installation.
- D. Industrial Appearance Grade glued laminated timber members shall be wrapped in a water resistant covering during transit. Contractor shall be responsible for protection during hauling and unloading at job site.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Lumber:
 - 1. Lumber used for laminating structural members shall be well manufactured and shall conform to requirements of Standard Grading and Dressing Rules No. 17, West Coast Lumber Inspection Bureau. Such lumber shall be inspected, identified by individual piece, and certified as meeting requirements of said standard specifications by an approved lumber grading agency. It is assumed that each lamination is graded on basis of requirement for nominal size of individual lamination. When lumber is resawn, it shall be regraded on basis of new size.

- B. Type: Glued Laminated Timber Protected from Weather
 - 1. Species: Douglas Fir or Western Larch
 - 2. Stress Grade: AITC Combination 24F-V4 for simple beams, 24F-V8 for cantilever or continuous beams.
 - 3. Extreme fiber bending - $F_b = 2400$ psi
 - 4. Adhesives: Wet use
 - 5. Appearance Grade: AITC Industrial for concealed uses, Architectural appearance at exposed uses.
 - 6. Preservative Treatment: Portions of beams exposed to weather shall be preservative treated.
 - 7. Laminations: Provide outer tension laminations or proof load testing as required by ANSI/AITC A190.1.
 - 8. Sealing: Shop seal all surfaces with 2 coats of clear penetrating sealer.

- C. Type: Glued Laminated Timber Exposed to Weather
 - 1. Species: Alaskan Yellow Cedar
 - 2. Stress Grade: AITC Combination 20F-V12 for simple beams, 20F-V13 for cantilever or continuous beams.
 - 3. Extreme fiber bending - $F_b = 2000$ psi
 - 4. Adhesives: Wet use
 - 5. Appearance Grade: Architectural
 - 6. Laminations: Provide outer tension laminations or proof load testing as required by ANSI/AITC A190.1.
 - 7. Sealing: Shop seal all surfaces with 2 coats of clear penetrating sealer.

2.2 FABRICATION

- A. Fabrication shall be in compliance with the above standards and references.
 - 1. Fabrication shall be in accordance with best practices with adequate plant and equipment and under supervision of properly qualified personnel.

2. Laminations shall be machine finished to a smooth surface, but not sanded, and to a uniform thickness with a maximum allowable variation of 1/64 inch. Warp, twist, or other characteristics which will prevent intimate contact of adjacent glued faces or interfere with uniform bending to a required curvature when under clamping pressure shall not be permitted. Surfaces to be glued shall be clean and free from oil, dust and other foreign material which would be detrimental to satisfactory gluing.
3. Moisture content of lumber at time of gluing shall be not less than 7 percent nor more than 12 percent.
4. Slips, misses, and wane are not permitted.
5. Boring of holes in members shall be in strict conformance with the Drawings. Notching is prohibited except where specifically detailed.
6. Field cuts and holes in preservative treated members shall be preservative treated and sealed.

PART 3 - EXECUTION

3.1 INSPECTION

- A. Prior to installation of the work of this Section, carefully inspect and verify that the installed work of all other trades is complete to the point where this installation may properly commence.
- B. Verify that specified items may be installed in accordance with the approved design.
- C. In the event of a discrepancy, immediately notify Architect. Do not proceed in discrepant areas until discrepancies have been fully resolved.

3.2 PROTECTION

- A. Protect work and materials of this Section prior to and during installation, and protect the installed work and materials of other trades.
- B. In the event of damage, make all repairs and replacements necessary to the approval of the Architect at no additional cost to the Owner.

3.3 HANDLING

- A. Use equipment and methods that avoid scarring corners and faces or otherwise injuring members. Sharp instruments and unprotected wire rope, chain slings and the like shall not be permitted.

3.4 INSTALLATION

- A. Glued Laminated members are to be erected and installed in accordance with the Drawings and manufacturer's recommendations.

3.5 CLEANUP

- A. Keep premises free from accumulated waste materials, rubbish and debris resulting from this work. Upon completion, remove tools, appliances, surplus materials, waste materials, rubbish, debris and accessory items used in or resulting from said Work, and legally dispose of off the site.

END OF SECTION

SECTION 07 46 46 Fiber Cement Siding

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Sheathing paper.
- B. Panel and plank siding for walls [and soffits.]
- C. Related trim, fascia, molding, accessories, and fastenings.
- D. Flashing where required.

1.2 REFERENCES

- A. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials.
- B. ASTM E136 – Standard Test Method for Assessing Combustibility for Materials Using a Vertical Tube Furnace at 750 degrees Celsius.
- C. ASTM C1186 - Grade II Type A non-asbestos fiber cement flat sheets, Grade IV Type A sheets.
- D. ASTM C1288 - Grade II discrete non-asbestos fiber cement interior substrate sheets.
- E. ANSI - A118 – Installation of Ceramic Tile.

1.3 SUBMITTALS

- A. Submit under provisions of Section 01 33 00.
- B. Submit shapes and templates of all products to be used.
- C. Submit two Samples 12" x 12" in size illustrating surface texture [and] [shape].
- D. Submit installation instructions.
- E. Submit example of 50-year express limited transferable product warranty.

1.4 JOB CONDITIONS

- A. Acceptable Substrates: Nominal 2" x 4" wood framing selected for minimal shrinkage and complying with local building codes, including the use of

weather-resistive barriers and/or vapor barriers where required. Minimum 1-1/2" face and straight, true, on uniform dimensions and properly aligned.

- B. Install weather-resistive barriers and claddings to dry surfaces.
- C. Repair any punctures or tears in the weather-resistive barrier prior to the installation of the siding.
- D. Protect siding from other trades.

1.5 WARRANTY

- A. Manufacturer's limited product warranty against manufacturing defects in plank lap and panel vertical siding for 50 years, shingle pattern for 30 years and trim for 10 years.
- B. Workmanship: Application limited warranty for 5 years.

PART 2 - PRODUCTS

2.1 MATERIALS (PANEL CLADDING/TRIM FASCIA AND MOULDING)

- A. Non-asbestos fiber-cement siding shall comply with ASTM Standard Specification C1186 Grade II, Type A.
- B. Siding shall meet the following building code compliance: California DSA PS-019; Non-asbestos fiber-cement siding shall be non-combustible when tested in accordance with ASTM test method E136.
- C. Type: Smooth Vertical siding panel.

2.2 ACCESSORIES

- A. Nails: Corrosion-resistant type; non-staining, of size and strength to securely and rigidly retain the Work, prefinished to match siding finish.
- B. Fasteners: Corrosion-resistant recommended by the manufacturer for the specified products.
- C. Sheathing Paper: ASTM D226; No. 15 unperforated asphalt-saturated felt.
- D. Flashings: 26 gauge galvanized steel.
- E. Soffits: Same material and finish as siding.
- F. Soffit Vents: Use manufacturer's perforated material or 2" wide continuous vent, extruded aluminum, finish, as manufactured by Fry Reglet Corp.

- G. Accessory Components: Starter strips, trim and corner boards of same material and finish as siding.

2.3 FINISH

- A. Manufacturer's standard smooth finish or textures as indicated.
- B. Primed or unprimed as indicated.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Verify that substrate surfaces are ready to receive Work and field measurements are as shown on Drawings.
- B. Beginning of installation means installer accepts existing substrates.

3.2 INSTALLATION - SHEATHING PAPER

- A. Install one layer of sheathing paper horizontally on sheathed walls.
- B. Weather lap edges and ends minimum 6".
- C. Stagger vertical joints.
- D. Staple or nail in place.

3.3 INSTALLATION

- A. Install siding and soffits in accordance with manufacturer's instructions.
- B. Nail as recommended. Butt joints tight. Miter external and internal corners where indicated.
- C. Install siding for natural watershed.
- D. Securely fasten in place, aligned, level, and plumb. Locate cut board ends over bearing surfaces.
- E. Install corner strips and trim as indicated.
- F. Exercise care when site cutting. Locate cut ends over bearing surfaces. Sand cut edges smooth and clean.
- G. Arrange for orderly nailing pattern.

- H. Touch-up prefinished paint surfaces that are disfigured. Unsightly touch-up will require removal and replacement of affected siding.
- I. Caulk or seal as required.

3.4 INSTALLATION TOLERANCES

- A. Maximum Variation From Level: 1/8" in 10'.
- B. Maximum Offset From Joint Alignment: 1/16".

3.5 PREPARATION FOR SITE FINISHING

- A. Sand Work smooth and set exposed nails.
- B. Site Finishing: Specified in Section 09 91 00.

END OF SECTION

SECTION 07 61 00 Sheet Metal Roofing

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Precoated galvanized steel roofing and associated flashings.
- B. Counterflashings.
- C. Underlayments.
- D. Clips, fasteners, closures, and accessories.
- E. Integral fascias where indicated as part of this system.

1.2 REFERENCES

- A. ASTM A653 - Standard Specification for Steel Sheet, Zinc Coated, (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
- B. ASTM A755 - Standard Specification for Steel Sheet, Metallic Coated by the Hot-Dip Process and Prepainted by the Coil-Coating Process for Exterior Exposed Building Products.
- C. ASTM A792 - Standard Specification for Steel Sheet, 55% Aluminum - Zinc Alloy. Coated by the Hot-Dip Process.
- D. ASTM A924 - Standard Specification for General Requirements for Steel Sheet, Metallic-Coated by the Hot-Dip Process.
- E. ASTM B209 - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate.
- F. ASTM D226 - Asphalt-Saturated Organic Felt Used in Roofing and Waterproofing.
- G. ASTM D2247 - Standard Practice for Testing Water Resistance of Coatings in 100% Relative Humidity.
- H. ASTM D4586 – Standard Specification for Asphalt Roof Cement, Asbestos Free.
- I. ASTM E1680 Standard Test Method for Determining the Rate of Air Leakage Through Exterior Metal Systems Under Specified Pressure Differences Across the Specimen.

- J. ASTM E1646 Standard Test Method for Water Penetration of Metal Systems by Uniform Static Air Pressure Difference.
- K. SMACNA - Architectural Sheet Metal Manual.
- L. UL (Underwriters Laboratories) - Wind Resistance Classification.

1.3 SUBMITTALS

- A. Submit under provisions of Section 01 33 00.
- B. Submit Shop Drawings, showing material profile, jointing pattern, jointing details, fastening methods, and installation details.
- C. Submit two sets of Manufacturer's sample chips representing full range of colors and finishes available of metal roofing.
- D. Submit manufacturer's installation instructions.

1.4 SYSTEM DESCRIPTION

- A. Metal roof system with exposed fasteners.
- B. Fire Rating: Class A
- C. UL 90 rated roofing system that has been tested in accordance with UL 580 uplift test procedures.
- D. Class 4 impact resistance roofing system that has been testing in accordance with UL 2218.
- E. Resistance to Air Infiltration: 0.014 cfm per lineal foot of joint when tested in accordance with ASTM E283 at static test pressure differential of 20 psf.
- F. Resistance to Water Infiltration: No leakage through panel joints when tested in accordance with ASTM E331 at static test pressure differential of 20 psf.
- G. International Association of Plumbing and Mechanical Officials Evaluation Services (IAPMO ES).
- H. Florida state approval.

1.5 QUALITY ASSURANCE

- A. Installer: Company specializing in sheet metal roof installations with five years documented experience.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Deliver, store and protect products as recommended by manufacturer.
- B. Stack preformed and prefinished material to prevent twisting, bending, or abrasion, and to provide ventilation. Slope metal sheets to ensure drainage.
- C. Prevent contact with materials during storage which may cause discoloration or staining.

1.7 WARRANTY

- A. Provide Manufacturer's 25-year limited substrate warranty covering panel against rupture structural failure, or perforation.
- B. Provide Manufacturer's 30-year limited finish warranty covering cracking, checking, peeling, fade, and chalking.
- C. Provide installer's 2-year warranty coverage for water tightness and integrity of seals.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. McElroy Metal, Inc., "U-Panel"., www.mcelroymetal.com;
- B. Or approved equal.
- C. Substitutions: Under provisions of Section 01 62 00.

2.2 SHEET MATERIALS

- A. Roof Panels: Max-Rib® exposed-fastener metal panel system with 36" cover width.
 - 1. Profile: Major longitudinal ribs 47/64" deep, spaced 6" on center; normal-run where ribs protrude from panel plane, viewed from exterior, reverse-run where ribs recede from panel plane, viewed from exterior.
 - 2. Size: 36" cover width, lengths indicated on drawings.
- B. 24 Gauge Pre-Coated Galvanized Steel: ASTM A755 on Zinc-Coated Galvanized Substrate, ASTM A653, Grade 33, G90 zinc coating in accordance with ASTM A924 or ASTM A792, or Grade 50, AZ 55 aluminum/zinc coating; 0.0249" thick core steel, factory pre-coated with "Kynar 500 / Hylar 5000" coating in manufacturer's standard color as selected by Architect.
- C. Eave, Hip and Ridge Strips: Snap-on and /or mechanical fasteners as required.

2.3 ACCESSORIES

- A. Exposed Fasteners: Self-tapping corrosion-resistant galvanized steel or stainless steel with neoprene washers. Exposed fasteners shall match color of metal panels by means of factory-applied coating.
- B. Concealed Fasteners: Galvanized steel pancake head Phillips drive screws. Self-drilling, self-tapping as required by substrate.
- C. Clip Assemblies: Manufacturer's standard clip, 0.0478" thick galvanized steel, 33 ksi yield strength, 2-1/2" or 3-1/2" long double or single fastener type, to suit the system.
- D. Underlayment: 40 mil Grace Ice & Water Shield or approved equal.
- E. Slip Sheet: 0.05 psf rosin-sized building paper.
- F. Joint Sealers: Manufacturer's standard or recommended liquid and preformed sealers and tapes, and as follows:
 - 1. Tape Sealers: Manufacturer's standard non-curing butyl tape, AAMA 809.2.
 - 2. Concealed Joint Sealant: Non-curing butyl, AAMA 809.2.
- G. Plastic Cement: ASTM D4586, Type I.
- H. Metal Accessories: Approved by metal panel manufacturer.

2.4 FABRICATION

- A. Roll form sections true to shape, accurate in size, square, and free from distortion or defects.
- B. Fabricate cleats and starter strips of same material as sheet, interlockable with sheet.
- C. Form pieces in longest practical lengths continuous from ridge to eave.
- D. Hem exposed edges on underside 1/2"; miter and seam corners.
- E. Form material with batten seams.
- F. Fabricate vertical faces with bottom edge formed outward 1/4" and hemmed to form drip.
- G. Fabricate flashings to allow toe to extend 2" over roofing. Return and brake edges.

2.5 FINISHING

- A. Two coat coil applied, baked on full strength (70% resin, PVF2) fluorocarbon coating consisting of a nominal 0.25 mil dry film thickness primer, and a nominal dry film thickness of 0.7 -0.8 mil color coat for a total 0.9 to 1.1 mil total system dry film thickness. The back side of the material should be 0.25 mil primer and a 0.25 mil polyester wash coat.
- B. Color to be selected by Architect from manufacturer's entire range of standard colors.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Inspect roof deck to verify deck is clean and smooth, free of depressions, waves, or projections, properly sloped to drains, valley or eaves.
- B. Verify roof openings, curbs, pipes, sleeves, ducts, or vents through roof are solidly set, cant strips and reglets are in place, and nailing strips located.
- C. Where used in conjunction with other roof systems, verify roofing membrane termination and base flashings are in place, sealed, and secure.
- D. Beginning of installation means acceptance of existing conditions.

3.2 PREPARATION

- A. Field measure site conditions prior to fabricating Work.
- B. Install starter and edge strips, and cleats before starting installation.

3.3 INSTALLATION

- A. General: Install metal panels to profiles, patterns and drainage indicated and required for leak-free performance. Provide for structural and thermal movement of work. Seal joints for leak-free metal installation.
 - 1. Shim or otherwise plumb substrates receiving metal panels.
 - 2. Flash and seal metal panels at perimeter of all openings. Fasten with self-tapping screws.
 - 3. Do not begin installation until air- or water-resistive barriers and flashings that will be concealed by metal panels are installed.
 - 4. Locate and space fasteners in uniform vertical and horizontal alignment.
 - 5. Install flashing and trim as metal panel work proceeds.

6. Install continuous length panels if at all possible. If splices are required, locate panel splices over, but not attached to, structural supports and only with prior Architect approval.
7. Align bottoms of metal panels and fasten with blind rivets, bolts, or self-tapping screws.
8. Fasten flashings and trim around openings and similar elements with self-tapping screws.
9. Provide weathertight EPDM Flashing for pipe- and conduit-penetrating panels.
10. Fix panels at location depicted on reviewed shop drawings.
11. Allow for required panel clearance at penetrations for thermal movement.
12. Align pipe penetrations to occur in the flat of the metal panel. Report and have corrected improperly placed penetrations before proceeding with panel installation. Remove and replace metal panels which have improperly placed penetration flashings.
13. Allow for required panel clearance at penetrations for thermal movement.
14. Fasteners: Conceal fasteners where possible in exposed work. Cover and seal fasteners and anchors for watertight and leak-free metal installation.
15. Sealant-Type Joints: Provide sealant-type joint where indicated. Form joints to conceal sealant.

3.4 METAL PANEL ROOFING

- A. Install metal panels plumb, true and in correct alignment with structural framing, in accordance with shop drawings and manufacturer's printed installation instructions.
- B. Install metal panels using manufacturer's concealed fastening system or non-corroding fasteners color-matched to panel.
- C. Install trim using concealed fasteners where possible; sight-exposed non-corroding fasteners color-matched to trim are permitted on vertical surfaces only.
- D. Installation Tolerances
 1. Variation from Plumb: Maximum 1/8" (3.2 mm) in 20 feet (6.096 m).
 2. Variation from Level: Maximum 1/8" (3.2 mm) in 20 feet (6.096 m).

3. Variation from True Plane: Maximum 1/8" (3.2 mm) in 20 feet (6.096 m).

3.5 UNDERLAYMENT

- A. Underlayment to be supplied by metal panel manufacturer.
- B. Self-adhered High-Temperature Underlayment: Provide self-adhering, cold-applied, sheet underlayment, a minimum of 40 mils thick adhesive, with release-paper backing. Provide primer when recommended by underlayment manufacturer.
- C. Thermal Stability: Stable after testing at 240 degree F; ASTM D1970.
- D. Low-Temperature Flexibility: Passes after testing at minus 20 degree F; ASTM D1970.
- E. Apply over the entire metal surface.

3.6 FLASHINGS

- A. Conform to SMACNA details and manufacturer's details and standards.
- B. Secure flashings in place using concealed fasteners.
- C. Cleat and seam all joints.
- D. Apply plastic cement compound between metal flashings and felt flashings.
- E. Fit flashings tight in place. Make corners square, surfaces true and straight in planes, and lines accurate to profiles.
- F. Seal metal joints watertight.

3.7 FIELD QUALITY CONTROL

- A. Field inspection will be performed under provisions of Section 01 45 29.
- B. Inspection will involve surveillance of Work during installation to ascertain compliance with specified requirements.

3.8 CLEANING

- A. Cleaning: Remove temporary coverings and protection of adjacent work areas.
- B. Repair or replace damaged installed products.
- C. Clean installed products in accordance with manufacturer's instructions prior to Owner's acceptance.

- D. Remove construction debris from project site and legally dispose of debris.
- E. Remove strippable coating and perform dry wipe-down cleaning of panels as erected.

3.9 PROTECTION OF FINISHED WORK

- A. Protect finished Work under provisions of Section 01 87 00.
- B. Do not permit traffic over unprotected roof surfaces.

END OF SECTION

SECTION 07 62 00
Sheet Metal Flashing and Trim

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Fascias.
- B. Counterflashings over bituminous base flashings.
- C. Flexible sheet flashing.

1.2 REFERENCES

Contractor's work shall comply with the following standards as applicable.

Manufactured items are to be fabricated to these same standards.

The following standards (and publications) are applicable to the extent referenced in the text. The most recent of these standards is implied, unless otherwise stated.

- A. ASTM A653 - Standard Specification for Steel Sheet, Zinc-Coated, (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
- B. ASTM A755 - Standard Specification for Steel Sheet, Metallic Coated by the Hot-Dip Process and Prepainted by the Coil-Coating Process for Exterior Exposed Building Products.
- C. ASTM A924 - Standard Specification for General Requirements for Steel Sheet, Metallic-Coated (Galvanized) by the Hot-Dip Process.
- D. ASTM B32 - Standard Specification for Solder Metal.
- E. ASTM D226 - Asphalt-Saturated Organic Felt Used in Roofing and Waterproofing.
- F. ASTM D4586 - Standard Specification for Asphalt Roof Cement, Asbestos Free.
- G. SMACNA - Architectural Sheet Metal Manual.

1.3 SYSTEM DESCRIPTION

- A. Work of this Section is to physically protect pre-formed metal roofing and base flashings from damage that would permit water leakage.

1.4 QUALITY ASSURANCE

- A. Applicator: Company specializing in sheet metal flashing Work with five years minimum experience.
- B. Perform Work in accordance with SMACNA standard details and requirements.

1.5 SUBMITTALS

- A. Submit under provisions of Section 01 33 00.
- B. Submit Shop Drawings of sheet metal items indicating profiles, jointing, terminations, sill pans and installation details. Indicate type and spacing of fasteners.
- C. Submittal of specific plates from the SMACNA Architectural Sheet Metal Manual constitutes acceptable documentation of installation details.
- D. Submit Product Data for pre-coated galvanized steel and flashing accessories.
- E. Submit two 4" square Samples illustrating metal finish color for pre-coated steel.

1.6 STORAGE AND HANDLING

- A. Store products under provisions of Section 01 87 00.
- B. Stack preformed material to prevent twisting, bending, or abrasion, and to provide ventilation.
- C. Prevent contact with materials during storage which may cause discoloration, staining, or damage.

1.7 WARRANTY

- A. Provide manufacturer's 20-year warranty against defective materials and finish.
- B. Provide installer's 2-year warranty coverage for water tightness and integrity of seals.

PART 2 - PRODUCTS

2.1 SHEET MATERIALS

- A. Pre-Coated Galvanized Steel: ASTM A755 on zinc-coated galvanized substrate, ASTM A653, Grade 33, G90 zinc coating in accordance with ASTM A924; 0.0299" thick core steel, factory pre-coated with "Kynar 500" or "Hylar 5000"

coating of color to match sheet metal roofing specified in Section 07 61 00.

2.2 ACCESSORIES

- A. Fastener: Galvanized steel or stainless steel with soft neoprene washers at exposed fasteners. Finish exposed fasteners shall match pre-coated metal.
- B. Underlayment: ASTM D266; No. 30 asphalt-saturated roofing felt.
- C. Metal Primer: As specified in Section 09 91 00.
- D. Protective Backing Paint: Zinc chromate alkyd.
- E. Slip Sheet: 0.05 psf, rosin-sized building paper.
- F. Silicone Sealant: One-part nonacid-curing silicone sealant complying with ASTM C920, Type S, Grade NS, Class 25:
 - 1. Dow Corning Corp., "Dowsil 790 Silicone Building Sealant"., www.dow.com
 - 2. General Electric Co., "SCS2000 Silpruf Sealant"., siliconeforbuilding.com
 - 3. Tremco, Inc., "Spectrem® 1"., www.tremosealants.com
 - 4. Pecora Corp., "Pecora 864NST" or "Pecora 890NST"., www.pecora.com
- G. Bedding Compound: Rubber-asphalt type.
- H. Plastic Cement: ASTM D4586, Type I.
- I. Metal Flashing System: Two piece pre-coated galvanized steel similar to Springlok Flashing System, manufactured by Fry Reglet, type as indicated. Include fabricated end closures and mitered corners.
- J. Solder for Zinc: ASTM B32; 50/50 tin/lead type, with rosin flux.
- K. Self-Adhesive Flexible Sheet Flashing: 40-mil-thick composite of polyethylene film and self-adhesive rubberized asphalt with embossed slip-resistant surface; "Ice and Water Shield" by W.R. Grace or approved equal.
- L. Manufactured Reglets: Two piece pre-coated galvanized steel, spring-action type similar to "Springlock Flashing System" or approved equal, manufactured by Fry Reglet, type as indicated. Include fabricated end closures and mitered corners. Finish: Manufacturer's gray epoxy primer; exposed portions shall be field finish painted as specified in Section 09 91 00.

2.3 FABRICATION

- A. Form sections true to shape, accurate in size, square, and free from distortion or defects.
- B. Fabricate concealed cleats of galvanized steel, ASTM A653, Grade 33, G90 zinc coating, 0.0478" thickness, interlockable with sheet.
- C. Fabricate exposed cleats and coverplates of same material as sheet, interlockable with sheet.
- D. Form pieces in longest practical lengths.
- E. Hem exposed edges on underside 1/2". Miter and seam corners.
- F. Form material with flat lock seam.
- G. Solder and seal metal joints. After soldering, remove flux. Wipe and wash solder joints clean.
- H. Fabricate corners from one piece with minimum 18" long legs; seam for rigidity, seal with sealant.
- I. Fabricate vertical faces with bottom edge formed outward 1/4" and hemmed to form drip.
- J. Fabricate flashings to allow toe to extend 4" over bituminous base flashings and/or roofing surface. Return and brake edges.

2.4 FINISH

- A. Shop prepare and prime exposed ferrous metal surfaces.
- B. Back-paint concealed metal surfaces with protective backing paint to a minimum dry film thickness of 15 mil.
- C. Site paint exposed to view metal surfaces under provisions of Section 09 91 00.
- D. "Kynar 500" or "Hylar 5000" factory pre-coated finish with 0.2 mil baked on primer and 0.8 mil baked on topcoat for a 1.0 mil dry film thickness. Finish shall be warrantied for a minimum of 20 years against all defects.

PART 3 - EXECUTION

3.1 INSPECTION

- A. Verify roof openings, curbs, pipes, sleeves, ducts, or vents through roof are solidly set, cant strips and reglets are in place, and nailing strips located.

- B. Verify membrane termination and base flashings are in place, sealed, and secure.
- C. Contractor to confirm that site conditions and substrates are ready for sheet metal work to commence. If not, make suitable repairs or adjustments to the work. Beginning of installation means acceptance of existing conditions.

3.2 PREPARATION

- A. Field measure site conditions prior to fabricating Work.
- B. Install starter and edge strips, and cleats before starting installation.
- C. Install surface-mounted reglets true to line and level. Seal top with sealant.
- D. Install underlayment with protective slip sheet over parapets, caps, copings, gravel stops and curbs.

3.3 INSTALLATION

- A. Conform to indicated details on the Drawings and the recommendations included in the SMACNA Architectural Sheet Metal Manual.
- B. Provide for thermal expansion of exposed sheet metal Work. Space movement joints at 10' on center maximum with no joints within 2' of corners. Attach members with clips to permit movement without damage, or provide slotted or oversize holes with washers.
- C. Form expansion joints of intermeshing hooked flanges filled with sealant.
- D. Insert flashings into reglets to form tight fit. Secure in place with lead wedges at maximum 12" on center. Pack remaining spaces with lead wool. Seal flashings into reglets with sealant.
- E. Secure flashings in place using concealed fasteners. Use exposed fasteners only where indicated.
- F. Lap, lock, seam and seal all joints. Make lock seam Work flat and true to line, and sweat full of solder, except where installed to permit expansion and contraction. Lap flat lock seams, and lap seams where soldered according to pitch, but in no case less than 3". Make seams in direction of flow.
- G. Apply plastic cement compound between metal flashings and felt flashings. Apply bituminous coating between dissimilar metals where occurs.
- H. Fit flashings tight in place. Make corners square, surfaces true and straight in planes, and lines accurate to profiles.

- I. Roof-Penetration, Vent Pipe Flashing: Turn lead flashing down inside vent piping. Clamp flashing to other pipes penetrating roof except for vent piping. Seal with elastomeric sealant.
- J. Solder metal joints watertight for full metal surface contact. After soldering, wash metal clean with neutralizing solution and rinse with water.
- K. Seal metal joints watertight and weathertight throughout.

3.4 FIELD QUALITY CONTROL

- A. Conform to SMACNA Architectural Sheet Metal Manual.
- B. Field observation will involve surveillance of Work during installation to ascertain compliance with specified requirements.

3.5 CLEANING AND ADJUSTMENT

- A. Leave Work clean and free of stains, scrap and debris.
- B. Repair and replace damaged Work.

END OF SECTION

SECTION 07 92 00
Joint Sealers

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Preparing sealant substrate surfaces.
- B. Sealant and backing.

1.2 SUMMARY OF SEALANT LOCATIONS

- A. Joints in Horizontal Surfaces:
 - 1. Expansion and isolation joints in cast-in-place concrete slabs.
 - 2. Expansion and isolation joints in masonry paving.
 - 3. Joints in flashing and sheet metal.
 - 4. Perimeter joints of toilet fixtures.
 - 5. Acoustical isolation joints between head and sill of walls and floor and ceiling surfaces.
 - 6. Joints between countertops and wall surfaces.
 - 7. Joints between dissimilar materials and those listed above.
 - 8. Other joints as indicated.
- B. Joints in Vertical Surfaces:
 - 1. Expansion and isolation joints in masonry.
 - 2. Joints in flashing and sheet metal.
 - 3. Perimeter joints of toilet fixtures.
 - 4. Acoustical isolation joints of walls.
 - 5. Joints between dissimilar materials and those listed above.
 - 6. Other joints as indicated.

1.3 REFERENCES

- A. ASTM C834 - Standard Specification for Latex Sealing.
- B. ASTM C919 - Standard Practices for Use of Sealants in Acoustical Applications.
- C. ASTM C920 – Standard Specification for Elastomeric Joint Sealants.
- D. ASTM C1193 - Standard Guide for Use of Joint Sealants.
- E. ASTM D217 – Standard Test Methods for Cone Penetration of Lubricating Grease.
- F. ASTM D1056 – Standard Specification for Flexible Cellular Materials - Sponge or Expanded Rubber.
- G. SWRI - (Sealant, Waterproofing and Restoration Institute) - Sealant and Caulking Guide Specification.

1.4 SUBMITTALS

- A. Submit under provisions of Section 01 33 00.
- B. Submit Product Data indicating sealant chemical characteristics, performance criteria, limitations, and color availability.
- C. Submit two 4" long Samples illustrating colors selected.

1.5 QUALITY ASSURANCE

- A. Manufacturer: Company specializing in manufacturing the products specified in this Section with minimum five years documented experience.
- B. Applicator: Company specializing in applying the Work of this Section with minimum three years documented experience, approved by sealant manufacturer.
- C. Conform to Sealant, Waterproofing, and Restoration Institute (SWRI) requirements for materials and installation.
- D. Perform Work in accordance with ASTM C1193.
- E. Perform acoustical sealant application work to provide maximum STC values in accordance with ASTM C919.

1.6 ENVIRONMENTAL REQUIREMENTS

- A. Do not install solvent curing sealants in enclosed building spaces.
- B. Do not install sealant when temperature is less than 40°F.

- C. Maintain temperature and humidity recommended by the sealant manufacturer during and after installation.

1.7 WARRANTY

- A. Provide sealant manufacturer's 5 year warranty against defects in materials.
- B. Include coverage for installed sealants and accessories which fail to achieve air and water seal and exhibit loss of adhesion or cohesion or do not cure.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Manufacturers and products are listed for each sealant type.
- B. Substitutions: Under provisions of Section 01 62 00.

2.2 SEALANTS

- A. Type A - Acrylic Latex: One-part, non-sag, mildew resistant acrylic emulsion compound complying with ASTM C834, Type S, Grade NS, formulated to be paintable:
 - 1. Tremco Inc., Acrylic Latex Caulk "Tremflex 834/TremPro 655", www.tremosealants.com
 - 2. Bostik Construction Products Division, www.bostik-us.com
 - 3. Pecora Corporation, "Pecora AC-20"., www.pecora.com
- B. Type B - Butyl Sealant: One-part, non-sag solvent-release-curing sealant complying with FS TT-S-001657 for Type 1 and formulated with a minimum of 75% solids:
 - 1. Tremco Inc., Tremco "Bitul Sealant"., www.tremosealants.com
 - 2. Bostik Construction Products Division, www.bostik-us.com
 - 3. Pecora Corporation, "~~BC-158~~"., www.pecora.com
- C. Type C - Silicone Sealant: One-part nonacid-curing silicone sealant complying with ASTM C920, Type S, Grade NS, Class 25:
 - 1. Dow Corning Corp., "Dowsil 790 Silicone Building Sealant"., www.dow.com

2. General Electric Co., "SCS2000 Silpruf Sealant"., siliconeforbuilding.com
 3. Tremco, Inc., "Spectrem® 1"., www.tremosealants.com
 4. Pecora Corp., "Pecora 864NST" or "Pecora 890NST"., www.pecora.com
- D. Type D - Neutral-Curing Silicone Sealant: One part medium modulus neutral-curing silicone sealant complying with ASTM C920, Type S, Grade NS, Class 25:
1. Dow Corning Corp., Dowsil 795 Silicone Building Sealant., www.dow.com.
 2. General Electric Co., "SSG4000 Ultraglaze Sealant"., siliconeforbuilding.com
 3. Tremco, Inc., "Spectrem® 3"., www.tremosealants.com
 4. Pecora Corp., "Pecora 895NST"., www.pecora.com
- E. Type E - One-Part Mildew-Resistant Silicone Sealant: Complying with ASTM C920, Type S, Grade NS, Class 25:
1. Dow Corning Corp., Dowsil 786 Silicone Sealant., www.dow.com.
 2. General Electric Co., "SCS1700 Sanitary"., siliconeforbuilding.com
 3. Tremco, Inc., "Proglaze®" White., www.tremosealants.com
 4. Pecora Corp., "~~863~~" or "Pecora 898NST" White., www.pecora.com
- F. Type F - Multi-Part Pourable Sealant: Complying with ASTM C920, Type M, Grade P, Class 25. Shore A hardness +40:
1. Tremco, Inc.
 2. Pecora Corp., "Pecora DynaTred" or "Pecora Urexpan NR-200"., www.pecora.com
 3. Sika Corporation, "Sikaflex 2C NS EZ Mix"., usa.sika.com
 4. W.R. Meadows, "Pourthane NS/SL"., www.wrmeadows.com
- G. Type G - Acoustical Sealant: Nondrying, nonhardening permanently flexible conforming to ASTM D217:
1. Pecora Corp., "Pecora BA-98" Acoustical Sealant., www.pecora.com
 2. Tremco, Inc., "Tremco Acoustical Sealant"., www.tremosealants.com

3. United States Gypsum Co., "Sheetrock® Acoustical Sealant"., www.usg.com
- H. Type H - Sound and Fire Protective Rated Moldable Putty Pads as wall opening protective materials when code required in fire-rated walls:
 1. Tremco, Inc., TREMstop® MP "Firestopping Putty Pads"., www.tremosealants.com
 2. 3M Inc., "3M Fire Barrier Moldable Putty Pads MPP+", www.3m.com
 3. Hilti Co., CP 617 Firestop Putty Pad"., www.hilti.com

2.3 ACCESSORIES

- A. Primer: Non-staining type, recommended by sealant manufacturer to suit application.
- B. Joint Cleaner: Non-corrosive and non-staining type, recommended by sealant manufacturer; compatible with joint forming materials.
- C. Joint Backing: ASTM D1056; round, closed cell polyethylene foam rod; oversized 30% to 50% larger than joint width.
- D. Bond Breaker: Pressure-sensitive tape recommended by sealant manufacturer to suit application.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Verify that joint openings are ready to receive Work and field measurements are as shown on Drawings and recommended by the manufacturer.
- B. Beginning of installation means installer accepts existing substrate.

3.2 PREPARATION

- A. Clean and prime joints in accordance with manufacturer's instructions. Prime if recommended by manufacturer.
- B. Remove loose materials and foreign matter which might impair adhesion of sealant.
- C. Verify that joint backing and release tapes are compatible with sealant.
- D. Perform preparation in accordance with ASTM C1193.

- E. Protect elements surrounding the Work of this Section from damage or disfiguration.

3.3 INSTALLATION

- A. Install sealant in accordance with manufacturer's instructions.
- B. Measure joint dimensions and size materials to achieve required width/depth ratios.
- C. Install joint backing to achieve a neck dimension no greater than 1/3 the joint width.
- D. Install bond breaker where joint backing is not used.
- E. Apply sealant within recommended application temperature ranges. Consult manufacturer when sealant cannot be applied within these temperature ranges.
- F. Install sealant free of air pockets, foreign embedded matter, ridges, and sags.
- G. Tool joints concave unless otherwise detailed.

3.4 CLEANING AND REPAIRING

- A. Clean work under provisions of Section 01 77 00.
- B. Clean adjacent soiled surfaces.
- C. Repair or replace defaced or disfigured finishes caused by Work of this Section.

3.5 PROTECTION OF FINISHED WORK

- A. Protect sealants until cured.

3.6 SCHEDULE

<u>Type</u>	<u>Location</u>	<u>Color</u>
Type A - Acrylic Latex Cure	All interior joints otherwise Scheduled	To match adjacent surfaces
Type B - Butyl	Under thresholds	Black
Silicone	Interior vertical joints in concrete masonry, metal flashing	To match adjacent material

Type E - Mildew-Resistant Silicone

Interior joints in ceramic tile and plumbing fixtures

To match adjacent existing

Type F - Multi-part Pourable Urethane

Exterior & interior joints in horizontal surfaces of concrete; between metal & concrete masonry and mortar

To match adjacent material

END OF SECTION

SECTION 09 29 00

Gypsum Board

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Gypsum board.
- B. Taped and sanded joint treatment.
- C. Surface primer.
- D. Texture finish.
- E. Level 5 finish, if indicated.

1.2 REFERENCES

- A. ASTM C11 - Standard Terminology Relating to Gypsum and Related Building Materials and Systems.
- B. ASTM C1396 - Gypsum Wallboard.
- C. ASTM C475 - Joint Treatment Materials for Gypsum Wallboard Construction.
- D. ASTM C514 - Nails for the Application of Gypsum Wallboard.
- E. ASTM C630 - Water Resistant Gypsum Backing Board.
- F. ASTM C754 - Installation of Steel Framing Members to Receive Screw Attached Gypsum Wallboard, Backing Board, or Water Resistant Backing Board.
- G. ASTM C840 - Application and Finishing of Gypsum Board.
- H. ASTM C919 - Use of Sealants in Acoustical Applications.
- I. ASTM C1002 - Steel Drill Screws for the Application of Gypsum Board.
- J. GA 201 - Using Gypsum Board for Walls and Ceilings.
- K. GA 214 - Levels of Gypsum Board Finish.
- L. GA 216 - Application and Finishing of Gypsum Board.
- M. GA 600 - Fire Resistance Design Manual.
- N. CBC - California Building Code.

- O. UL - Underwriters Laboratories.

1.3 QUALITY ASSURANCE

- A. Applicator: Company specializing in gypsum board systems, with five years documented experience.

1.4 REGULATORY REQUIREMENTS

- A. Conform to CBC, Chapter 7, and UL and GA requirements for fire-rated assemblies.

1.5 DEFINITIONS

- A. Refer to ASTM C11 for definitions of terms related to gypsum board assemblies.

1.6 FIELD SAMPLES

- A. Provide field samples under provisions of Section 01 33 00.
- B. On wall and ceiling surface duplicate specified texture finish on at least 100 square feet of surface area.
- C. Provide complete finish including surface primer.
- D. Simulate finished lighting conditions for review of field sample.
- E. After surface texture is accepted, the accepted surface will remain as part of the Work and will be used to evaluate subsequent applications of finish texture.

1.7 SUBMITTALS

- A. Submit under provisions of Section 01 33 00.
- B. Provide Product Data for all items specified.
- C. Submit 12" square Samples of each texture finish specified.

PART 2 - PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS

- A. Georgia Pacific Corp.
- B. National Gypsum Company.

- C. United States Gypsum Co.
- D. Substitutions: Under provisions of Section 01 62 00.

2.2 FRAMING MATERIALS

- A. Fasteners: ASTM C1002.

2.3 GYPSUM BOARD MATERIALS

- A. Standard Gypsum Board: ASTM C36; 5/8" thick unless otherwise indicated, maximum permissible length; ends square cut, tapered and beveled edges.
- B. Moisture-Resistant Gypsum Board: ASTM C630; 5/8" thick unless otherwise indicated, maximum permissible length; ends square cut, tapered and beveled edges.

2.4 ACCESSORIES

- A. Acoustical Sealant: Non-hardening, non-skinning, for use in conjunction with gypsum board.
 - 1. "Sheetrock Acoustical Sealant", manufactured by United States Gypsum Company.
 - 2. "BA-98 Acoustical Sealant", manufactured by Pecora Corporation.
 - 3. "Tremco Acoustical Sealant", manufactured by Tremco, Inc.
- B. Corner Beads: Metal, hot dip galvanized.
- C. Edge Trim: GA 201 and GA 216; Type LC bead, unless otherwise indicated.
- D. Control Joints: Roll-formed zinc, USG No. 093, or approved equal.
- E. Spot Grout: ASTM C475, setting-type joint compound.
- F. Joint Materials: ASTM C475; reinforcing tape, joint compound, adhesive, water, and fasteners. Use tapes and compound recommended by gypsum board manufacturer for the use intended. Use ready mixed, drying type compounds. Use taping compound for embedding tape and first coat over fasteners and flanges of corner beads and trim. Use topping compound for fill and finish coats.
- G. Primer: Flat latex basecoat paint equivalent to "First Coat" manufactured by United States Gypsum Company.
- H. Other Textures: To match existing.

PART 3 - EXECUTION

3.1 INSPECTION

- A. Verify that site conditions are ready to receive Work.
- B. Beginning of installation means acceptance of substrate.

3.2 MEMBRANE INSTALLATION

- A. Install membrane over wall studding where moisture resistant gypsum board is to be installed.
- B. Install membrane over substrate; weatherlap horizontal edges 4", vertical edges 6".

3.3 GYPSUM BOARD INSTALLATION

- A. Install gypsum board in accordance with ASTM C840 and manufacturer's instructions.
- B. Erect single layer standard gypsum board in most economical direction, with ends and edges occurring over firm bearing except those ends and edges which are perpendicular to framing.
- C. Erect single layer fire rated gypsum board vertically, with edges and ends occurring over firm bearing except those ends and edges which are perpendicular to framing members. Comply with required UL, CBC, or GA fire rated assembly.
- D. Erect double layer gypsum board with standard gypsum board for first layer placed in most economical direction with second layer placed parallel to face layer with adhesive and supplementary fasteners. Off-set joints of second layer from joints of first layer by at least 12".
- E. Erect double layer fire-rated gypsum board in accordance with required UL, CBC, or GA fire rated assembly.
- F. Use screws when fastening gypsum board to metal furring.
- G. Use screws when fastening gypsum board to wood furring or framing except where nails are required for UL or CBC fire-rated assembly.
- H. Install firestop sealant at wall penetrations and terminations in accordance with required UL, CBC, or GA fire-rated assembly in accordance with Section 07 84 00.

- I. Treat cut edges and holes in moisture-resistant gypsum board with sealant.
- J. Place corner beads at external corners. Use longest practical length. Place edge trim where gypsum board abuts dissimilar materials.
- K. Spot grout metal door frames. Apply spot grout at each jamb anchor clip just before inserting board into frame.

3.4 JOINT TREATMENT

- A. Tape, fill, and sand joints, edges, and corners in accordance with GA 214.
- B. Feather successive coats a minimum of 2" onto adjoining surfaces for each coat.
- C. Where fire-resistance rating is required, detail of joint treatment shall meet fire-rating requirement.
- D. Level 1 Treatment:
 - 1. All joints and angles shall have tape embedded in joint compound.
 - 2. Surface shall be free of excess joint compound.
 - 3. Tool marks and ridges are acceptable.
 - 4. Use for plenum areas above ceiling, in areas that are generally concealed and other areas not normally open to view.
- E. Level 2 Treatment:
 - 1. All joints and angles shall have tape embedded in joint compound and one separate coat of joint compound shall be applied over all fastener heads and accessories.
 - 2. Surface shall be free of excess joint compound.
 - 3. Tool marks and ridges are acceptable.
 - 4. Use where surface is substrate to ceramic tile, acoustic tile, or tackable wallboard system.
- F. Level 3 Treatment:
 - 1. Not used.
- G. Level 4 Treatment:
 - 1. All joints and angles shall have tape embedded in joint compound with three separate coats of topping compound applied over all joints, angles,

fasteners, and accessories.

2. All compound shall be smooth and free of tool marks and ridges.
3. Sand lightly between coats, taking care not to roughen face paper.
4. Use for all surfaces that are scheduled to receive a textured and painted finish, except areas of food service and preparation, or a surface applied wallcovering.
5. Where patching skip-trowel, knock-down or other finishes, match existing to the greatest extent possible.

H. Level 5 Treatment:

1. All joints and angles shall have tape embedded in joint compound with three separate coats of topping compound applied over all joints, fasteners, and accessories.
2. Apply a thin skim coat of topping compound over entire surface.
3. All compounds shall be smooth and free of tool marks and ridges.
4. Sand lightly between coats.

3.5 FINISHING

- A. Roller apply surface primer to all gypsum board surfaces scheduled to receive a painted and textured finish prior to application of paint or texture finish.
- B. Spray apply textured finish to all surfaces scheduled to receive a paint finish except surfaces of food service and preparation areas.
- C. Trowel-apply patch-to-match textures to match existing.
- D. Remove any overspray of texture finish from door frames, windows, and other adjoining construction.

3.6 TOLERANCES

- A. Maximum Variation from True Flatness: 1/8" in 10' in any direction.

3.7 SCHEDULE

- A. Existing Construction: Patch-to-match, or if exceeds 30% of existing wall, strip and replace to the nearest surface break and treat this area as new construction.

<u>Room Type</u>	<u>Wallboard System</u>	<u>Finish Type</u>	<u>Notes</u>
Wet Areas	5/8", Type MR	Match Existing	Coordinate with FRP Wainscot.

END OF SECTION

SECTION 09 53 33
Fiber Reinforced Plastic Panels

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Fiberglass reinforced plastic (FRP) panels.
- B. Panel moldings.
- C. Adhesives.

1.2 REFERENCES

- A. ASTM E84 - Surface Burning Characteristics of Building Materials.

1.3 SUBMITTALS

- A. Submit under provisions of Section 01 33 00.
- B. Submit Product Data for panels and accessories.
- C. Submit two 4-inch square Samples illustrating panel pattern and color. Submit two 12 inch long Samples of panel moldings.
- D. Submit manufacturers installation instructions.

1.4 OPERATION AND MAINTENANCE DATA

- A. Submit maintenance data under provisions of Section 01 70 00.
- B. Include data for cleaning and stain removal.
- C. Include manufacturer's recommendations for cleaning materials, polishes, and waxes.

1.5 REGULATORY REQUIREMENTS

- A. Provide products having flame/smoke-developed rating of 25/450 when tested in accordance with ASTM E84.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Deliver, store, and protect products to site under provisions of Section 01 87 00.

1.7 ENVIRONMENTAL REQUIREMENTS

- A. Do not install fiberglass reinforced plastic panels when temperatures are below 60 degrees F or above 90 degrees F.
- B. Maintain temperature range for 24 hours before, during, and 72 hours after installation of panels.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Glasteel Inc., (818) 357-8081.
- B. Kemlite Co., (800) 435-0080.
- C. Marlite, (310) 944-0157.
- D. Substitutions: Under provisions of Section 01 62 00.

2.2 MATERIALS

- A. Fiberglass reinforced plastic panels 0.090 inch thick in 4 foot wide sheets.
- B. Panels shall have pebble textured surface finish in color to be selected by Architect.
- C. Panels shall have a flame/smoke-developed rating of 25/450 for a Class A finish when tested according to ASTM E84.

2.3 ACCESSORIES

- A. Moldings: Extruded plastic J and H configured joint accessories in maximum practical lengths. Color and finish shall match panels.
- B. Adhesive: Latex-based non-flammable construction adhesive.
- C. Sealant: One-Part Mildew-Resistant Silicone Sealant: Complying with ASTM C920, Type S, Grade NS, Class 25:
 - 1. Dow Corning Corp., Dowsil 786 Silicone Sealant., www.dow.com.
 - 2. General Electric Co., "SCS1700 Sanitary"., siliconeforbuilding.com
 - 3. Tremco, Inc., "Proglaze®" White., www.tremosealants.com

4. Pecora Corp., "863" or "Pecora 898NST" White., www.pecora.com

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Verify that surfaces and openings are ready to receive Work.
- B. Verify that field measurements and tolerances are as instructed by manufacturer.
- C. Verify that required utilities are available, in proper location, and ready for use.
- D. Beginning of installation constitutes acceptance of existing substrate surface conditions by installer.

3.2 PREPARATION

- A. Clean substrate surfaces.
- B. Protect elements of work adjacent to Work of this Section from damage or disfiguration.

3.3 INSTALLATION

- A. Lay out vertical joints to minimize interference with fixtures and accessories.
- B. Coordinate layout of top and bottom joints with other trades.
- C. Install panels and accessories in accordance with manufacturer's instructions.
- D. Apply panel adhesive at 6 inches on center over entire field of panel.
- E. Set panel ends and edges in moldings.
- F. Seal moldings and panel joints including transitions to adjacent surface finishes with sealant.

3.4 FIELD QUALITY CONTROL

- A. Panels shall lay flush with substrate, without air pockets or warpage.
- B. Remove and replace panels not conforming to manufacturers installation guidelines.

3.5 CLEANING

- A. Clean work under provisions of Section 01 70 00.

3.6 PROTECTION

- A. Protect finished installation under provisions of Section 01 87 00.

END OF SECTION

SECTION 09 91 00

Painting

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Surface preparation.
- B. Products and application.
- C. Surface finish schedule.
- D. Patch to match existing.

1.2 REFERENCES

- A. ASTM D16 - Definitions of Terms Relating to Paint, Varnish, Lacquer, and Related Products.
- B. ASTM D2016 - Test Method for Moisture Content of Wood.
- C. SSPC-SP 1 - Solvent Cleaning
- D. SSPC-SP 2 - Hand Tool Cleaning
- E. SSPC-SP 3 - Power Tool Cleaning
- F. SSPC-SP 13 / NACE No. 6 - Surface Preparation for Concrete

1.3 SYSTEM DESCRIPTION

- A. Preparation of all surfaces to receive final finish.
- B. Painting and finishing Work of this Section using coating systems of materials including primers, sealers, fillers, and other applied materials whether used as prime, intermediate, or finish coats.
- C. Surface preparation, priming, and finish coats specified in this Section are in addition to shop-priming and surface treatment specified under other Sections.
- D. Painting and finishing all exterior and interior surfaces of materials including structural, mechanical, and electrical Work on site, in building spaces, and above or on the roof.
- E. Paint exposed surfaces except where a surface or material is specifically indicated not to be painted or is to remain natural. Where an item or surface is

not specifically mentioned, paint the same as similar adjacent materials or surfaces.

1.4 DEFINITIONS

- A. Conform to ASTM D16 for interpretation of terms used in this Section.

1.5 QUALITY ASSURANCE

- A. Product Manufacturer: Company specializing in manufacturing quality paint and finish products with five years experience.
- B. Applicator: Company specializing in commercial painting and finishing with five years documented experience.
- C. Regulatory Requirements: Comply with applicable codes and regulations of governmental agencies having jurisdiction including those having jurisdiction over airborne emissions and industrial waste disposal. Where those requirements conflict with this specification, comply with the more stringent provisions. Comply with the current applicable regulations of the California Air Resources Board (CARB) and the Environmental Protection Agency (EPA).
- D. Coats: The number of coats specified is the minimum number acceptable. If full coverage is not obtained with the specified number of coats, apply such additional coats as are necessary to produce the required finish.
- E. Employ coats and undercoats for all types of finishes in strict accordance with the recommendations of the paint manufacturer.
- F. Provide primers and undercoat paint produced by the same manufacturer as the finish coat.

1.6 SUBMITTALS

- A. Submit under provisions of Section 01 33 00.
- B. Provide manufacturer's technical information and instructions for YCCD Yuba Community College New Softball Field & Site Improvements List each material by catalog number and cross-reference specific coating with specified finish system.
- C. Provide manufacturer's certification that products proposed meet or exceed specified materials.
- D. Selection Samples: Submit a complete set of color chips that represent the full range of manufacturer's color samples available.
- E. Submit four 8-1/2" x 11" Samples of selected paint, color, finish/sheen and

texture applied to thick white card stock. Resubmit Samples until acceptable color, sheen and texture is obtained.

- F. On same species and quality of wood to be installed, submit two 4" x 8" Samples showing system to be used.
- G. Coating Maintenance Manual: upon conclusion of the project, the Contractor or paint manufacture/supplier shall furnish a coating maintenance manual, such as Sherwin-Williams "Custodian Project Color and Product Information" report or equal. Manual shall include an Area Summary with finish schedule, Area Detail designating where each product/color/finish was used, product data pages, Material Safety Data Sheets, care and cleaning instructions, touch-up procedures, and color samples of each color and finish used.

1.7 FIELD SAMPLES

- A. Provide field samples under provisions of Section 01 33 00.
- B. On wall surfaces and other exterior and interior components, duplicate specified finishes on at least 100 square feet of surface area.
- C. Provide full-coat finishes until required coverage, sheen, color and texture are obtained.
- D. Simulate finished lighting conditions for review of field samples.
- E. After finishes are accepted, the accepted surface may remain as part of the Work and will be used to evaluate subsequent coating systems applications of a similar nature.

1.8 DELIVERY, STORAGE, AND HANDLING

- A. Deliver products to site in sealed and labeled containers; inspect to verify acceptance.
- B. Container labeling to include manufacturer's name, type of paint, brand name, brand code, VOC content, Environmental handling, Batch date, coverage, surface preparation, drying time, cleanup, color designation, and instructions for mixing and reducing. Paint containers not displaying product identification will not be acceptable.
- C. Storage: Store and dispose of solvent-based materials, and materials used with solvent-based materials, in accordance with requirements of local authorities having jurisdiction. Store paint materials at minimum ambient temperature of 45°F and a maximum of 90°F, in well ventilated area, unless required otherwise by manufacturer's instructions.
- D. Take precautionary measures to prevent fire hazards and spontaneous

combustion.

- E. Handling: Maintain a clean, dry storage area, to prevent contamination or damage to the coatings.

1.9 ENVIRONMENTAL REQUIREMENTS

- A. Provide continuous ventilation and heating facilities to maintain surface and ambient temperatures above 45°F for 24 hours before, during, and 48 hours after application of finishes, unless required otherwise by manufacturer's instructions.
- B. Do not apply exterior coatings during rain or snow, or when relative humidity is above 50%, unless required otherwise by manufacturer's instructions.
- C. Minimum Application Temperatures for Latex Paints: 45°F for interiors; 50°F for exterior; unless required otherwise by manufacturer's instructions.
- D. Minimum Application Temperature for Varnish and Urethane Finishes: 65°F for interior or exterior, unless required otherwise by manufacturer's instructions.
- E. Provide lighting level of 80 foot-candles measured mid-height at substrate surface.

1.10 EXTRA STOCK

- A. Provide a ten gallon container of each finish paint color to District for touchup.
- B. Label each container with color, texture, and room locations in addition to the manufacturer's label.

PART 2 - PRODUCTS

2.1 ACCEPTABLE MANUFACTURER

1. Sherwin-Williams Company
101 Prospect Avenue NW
Cleveland, OH 44115
Tel: (800) 321-8194
Fax: (216) 566-1392
www.sherwin-williams.com

2.2 SUBSTITUTIONS:

- A. Requests for substitutions will be considered in accordance with provisions of Section 01 62 00.

- B. When submitting request for substitution, provide complete product data specified above under Submittals, for each substitute product.

2.3 MATERIALS

- A. Ready mixed, except field catalyzed coatings. Process pigments to a soft paste consistency, capable of being readily and uniformly dispersed to a homogeneous coating.
- B. Good flow and brushing properties; capable of drying or curing free of streaks or sags.
- C. Accessory Materials: Linseed oil, shellac, turpentine, paint thinners and other materials not specifically indicated but required to achieve the finishes specified, of commercial quality.

2.4 FINISHES

- A. Refer to schedule at end of Section for surface finish schedule.

2.5 Surfaces to Be Coated:

- A. Metal Ferrous: Exposed and/or Exterior Structural Steel, Posts, Beams
- B. Wood: Exposed and/or Exterior Beams, Posts, Frames, Doors, Trim
- C. Drywall: Drywall board, Gypsum board

PART 3 - EXECUTION

3.1 INSPECTION

- A. Verify that surfaces are ready to receive Work as instructed by the product manufacturer.
- B. Examine surfaces to be finished prior to commencement of Work. Report any condition that may potentially affect proper application.
- C. Measure moisture content of surfaces using an electronic moisture meter. Do not apply finishes unless moisture content of surfaces are below the following maximums:
 - 1. Plaster and Gypsum Wallboard: 12%.
 - 2. Interior Located Wood: 15%, measured in accordance with ASTM D2016.
- D. Beginning of installation means acceptance of existing surfaces.

3.2 SURFACE PREPARATION

WARNING!

Removal of old paint by sanding, scraping or other means may generate dust or fumes that contain lead. Exposure to lead dust or fumes may cause brain damage or other adverse health effects, especially in children or pregnant women. Controlling exposure to lead or other hazardous substances requires the use of proper protective equipment, such as a properly fitted respirator (NIOSH approved) and proper containment and cleanup. For more information, call the National Lead Information Center at 1-800-424-LEAD (in US) or contact your local health authority. Removal must be done in accordance with EPA Renovation, Repair and Painting Rule and all related state and local regulations. Care should be taken to follow all state and local regulations which may be stricter than those set under the federal RRP Rule.

WARNING!

- A. Proper product selection, surface preparation and application affect coating performance. Coating integrity and service life will be reduced because of improperly prepared surfaces. Selection and implementation of proper surface preparation ensures coating adhesion to the substrate and prolongs the service life of the coating system.
- B. Selection of the proper method of surface preparation depends on the substrate, the environment, and the expected service life of the coating system. Economics, surface contamination, and the effect on the substrate will also influence the selection of surface preparation methods.
- C. The surface must be dry and in sound condition. Remove oil, dust, dirt, loose rust, peeling paint or other contamination to ensure good adhesion.
- D. Remove mildew before painting by washing with a solution of 1 part liquid household bleach and 3 parts of warm water. Apply the solution and scrub the mildewed area. Allow the solution to remain on the surface for 10 minutes. Rinse thoroughly with clean water and allow the surface to dry a minimum of 48 hours before painting. Wear protective glasses or goggles, waterproof gloves, and protective clothing. Quickly wash off any of the mixture that comes in contact with your skin. Do not add detergents or ammonia to the bleach/water solution.
- E. Methods
 - 1. Drywall-Interior
Must be clean and dry. All nail heads must be set and spackled. Joints must be taped and covered with a joint compound. Spackled nail heads and tape joints must be sanded smooth and all dust removed prior to painting.
 - 2. Power Tool Cleaning, SSPC-SP3
Power Tool Cleaning removes all loose mill scale, loose rust, and other detrimental foreign matter. It is not intended that adherent mill scale, rust,

and paint be removed by this process. Before power tool cleaning, remove visible oil, grease, soluble welding residues, and salts by the methods outlined in SSPC-SP1.

3. A Brush-Off Blast Cleaned surface, when viewed without magnification, shall be free of all visible oil, grease, dirt, dust, loose mill scale, loose rust, and loose paint. Tightly adherent mill scale, rust, and paint may remain on the surface. Before blast cleaning, visible deposits of oil or grease shall be removed by any of the methods specified in SSPC-SP 1 or other agreed upon methods.
4. Wood
Must be clean and dry. Knots and pitch streaks must be scraped, sanded, and spot primed before a full priming coat is applied. Patch all nail holes and imperfections with a wood filler or putty and sand smooth.

3.3 WORK NOT TO BE PAINTED

- A. Painting is not required on surfaces in concealed and inaccessible areas such as furred spaces, foundation spaces, utility tunnels, pipe spaces and duct shafts.
- B. Do not paint metal surfaces such as stainless steel, chromium plate, brass, bronze, and similar finished metal surfaces.
- C. Do not paint anodized aluminum or other surfaces which are specified to be factory pre-finished.
- D. Do not paint sandblasted or architecturally finished concrete surfaces.
- E. Do not paint over Underwriters Laboratories, Factory Mutual or other code-required labels or identifications.

3.4 APPLICATION

- A. Apply products in accordance with manufacturer's instructions.
- B. Do not apply finishes to surfaces that are not dry.
- C. Apply each coat to uniform finish.
- D. Apply each coat of paint slightly darker than preceding coat unless otherwise approved.
- E. Sand lightly between coats to achieve required finish.
- F. Allow applied coat to dry before next coat is applied.
- G. The number of coats specified is the minimum that shall be applied. Apply

additional coats when undercoats, stains or other conditions show through final paint coat, until paint film is of uniform finish, color and appearance.

- H. Where clear finishes are required, tint fillers to match wood. Work fillers into the grain before set. Wipe excess from surface.
- I. Prime back surfaces of interior and exterior woodwork with primer paint.
- J. Prime back surfaces of interior woodwork scheduled to receive stain or varnish finish with gloss varnish reduced 25% with mineral spirits.
- K. Paint mill finished door seals to match door or frame.
- L. Paint primed steel glazing stops in doors to match door or frame.
- M. Cloudiness, spotting, lap marks, brush marks, runs, sags, spikes and other surface imperfections will not be acceptable.
- N. Where spray application is used, apply each coat of the required thickness. Do not double back to build up film thickness of two coats in one pass.
- O. Where roller application is used, roll and redistribute paint to an even and fine texture. Leave no evidence of roller laps, irregularity of texture, skid marks, or other surface imperfections.
- P. For painting of exterior patchwork, paint to the nearest surface break.

3.5 FINISHING MECHANICAL AND ELECTRICAL EQUIPMENT

- A. Paint shop primed equipment. Do not paint shop prefinished items.
- B. Remove unfinished louvers, grilles, covers, and access panels on mechanical and electrical components and paint separately.
- C. Prime and paint insulated and exposed pipes, conduit, boxes, insulated and exposed ducts, hangers, brackets, collars and supports, except where items are prefinished.
- D. Replace identification markings on mechanical or electrical equipment when painted accidentally.
- E. Paint both sides and edges of plywood backboards for electrical and telephone equipment before installing equipment.
- F. Replace electrical plates, hardware, light fixture trim, and fittings removed prior to finishing.
- G. Paint grilles, registers, and diffusers which do not match color of adjacent surface.

- H. Paint all mechanical and electrical equipment, vents, fans, and the like occurring on roof.
- I. Do not paint moving parts of operating units; mechanical or electrical parts such as valve operators; linkages; sensing devices; and motor shafts.
- J. Do not paint over labels or equipment identification markings.
- K. Do not paint mechanical room specialties such as compressors, boilers, pumps, control panels, etc.
- L. Do not paint switch plates, light fixtures, and fixture lenses.

3.6 CLEANING

- A. As Work proceeds, promptly remove paint where spilled, splashed, or spattered.
- B. During progress of Work maintain premises free of unnecessary accumulation of tools, equipment, surplus materials, and debris.
- C. Collect cotton waste, cloths, and material which may constitute a fire hazard, place in closed metal containers and remove daily from site.

3.7 PROTECTION OF COMPLETED WORK

- A. Erect barriers and post warning signs. Maintain in place until coatings are fully dry.
- B. Confirm that no dust generating activities will occur following application of coatings.

3.8 PATCHING

- A. After completion of painting in any one room or area, repair surfaces damaged by other trades.
- B. Touch-up or re-finish as required to produce intended appearance.

3.9 FIELD QUALITY CONTROL

- A. Field inspection and testing will be performed under provisions of Section 01 45 29.
- B. The District reserves the right to invoke the following test procedure at any time and as often as the District deems necessary.
- C. The District will engage the services of an independent testing agency to sample paint material being used.

- D. Samples of material delivered to the Project will be taken, identified, sealed, and certified in the presence of the Contractor.
- E. The testing agency will perform appropriate quantitative materials analysis and other characteristic testing of materials as required by the District.
- F. If test results show materials being used and their installation do not comply with specified requirements or manufacturer's recommendations, the Contractor may be directed to stop painting, remove noncomplying paint, pay for testing and repaint surfaces to acceptable condition.

3.10 COLOR SCHEDULE

- A. Paint and finish colors shall be custom color, mixed and formulated to the colors identified in the construction documents.
- B. Access doors, registers, exposed piping, electrical conduit and mechanical/electrical panels if not stainless steel; generally the same color as adjacent walls.
- C. Door and Frames: Per Construction Documents.
- D. Interior and Exterior Steel Fabrications, if not Stainless Steel: Per Construction Documents.
- E. Interior gypsum board walls and soffits: Per Construction Documents.

3.11 SCHEDULE - INTERIOR SURFACES

- A. DRYWALL (Walls, Ceilings, Gypsum Board, Plaster Board, etc.)
 - 1. Latex Systems:
 - a. Gloss Finish:
 - 1st Coat: S-W ProMar 200 Zero VOC Latex Primer, B28W2600 (4.0 mils wet, 1.0 mils dry)
 - 2nd Coat: S-W ProMar 200 Latex Gloss, B21-2200 Series
 - 3rd Coat: S-W ProMar 200 Latex Gloss, B21-2200 Series (4.0 mils wet, 1.5 mils dry per coat)
 - b. Semi-Gloss Finish:
 - 1st Coat: S-W Harmony® Interior Latex Primer, B11 Series (4.0 mils wet, 1.3 mils dry)
 - 2nd Coat: S-W Harmony Interior Latex Semi-Gloss, B10 Series
 - 3rd Coat: S-W Harmony Interior Latex Semi-Gloss, B10 Series (4.0 mils wet, 1.6 mils dry per coat)

Alternate:

1st Coat: S-W ProMar 200 Zero VOC Latex Primer, B28W2600 (4.0 mils wet, 1.0 mils dry)
2nd Coat: S-W ProMar 200 Zero VOC Latex Semi-Gloss, B31-2600 Series
3rd Coat: S-W ProMar 200 Zero VOC Latex Semi-Gloss, B31-2600 Series (4.0 mils wet, 1.6 mils dry per coat)

3.12 SCHEDULE - EXTERIOR SURFACES

A. Exterior CMU & Block Areas:

1. Latex Systems

a. Satin Finish

Filler: Loxon® Block Surfacer, A24W200

1st coat: A-100® Exterior Latex Satin, A82 Series

2nd coat: A-100® Exterior Latex Satin, A82 Series

B. Exterior Ferrous Metals (Including Handrails):

1. Acrylic Systems

a. Semi-Gloss Finish

Primer: Pro Industrial™ Pro-Cryl Universal Primer, B66-310

1st coat: Pro Industrial™ Acrylic Semi-Gloss, B66 Series

2nd coat: Pro Industrial™ Acrylic Semi-Gloss, B66 Series

C. Exterior Non-Ferrous Metals (Including Handrails):

1. Acrylic Systems

a. Semi-Gloss Finish

Primer: Pro Industrial™ Pro-Cryl® Universal Primer, B66-310

1st coat: Pro Industrial™ Acrylic Semi-Gloss, B66 Series

2nd coat: Pro Industrial™ Acrylic Semi-Gloss, B66 Series

D. Exterior Wood:

a. Satin Finish

Primer: Exterior Latex Wood Primer, B42W8041

1st coat: A-100® Exterior Latex Satin, A82 Series

2nd coat: A-100® Exterior Latex Satin, A82 Series

END OF SECTION

SECTION 10 14 00 Signage

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Exterior metal signs.
- B. Cast letters and numbers.
- C. Traffic Signs.
- D. Cast metal plaques.

1.2 SUBMITTALS

- A. Submit under provisions of Section 01 33 00.
- B. Shop Drawings: Submit dimensioned elevations of each sign configuration.
 - 1. Show sign sections indicating materials, thicknesses and attachment methods.
 - 2. Show anchors and reinforcement.
 - 3. Provide complete signage schedule indicating all signs and locations, key to room numbers and elevations. Provide space for Architect to indicate sign type and location.
- C. Product Data:
 - 1. Manufacturer's current published specifications.
 - 2. Manufacturer's installation instructions.
- D. Samples:
 - 1. Provide two Samples of each sign type required in the profiles and sizes indicated on the Drawings. Signs approved with correct color and type may be used in the final installation at the request of the Contractor.
 - 2. Provide Samples of all proposed fasteners and accessories.
 - 3. Three copies of manufacturer's color chart indicating all available standard colors for selection by the Architect.
- E. Closeout: Manufacturer's warranty.

1.3 PROJECT CONDITIONS

- A. Environmental Requirements: Install signs only when interior air and substrates have reached equilibrium moisture and temperature approximating that of normal occupied conditions.
- B. Do not install adhesive tape mounted signs when ambient temperature is below 7°F. Maintain this temperature during and after installation of signs. Unless otherwise noted by manufacture recommendations.

1.4 REGULATORY REQUIREMENTS

- A. Conform to C.C.R., Title 24, Part 2, Chapter 11B Div. 7, ADA Accessibility Guidelines (ADAAG), and American Disability Act (ADA) for accessibility requirements.
- B. Inspection: Tactile signs shall be field inspected for compliance after installation per Section 11B-703.1.1.2.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Deliver signs safely packed to prevent damage during shipment and prior to installation.
- B. Keep signs in protective wrapping until ready for installation.
- C. Handle carefully to prevent damage. Replace damaged parts at no cost to the District.
- D. Comply with the additional requirements specified in Section 01 87 00.

1.6 SCHEDULING

- A. Do not install signs until walls and/or doors have received final finish.

1.7 WARRANTY

- A. Procedures: In accordance with Section 01 78 36.
- B. Furnish manufacturer's written warranty agreeing to replace signs which fade or discolor under normal environmental exposure.
- C. Warranty Period: 5 years.

PART 2 - PRODUCTS

2.1 MANUFACTURERS AND PRODUCTS

- A. Subject to compliance with requirements specified herein. See Kaiser

specification standards for further information and guidelines.

- B. Substitutions: Under provisions of Section 01 62 00.

2.2 EXTERIOR METAL SIGNAGE

- A. Galvanized steel plate, 0.0538" thick, mechanically mounted.
- B. Porcelain copy, 1" high, colors as selected by Architect. Text and size shall be all uppercase as indicated on Drawings.
- C. Location of signs as shown on Drawings.
- D. Shop Fabricated Signs: All joints, returns and the like shall be properly joined together and welded edges shall be ground smooth to proper aluminum finish.
- E. Shapes shall be saw-cut smooth and straight and shall be deburred prior to final finishing and assembly. Square or rectangular shapes shall have radiused corners.
- F. Vandal resistant surface which can be cleaned using industrial cleansers, including acetone.
- G. Fasteners: All screws, bolts and fasteners to be tamper resistant stainless steel. All fasteners shall be to be provided with solid anchorage to studs, blocking or concrete; do not use toggle bolts.
- H. Colors: High contrast non-glare or semi-matte integral colors for graphics. All integral resins are UV stabilized resins utilizing automotive grade pigments.

2.3 CAST LETTERS AND NUMBERS

- A. Manufacturer: DID, ARK Ramos, Metal Arts Inc., ASI Modulux, or approved equal.
- B. Standard cast letters, [No. 530 "Optima",] [F-1 satin aluminum face,] color to be selected by Architect.
- C. Verify location as shown on Exterior Elevations. Verify all text with District prior to ordering signage.
- D. Size of Letters: See details
- E. Text: See signage plan

2.4 TRAFFIC SIGNS

- A. Manufacturer: Hawkins Sign Co, Inc. (510) 525-8500; Traffic Control Service Inc., (800) 884-8274; or approved equal.

- B. Types of Signs: Sheet metal with porcelain enamel finish.
 - 1. Accessible Parking Stall Signs: Complying with Title 24, Part 2, Section 7102(e) at automobile stalls and Section 1129B.5 at van stalls. At van stalls, provide separate 12" wide x 4" high sign below main sign. Text on signs shall comply with ADAAG Article 4.6.4.
 - 2. Tow-Away Signs: Complying with Title 24, Part 2, Section 7102(e).
- C. Sign Posts: 2" outside diameter standard weight galvanized steel pipe, set in concrete footing.
- D. Mount signs on sign posts with bottom of sign 7'-2" above grade, unless indicated otherwise.

2.5 CAST METAL PLAQUES

- A. Manufacturer: ARK Ramos, Metal Arts Inc., ASI Modulux, or approved equal.
- B. Construction: [Cast aluminum, alloy C443.2,] [bronze] [painted pebble background] with raised graphics and single line bevel edge. Provide clear protective coating and satin highlighting finish at raised surfaces. Letter and border styles and painted background color to be selected by Architect from manufacturer's standard styles and colors.
- C. Size: [24"][_"] high x [12"][_"] wide.
- D. Text: prior to fabrication, verify content and spelling of text with District's representative.
- E. Mounting: Provide hardware and blocking for wall mounting in location indicated.

2.6 FABRICATION

- A. General Requirements:
 - 1. Shop-fabricate signs to requirements indicated for materials, thicknesses, designs, shapes, sizes and details of construction.
 - 2. Sign panel surfaces shall be smooth, even and fabricated to remain flat under installed conditions. Ease all edges and corners of signs.
 - 3. Provide lettering and graphics precisely formed, uniformly opaque to comply with relevant regulations and requirements indicated for size, style, spacing, content, position and colors.
- B. Tactile Graphics and Text:

1. Conform to C.B.C. Title 24, Chapter 11, Section 11B-Division 7. 11B-703.2.5, Table 11B-703.3.1, 11b-703.3.1 11B-703.3.2.
 2. California Grade 2 Braille must accompany raised text characters. Provide tactile copy and Grade 2 Braille raised 1/32" minimum from plaque using manufacturer's co-molding process:
 - a. Letters and numbers shall be raised 1/32" (0.794 mm) and shall be sans-serif uppercase characters accompanied by California Grade 2 Braille symbols.
 - b. Braille Symbols: Rounded or domed California Braille dots, each distinct and separate. Dots shall be 1/10" (2.54 mm) on centers in each cell with 2/10" (5.08 mm) space between cells. Dots shall be raised a minimum of 1/32" (0.794 mm) from a plaque surface.
 - c. Proportions: Characters shall be selected from fonts where the width of the uppercase letter "O" is 60% minimum and 110% maximum of the height of the uppercase letter "I".
 - d. Character Height: Characters and numbers on signs shall be 5/8" minimum and 2" maximum high and as shown on the Drawings.
 - e. Contrast of Characters and Symbols: Characters and symbols shall be light characters with dark background with a contrast of 70% minimum.
 3. Raised Characters and Pictorial Symbol Signs:
 - a. Letter Type: Letters and numbers on signs shall be raised 1/32" (0.794 mm) minimum and shall be sans-serif uppercase characters accompanied by California Grade 2 Braille.
 - b. The stroke thickness of the uppercase letter "I" shall be 15% maximum of the height of the character. Reference to CBC 11B Division 7, 11B-703.2.6.
 - c. Symbol Size: Raised characters or symbols shall be a minimum of 5/8" (15.9 mm) and as shown on the Drawings.
 - d. Pictorial Symbol Signs (Pictograms): Pictorial symbol signs (pictograms) shall be accompanied by the equivalent verbal description placed directly below the pictogram as shown on the Drawings.
 - e. Contrast between letters and/or characters and background color must be 70% minimum.
- C. Silkscreening: All silkscreened graphics shall be produced with ABS paint compatible with the substrate, using mesh of 390 or finer to produce clean, sharp edges. All media are to be opaque, with full even coverage, and free from

dust bubbles, blemishes and other foreign matter. Characters and symbols shall contrast 70% minimum with their background. Characters shall be light colors with dark background.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Verify that substrate surfaces to receive units are true and plumb. Correct inadequate surfaces before installation of signs.
- B. Verify that moisture and temperature levels of substrate and environment have been stabilized and are acceptable prior to proceeding with the Work.
- C. Take field measurements prior to shop fabrication where necessary in order to ensure proper fitting of Work.
- D. Do not begin Work until unsatisfactory conditions have been corrected.

3.2 INSTALLATION

- A. Install units in locations and at mounting heights indicated on Drawings.
 - 1. Keep perimeter lines straight, plumb, and level.
 - 2. Install within 1/4" tolerance vertically and horizontally of intended location and in accordance with manufacturer's recommendations.
 - 3. Install product at heights to conform to C.C.R., Title 24, Part 2 and ADA Accessibility Guidelines (ADAAG).
- B. Installation on Walls: Attach securely through finish wall to rigid backing.
- C. Installation Method: Install with vandal - resistant fasteners.

3.3 CLEANING, PROTECTION AND REPAIR

- A. Repair scratches and other damage which might have occurred during installation. Replace components where repairs were made but are still visible to the unaided eye from a distance of 5'.
- B. Clean installed products in accordance with manufacturer's instructions prior to District's acceptance.

END OF SECTION

SECTION 10 21 14

Composite Toilet Compartments

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Solid color reinforced composite toilet partitions and sight screens, floor mounted, headrail braced.
- B. Additional cross-bracing as required.
- C. Hardware: Coordinate with items installed under Section 10 28 00 Toilet and Bath Accessories.
- D. Attachments screws and bolts.

1.2 REFERENCES

- A. ADAAG - Americans with Disabilities Act (ADA) Accessibility Guidelines for Buildings and Facilities.
- B. CBC - California Building Code.
- C. National Fire Protection Association 101 Life Safety Code 2018 Edition, Chapters 5, 6, 8-30.
- D. ICC/ANSI A117.1-2017 Accessible and Usable Buildings and Facilities.
- E. US Green Building Council (USGBC) Leadership in Energy and Environmental Design (LEED) Program, Version 2.1
- F. American Society for Testing and Materials Standards:
 - 1. ASTM D2197-16 - Standard Test Method for Adhesion of Organic Coatings by Scrape Adhesion.
 - 2. ASTM D2794-93(2019) - Standard Test Method for Resistance of Organic Coatings to the Effects of Rapid Deformation (Impact).
 - 3. ASTM D6578-13(2018) - Standard Practice for Determination of Graffiti Resistance.
 - 4. ASTM E84-21a (2106) Standard Test Method for Surface Burning Characteristics of Building Material.

1.3 PERFORMANCE REQUIREMENTS

- A. Graffiti Resistance: Partition material shall have the following graffiti removal characteristics when tested in accordance with ASTM D6578-13(2018) Standard Practice for Determination of Graffiti Resistance in accordance with Section 9, "Graffiti Removal Procedure Using Manual Solvent Rubs":
 - 1. Cleanability: Five required staining agents shall be cleaned off material.
- B. Scratch Resistance: Partition material shall have the following characteristics when tested in accordance with ASTM D2197-16 Standard Test Method for Adhesion of Organic Coating by Scrape Adhesion, using Gardner Stock #PA-2197/ST pointed stylus attachment on scrape tester:
 - 1. Scratch Resistance: Maximum Load Value shall exceed 10 kilograms.
- C. Impact Resistance: Partition material shall have the following requirements, when tested in accordance with ASTM D2794-93(2019) Standard Test Method for Resistance of Organic Coating to the Effects of Rapid Deformation (Impact), using .625" hemispherical indenter with 2 lb. impact weight.
 - 1. Impact Resistance: Maximum Impact Force value shall exceed 30 inch-pounds.
- D. Fire Resistance: Partition material shall comply with the following requirements, when tested in accordance with ASTM E84: Standard Test Method for Surface Burning Characteristics of Building Materials:
 - 1. Smoke Developed Index: Not to exceed 450.
 - 2. Flame Spread Index: Not to exceed 75.
 - 3. Material Fire Ratings:
 - a. National Fire Protection Association (NFPA): Class B.
 - b. International Code Council (ICC): Class B.
- E. LEED Contribution: Partition material shall contribute to the following US Green Building Council's Leadership in Energy and Environmental Design Program Credits (USGBC LEED Version 2.1):
 - 1. Recycled Content (MR Credit: Interiors Life-Cycle Impact Reduction – Option 1 Interior Reuse): Shall contain a minimum of 50% reused or salvaged surface areas.
 - 2. Recycled Content (MR Credit: Interiors Life-Cycle Impact Reduction – Option 2 Furniture Reuse): Shall contain a minimum of 30% reused, salvage, or refurbish total furniture.

3. Recycled Content (MR Credit: Interiors Life-Cycle Impact Reduction – Option 3 Design for Flexibility): Shall contain a minimum of 3 out of 7 design flexibility options.
4. Low Emitting Materials (EQ Credit: Low-Emitting Materials Options 1 or 2 with accordance to Emissions and Content Requirements): Shall not contain urea-formaldehyde resins.

1.4 SUBMITTALS

- A. Submit product data for components, hardware, and accessories, including installation instructions, cleaning and maintenance instructions, and replacement parts information.
- B. Submit samples for color selection
- C. Shop Drawings:
 1. Show fabrication and erection of compartment assemblies, to extent not fully described by manufacturer's data sheets.
 2. Show anchorage, accessory items and finishes.

1.5 REGULATORY REQUIREMENTS

- A. Conform to CBC, and ADAAG for accessibility requirements.
- B. Conform to flame spread and smoke developed ratings of 20/95 for panel materials when tested in accordance with ASTM E84.

1.6 COORDINATION

- A. Coordinate Work under provisions of Section 01 31 19.
- B. Coordinate Work with support framing and anchors.
- C. Coordinate Work with placement of plumbing fixtures and floor drains.
- D. Coordinate Work with placement of electrical fixtures and equipment.
- E. Coordinate Work with toilet accessories.

1.7 WARRANTY

- A. Provide under provisions of Section 01 77 00.
- B. Furnish ten-year limited warranty for panels, doors, and stiles against breakage, corrosion, delamination, and defects in factory workmanship.

- C. Furnish one-year warranty against defects in material and workmanship for stainless steel door hardware and mounting brackets.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Model numbers for toilet partitions manufactured by Bobrick Washroom Equipment, Inc., are listed to establish a standard of quality for design, function, materials, workmanship, and appearance. Other manufacturers may be submitted for evaluation by the architect by following the conditions of the substitutions clause. Unless approval is obtained ten days prior to the bid date, all bids shall be based on the standard of quality. The architect shall be the sole judge as to the acceptability of all products submitted for substitution.
- B. Subject to compliance with the material performance requirements, toilet partitions manufactured by others may be constructed from solid surface materials including, but not limited to:
- C. Substitutions: Under provisions of Section 01 62 00.

2.2 MATERIALS

- A. Toilet partitions shall be overhead-braced (Sierra Series SCRC), constructed of solid color reinforced composite material, which is composed of dyes, organic fibrous material, and polycarbonate/phenolic resins. Material shall have a non-ghosting, graffiti-resistant surface integrating bonded to care through a series of manufacturing steps requiring thermal and mechanical pressure. Edges of material shall be the same color as the surface.
- B. Stainless Steel:, Type 304.

2.3 ACCESSORIES

- A. Pilaster Shoe:, Type 304 stainless steel, with adjustable screw jack.
- B. Headrail: 1" x 1-5/8" anodized extruded aluminum; with anti-grip configuration; with stainless steel wall brackets. Headrail shall also be used as a stabilizer strut to tie back any assembly of more than three doors to solid blocking.
- C. Threaded brass inserts shall be factory installed for door hinge and latch connections and shall withstand a direct pull exceeding 1,500 pounds per insert.
- D. Through-bolted stainless steel, pin-in-head "Torx" sex-bolt fasteners shall be used at latch keeper-to-stile connections and shall withstand direct pull force exceeding 1,500 pounds per fastener.

2.4 HARDWARE

- A. Hinges: Full height continuous hinges of 16 gauge stainless steel. Spring-loaded and self-closing.
 - 1. Continuous piano hinge shall be attached to door and stile by theft-resistant, pin-in-head "Torx" stainless steel machine screws into factory installed, threaded brass inserts.
 - 2. Fasteners secured directly into the core are not acceptable.
- B. Latch and Keeper, Standard Doors: 14 gauge stainless steel combination slide latch and bumper.
- C. 14 gauge stainless steel combination slide and bumper sliding door latch shall require less than five-pound force to operate. Twisting latch operation will not be acceptable. Latch and keeper shall be provided.
- D. Door Stop: Door shall be furnished with two 11 gauge (3mm) stainless steel door stop plates with attached rubber bumpers to prevent door from being kicked in or out beyond stile.
- E. Coat Hook: 12 gauge stainless steel clothes hook. See Section 10 28 00 Toilet and Bath Accessories.
- F. Door Pull: "U"-shaped stainless steel door pull shall be provided on both sides at accessible stall door.
- G. When using full height continuous brackets, make sure wall wainscots are 7'-0" high or that wall finish is full height and flush where brackets occur. If not, detail filler bracket or blocking behind bracket. Check that bracket clears monolithic floor/wall bases where occur (usually 6").
- H. Panel Brackets: Full length angle brackets of 18 gauge stainless steel. Angel brackets shall be furnished to secure stiles to walls, panels to walls, and stiles to panels.
- I. Leveling Device: 7 gauge, 3/16" (5-mm) hot rolled steel bar; chromate-treated and zinc-plated; through-bolted to base of solid color reinforced composite stile.
- J. Stabilizer: Provide additional head rails as stabilizers to tie assemblies walls to prevent movement.

2.5 FABRICATION

- A. Doors and Panels:
 - 1. Door Thickness: 3/4".

2. Panel Thickness: 3/4".
 3. Door Width: 24".
 4. Door Width for Accessible Use: 32" front entry, 34" side entry.
 5. Height: 58".
- B. Pilasters: 3/4" thick, constructed same as doors, of sizes required to suit cubicle width and spacing.
- C. Furnish units with cutouts and drilled holes to receive partition mounted hardware, accessories, and grab bars as indicated.

2.6 FINISHES

- A. Solid Color Reinforced Composite Material: Color to be selected by Architect from manufacturer's standard colors.
- B. Stainless Steel Surfaces: No. 4 finish.
- C. Aluminum: Clear anodized.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Verify that openings are ready to receive work.
- B. Verify field measurements are as shown on approved Shop Drawings.
- C. Verify correct location of built-in framing, anchorage, bracing, electrical and plumbing fixtures.

3.2 ERECTION

- A. Erect in accordance with manufacturer's instructions.
- B. Install partition components secure, plumb and level.
- C. Attach panel brackets securely to walls and floors using appropriate anchor devices. Provide additional floor anchors at mid-span of panel for added stability and to eliminate wobble.
- D. Set all floor anchors and pilaster shoes firmly in mastic.
- E. Attach panels and pilasters to brackets with through bolts and nuts. Locate

headrail joints at pilaster center line.

- F. Provide additional headrails over accessible stalls to tie the pilaster assembly securely to the wall. Headrails may be sloped to tie to top plates of stud walls at the ceiling.
- G. Provide 1/2" space between wall surface and panels or pilasters.
- H. Provide for adjustment of floor variations with screw jack through steel saddles integral with pilaster. Conceal floor fastenings with pilaster shoes.
- I. Equip each toilet stall door with hinge, door latch, pull, bumper, and clothes hook.
- J. Equip each accessible toilet stall door with two "U"-shaped pulls, one each side of door. Mount coat hook at 48" maximum height or as required by ADA for accessible stalls.
- K. Install door strike keeper on each pilaster in alignment with door latch.

3.3 ERECTION TOLERANCES

- A. Maximum Variation from Plumb or Level: 1/8".
- B. Maximum Misplacement from Intended Position: 1/8".

3.4 ADJUSTING

- A. Adjust hardware for proper operation after installation.
- B. Adjust and align door hardware to uniform clearance at vertical edges of doors. Clearance space shall not exceed 3/16".
- C. Adjust door hinges so that free movement is attained and will locate in-swinging doors in partial open position when unlatched. Return out-swinging doors to closed position.

3.5 ADJUSTMENT AND CLEANING

- A. Clean work under provisions of Section 01 77 00.
- B. Remove protective coverings.
- C. Adjust hardware for proper operation after installation.
- D. Clean exposed surfaces of compartments, hardware, and fittings.

3.6 PROTECTION OF FINISHED WORK

- A. Protect finished installation under provisions of Section 01 87 00.
- B. Field touch-up of finished surfaces will not be permitted.
- C. Replace damaged or scratched materials with new materials.

END OF SECTION

SECTION 10 28 00 Toilet and Bath Accessories

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Toilet and washroom accessories.
- B. Concealed anchor devices and backing plate reinforcements furnished to other Sections.
- C. Attachment hardware.

1.2 REFERENCES

- A. ADAAG - Americans with Disabilities Act (ADA) Accessibility Guidelines for Buildings and Facilities.
- B. CCR - California Code of Regulations, Title 24, Part 2, California State Accessibility Standards.
- C. ASTM A123 - Zinc (Hot-Dip Galvanized) Coatings on Products Fabricated from Rolled, Pressed, and Forged Steel Shapes, Plates, Bars and Strips.
- D. ASTM A366 - Steel, Carbon, Cold-Rolled Sheet, Commercial Quality.
- E. ASTM A386 - Zinc Coating (Hot-Dip) on Assembled Steel Products.
- F. ASTM B456 - Electrodeposited Coatings of Copper Plus Nickel Plus Chromium and Nickel Plus Chromium.
- G. ASTM A167 - Stainless and Heat-Resisting Chromium-Nickel Steel Plate, Sheet and Strip.
- H. ASTM A269 - Seamless and Welded Austenitic Stainless Steel Tubing for General Service.

1.3 SUBMITTALS

- A. Submit under provisions of Section 01 33 00.
- B. Provide Product Data on accessories, describing size, finish, details of function, attachment methods.
- C. Submit manufacturer's installation instructions.

1.4 KEYING

- A. Supply two keys for each accessory to [Owner][District].
- B. Master key all accessories.

1.5 REGULATORY REQUIREMENTS

- A. Conform to CCR, Title 24, Part 2, and ADAAG for access for the handicapped.

1.6 COORDINATION

- A. Coordinate the Work of this Section under provisions of Section 01 31 19.
- B. Coordinate the Work of this Section with the placement of internal wall reinforcement and reinforcement of toilet partitions to receive anchor attachments.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Bobrick Washroom Equipment, Inc.
- B. American Specialties, Inc. (ASI).
- C. Bradley Corporation.
- D. Substitutions: Under provisions of Section 01 62 00.

2.2 MATERIALS

- A. Sheet Steel: ASTM A366.
- B. Stainless Steel Sheet: ASTM A167, Type 304.
- C. Tubing: ASTM A269, stainless steel, Type 304.
- D. Adhesive: Two-component epoxy type waterproof.
- E. Fasteners, Screws, and Bolts: Hot-dip galvanized, tamperproof.
- F. Expansion Shields: Fiber, lead, or rubber as recommended by accessory manufacturer for component and substrate.

2.3 FABRICATION

- A. Weld and grind smooth joints of fabricated components.
- B. Form exposed surfaces from single sheet of stock, free of joints.
- C. Form surfaces flat without distortion. Maintain flat surfaces without scratches or dents.
- D. Back-paint components where contact is made with building finishes to prevent electrolysis.
- E. Shop-assemble components and package complete with anchors and fittings.
- F. Provide steel anchor plates, adapters, and anchor components for installation.
- G. Hot-dip galvanize all ferrous metal and fastening devices.

2.4 FACTORY FINISHING

- A. Galvanizing: ASTM A123 to 1.25 ounces per square yard.
- B. Shop Primed Ferrous Metals: Pretreat and clean, spray apply one coat primer and bake.
- C. Stainless Steel: No. 4 satin finish.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Verify that site conditions are ready to receive Work and dimensions are as instructed by the manufacturer.
- B. Beginning of installation means acceptance of existing conditions.

3.2 PREPARATION

- A. Deliver inserts and rough-in frames to site at appropriate time for building-in.
- B. Provide templates and rough-in measurements as required.
- C. Verify exact location of accessories for installation.

3.3 INSTALLATION

- A. Install fixtures, accessories and items in accordance with manufacturer's instructions.

- B. Install plumb and level, securely and rigidly anchored to substrate.
- C. Verify that no equipment in accessible toilet stalls protrudes past the face of the wall by more than 3".

Provide a Schedule for accessories describing item, finish, location, mounting height, quantity if appropriate, and other descriptive attributes. Bobrick is used for West Contra Costa Unified School District; refer to client facility standards and edit as appropriate.

3.4 SCHEDULE

- A. Model numbers refer to [Bobrick] products, as a standard of quality and performance.

Model No.	Description	Power	Remark
B-7120	Surface Mt.Hand dryer - ADA		
B-29744	Semi-recessed Automatic Universal Roll Paper Towel Dispenser	-	-
B-68137.99	1-1/2" dia. X 36" x 54" horizontal two-wall shower compartment grab bar	-	-
B-1659	Glass Mirror, reference Drawings for sizes	-	-
B-295	Stainless steel shelf	-	-
B-221	Toilet seat cover dispenser	-	-
B-239 x 34	Custodian's mop and broom rack w/shelf	-	-
B-2888, B-3888	Toilet tissue dispenser, non-accessible stalls	-	-
B-3888 B-4388	Toilet tissue dispenser, accessible stalls	-	-
B-2112	Soap dispenser	-	-
B-1556	Frameless stainless steel mirror, see drawings for sizes	-	-
B-233	Stainless steel clothes hook	-	-
B-3706 25	Recessed sanitary napkin dispenser - ADA	-	-
B-4388	Recessed toilet tissue dispenser	-	-
B-204/204-1	Curtain rod, curtain, & hooks see drawings for sizes	-	-
B-517/518	21-1/2" x 33" folding shower seat	-	-
B-254	Sanitary napkin disposal	-	-
B-6806-99	1-1/2" diameter x 36" long grab bar refer to Drawings for anchorage	-	-
B-517/B-	14-3/4" x 32-7/8" x 21-1/4" folding shower		

Model No.	Description	Power	Remark
518	seat		
See Plumbing Drawings	Flexible spray hose 60" lg., single lever mixing valve control and shower and wand support.		
	1-1/2" diameter x 24" x 36" horizontal two-wall shower compartment grab bar		
B-35303	Recessed sanitary napkin disposal		

END OF SECTION

SECTION 11 68 33

ATHLETIC FIELD EQUIPMENT

PART 1 - GENERAL

1.01 WORK INCLUDED

- A. Provide all equipment and materials, and do all work necessary to furnish and install the athletic equipment, as indicated on the drawings and as specified herein. Athletic equipment shall include, but not be limited to:
1. Foul pole with Mesh Wing, ground sleeve mounted.
 2. Guard Rail Padding
 3. Backstop Padding
 4. Batting Tunnels
 5. Bases: Home, 1st, 2nd, and 3rd
 6. Pitching Mound
 7. Outfield Netting System

1.02 RELATED WORK

- A. Examine contract documents for requirements that affect work of this section. Other specification divisions and sections that directly relate to the work of this section include, but are not limited to:
1. Division 1 – District Contractual Requirements
 2. Division 03 – Concrete; Sections: Cast-in-Place Concrete
 3. Division 04 – Masonry
 4. Division 05 - Metals
 5. Division 31 – Earthwork; Sections: Excavation and Backfill and Establishment of Sub-Grade Elevations
 6. Division 32 – Exterior Improvements; Sections: Athletic and Recreational Surfacing, Concrete and Asphalt

1.03 REFERENCES

- A. Comply with applicable requirements of the following standards. Where these standards conflict with other specified requirements, the most restrictive requirements shall govern.
1. National Federation of State High School Associations (NFHS).
 2. American Sports Builders Association (ASBA)
 3. Manufacturer's Data and Recommended Installation Requirements.

1.04 SUBMITTALS

- A. Manufacturers Product Data

1. Provide manufacturers product data prior to actual field installation work, for Architects or Owners representatives review.
- B. Shop Drawings
1. Provide drawings of the manufacturers recommended installation and foundation requirements prior to actual field installation work, for Architects or Owners representatives review.
- A. Substitution Requests:
1. Manufactures listed in this specification are the basis of design. Alternative manufacturers of similar products may be submitted for review and approval by formal substitution request. While it is impossible for products to be an exact match, any such products will be reviewed against the basis of design products under the following categories:
 - a. Quality and value of the product.
 - b. Size, shape and construction of the product
 - c. Function of the product.
 - d. Cost of the product.
 - e. Availability and lead time of the product.
 - f. Manufacturer warrantee/guarantees of the product.
 - g. Available Certifications of the product.
 - h. Carbon footprint of the product (if applicable).
 - i. Compliance with governmental statues and codes.
 - j. Compliance with administrative authorities.

1.05 ACCEPTABLE MANUFACTURERS

1. Sportsfield Specialties, Inc. (Basis of Design)
 P.O. Box 231
 41155 State Highway 10
 Delhi, NY 13753
 Phone. 888-975-3343
 Fax: 607-746-8481
www.sportsfieldspecialties.com

(Note: These products are the basis of design. Minor changes to the design and layout of such sports equipment may be required when using sports equipment by other manufacturers below. Contractor will be responsible for verifying such installation requirements and dimensions.)

2. UCS Spirit
 1601 Fairview Drive #1
 Carson City, NV 89701
 Phone: 800-537-7117
 Fax: 775-882-7153

3. Litania Sports Group, Inc.
601 Mercury Drive
Champaign, IL 61822
Phone: 800-637-3090
Fax: 217-367-8440
4. Alternate Suppliers and materials may be reviewed for approval however contractor will be responsible for adjustments to the design as needed for the incorporation of such new materials. There is no guarantee that any other manufacturers products and materials will work with the proposed design in all cases.

1.05 QUALITY ASSURANCE

- A. Manufacturers warranties shall pass to the Owner and certification made that the product materials meet all applicable grade trademarks or conform to industry standards and inspection requirements.

1.06 PRODUCT DELIVERY AND STORAGE

- A. Materials delivered to the site shall be examined for damage or defects in shipping. Any defects shall be noted and reported to the Owners representative. Replacements, if necessary, shall be immediately re-ordered, so as to minimize any conflict with the construction schedule. Sound materials shall be stored above ground under protective cover or indoors so as to provide proper protection.

PART 2 - PRODUCTS

2.01 FPW630 - 30' Foul Pole

- A. BASE: FPW630 - 30' Foul Pole with Wing as Manufactured and/or Supplied by:

Sportsfield Specialties, Inc.
P.O. Box 231
41155 State Highway 10
Delhi, NY 13753
p. 888-975-3343
www.sportsfield.com

- B. COMPONENTS:

1. Foul Pole Upright:
 - a. 6" Schedule 40 Aluminum Pipe (6.625"O.D. x .280" Wall)
 - b. 30' Height Above Finish Grade
 - c. Super Durable Powder Coated Finish
 - a. Color: Yellow, Orange, or White
2. Foul Pole Wing:

- a. Stamped 1/8" (0.125") Aluminum Sheet with Double Reinforced Bends Welded at Corners
- b. 1.5" Square Open Mesh
- c. 18"W x 22'L
 - a. Top of Upright Pole to 8' Above Finish Grade
- 3. Ground Sleeve:
 - a. 4' Depth
 - b. 7" O.D. x .109" Wall Steel
 - c. Alignment Bolt
 - d. Welded Leveling Plate
- 4. Stainless Steel Assembly Hardware

2.02 Backstop Padding`

- A. BASE: BGRPSG – BaseZone® Round Guard Rail Padding as Manufactured and/or Supplied by:

Sportsfield Specialties, Inc.
 P.O. Box 231
 41155 State Highway 10
 Delhi, NY 13753
 p. 888-975-3343
www.sportsfield.com

- B. COMPONENTS:

- 1. BGRPSG – BaseZone® Round Guard Rail Padding:
 - a. Dimensions: "W x Variable Length x 1" Thick
 - b. 1" Thick High Impact 1690 Polyurethane Foam
 - 1) Density: 1.60 +/- 0.10 (ASTM D3574)
 - 2) Impression Load Deflection (4" x 25" x 25" Sample)
 - a) 25%: 85 – 95 (ASTM D3574)
 - b) 65%: 145 – 162 (ASTM D3574)
 - c) Support Factor 65/25: 1.7 min (ASTM D3574)
 - 3) Resilience (% Rebound): 25 – 35 (ASTM D3574)
 - 4) Tear Resistance: 1.0 – 2.0 lbs/in (ASTM D3574)
 - 5) Static Fatigue:
 - a) % Loss @ 25% ILD: Less than 35 (ASTM D3574)
 - b) % Loss in Thickness: Less than 10 (ASTM D3574)
 - c. Outdoor Vinyl Encasement:
 - 1) High UV Resistance: 3000 hrs (QUV-A)
 - 2) Total Weight: 18 oz./yd² (ASTM D751)
 - 3) Emboss: Course Matte
 - 4) Construction: 9 x 9, 1000 x 1000 Denier
 - 5) Tongue Tear: Warp 50 lbs., Fill 40 lbs. (ASTM 2261)
 - 6) Grab Tensile: Warp 250 lbs., Fill 240 lbs. (ASTM D751)
 - 7) Adhesion: 15 lbs. (ASTM D751)
 - 8) Flame Resistance: Class 1 (ASTM E-84)
 - 9) Abrasion (H18, 1,000g load): 1000 Cycles (ASTM D3389)
 - 10) Rot, Mildew and Fungus Resistant: Yes (ASTM-G21, 0-1)

- 11) Various Standard Colors Available
- d. Vinyl Seams Double Stitched Using 6 lb. Bonded Polyester Black Thread
- e. Includes Two (2) 1.5"W Vinyl Flaps with #2 Stainless Steel Grommets 6" On-Center
 - 1) Designed to Wrap 1.5" to 2" O.D. Guard Rails
 - 2) Secured to Railing with 8"L x 50 lb. Break Strength UV Resistant Nylon Zip-Ties or Lacing Cord
- f. 1-Year Manufacturer's Limited Product Warranty
- g. Optional
 - 1) Custom High-Resolution Digitally Printed Graphics

2.03 BaseZone® Field Wall Padding and Accessories

- A. BASE: BaseZone® Field Wall Padding and Accessories as Manufactured and/or Supplied by:
 - Sportsfield Specialties, Inc.
 - P.O. Box 231
 - 41155 State Highway 10
 - Delhi, NY 13753
 - p. 888-975-3343
 - f. 607-746-8481
 - www.sportsfield.com
- B. COMPONENTS:
 - 1. BaseZone® Field Wall Padding 48" tall, z-clip mounted.
 - Model BFWPZ44 – 4' wide
 - Model BFWPZ46 – 4' wide
 - Model BFWPZ48 – 4' wide

Note: "DG" option with digitally printed graphics to be included in bid. But shall be provided on only three (3) 8' wide padding panels. Graphics files to be provided.

 - a. Outdoor Vinyl Encasement:
 - 1) High UV Resistance
 - 2) Total Weight: 18 oz./yd² (ASTM D3776)
 - 3) Construction: 84% Vinyl Coating, 16% Polyester Fabric (ASTM D751)
 - 4) Tongue Tear: Warp 93 lbs., Fill 68 lbs. (ASTM D751)
 - 5) Grab Tensile: Warp 232 lbs., Fill 213 lbs. (ASTM D751)
 - 6) Adhesion: Warp 28 lbs/in, Fill 40 lbs/in (ASTM D751)
 - 7) Abrasion: > 1000 Cycles (ASTM D3389-94)
 - 8) Cold Crack: -49° F (ASTM D2136)
 - 9) Rot, Mildew and Fungus Resistant: Yes
 - 10) Flame Resistance: None
 - 11) Various Standard Colors Available
 - b. 3" Thick High Impact 1580 Polyurethane Foam
 - 1) Density: 1.45 – 1.55 pcf (ASTM D3574)
 - 2) Impression Load Deflection (4" x 25" x 25" Sample)
 - a) 25%: 75 – 85 (ASTM D3574)
 - b) 65%: 128 – 145 (ASTM D3574)
 - c) Support Factor 65/25: 1.7 min (ASTM D3574)

- 3) Resilience (% Rebound): 40 – 48 (ASTM D3574)
- 4) Tear Resistance: 1.5 – 2.5 lbs/in (ASTM D3574)
- 5) Static Fatigue:
 - 1. % Loss @ 25% ILD: Less than 35 (ASTM D3574)
 - 2. % Loss in Thickness: Less than 10 (ASTM D3574)
- 6) Flammability: Passes with Class 1 Fabric (California TB 117-2013)
- c. 3/4" Square Edge AdvanTech® Water Resistant Sheathing Panel; All Sides Stained and Sealed with Exterior Grade Finish
- d. Stainless Steel Staples and Applicable Hardware
- e. Wall Mounting Hardware:
 - 1) Aluminum Z-Clip Wall Mounting Hardware or Bolt and Back-up Plate Chain Link Fence Attachment Hardware
- f. Impact Testing; Independently Certified:
 - 1) ASTM F2440; 10 lb. x 6.3" Dia. Hemisphere Head Form, 4' Drop Height (Impact Velocity: 10.9 MPH):
 - 1. G-max: 47
 - 2. Head Injury Criterion (HIC): 103
 - 2) Head Injury Criterion (HIC) Impact Test: 10 lb. x 6.3" Dia. Hemisphere Head Form, 5' Drop Height (Impact Velocity: 12.2 MPH):
 - 1. G-max: 92
 - 2. Head Injury Criterion (HIC): 208
 - 3) Head Injury Criterion (HIC) Impact Test: 10 lb. x 6.3" Dia. Hemisphere Head Form, 5'-6" Drop Height (Impact Velocity: 12.8 MPH):
 - 1. G-max: 244 (Failure)
 - 2. Head Injury Criterion (HIC): 905
- g. 1-Year Manufacturer's Limited Product Warranty
- h. Optional:
 - 1) Custom High-Resolution Digitally Printed Graphics

2.04 Batting Tunnel

- A. BASE: BTTSS Tension Batting Tunnel; Softball Single

Sportsfield Specialties, Inc.
 P.O. Box 231
 41155 State Highway 10
 Delhi, NY 13753
 p. 888-975-3343
 f. 607-746-8481
www.sportsfield.com

- B. COMPONENTS:

- 1. Tension Cable Style Batting Tunnel:
 - a. Upright Poles: 8" Schedule 40 Steel (8.625" O.D.) Pipe.
 - 1) 4' Direct Embedment
 - b. Extension Arms: 3/8" Steel Plate x 18" Long

- c. Crossbar Supports: 4" x 3/16" wall Square Steel Tube
- d. Super Durable Black Powder Coated Finish
 - 1) Enhanced Resistance to UV
- e. Tension Cable Support: 1/4" 7x19 Black Powder Coated Galvanized Aircraft Cable with 1/2" x 6" Jaw and Jaw Turnbuckles
- f. 13'H x 14'W x 55'L Softball Standard #36 Black Nylon Net, 1-3/4" Square Mesh with Rope Bound Perimeter
 - 1) 4'W x Full Height Overlapped Entryways
 - 2) Black Vinyl Encased 1/4" Galvanized Chain Ground Weight
- g. Model Specific Hardware Kit and Installation Instructions

2.04 Bases, Home, 1st, 2nd, and 3rd

- A. BASE: Schutt Hollywood Impact Base Set (1st, 2nd and 3rd)
Schutt Hollywood MLB pro style home plate
Manufactured by:

Sportsfield Specialties, Inc.
P.O. Box 231
41155 State Highway 10
Delhi, NY 13753
p. 888-975-3343
f. 607-746-8481
www.sportsfield.com

- B. COMPONENTS:

- 1. SHIBL - Schutt® Hollywood Impact® bases (set of 3)
 - a. Provide SHBBP-44 ground anchors, set in concrete footing, see plan details.
 - b. Provide SHBBP-64 complete set of base anchor plugs.
- 2. SHP-UM - Schutt® MLB pro style home plate.
 - a. Provide SHBBP-44 ground anchor, set in concrete footing, see plan details.
 - b. Provide SHBBP-64 base anchor plug.

2.05 Pitching Mound

- A. BASE: SHBBPB - Schutt® Hollywood MLB® Official Size Four Sided Professional Pitching Rubber
Manufactured by:

Sportsfield Specialties, Inc.
P.O. Box 231
41155 State Highway 10
Delhi, NY 13753
p. 888-975-3343
f. 607-746-8481

B. COMPONENTS:

1. Schutt® Hollywood MLB® Official Size Four Sided Professional Pitching Rubber
 - a. Fill with concrete per manufacturer installation instructions and embed within infield mix. Top of rubber shall be flush with infield mix surface.

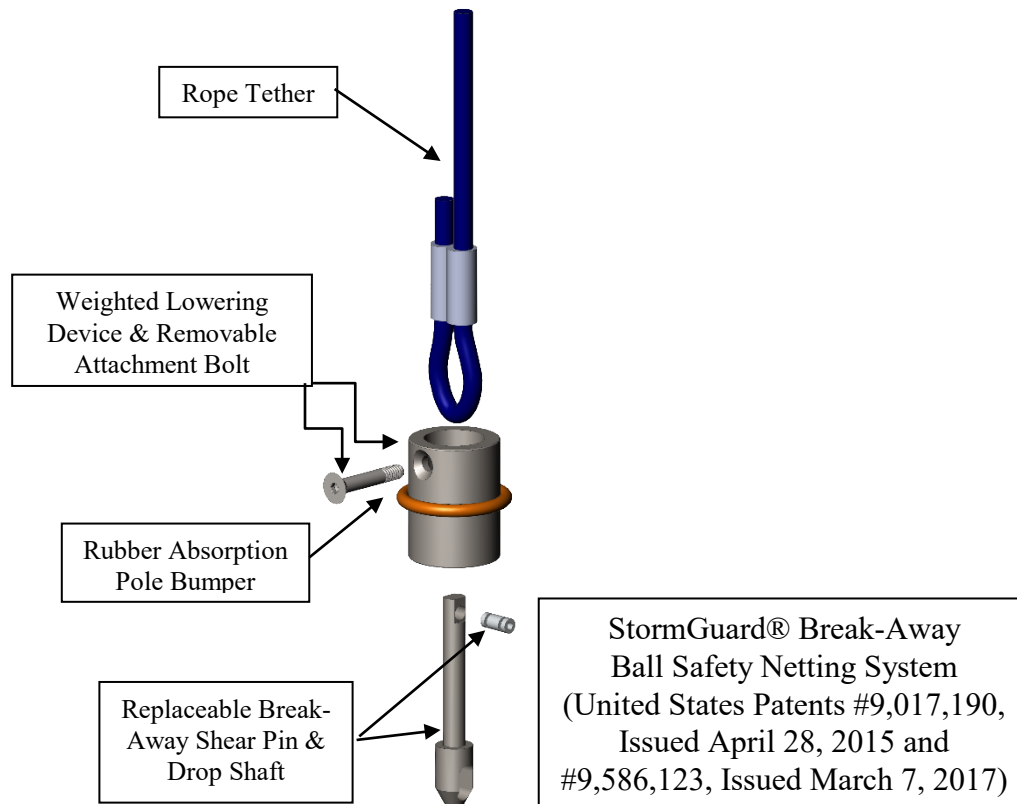
2.06 Outfield Netting System

- A. BASE: BSS630 StormGuard® Professionally Pre-Engineered 30' Straight Pole Break-Away Ball Safety Netting System and Accessories as Manufactured and/or Supplied by
Sportsfield Specialties, Inc.
P.O. Box 231
41155 State Highway 10
Delhi, NY 13753
p. 888-975-3343
f. 607-746-8481
www.sportsfield.com

B. COMPONENTS:

1. BSS630 StormGuard® Professionally Pre-Engineered Break-Away Ball Safety Netting System Straight Poles:
 - a. 6" Schedule 40 Aluminum Pipe (6.625" O.D.), 35'L
 - b. Standard Powder Coated Black Finish, Various Standard and Custom Powder Coat Finish Color Options Available.
2. StormGuard® Professionally Pre-Engineered Break-Away Ball Safety Netting System (United States Patents #9,017,190, Issued April 28, 2015 and #9,586,123, Issued March 7, 2017):
 - a. StormGuard® is the first and only ball safety netting system in the industry that is both designed and professionally pre-engineered to allow the net to fall to the ground before failures of the poles and/or hardware occur under extreme wind speed and/or adverse weather conditions such as ice and snow. This patented feature utilizes a shear pin device attached to the net at the top of each pole.
 - b. As shown in the diagram, the snap clip that holds the net up is attached to the oblong shaped hole located at the bottom of the smaller drop shaft that is connected to the cylindrical steel weight utilizing a 150 lb. break strength aluminum shear pin. The cylindrical steel weight is semi-permanently attached to the rope tether that hoists the net up and down with a removable bolt and includes a rubber absorption bumper to prevent damage to the pole's powder coated black finish.
 - c. The poles are installed at a maximum of twenty-five foot (25') on center or less. When the wind speed exceeds approximately sixty-five to seventy miles

per hour (65 - 70 mph), the 150 lb. break strength aluminum shear pin will react to the environmental conditions by allowing the smaller drop shaft to release from the cylindrical steel weight causing the net to fall to the ground. The end user then simply unwinds the rope tether from the cleat, lowers the cylindrical steel weight to the ground, replaces the already provided aluminum shear pin and raises the net back up.



3. Ground Sleeves with Welded Base Plates:
 - a. 48"L Ground Sleeves
 - b. Steel Tube with Alignment Bolt
4. Net with Perimeter Rope Binding:
 - a. Overall Dimensions Specified by Customer
 - b. 1-3/4" Square Mesh
 - c. #36 Black Nylon
 - d. Sewn 1/4" Diameter Braided Rope Binding on Perimeter Edges
 - e. Standard Color is Black
5. Included Accessories:
 - a. Stainless Steel and/or Galvanized Steel Assembly Hardware
 - b. Fixed Welded Upper Tab and Adjustable Lower Bracket with Tensioned Vertical Slide Cable System

- c. Secure Snap Clips for Net Attachment
 - d. 3/16" Diameter Galvanized Wire Rope Black Vinyl Coated to 1/4" Diameter
 - e. Aluminum Ground Sleeve Caps
 - f. Model Specific Hardware Kit and Installation Instructions
6. Optional Accessories:
- a. None.

PART 3 - EXECUTION

3.01 INSTALLATION OF EQUIPMENT

- A. Install all equipment and accessories as noted and described above in accordance with the plans and supplied manufacturers recommended installation instructions.
- B. Installer should have at least the minimum experience as noted for each type of equipment specified.

3.02 EXCESS MATERIALS

- A. Excess materials left over from installations of equipment shall be bagged with durable plastic bags or cardboard boxes, and labeled as to their use and supplied to owner for storage onsite.

3.03 CLEANUP AND CLOSE OUT PROCEDURES

- A. Refer to Division 1 – District General Conditions and Contractual Requirements
- B. Upon completion of work of this Section promptly remove from the working area all scraps, debris.
- C. Save all installation instructions, manuals and other paperwork provided by suppliers and compile into binder to be provided to owner as part of the for project close procedures.

END OF SECTION

SECTION 26 01 00
GENERAL REQUIREMENTS OF ELECTRICAL WORK

PART 1 GENERAL

1.01 SUMMARY

- A. This Section describes the general requirements for the electric work. These requirements apply to all sections of Division 26.
- B. Provide electrical materials, power equipment, installation and testing for the electrical work as shown on the plans.

1.02 DESCRIPTION

- A. The intent of the drawings and specifications is to reconstruct the hospital building in accordance with title 24, California Code of Regulations (CCR). Should any conditions develop not covered by the contract documents wherein the finished work will not comply with said Title 24, California Code of Regulations, a request for information detailing and specifying the required work shall be submitted to and approved by the Architect before start of any work.
- B. Provide all equipment and materials for a complete electrical system as described herein and as shown on the plans.
- C. Provide the following electrical system upgrades:
 - 1. Installation of new electrical panelboards and feeders.
 - 4. Installation of new electrical conduit, outlets and wiring.
 - 5. Electrical connections for equipment.
 - 6. Adjustment and cleaning.
 - 7. Testing and start-up.

1.03 CODE COMPLIANCE

- A. Perform all work in accordance with the latest adopted version of the following codes:
 - 1. State of California, Title 24, State Building Standards, Part 3, California Electrical Code (CEC) that adopts, with amendments, the National Fire Protection Association NFPA No. 70 , National Electrical Code.
 - 2. State of California, Title 24, State Building Standards, Part 6, California Energy Code.
 - 3. State of California, Title 24, State Building Standards, Part 9, California Fire Code.
 - 4. State of California, Title 8, Industrial Relations, Chapter 4, Division of Industrial Safety and Subchapter 5, Electrical Safety Orders.

5. California Green Building Standards Code - Part 11, Title 24.
6. NECA 1 - Standard Practices for Good Workmanship in Electrical Contracting; National Electrical Contractors Association.

1.04 PERMITS, FEES AND INSPECTIONS

- A. Obtain all permits that are required for the work.
- B. Call for all local building department inspections.
- C. Obtain approvals from local building inspector prior to final observation by Engineer.
- D. Advise Engineer, one week prior to:
 1. Installation of underground work. Obtain Engineer's approval prior to backfill. The Engineer may direct uncovering of any work not so approved.

1.05 STANDARDS

- A. Comply with the current applicable standards of the listed agencies for electrical materials and installation.
- B. Underwriters Laboratories, Inc. (UL): Provide a UL label or evidence of UL listing for all electrical material, unless the material is of a type for which a label or listing service is not provided.
- C. National Electrical Manufacturer's Association (NEMA).
- D. American National Standards Institute (ANSI).
- E. American Society for Testing Materials (ASTM).
- F. Insulated Power Cable Engineers Association.
- G. Certified Ballast Manufacturer's Association.
- H. Institute of Electrical and Electronic Engineers (IEEE).

1.06 SUBMITTALS

- A. Provide submittals for items specified in individual sections of Division 26 00 00, in accordance with the requirements of Division 1.
- B. Procedure: Submit under provisions of Division 1.
- C. Provide submittals for items listed documenting compliance with specification requirements.
 1. Test Reports: Reports of field tests, continuing copies of the test results, in tabulated form with the signature of the responsible person.
 2. Insulation resistance.

3. Operation and Maintenance Manual, in accordance with Division 1.
4. Record Drawings, in accordance with Division 1.

1.07 MATERIALS AND SUBSTITUTIONS

- A. Provide new material of the quality specified and satisfactory to the Engineer.
 1. Provide major equipment which is the product of a manufacturer who has, for a period of not less than five years been in successful manufacture of similar equipment to that specified and who has a catalog covering ratings and specifications of proposed equipment.

1.08 DRAWINGS AND SPECIFICATIONS

- A. Data given herein and on the plans are exact as could be secured, but their absolute accuracy is not guaranteed. Plans and specifications are for the assistance and guidance of the Contractor and exact locations, distances, levels and other data will be governed by the structures. The contractor shall provide a layout plan of all electrical equipment showing actual dimensions and working clearances. The contractor is responsible for ensuring that all electrical equipment will fit and no working clearances are exceeded.
- B. Clarification of plans and specifications for the purpose of facilitating construction, but not involving additional labor and materials, may be prepared during construction by the Engineer. Said revised plans and specifications shall become a part of the contract. The Contractor shall conform to the revised plans and specifications at no additional cost to the Owner.
- C. Layouts of equipment, accessories, and wiring systems are diagrammatic but follow these as closely as possible. Examine Architectural, Structural, Civil, Landscape Architect and other drawings, noting all conditions that may affect this work. Report conflicting conditions to the Engineer for adjustment before proceeding with the work. Should the Contractor proceed with work without so reporting the matter, he does so, on his own responsibility and shall alter work if directed by the Engineer at his own expense.
- D. The right is reserved to make minor changes in locations of equipment and wiring systems shown, providing the change is ordered before conduit runs and/or work directly connected to same is installed and no extra materials are required.

1.09 SUPERVISION

- A. Provide adequate and competent supervision. Maintain complete control of the project execution and complete liability for the materials and work until the job is completed and accepted by the Owner.

1.10 MANUFACTURER'S INSTRUCTION

- A. Follow the manufacturer's instructions when specific installation or connection details are not indicated or specified.
- B. Notify the Engineer of conflicts between the manufacturer's instructions and installation or connection details prior to the installation of materials.

1.11 WORKMANSHIP

- A. Firmly and permanently secure in place all electrical equipment to the structure so that it is level, plumb, and true with the structure and other equipment. Installation methods shall be as recommended by the National Electrical Contractors' Standard of Installation, except when methods specified or shown on the plans differ. The minimum installation standards shall be as required by the Codes.

1.12 PROTECTION

- A. Protect all equipment and materials required for the performance of this work from damage by the elements, vandalism, or work during construction.
 - 1. Do not subject the work and materials of other trades to damage during execution of the work in this division of the specifications.

1.13 COORDINATION WITH OTHER TRADES

- A. Coordinate with other trades and promptly transmit all information required by them. Coordinate the sequence of construction with other trades to ensure that all work proceeds with a minimum of interference and delay. Perform all work that requires relocation due to negligence or absence of regard for the work of other trades.

1.14 EXAMINATION OF SITE

- A. Examine the site prior to bid to determine existing site conditions that may affect the work. No allowance will be allowed for any extra work required due to a failure to recognize, or negligence to discover conditions prior to bid.

1.15 STRUCTURAL REQUIREMENTS

- A. Secure all anchors for electrical equipment in a manner that will not decrease the structural value of any structure to an unsafe level. Inform the Engineer of any proposed modifications to the structure that involves cutting or patching of concrete, masonry, steel, or wood in the project.

1.16 OPERATION AND MAINTENANCE MANUALS

- A. Furnish four sets of operation and maintenance manuals prior to final inspection, bound in 8-1/2 x 11-inch three-ring side binders with durable plastic covers.
- B. Furnish PDF copy of the operation and maintenance manuals prior to final inspection on a USB thumb drive.
- C. Provide a separate section for each system, with a table of contents and index tabs for each volume.
- D. Part 1: Directory, listing names and addresses and telephone numbers of Electrical Engineer and Electrical Subcontractor.
- E. Part 2: Operation and maintenance instructions, arranged by system. For each system, give names, addresses and telephone numbers of suppliers and factory service representatives. Include:
- F. List of equipment.
 - 1. Spare parts list.
 - 2. Operating instructions.
 - 3. Maintenance instruction, equipment.
 - 4. Shop Drawings and Product Data.
 - 5. Wiring Diagrams.

1.17 IDENTIFICATION

- A. Install nameplates on electrical equipment including:
 - 1. Individual circuit breakers on switchboards, distribution panelboards and motor control centers.
 - 2. Panelboards, switchboards, transformers, control cabinets and other major equipment.
 - 3. Disconnect switches, time switches, contactors, relays and other miscellaneous equipment enclosures.
 - 4. Light switches for which the control functions are not evident.
- B. Describe item, control function of sequence or operation on each nameplate, as applicable.
- C. Fabricate nameplates of laminated phenolic plastic, black front and back with white core. Bevel edges. Engrave through outer layer to produce white letters and numerals. Fasten nameplates to equipment with no. 4 philips, round head, cadmium steel, self tapping screws. Use 1/8-inch letters on circuit breakers, switches and other control devices, and 1/4-inch letters on panelboards, switchboards and other major electrical equipment. Submit label designations as part of corresponding equipment submittal.

- A. Equipment identification is to indicate the following:
 - 1. Equipment id abbreviation.
 - 2. Voltage, phase and wires.
 - 3. Power source.

1.18 TESTS AND REPORTS

- A. Prior to energization of equipment, check the insulation resistance of listed circuits, with a 500-volt "Megger".
- B. Take precaution during the testing period to insure the safety of personnel and equipment.
- C. Set circuit protective devices to provide proper long-time, short-time and ground-fault tripping coordination.
- D. Record all tests and furnish two copies to the Engineer.
- E. Tests:
 - 1. Grounding systems, for resistance to earth. Provide additional grounding electrodes if main service or separately derived system ground resistance exceed 5 ohms.
 - 2. Motor circuits with motor disconnected, for resistance to ground.
 - 3. Control circuits for resistance to ground.
 - 4. Lighting circuits, for resistance to ground.
 - 5. Power feeders, for resistance to ground.
 - 6. Switchboards, Motor Control Centers:
 - 7. Main bus, power and control circuits, for resistance to ground.
 - a. Check connection; tighten if necessary.
 - b. Operation of each device.
 - c. Set relays and trip settings in accord with the Engineer's directions.
 - d. Check thermal overload heaters for size and reset operation.
 - 8. Circuit breakers for loose connections and proper operation. Adjust trip settings as required by Engineer.
- F. Coordinate phase rotation of all motors with installer to ensure proper direction of rotation.
- G. List motor data:
 - 1. Item of equipment.
 - 2. Nameplate data.
 - 3. Overload heater catalog number and rating.

1.19 DEMONSTRATIONS:

- A. After testing and final inspection, demonstrate operation of listed systems and equipment to Engineer and Owner.
- B. Arrange date of test with Owner.
- C. Advise the manufacturers' representative to be present when required.
- D. Instruct Owner's personnel in operation, adjustment and maintenance of equipment and systems, using the operation and maintenance data as the basis of instruction.
- E. Demonstrate:
 - 1. Motor Control Devices
 - 2. Lighting Fixtures:
 - a. Replacement of lamps and ballasts.
 - b. Cleaning.
 - 3. Lighting Control Devices:
 - a. Time Switches.
 - b. Photocontrols.
 - c. Contactors.

1.21 GUARANTEE:

- A. Guarantee the electrical work against defects in work or materials for one year after filing of Notice of Completion.
- B. Undertake repairs within 24 hours after notice from the Owner.
- C. If the operation of the electrical system fails to conform to Division 16 requirements, approved submittals, or operation and maintenance manuals, the Owner may operate the electrical system without liability to Owner. Repair or replace defective or unsatisfactory equipment or systems.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION

3.01 EQUIPMENT MOUNTING SEISMIC CRITERIA

- A. Brace or anchor all electrical equipment to resist a horizontal force acting in any direction using the criteria of Section 1613A and 1615A, California Building Code, Title 24, Part 2.
- B. Simultaneous vertical force - use 1/3 by horizontal force.
- C. Where anchorage details are not shown on the drawings, the field installation shall be subject to the approval of the electrical and structural engineers.

END OF SECTION

SECTION 26 05 02
SUPPORTING FROM BUILDING STRUCTURE

PART 1 GENERAL

1.01 DESCRIPTION

- A. This section provides guidelines and limitations for supporting all electrical or mechanical items from the building structure, and for seismic bracing for all such items.
- B. Design and install all support and bracing systems except as noted. Provide for attachment to portions of the building structure capable of bearing the loads imposed. Design systems to not overstress the building structure.
- C. The Contractor is required to design support and bracing for items for which the contract documents do not provide specific attachment, support, and bracing. Seismic bracing is not required for the following items:
 - 1. Gas piping less than 1 inch inside diameter.
 - 2. Piping in boiler and mechanical equipment rooms less than 1.25 inches inside diameter.
 - 3. All other piping less than 2.5 inches inside diameter, unless racked together.
 - 4. All electrical conduits less than 2.5 inches inside diameter, unless racked together.

1.02 RELATED REQUIREMENTS

- A. Section 26 01 00: General Requirements for Electrical Work.

1.03 QUALITY ASSURANCE

- A. Design and install all support systems to comply with the seismic requirements of the California Building Code (CBC) Chapter 16A
- B. Design and install all support systems to comply with the requirements of the California Building Code (OPAs only).
- C. For seismic bracing design use the services of a structural engineer licensed in California.
- D. SUBMITTALS
 - 1. Submit shop drawings for all substructures and attachment methods.
 - 2. Submit proposed alternative methods of attachment for review and approval by the Engineer, prior to deviating from the requirements given below.
 - 3. For all seismic bracing systems, submit structural calculations and details prepared and signed by the Contractors licensed engineer which include all

resultant forces applied to the building structure. Do not overstress building structure. The maximum allowable loads are as indicated in 3.01 of this specification. The submittal data required does not require an analysis of the building structural members and their reaction to the loads of the piping. The submittal data needs to address attachment methods and shall include calculations indicating the forces that are applied to the building structure at the point of attachment. Calculations will be reviewed for compliance with design criteria, not for arithmetic.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Furnish all substructures and fasteners required to comply with the limitations given below. Use materials as specified in the various sections and as appropriate to the use.
- B. All exterior materials: Hot dipped galvanized or stainless steel.

PART 3 EXECUTION

3.01 GUIDELINES & LIMITATIONS

- A. The General Contractor shall coordinate the load requirements from all subcontractors so that no combination of loads exceeds the limitations given below
- B. Steel Structure:
 - 1. At both the floor and the roof, attachments may be at the upper or the lower truss chord (horizontal members at top and bottom of truss). Hang no loads from web members (the diagonal and vertical members between chords), including the end diagonal member where the lower chord is discontinuous.
 - 2. Make the point of attachment at a panel point of the truss girders or joints. (The panel points are the intersections of the horizontal chords with the diagonal or vertical web members.)
 - 3. Make no attachments to metal decking.
 - 4. Do no welding on any trusses. Use bolted or clamped type connections.
 - 5. At floor and roof joists, hang only concentric loads, not one side loaded. At all other members (W beams and truss girders) hang all loads greater than 40 pounds Concentric.
 - 6. Attach no loads greater than the following without specific approval of Engineer.
 - a. Floor joists and girders: 500 pounds points load. 1000 pounds total for a single span.

- b. Roof joists and girders: 300 pounds points load. 600 pounds total for a single span.

END OF SECTION

SECTION 26 05 19

LOW-VOLTAGE ELECTRICAL POWER CONDUCTORS AND CABLES (600 V AND LESS)

PART 1 GENERAL

1.01 SUMMARY

- A. The work required under this section of the specifications consists of furnishing, installing and connecting the building wiring system, 600 volts and below. Exterior branch circuit wiring and feeder conductors extended beyond the building are included.

1.02 DESCRIPTION

- A. This section describes requirements for wire and cable.

1.03 RELATED WORK

- A. Section 26 01 00: General Requirements for Electrical Work.

1.04 REFERENCE STANDARDS

- A. NETA STD ATS - Acceptance Testing Specifications for Electrical Power Distribution Equipment and Systems; International Electrical Testing Association; 2009.

1.05 SUBMITTALS

- A. Procedure: Submit under provisions of Division 1.
- B. Provide submittals for items listed documenting compliance with specification requirements.
- C. Product Data:
 - 1. Electrical Materials: Manufacturer's current published catalog sheets.

PART 2 PRODUCTS

2.01 ALL CONDUCTORS AND CABLES

- A. Provide products that comply with requirements of NFPA 70, CEC.
- B. Provide products listed and classified by Underwriters Laboratories Inc. as suitable for the purpose indicated.
- C. Unless specifically indicated to be excluded, provide all required conduit, boxes, wiring, connectors, etc. as required for a complete operating system.
- D. Comply with NEMA WC 70.
- E. Thermoplastic-Insulated Conductors and Cables: Listed and labeled as complying with UL 83.

- F. Thermoset-Insulated Conductors and Cables: Listed and labeled as complying with UL 44.
- G. Conductor Material:
 - 1. Copper Conductors: Soft drawn annealed, 98 percent conductivity, uncoated copper conductors complying with ASTM B3, ASTM B8, or ASTM B787/B787M unless otherwise indicated.
 - 2. Tinned Copper Conductors: Comply with ASTM B33.
- H. Conductor Color Coding:
 - 1. Color code conductors as indicated unless otherwise required by the authority having jurisdiction. Maintain consistent color coding throughout project.
 - 2. Color Coding Method: Integrally colored insulation.
 - 3. Color Code:
 - a. Equipment Ground, All Systems: Green.

2.02 WIRE AND CABLE

- A. Conductor: Insulated copper, individual conductors, 98 percent conductivity, stranded.
 - 1. Power conductors, #12 AWG, minimum to 750 MCM, stranded.
 - 2. Control conductors #14 AWG, minimum to #10 AWG, stranded.
- B. Insulation:
 - 1. Rated 600 volts as follows:

<u>Item</u>	<u>Size (AWG)</u>	<u>Insulation Type</u>
Branch Circuits (except underground)	#12 to #4/0	THWN/THHN-2
Underground Branch Circuits	#12 to #4/0	XHHW-2
Fixture Taps	#12	XHHW-2 or THHN/THWN-2
Feeders (except underground)	#12 to #4/0	THWN/THHN-2
	to #750 MCM	RHH,RHW-2,USE-2,or XHHW-2
Underground Feeders	#12 to #750 MCM	RHH,RHW-2,USE-2,or XHHW-2
Grounding	All	THHN/THWN-2
Control Interconnect	#14 to #10	THHN/THWN-2
Control Cabinets	#14	MTW or THHN/THWN-2

2.03 WIRE CONNECTIONS

- A. Connect wire to binding post screw, stud, bolt or bus as follows:
 - 1. #10 AWG and smaller conductors, compression type, nylon, self-insulated grip spade lugs, T & B "Sta-Kon", Buchanan "Termend", Panduit "Pan-Term", or equal.
 - 2. #8 AWG to #750 MCM copper conductors, solderless lug type connectors, with hex-head or allen type compression set screws with configuration to suit application, T & B "Locktite", Burndy "QA", OZ Type "XL" or "XLH", or equal.
- B. Conductor Taps: #8 through #4 copper conductors, split-bolt, Kearney.
- C. Splice wire as follows:
 - 1. #10 AWG and smaller conductors, twist-on solder-less, insulated spring connectors, 3M "Scotchloks", T & B "Piggys" or equal.
 - 2. #8 AWG to #750 MCM copper conductors, two-way connectors, OZ type "XW", Burndy or equal.
 - 3. In underground pull-boxes, cast resin epoxy, Scotch.
- D. Size, install and tighten wire terminal and splice connectors in accordance with manufacturer's recommendations.

2.04 TAPE

- A. Wire Splices: Vinyl plastic electrical tape, 8.5-mil and 4.0-mil, Scotch 33.
- B. Conduit Wrapping: 10-mil vinyl wrapping tape, Manville, Minnesota Mining and Manufacturing Company.

2.05 WIRING ACCESSORIES

- A. Identify conductors with self-adhesive vinyl cloth markers, sized to fit the conductor insulation, with machine printed black marking, W.H. Brady, Thomas and Betts, or equal.

PART 3 EXECUTION

3.01 INSULATED CONDUCTORS AND CABLE

- A. Exercise extreme care when pulling conductors and cable into conduits to avoid kinking, twisting, nicking or scratching of the insulation or the placement of extreme stress on the conductors or cable. When required, utilize UL approved pulling compounds to assist in pulling conductors.
- B. Color code conductors by phase sequence A-B-C when looking into the front of the equipment from left-to-right, top-to-bottom or front-to-back. Provide

conductors with the appropriate phase color or mark conductors with a minimum of 6 inches of phase tape on ends connected to terminals. Phase code conductors as listed:

<u>Voltage</u>	<u>Phase A</u>	<u>Phase B</u>	<u>Phase C</u>	<u>Neutral</u>	<u>Ground</u>
120/208	Black	Red	Blue	White	Green
277/480	Brown	Orange	Yellow	Grey	Green
120/240	Black	Orange	Blue	White	Green

- C. Identify all conductors with their respective circuit numbers at all boxes and terminals.
- D. Connections:
 1. Use twist-on solder-less connectors for splicing receptacle and lighting circuits #10 AWG wire size and smaller.
 2. Splice #12 and #10 AWG stranded conductors with compression connectors.
 3. Terminate conductors at motors with bolted connections, insulated with plastic tape.
 4. For conductor taps #8 through #4 AWG, provide split bolt service connectors.
 5. For splices larger than #10 AWG, insulate and smooth the splice with insulation putty, tape with one half-lapped layer of 8.5-mil vinyl plastic electrical tape and two half-lapped layers of 7.0-mil vinyl plastic electrical tape.
 6. Use cast resin epoxy splices for splices in underground pullboxes.
 7. Wrap all wire and cable operating at 480 volts AC or more with electric arc and fireproofing tape where wires are installed with other wires or cables.

END OF SECTION

SECTION 26 05 26
GROUNDING AND BONDING FOR ELECTRICAL SYSTEMS

PART 1 GENERAL

1.01 SUMMARY

- A. This section describes requirements for grounding of the power and communications systems.

1.02 DESCRIPTION

- A. Provide all equipment and materials for a complete grounding system.
 - 1. Power System Grounding.
 - 2. Communications System Grounding.
 - 3. Electrical Equipment and Raceway Grounding and bonding.

1.03 RELATE REQUIREMENTS

- A. Section 26 01 00: General Requirements for Electrical Work.
- B. Section 26 05 19 - Low-Voltage Electrical Power Conductors and Cables: Additional requirements for conductors for grounding and bonding, including conductor color coding.
 - 1. Includes oxide inhibiting compound.
- C. Section 26 05 53 - Identification for Electrical Systems: Identification products and requirements.

1.04 REFERENCE STANDARDS

- A. NECA 1 - Standard for Good Workmanship in Electrical Construction; 2010.
- B. NEMA GR 1 - Grounding Rod Electrodes and Grounding Rod Electrode Couplings; 2007.
- C. NETA ATS - Acceptance Testing Specifications for Electrical Power Equipment and Systems; 2013.
- D. NFPA 70, CEC- National Electrical Code, California Electric Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.
- E. UL 467 - Grounding and Bonding Equipment; Current Edition, Including All Revisions.

1.05 SUBMITTALS

- A. Submit a complete set of marked-up record drawings to indicate installed location of system grounding electrode connections, and routing of grounding electrode conductor.
- B. Submit certified test results stating ground resistance from service neutral at service entrance and separately derived systems.

PART 2 PRODUCTS

2.01 GROUNDING AND BONDING REQUIREMENTS

- A. Do not use products for applications other than as permitted by NFPA 70, CEC and product listing.
- B. Unless specifically indicated to be excluded, provide all required components, conductors, connectors, conduit, boxes, fittings, supports, accessories, etc. as necessary for a complete grounding and bonding system.
- C. Where conductor size is not indicated, size to comply with NFPA 70, CEC but not less than applicable minimum size requirements specified.

2.02 GROUNDING AND BONDING COMPONENTS

- A. General Requirements:
 - 1. Provide products listed, classified, and labeled by Underwriter's Laboratories Inc. (UL) or testing firm acceptable to authority having jurisdiction as suitable for the purpose indicated.
 - 2. Provide products listed and labeled as complying with UL 467 where applicable.
- B. Conductors for Grounding and Bonding, in addition to requirements of Section 26 05 19:
 - 1. Use insulated copper conductors unless otherwise indicated.
 - a. Exceptions:
 - 1) Use bare copper conductors where installed underground in direct contact with earth.
 - 2) Use bare copper conductors where directly encased in concrete (not in raceway).
- C. Connectors for Grounding and Bonding:
 - 1. Description: Connectors appropriate for the application and suitable for the conductors and items to be connected; listed and labeled as complying with

UL 467.

2. Unless otherwise indicated, use exothermic welded connections for underground, concealed and other inaccessible connections.
3. Unless otherwise indicated, use mechanical connectors, compression connectors, or exothermic welded connections for accessible connections.

2.03 ACCEPTABLE MANUFACTURERS

- A. Thomas and Betts Appleton, Raco, Oz Gedney, Blackburn, or approved equal.

2.04 MATERIALS

- A. Ground Rods: Copper encased steel, 3/4 inch diameter, minimum length - 10 feet.
- B. Ground Clamp: Water pipe connection, bronze two piece with serrated jaws, lug sized for grounding electrode conductor.
- C. Connectors, Compression Type: Bronze or Copper, pretreated with conductive paste, sized for conductor to which applied.
- D. Connectors, Exothermic Weld Type: Powder actuated weld. Bond made through exothermic reaction producing molten copper from premixed copper oxide and aluminum powder. Form bond in mold or crucible.

2.05 SECONDARY GROUNDING SYSTEM

- A. The main grounding system shall consist of bare copper ground wires connected to a UFER ground placed below the bottom of the structural slab. The grounding system shall include, but is not limited to ground cables, fittings, connectors and all other devices and material as required to render the system complete and meet the requirements of California Electrical Code (CEC) Article 250. Connect grounding system to all building columns.
- B. Except where specifically indicated otherwise, all exposed non-current carrying metallic parts of electrical equipment, metallic raceways systems, grounding conductor in nonmetallic raceways and neutral conductor of the wiring system shall be grounded. The ground connection shall be made at the main service equipment of each service and shall be extended to all required components of CEC Article 250.

2.06 GENERAL BRANCH CIRCUITS GROUNDING

- A. All grounding conductor wire shall be insulated green copper conductors.
- B. All conduit bushings shall be grounding type.

- C. All grounding connections shall be made with solderless lugs and nonferrous hardware.

END OF SECTION

SECTION 26 05 34 CONDUIT

PART 1 GENERAL

1.01 SUMMARY

- A. Provide electrical materials, installation and testing for the new softball field.

1.02 DESCRIPTION

- A. This section describes requirements for raceways.

1.03 RELATED WORK

- A. Section 26 01 00: General Requirements for Electrical Work.
- B. Section 26 05 26: Grounding.
- C. Section 26 05 02: Supporting from Building Structure

1.04 REFERENCE STANDARDS

- A. American National Standards Institute (ANSI):
 - 1. C80.1 Specification for Rigid Steel Conduit, Zinc Coated
 - 2. C80.3 Specification for Electrical Metallic Tubing, Zinc Coated
- B. National Electrical Manufacturers Association (NEMA):
 - 1. TC 2 Electrical Plastic Tubing (EPT), Conduit (EPC-40 and EPC-80) and Fittings
- C. Underwriters Laboratories, Inc. (UL):
 - 1. 1242 Intermediate Metal Conduit
- D. Federal Specifications:
 - 1. WW-C-581E Conduit, Metal Electrical Conduit. Steel, Zinc Coated

1.05 SUBMITTALS

- A. Procedure: Submit under provisions of Division 1.
- B. Provide submittals for items listed documenting compliance with specification requirements.
 - 1. Product Data:
 - 2. Electrical Materials: Manufacturer's current published catalog sheets.

PART 2 PRODUCTS

2.01 RACEWAYS

- A. Rigid Steel Conduit:
 - 1. ANSI C80.1, minimum size 3/4 inch.
 - 2. Threaded fittings, galvanized.
 - 3. Locknuts, 3/4 inch to 1-1/2 inch, heavy nut steel.
 - 4. Locknuts, 1-1/2 inch and larger, malleable iron.
 - 5. Insulated bushings, malleable iron, plastic or nylon insert, OZ "IBC" series, Efcor "56" series, Appleton "GIB" series or equal.
 - 6. Three-piece conduit couplings, malleable iron, T & B "Erickson", Appleton "EC" series, OZ "4" series, or equal.

- B. Liquid-tight Flexible Metal Conduit:
 - 1. Fabricate from galvanized steel strip, jacketed with PVC, minimum size 1/2 inch.
 - 2. Straight connectors, cadmium plated steel or malleable iron, insulated throat and neoprene sealing ring, OZ "4Q-IT" series, T & B "5330" series, Efcor "11-B" series, or equal.
 - 3. Angle connectors, cadmium plated steel or malleable iron, insulated throat and neoprene sealing ring, OZ, T & B, Efcor, or equal, comparable to straight connectors.
 - 4. Hardware, cadmium plated steel.
 - 5. Length, no greater than 6 feet. Allow slack for movement of connected equipment.

- F. PVC Conduit:
 - 1. Schedule 40, NEMA TC2, Type II underground installation.
 - a. Minimum size, 1 inch.
 - b. Elbows, Schedule 40, encased in concrete for sizes 2-inch and larger.
 - c. Extensions above grade, rigid steel (exposed), EMT (concealed indoors).
 - d. Adapters, PVC to rigid steel, threaded plastic.

PART 3 EXECUTION

3.01 INSTALLATION

- A. Install products in accordance with manufacturer's instructions.
- B. Install conduit in a neat and workmanlike manner in accordance with NECA 1.
- C. Conduit Support:
 - 1. Secure and support conduits in accordance with NFPA 70, CEC and Section 26 05 02 using suitable supports and methods approved by the authority having

- jurisdiction.
2. Provide independent support from building structure. Do not provide support from piping, ductwork, or other systems.
- D. Connections and Terminations:
1. Use suitable adapters where required to transition from one type of conduit to another.
 2. Provide insulating bushings or insulated throats at all conduit terminations to protect conductors.
 3. Secure joints and connections to provide maximum mechanical strength and electrical continuity.
- E. Penetrations:
1. Do not penetrate or otherwise notch or cut structural members, including footings and grade beams, without approval of Structural Engineer.
 2. Make penetrations perpendicular to surfaces unless otherwise indicated.
 3. Provide sleeves for penetrations as indicated or as required to facilitate installation. Set sleeves flush with exposed surfaces unless otherwise indicated or required.
 4. Conceal bends for conduit risers emerging above ground.
 5. Seal interior of conduits entering the building from underground at first accessible point to prevent entry of moisture and gases.
 6. Where conduits penetrate waterproof membrane, seal as required to maintain integrity of membrane.
 7. Make penetrations for roof-mounted equipment within associated equipment openings and curbs where possible to minimize roofing system penetrations. Where penetrations are necessary, seal as indicated or as required to preserve integrity of roofing system and maintain roof warranty. Include proposed locations of penetrations and methods for sealing with submittals.
 8. Install firestopping to preserve fire resistance rating of partitions and other elements, using materials and methods specified in Section 07 84 00.
- F. Conduit Movement Provisions: Where conduits are subject to movement, provide expansion and expansion/deflection fittings to prevent damage to enclosed conductors or connected equipment. This includes, but is not limited to:
1. Where conduits cross structural joints intended for expansion, contraction, or deflection.
 2. Where conduits are subject to earth movement by settlement or frost.
- G. Condensation Prevention: Where conduits cross barriers between areas of potential substantial temperature differential, provide sealing fitting or approved sealing compound at an accessible point near the penetration to prevent

condensation. This includes, but is not limited to:

1. Where conduits pass from outdoors into conditioned interior spaces.
2. Where conduits pass from unconditioned interior spaces into conditioned interior spaces.

H. Provide grounding and bonding in accordance with Section 26 05 26.

3.02 RACEWAY SYSTEMS

- A. Install all wiring in raceways. Install raceway systems, including conduits, hangers and support channels parallel or perpendicular to structural members. Coordinate location of raceway systems with other Divisions prior to commencing installation.
- B. Rigid Steel Conduit: Suitable for use in all locations. Where used underground, wrap with no less than 2 layers of half-lapped 10 mil vinyl pipe wrapping tape, Manville, Minnesota Mining and Manufacturing Co., or equal.
- C. Liquid-Tight Flexible Metal Conduit: Suitable for connection of motors and equipment in damp or wet locations.
- D. PVC Conduit: Suitable for use underground, with a minimum of 18 inches of cover. Also suitable for use in concrete slabs (for healthcare facilities, encase Schedule 40 PVC in minimum 2" of concrete, not for use in branch circuits). Fabricate field bends with an approved thermal bender and jig. Maintain separation between conduits using plastic spacers specifically designed for the purpose.
- E. Conduit Supports:
1. Support all conduits at intervals not to exceed 10-feet.
 2. Support individual conduits with conduit hangers or clamp back and nest back, if required for entrance into the equipment.
 3. Support multiple conduits, 2 or more in parallel, with framing channel and pipe clamps.
 4. Spring steel fasteners may be used to fasten electrical metallic tubing to individual hanger wires, minimum #12 AWG, specifically used for hanging conduit, nothing else.
- F. Conduit Bends:
1. Provide no more than (3) 90-degree conduit bends or the equivalent number of smaller radius bends in any conduit run between boxes or equipment.
 2. Length of run: 400-feet maximum less 100-feet for each equivalent 90 degree bend.
 3. Fabricate bends and offsets with a hickey or conduit bender designed

specifically for use with the type of conduit to be bent, or use factory made bend.

4. Radius of Underground Bends: Minimum 12 times conduit radius.
- G. Expansion Joints: Provide expansion couplings in conduit runs that cross expansion joints in the structures. Place expansion couplings at the expansion joints.
- H. Cap conduits during construction to prevent entrance of foreign material.
- I. Provide conduit-sealing bushings at conduit penetrations through exterior walls to seal against fluid and gas pressure around the conduit.
- J. Fit all conduits that enter the enclosure of a switchboard, distribution panel, or motor control center with an insulated grounding bushing.
- K. Fit PVC conduits that enter underground pullboxes and junction boxes with belled ends.
- L. Install pull ropes in all empty conduits, #12 AWG in conduits 1 inch and smaller and 3/16 inch polypropylene rope in conduits 1-1/4 inch and larger.

END OF SECTION

SECTION 26 05 37 BOXES

PART 1 GENERAL

1.01 SUMMARY

- A. Provide electrical materials, installation and testing for the new softball field.

1.02 DESCRIPTION

- A. This section describes requirements for outlet boxes.

1.03 RELATED WORK

- A. Section 26 01 00: General Requirements for Electrical Work.

1.04 REFERENCE STANDARDS

- A. NEMA FB 1 - Fittings, Cast Metal Boxes, and Conduit Bodies for Conduit, Electrical Metallic Tubing, and Cable; National Electrical Manufacturers Association; 2007.
- B. NEMA OS 1 - Sheet Steel Outlet Boxes, Device Boxes, Covers, and Box Supports; National Electrical Manufacturers Association; 2008.
- C. NEMA OS 2 - Nonmetallic Outlet Boxes, Device Boxes, Covers and Box Supports; National Electrical Manufacturers Association; 2008.
- D. NEMA 250 - Enclosures for Electrical Equipment (1000 Volts Maximum); National Electrical Manufacturers Association; 2008.

1.05 SUBMITTALS

- A. Procedure: Submit under provisions of Division 1.
- B. Provide submittals for items listed documenting compliance with specification requirements.
- C. Product Data:
 - 1. Electrical Materials: Manufacturer's current published catalog sheets.

PART 2 PRODUCTS

2.01 OUTLET BOXES

- A. Outlet and Device Boxes Up to 100 cubic inches (1,650 cu cm), Including Those Used as Junction and Pull Boxes:
 - 1. Use sheet-steel boxes for dry locations unless otherwise indicated or required.
 - 2. Use cast iron boxes or cast aluminum boxes for damp or wet locations unless

otherwise indicated or required; furnish with compatible weatherproof gasketed covers.

3. Use suitable concrete type boxes where flush-mounted in concrete.
4. Use suitable masonry type boxes where flush-mounted in masonry walls.
5. Use raised covers suitable for the type of wall construction and device configuration where required.
6. Use shallow boxes where required by the type of wall construction.
7. Do not use "through-wall" boxes designed for access from both sides of wall.
8. Sheet-Steel Boxes: Comply with NEMA OS 1, and list and label as complying with UL 514A.
9. Cast Metal Boxes: Comply with NEMA FB 1, and list and label as complying with UL 514A; furnish with threaded hubs.
10. Boxes for Ganged Devices: Use multigang boxes of single-piece construction. Do not use field-connected gangable boxes unless specifically indicated or permitted.
11. Wall Plates: Comply with Section 26 27 26.

2.02 PULL AND JUNCTION BOXES

- A. General: For all pull and junction boxes over 100 cubic inches, provide code gauge, sheet steel boxes which meet NEMA 1 standards for panelboard and terminal cabinet box construction, with screw type covers.
- B. Ground Lug: Weld, before finish is applied, a grounding pad drilled for two bolted grounding lugs or two ground studs on the box interior.
- C. Finish: Apply rust inhibiting prime coat and 2 coats of baked enamel, standard factory gray.
- D. Hardware: Cadmium plated steel screws.

2.03 PRECAST CONCRETE BOXES

- A. Provide high-density reinforced concrete pull and junction boxes with end and side knockouts as manufactured by Christy, Forni, Brooks, or approved equal. Fabricated boxes with non-settling shoulders to facilitate maintaining grade during backfilling. Unless noted otherwise, provide galvanized steel checker plate covers with hold-down bolts, identified as follows:

<u>System</u>	<u>Identification</u>
Power - 600 volts or less	Electrical
Power - 2300 volts (8)	Electrical (Provide high voltage warning sign per Title 8)

PART 3 EXECUTION

3.01 BOXES AND CABINETS

- A. Place outlet boxes in a location as close to that shown on the plans as possible. Coordinate location of boxes with other Divisions.
- B. Install wall mounted outlet boxes so that the distance from the centerline of the box to finished floor is as listed or indicated:
 - 1. Receptacles, + 1 foot-6 inches
 - 2. Telephone, + 1 foot-6 inches
 - 3. Data, + 1 foot-6 inches
 - 4. Switches, + 4 feet-0 inches
- C. Install junction boxes with covers in concealed areas accessible after installation. Do not install junction boxes flush with finish walls or ceilings unless specifically approved by the Engineer.
- D. Attach surface boxes with:
 - 1. Steel or malleable iron expansion anchors in concrete or solid masonry.
 - 2. Wood screws in wood.
 - 3. Toggle bolts in hollow walls or masonry.
 - 4. Machine screws, bolts or welded studs in steel.
- E. Attach flush boxes with adjustable bar type hangers screw fastened to studs on both sides of the box.

END OF SECTION

SECTION 26 05 53
IDENTIFICATION FOR ELECTRICAL SYSTEMS

PART 1 GENERAL

1.01 DESCRIPTION

- A. Extent of electrical identification work is as outlined by this specification.
- B. Types of electrical identification work specified in this section include the following:
 - 1. Buried cable warnings.
 - 2. Electrical power, control and communication conductors.
 - 3. Operational instructions and warnings.
 - 4. Danger signs.
 - 5. Equipment/system identification signs.

1.02 RELATED REQUIREMENTS

- A. Section 26 01 00: General Requirements for Electrical Work.

1.03 QUALITY ASSURANCE

- A. California Electrical Code (CEC) Compliance: Comply with CEC as applicable to installation of identifying labels and markers for wiring and equipment.
- B. Underwriters Laboratories, Inc. (UL) Compliance: Comply with applicable requirements of UL Standard 969, "Marking and Labeling Systems", pertaining to electrical identification systems.
- C. American National Standards Institute (ANSI) Compliance: Comply with applicable requirements of ANSI Standard A13.1, "Scheme for the Identification of Piping Systems".
- D. National Electrical Manufacturer's Association (NEMA) Compliance: Comply with applicable requirements of NEMA Standard No's WC-1 and WC-2 pertaining to identification of power and control conductors.

1.04 SUBMITTALS

- A. Product Data: Submit manufacturer's data on electrical identification materials and products.
- B. Samples: Submit samples of each color, lettering style and other graphic representation required for each identification material or system.

PART 2 PRODUCTS

2.01 IDENTIFICATION REQUIREMENTS

- A. Identification for Equipment:
 - 1. Use identification nameplate to identify each piece of electrical distribution and control equipment and associated sections, compartments, and components.
- B. Identification for Conductors and Cables:
 - 1. Color Coding for Power Conductors 600 V and Less: Comply with Section 26 05 19.
 - 2. Use identification nameplate or identification label to identify color code for ungrounded and grounded power conductors inside door or enclosure at each piece of feeder or branch-circuit distribution equipment when premises has feeders or branch circuits served by more than one nominal voltage system.

2.02 IDENTIFICATION NAMEPLATES AND LABELS

- A. Identification Nameplates:
 - 1. Materials:
- B. Identification Labels:
 - 1. Materials: Use self-adhesive laminated plastic labels; UV, chemical, water, heat, and abrasion resistant.
 - 2. Text: Use factory pre-printed or machine-printed text. Do not use handwritten text unless otherwise indicated.

2.03 WARNING SIGNS AND LABELS

- A. Comply with ANSI Z535.2 or ANSI Z535.4 as applicable.
- B. Warning Signs:
 - 1. Materials:
 - 2. Minimum Size: 7 by 10 inches unless otherwise indicated.
- C. Warning Labels:
 - 1. Materials: Use factory pre-printed or machine-printed self-adhesive polyester, or self-adhesive vinyl labels; UV, chemical, water, heat, and abrasion resistant; produced using materials recognized to UL 969.
 - 2. Machine-Printed Labels: Use thermal transfer process printing machines and accessories recommended by label manufacturer.
 - 3. Minimum Size: 2 by 4 inches unless otherwise indicated.

2.04 ACCEPTABLE MANUFACTURERS

- A. Manufacturers: Subject to compliance with requirements, provide electrical identification products of one of the following (for each type marker):
1. Almetek,
 2. Brady, W.H. Company,
 3. Calipico Inc.,
 4. Cole-Flex Corporation,
 5. Direct Safety Company,
 6. George-Ingraham Corporation,
 7. Griffolyn Company,
 8. Ideal Industries, Inc.,
 9. LEM Products, Inc.,
 10. Markal Company,
 11. National Band and Tag Company,
 12. Panduit Corporation,
 13. Seton Name Plate Company,
 14. Tesa Corporation,
 15. Or equal.

2.05 ELECTRICAL IDENTIFICATION MATERIALS

- A. Except as otherwise indicated, provide manufacturer's standard products of categories and types required for each application. Where more than single type is specified for an application, provide single selection for each application.
- B. Color-Coded Plastic Tape:
1. Provide manufacturer's standard self-adhesive vinyl tape not less than 3 mils thick by 1-1/2 inches wide.
 - a. Colors: Unless otherwise indicated or required by governing regulations, provide orange tape.
- C. Underground-Type Plastic Line Marker:
1. Manufacturer's standard permanent, bright-colored, continuous-printed plastic tape, intended for direct-burial service; not less than 6 inches wide x 4 mils thick. Provide tape with printing which most accurately indicates type of service of buried cable.
- D. Cable/Conductor Identification Bands:
1. Provide manufacturer's standard vinyl-cloth self-adhesive cable/conductor markers of wrap-around type, either pre-numbered plastic coated type, or write-on type with clear plastic self-adhesive cover flap; numbered to show circuit identification.

- E. Plasticized Tags:
 - 1. Manufacturer's standard pre-printed or partially pre-printed accident-prevention and operational tags, of plasticized card stock with matte finish suitable for writing, approximately 3-1/4 x 5-5/8 inches, with brass grommets and wire fasteners, and with appropriate pre-printed wording including large-size primary wording, e.g., DANGER, CAUTION, DO NOT OPERATE.
- F. Self-Adhesive Plastic Signs:
 - 1. Provide manufacturer's standard, self-adhesive or pressure-sensitive, pre-printed, flexible vinyl signs for operational instructions or warnings; of sizes suitable for application areas and adequate for visibility, with proper wording for each application, e.g., 208V, EXHAUST FAN, RECTIFIER.
- G. Colors: Unless otherwise indicated, or required by governing regulations, provide white signs with black lettering.
- H. Baked Enamel Danger Signs:
 - 1. General: Provide manufacturer's standard DANGER signs of baked enamel finish on 20-gauge steel; of standard red, black and white graphics; 14 x 10 inches size except where 10 x 7 inches is the largest size which can be applied where needed, and except where larger size is needed for adequate vision; with recognized standard explanation wording, e.g., HIGH VOLTAGE, KEEP AWAY, BURIED CABLE, DO NOT TOUCH SWITCH.
- I. Engraved Plastic-Laminate Signs:
 - 1. Provide engraving stock melamine plastic laminate, complying with FS L-P-387, in sizes and thicknesses indicated, engraved with engraver's standard letter style of sizes and wording indicated, black face and white core plies (letter color) except as otherwise indicated, punched for mechanical fastening except where adhesive mounting is necessary because of substrate.
 - 2. Thickness: 1/8 inch, except as otherwise indicated.
 - 3. Fasteners: Self-tapping stainless steel screws, except contact-type permanent adhesive where screws cannot or should not penetrate substrate.

2.06 LETTERING AND GRAPHICS

- A. General: Coordinate names, abbreviations and other designations used in electrical identification work, with corresponding designations shown, specified or scheduled. Provide numbers, lettering and wording as indicated or, if not otherwise indicated, as recommended by manufacturer or as required for proper identification and operation/maintenance of electrical systems and equipment. Comply with ANSI A13.1 pertaining to minimum sizes for letters and numbers.

PART 3 EXECUTION

3.01 APPLICATION AND INSTALLATION

- A. General Installation Requirements:
 - 1. Install electrical identification products as indicated, in accordance with manufacturer's written instructions, and requirements of CEC and OSHA.
 - 2. Coordination: Where identification is to be applied to surfaces which require finish, install identification after completion of painting.
 - 3. Regulations: Comply with governing regulations and requests of governing authorities for identification of electrical work.
- B. Conduit Identification:
 - 1. Where electrical conduit is exposed in spaces with exposed mechanical piping which is identified by color-coded method, apply color-coded identification on electrical conduit in manner similar to piping identification. Except as otherwise indicated use white as coded color for conduit.
- C. Box Identification:
 - 1. After completion, using an indelible wide tip marker, indicate on the cover of each junction and pull box the designation of the circuits contained therein, i.e., A-1, 3, 5. Use a black marker for normal power circuits a red marker for critical circuits, an orange marker for life safety circuits, and a green marker for equipment circuits.
 - 2. All junction and pull boxes for wiring systems above 600V shall be identified with high voltage warning labels installed every 20 linear feet in accordance with OSHA standards. All boxes shall also be painted red, see Section 09900 of the specifications.
 - 3. All junction and pull boxes for the fire alarm system shall be painted red. All raceway for the fire alarm system shall be labeled "Fire Alarm" in red letters on intervals not to exceed ten feet.
- D. Underground Cable Identification:
 - 1. During back-filling/top-soiling of each exterior underground electrical, signal or communication conduits, install continuous underground-type plastic line marker, located directly over buried line at 6 to 8 inches below finished grade. Where multiple small lines are buried in a common trench and do not exceed an overall width of 16 inches, install a single line marker.
 - 2. Install line marker for every buried conduit.
- E. Cable/Conductor Identification:
 - 1. Apply cable/conductor identification, including voltage, phase and feeder number, on each cable/conductor in each box/enclosure/cabinet where wires

of more than one circuit or communication/signal system are present, except where another form of identification (such as color-coded conductors) is provided. Match identification with marking system used in panelboards, shop drawings, contract documents, and similar previously established identification for project's electrical work. Refer to Section 16100 - Basic Materials and Methods of these specifications for color coding requirements.

F. Operational Identification and Warnings:

1. Wherever required by OSHA or directed by the Owner's Representative, to ensure safe and efficient operation and maintenance of electrical systems, including prevention of misuse of electrical facilities equipment by unauthorized personnel, install self-adhesive plastic signs or similar equivalent identification, instruction or warnings on switches, outlets and other controls, devices and covers of electrical enclosures. Where detailed instructions or explanations are needed, provide plasticized tags with clearly written messages adequate for intended purposes. Request a meeting with the Owner's Representative prior to substantial completion to coordinate warning requirements.

G. Danger Signs:

1. In addition to installation of danger signs required by governing regulations and authorities, install appropriate danger signs at locations identified by the Owner's Representative as constituting similar dangers for persons in or about project. Request a meeting with the Owner's Representative prior to substantial completion to coordinate danger sign requirements.
 - a. High Voltage: Install danger signs wherever it is possible, under any circumstances, for persons to come into contact with electrical power of voltages higher than 110-120 volts.
 - b. Critical Switches/Controls: Install danger signs on switches and similar controls, regardless of whether concealed or locked up, where untimely or inadvertent operation (by anyone) could result in significant danger to persons, or damage to or loss of property.

H. Equipment/System Identification:

1. Install engraved plastic-laminate sign on each major unit of electrical equipment in building; including central or master unit of each electrical system including communication/control/signal systems, unless unit is specified with its own self-explanatory identification or signal system. Except as otherwise indicated, provide single line of text, 1/2 inch high lettering, on 1-1/2 inch high sign (2 inch high where 2 lines are required), white lettering in black field. Provide text matching terminology and numbering of the

contract documents and shop drawings. Provide signs for each unit of the following categories of electrical work:

- a. Electrical cabinets and enclosures.
 - b. Access panel/doors to electrical facilities.
 - c. Transformers.
 - d. Fire alarm control panel, battery cabinets, voice alarm system cabinets, and transponders.
 - e. Automatic transfer switches.
2. Install signs at locations indicated or, where not otherwise indicated, at location for best convenience of viewing without interference with operation and maintenance of equipment. Secure to substrate with fasteners, except use adhesive where fasteners should not or cannot penetrate substrate. Identification of flush mounted cabinets and panelboards shall be on the inside of the device.
3. Panelboards, individually mounted circuit breakers, and each breaker in the switchboards, secondary unit substations, and distribution panels shall be identified with an engraved plastic laminate sign. Plastic nameplates shall be multicolored laminated plastic with faceplate and core as scheduled. Lettering shall be engraved minimum 1/4 inch high letters.
- a. 480/277 volt normal power equipment shall be identified with white faceplate with green core.
 - b. 480/277 volt critical branch power equipment shall be identified with white faceplate with yellow core.
 - c. 480/277 volt life safety branch power equipment shall be identified with white faceplate with red core.
 - d. 480/277 volt equipment branch power equipment shall be identified with white faceplate with blue core.
 - e. 208/120 volt normal power equipment shall be identified with green faceplate with white core.
 - f. 208/120 volt critical branch power equipment shall be identified with yellow faceplate with white core.
 - g. 208/120 volt life safety branch power equipment shall be identified with red faceplate with white core.
 - h. 208/120 volt equipment branch power equipment shall be identified with blue faceplate with white core.
 - i. Equipment identification is to indicate the following:
 - 1) Equipment ID abbreviation.
 - 2) Voltage, phase, wires and frequency.
 - 3) Emergency or other system.

4) Power source origination.

Example:

Panel GLSH1

480/277V, 3 phase, 4 wire

Life Safety System

Fed by GLSD1

j. Submit complete schedule with the shop drawings listing all nameplates and information contained thereon.

END OF SECTION

SECTION 26 05 74 ARC FLASH STUDY

PART 1 GENERAL

1.01 SUMMARY

- A. The purpose of this study is to provide a complete arc flash program to protect individuals working on its premises from electrical arc flash hazards. These individuals may include any workers who inspect, maintain, or operate energized electrical equipment.

1.02 SCOPE

- A. Engage and pay for the services of a recognized independent Testing laboratory/Firm for the purpose of performing inspections and tests as herein specified.
- B. The Firm should be currently involved in high- and low-voltage power system evaluation. The study must be performed, stamped and signed by a registered professional engineer. Credentials of the individual(s) performing the study and background of the Firm must be submitted to the Engineer for approval prior to start of the work. A minimum of five (5) years experience in power system analysis is required for the individual in charge of the project.
- C. The Firm performing the study should demonstrate capability and experience to provide assistance during start up as required.
- D. The Firm must provide all material, equipment, labor and technical supervision to perform such tests and inspections.
- E. It is the intent of these tests to assure that all electrical equipment, both Contractor and Owner-supplied, is operational within industry and manufacturer's tolerances and is installed in accordance with design specifications.

1.03 RELATED REQUIREMENTS

- A. Section 26 01 00: General Requirements for Electrical Work.

1.04 SAFETY AND PROCEDURAL REQUIREMENTS

- A. The Firm must provide proof (written documentation) that its employees working on the premises have been properly trained in the use and application of personal protective equipment (PPE) and the hazards of working on or near energized equipment.

- B. Safety practices that must be followed include, but are not limited to, the following:
 1. Occupational Safety and Health Act
 2. Accident Prevention Manual for Industrial Operations, National Safety Council
 3. Applicable state and local safety operating procedures
 4. Owner's safety practices
- C. Perform all work in accordance with the applicable codes and standards of the following agencies except as provided otherwise herein:
 1. InterNational Electrical Testing Association – NETA ATS latest Edition: Acceptance Testing Specifications, and/or NETA MTS latest Edition: Maintenance Testing Specifications.
 2. National Fire Protection Association – NFPA
 - a. ANSI/NFPA 70, CEC: National Electrical Code (NEC), California Electric Code (CEC)
 - b. ANSI/NFPA 70B: Recommended Practice for Electrical Equipment Maintenance
 - c. NFPA 70E: Electrical Safety Requirements for Employee Workplaces

1.05 DATA COLLECTION FOR THE STUDY

- A. The Contractor must provide the required data for preparation of the studies. The Firm performing the system studies must furnish the Contractor with a listing of the required data immediately after award of the contract.
- B. The Firm must provide an up to date electrical system single-line diagram as required by NFPA 70E, 2009 Edition, "Standard for Electrical Safety in the Workplace", as referenced in OSHA 29 CFR 1910 Subpart S, Appendix A. This information must include nameplate data for electrical components (e.g. transformers, medium voltage switchgear, panelboards, switchboards, motor control centers, etc.) for all portions of the electrical system from the utility intertie through the lowest rated panel.
- C. Utilize up to date Cable sizes, types and lengths between electrical equipment components and utility source data for an accurate single-line representation of the electrical system. Utilize unique characteristics of the equipment installation which may impact the magnitude of the potential hazard (e.g. open space versus enclosure). Verify over-current device settings.
- D. Data collection may require removal of barriers, opening of front panels, etc. while equipment is energized. The Firm must provide its own PPE protection with a minimum arc thermal performance rating (ATPV) of 40 calories/cm².

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION

3.01 SYSTEM ANALYSIS

- A. Perform a comprehensive analysis of the facility's electrical system for all equipment 480 volt and higher and 240 volt served by a 125kVA or larger transformer based on the up to date single-line diagram provided from Part 1. Include the following:
1. Short Circuit Study – Perform a short circuit analysis in accordance with ANSI standard C37 and IEEE standard 141-1993 (Red Book) for each electrical component as defined in "Section A. "
 2. Coordination Study – Perform a coordination study in accordance with IEEE 242-2001 "Buff" to determine the proper over-current device settings that will balance system reliability through selective coordination while minimizing the magnitude of an electrical arc flash hazard incident.
 3. Incident Energy Study – Perform an incident energy study in accordance with the IEEE 1584-2004a, "IEEE Guide for Performing Arc Flash Hazard Calculations" as referenced in NFPA 70E, "Standard for Electrical Safety in the Workplace", 2009 Revision, in order to quantify the hazard for selection of personal protective equipment (PPE). Tables that assume fault current levels and clearing time for proper PPE selection are not acceptable. Assist the owner in selecting appropriate combinations of PPE prior to the final analysis and preparation of equipment labels.

3.02 DESIGN REVIEW

- A. Assist the owner with system design adjustments to optimize the results of the study as it relates to safety and reliable electrical system operation (e.g. overcurrent device settings, working distances, current limiting devices). This includes mitigation, where possible, of incident energy levels that exceed 40 calories/cm². A qualified engineer with power systems design experience must provide this assistance.

3.03 STUDY REPORT

- A. Provide a comprehensive report that includes:
1. Report summary with analysis methodology, findings and recommendations
 2. Summary of input data for utility source, equipment and cables
 3. Available fault current at each equipment location with comparison to equipment rating
 4. Overcurrent device settings (e.g. pick-up, time delay, curve), "as found" and "as recommended"
 5. Incident energy level (calories/cm²) for each equipment location and

recommended PPE

6. Overcurrent device coordination curves including related section of the single-line diagram
7. Complete system single-line diagram for the system analyzed

B. Labels

1. Based on the results of the incident energy study, provide and install a warning label (orange <math>< 40 \text{ cal/cm}^2</math>) or danger label (red > 40 cal/cm²) for each piece of equipment as specified in "Section A" in accordance with ANSI Z535.4-2002. The label must be readable in both indoor and outdoor environments for at least 3 years and contain the following information:
2. Arc hazard boundary (inches)
3. Working distance (inches)
 - a. Arc flash incident energy at the working distance (calories/ cm²)
 - 1) PPE category and description including the glove rating
 - (a) Voltage rating of the equipment
 - (b) Limited approach distance (inches)
 - (c) Restricted approach distance (inches)
 - (d) Prohibited approach distance (inches)
 - (e) Equipment/bus name
 - (f) Date prepared
 - (g) Supplier name and address

C. Equipment Verification/Operation

1. The validity of the arc flash study and incident energy readings is in part based on proper setting of over-current device trip times and the proper operation of the over-current devices and breakers themselves. Verify proper operation of over-current devices and breakers at the request of the owner using InterNational Electrical Testing Association (NETA) qualified technicians.
2. The Firm must be capable of adjustment, maintenance, repair or replacement of over-current devices or breakers as required to support the performance of the electrical system in line with the expectations of the system study.

D. Safety Training

1. Provide the owner with one day of arc flash safety training that contains the requirements referenced in OSHA 1910.269, OSHA 1910 Subpart S and NFPA 70E including:
 - a. Proper use of the system analysis data
 - b. Interpretation of hazard labels
 - c. Selection and utilization of personal protective equipment
 - d. Safe work practices and procedures

2. Provide the owner an outline of the one day training course including training materials at time of quotation. The owner at its discretion may require additional training customized to its specific needs. The Firm must be capable of developing and presenting customized training for approval as required.
3. Provide a training certificate to record satisfactory completion by the owner's employees for continuing education credits and re-licensing requirements. Satisfactory completion is defined as the student obtaining a minimum of 70% on the post training examination and the ability to work safely if a hands on performance evaluation is provided.

3.04 SAFETY DOCUMENTATION/POLICY

- A. At the request of the owner, integrate the results of the system study and design review into the safety manual in compliance with OSHA CFR 29 1910.333. Assist the owner at its request to develop a safety policy with corresponding documentation and procedures including information gained in the system analysis. This includes electrical safety, procedures for mitigation of arc hazards, PPE selection based on specific equipment of the owner, task and training requirements.

END OF SECTION

SECTION 26 22 00
LOW-VOLTAGE TRANSFORMERS

PART 1 GENERAL

1.01 REQUIREMENTS INCLUDED

- A. The General Conditions, Supplementary General Conditions, Special Conditions and Division 1 General Requirements apply to the work of this section.
- B. This section describes requirements for dry type transformer.
- C. This section describes requirements for dry type transformer K-rated.

1.02 RELATED WORK

- A. Section 26 01 00: General Requirements for Electrical Work.

1.03 REFERENCE STANDARDS

- A. The Underwriters Laboratory, Inc. (UL).
- B. National Electrical Manufacturers Association (NEMA).

1.04 QUALIFICATIONS

- A. The equipment manufacturer shall be ISO 9000, 9001 or 9002 certified.
- B. The manufacturer of this equipment shall have produced similar electrical equipment for a minimum period of five (5) years. When requested by the Engineer, an acceptable list of installations with similar equipment shall be provided demonstrating compliance with this requirement.
- C. The transformers shall be suitable for and certified to meet all applicable seismic requirements of the California Electric Code (CEC) for zone 4 application. Guidelines for the installation consistent with these requirements shall be provided by the transformer manufacturer and be based upon testing of representative equipment.
- D. The test response spectrum shall be based upon a 5 percent minimum damping factor, IBC: a peak of 0.75g, and a ZPA (zero period acceleration) of 0.38g. The tests shall fully envelope this response spectrum for all equipment natural frequencies up to at least 35Hz.

1.05 SUBMITTALS

- A. Submit manufacturers' data and shop drawings in accordance with Division 1.
- B. Manufacturers Data:
 - 1. Dimension drawing and weight.

2. Technical certification sheet.
3. Conduit entry/exit locations.
4. Transformer ratings including:
 - a. Primary and secondary kVA.
 - b. Voltage.
 - c. Taps.
 - d. Primary and secondary continuous current.
 - e. Basic Impulse level for equipment over 600-volts.
 - f. Impedance.
 - g. Insulation class and temperature rise.
 - h. Sound level.

PART 2 PRODUCTS

2.01 ALL TRANSFORMERS

- A. Description: Factory-assembled, dry type transformers for 60 Hz operation designed and manufactured in accordance with NEMA ST 20 and listed and labeled by Underwriters Laboratories Inc. as suitable for the purpose specified and indicated.
- B. Unless noted otherwise, transformer ratings indicated are for continuous loading according to IEEE C57.96 under the following service conditions:
 1. Altitude: Less than 3,300 feet.
 2. Ambient Temperature: Not exceeding 86 degrees F average or 104 degrees F maximum measured during any 24 hour period.
- C. Core: High grade, non-aging silicon steel with high magnetic permeability and low hysteresis and eddy current losses. Keep magnetic flux densities substantially below saturation point, even at 10 percent primary overvoltage. Tightly clamp core laminations to prevent plate movement and maintain consistent pressure throughout core length.
- D. Impregnate core and coil assembly with non-hydroscopic thermo-setting varnish to effectively seal out moisture and other contaminants.
- E. Basic Impulse Level: 10 kV.
- F. Ground core and coil assembly to enclosure by means of a visible flexible copper grounding strap.
- G. Isolate core and coil from enclosure using vibration-absorbing mounts.

H. Nameplate: Include transformer connection data, ratings, wiring diagrams, and overload capacity based on rated winding temperature rise.

2.02 DRY TYPE POWER TRANSFORMERS

- A. General: Provide dry type power transformers, for lighting and general power applications, rated as indicated.
- B. Transformers shall be designed for continuous operation at rated kVA, for 24 hours a day, yearly operation, with normal life expectancy as defined in American National Standards Institute (ANSI) C57.96.
- C. Shipping: Provide lifting holes, accessible without removal of any of the enclosure components.

D. Insulation, as listed:

<u>Insulation Size</u>	<u>Temperature Class</u>	<u>Rating</u>	<u>Hot Spot Allowance</u>
2kVA & below	NEMA B or better	80 degrees C rise	30 degrees C
3kVA thru 15 kVA	NEMA F or better	115 degrees C rise	30 degrees C
15kVA and above	NEMA H	150 degrees C rise	30 degrees C

- H. Base temperature rating and hot spot allowances in the above table on a 40 degrees C maximum ambient temperature and 30 degrees C average ambient temperature.
- I. Overload Capacity: 10 percent above full load rating continuously in an ambient not exceeding 40 degrees C.
- J. Case Temperature: Maintain no more than a 35 degrees C rise above a 40 degrees C ambient.
- K. Taps, as listed:

<u>Transformer Rating</u>	<u>Phase</u>	<u>Taps</u>
Through 10kVA	Single	None
15kVA thru 2kVA	Single	(2) 5 percent FCBN
6kVA thru 15 kVA	Three	(2) 5 percent FCBN
30kVA and larger	Single and Three	(2) 2-1/2 percent FCAN and(4) 2-1/2 percent FCBN where FCBN- Full Capacity Below Normal.

L. Sound levels, not to exceed listed values, as determined by NEMA standards:

<u>Size</u>	<u>Sound Level in dB</u>
Through 9kVA	40
10 through 50kVA	45
51 through 150kVA	50
151 through 300kVA	55
301 through 500kVA	60
501 through 700kVA	62
701 through 1000kVA	64

M. Provide vibration isolating mounts to isolate the enclosure from the core and coil assembly.

N. Mounting, suitable as listed:

1. Single Phase Transformers: Wall
2. Three Phase Transformers, through 15kVA: Wall.
3. Three Phase Transformers, 15kVA and above: Floor or ceiling hung channel.

O. Provide conduit knockouts for line and load conduit entrance.

P. Enclosure:

1. Units rated 30kVA and below, the encapsulated enclosure construction shall be totally enclosed, non-ventilated, NEMA 3R, with lifting eyes.
2. Units rated 15kVA and above, the enclosure construction shall be ventilated, NEMA 2, drip-proof, with lifting holes. All ventilation openings shall be protected against falling dirt.
3. Outdoor units rated 15kVA or above, provide suitable weather-shields over ventilation openings.

Q. Finish: Degrease, clean, phosphatize, prime and finish all interior and exterior surfaces with baked enamel, color ANSI 61 or standard factory grey.

R. Connect a grounding strap from the secondary neutral to a grounding lug on the enclosure.

S. Terminals: As specified in Section 16100 - Basic Materials and Methods.

T. Subject transformers 25kVA above to listed production test at factory:

1. Applied potential: 4kVA.
2. Induced potential: 2 times normal to 7200Hz.

3. Voltage.
 4. Phase Relation.
 5. Continuity.
- U. Perform the listed standard tests on unit of identical design:
1. No-load losses.
 2. Total losses.
 3. Sound levels.
 4. Temperature rise.
 5. Impulse.
 6. Impedance.
 7. Induced potential.
 8. Applied potential.
- V. Submit certified test reports for production and standard tests.
- W. Manufacture: Cutler-Hammer, General Electric, Square D, Sorgel.

PART 3 EXECUTION

3.01 DRY TYPE POWER TRANSFORMER

- A. Mount transformer on floor or wall as indicated.
- B. Provide one (1) vibration isolating mount, minimum 1 inch thick with 1 inch static deflection, for each mounting point on the transformer.
- C. Connect transformer with flexible metal conduit. Provide an insulated grounding bushing on conduit and bond to transformer case.

END OF SECTION

SECTION 26 24 16 PANELBOARDS

PART 1 GENERAL

1.01 SUMMARY

- A. This section describes requirements for branch circuit panelboards.

1.02 RELATED WORK

- A. Section 26 01 00: General Requirements for Electrical Work.

1.03 REFERENCE STANDARDS

- A. The Underwriters Laboratory, Inc. (UL).
- B. National Electrical Manufacturers Association (NEMA).

1.04 SUBMITTALS

- A. Submit manufacturers' data and shop drawings in accordance with Division 1.
- B. Manufacturers Data:
 - 1. Panelboards.
- C. Shop Drawings.
 - 1. Panelboards.

PART 2 PRODUCTS

2.01 ALL PANELBOARDS

- A. Provide products listed and labeled by Underwriters Laboratories Inc. as suitable for the purpose indicated.
- B. Unless otherwise indicated, provide products suitable for continuous operation under the following service conditions:
 - 1. Altitude: Less than 6,600 feet.
 - 2. Ambient Temperature:
 - a. Panelboards Containing Circuit Breakers: Between 23 degrees F (-5 degrees C) and 104 degrees F (40 degrees C).
 - b. Panelboards Containing Fusible Switches: Between -22 degrees F (-30 degrees C) and 104 degrees F (40 degrees C).
- C. Short Circuit Current Rating:
 - 1. Provide panelboards with listed short circuit current rating not less than the available fault current at the installed location as indicated on the drawings.
- D. Mains: Configure for top or bottom incoming feed as indicated or as required

for the installation.

- E. Branch Overcurrent Protective Devices: Replaceable without disturbing adjacent devices.
- F. Bussing: Sized in accordance with UL 67 temperature rise requirements.
 - 1. Provide solidly bonded equipment ground bus in each panelboard, with a suitable lug for each feeder and branch circuit equipment grounding conductor.
- G. Conductor Terminations: Suitable for use with the conductors to be installed.
- H. Enclosures: Comply with NEMA 250, and list and label as complying with UL 50 and UL 50E.
 - 1. Environment Type per NEMA 250: Unless otherwise indicated, as specified for the following installation locations:
 - 2. Boxes: Galvanized steel unless otherwise indicated.
 - a. Provide wiring gutters sized to accommodate the conductors to be installed.
 - 3. Fronts:
 - a. Fronts for Surface-Mounted Enclosures: Same dimensions as boxes.
 - b. Fronts for Flush-Mounted Enclosures: Overlap boxes on all sides to conceal rough opening.
 - c. Finish for Painted Steel Fronts: Manufacturer's standard grey unless otherwise indicated.
 - 4. Lockable Doors: All locks keyed alike unless otherwise indicated.
- I. Future Provisions: Prepare all unused spaces for future installation of devices including bussing, connectors, mounting hardware and all other required provisions.

2.02 BRANCH CIRCUIT PANELBOARDS

- A. General: Provide bussed, circuit breaker or fusible switch type panelboards with main lugs or circuit breaker in flush or surface mounted enclosures as indicated.
- B. Construction:
 - 1. Cabinets: Code gauge steel cabinets, deadfront panels, and doors. Fasten deadfront panels to cabinets with concealed trim fasteners. Conceal front door hinges.
 - 2. Dimensions: 20 inches wide by 6 inches deep.
 - 3. Locks: Flush door locks, keyed alike for all panelboards.
 - 4. Access: Door-in-Door (Not EZ-Trim).
 - 5. Standards: Provide UL label where applicable and conform to No. 67 and 50

Underwriters Laboratories, Inc., and NEMA PB-1.

- C. Bussing:
 1. Phase Bus: Silver-plated copper, rated 1000 amperes per square inch cross sectional area maximum, braced for 100,000 rms amperes minimum.
 2. Neutral Bus: Copper with lugs for connection of neutral conductors.
 3. Ground Bus: Copper with terminals for equipment grounding conductors.
 4. Terminals: As specified in Section 26 05 19 - Building Wire and Cable.
- D. Finish: Degrease, clean, phosphatize, prime, and finish cabinets, deadfront panels, and doors with baked enamel, color ASA-61, or standard factory grey. Galvanized cabinets are acceptable for flush cabinets.
- E. Nameplates:
 1. Provide a nameplate identifying panelboard in accordance with 26 01 00 - General Requirements for Electrical Work.
 2. Provide a manufacturer's nameplate on the deadfront interior panel indicating panelboard type, voltage rating, current rating and manufacturer's name.
- F. Directory: Provide a directory card which fits into slots in the back of the panelboard. Protect directory with non-yellowing clear plastic.
- G. Manufacturer: Westinghouse (Pow-R-Line 2), General Electric, Square D.
- H. Circuit Breakers:
 1. Provide circuit breakers for miscellaneous branch circuits with frame sizes and ratings as shown on the plans.
 2. Bolt-on, thermal magnetic, molded case, with inverse time current overload, and instantaneous magnetic trips, trip-free and trip-indicating all poles of multi-pole device shall operate simultaneously during open, close and trip operations. Provide circuit breakers indicated with the following ratings:

<u>Panel Type</u>	<u>Circuit Breaker Frame Size</u>	<u>Trip Rating (Amperes)</u>	<u>Voltage (Ac Rating)</u>	<u>Symmetrical AC Interrupting Capacity</u>
1	100/1 pole	15-100	120	10,000 Min
	100/2 & 3 poles	15 – 100	240	10,000 Min
	150/2 & 3 poles	110 - 150	240	18,000 Min
	225/3 poles	125 - 225	240	22,000 Min

<u>Panel Type</u>	<u>Circuit Breaker Frame Size</u>	<u>Trip Rating (Amperes)</u>	<u>Voltage (Ac Rating)</u>	<u>Symmetrical AC Interrupting Capacity</u>
2	100/1 pole	15-100	277	14,000 Min
	100/2 & 3 poles	15 – 100	480	14,000 Min
	150/2 & 3 poles	110 - 150	480	25,000 Min
	225/3 poles	125 - 225	480	25,000 Min

- I. Manufacturer: Eaton Cutler-Hammer (Pow-R-Line 2), General Electric, Square D.

PART 3 EXECUTION

3.01 BRANCH CIRCUIT PANELBOARDS

- A. Mount panelboard so that the top is 6 feet-6 inches above the finished floor.
- B. Neatly terminate conductors onto breaker, ground bus and neutral bus. Train conductors in an organized grouping with conductors fanning out at the circuit terminals, bundled in the wireways and laced with plastic ties.
- C. Identify all conductors with a circuit number and phase color.
- D. Type all panelboard directories.
- E. Provide a minimum of three (3) 3/4 inch empty conduits into accessible ceiling space.
- F. Provide insulated grounding bushings on all conduits which enter the cabinet and bond to ground bus.
- G. Install conduits in a vertical line, perpendicular to the cabinet.

END OF SECTION

SECTION 26 27 16
ELECTRICAL CABINETS AND ENCLOSURES

PART 1 GENERAL

1.01 SUMMARY

- A. This section describes requirements for cabinets and enclosures.

1.02 RELATED WORK

- A. Section 26 01 00: General Requirements for Electrical Work.

1.03 REFERENCE STANDARDS

- A. The Underwriters Laboratory, Inc. (UL).
 - 1. National Electrical Manufacturers Association (NEMA).

1.04 SUBMITTALS

- A. Submit manufacturers' data and shop drawings in accordance with Division 1.
- B. Manufacturers Data:
 - 1. Terminal cabinets.
- C. Shop Drawings.
 - 1. Terminal cabinets

PART 2 PRODUCTS

2.01 TERMINAL CABINETS

- A. General: Provide terminal cabinets flush or surface mounted as indicated on plans.
- B. Construction:
 - 1. Cabinets: Code gauge steel cabinets, deadfront panels and doors. Fasten deadfront panels to cabinets with concealed trim fasteners and concealed front door hinges. Provide 1/2 inch plywood backboard, painted gray, covering entire back of cabinet. Provide all signal system terminal cabinets with terminal strips.
 - 2. Locks: Flush door locks keyed to match panelboards.
 - 3. Dimensions: As indicated on drawings. Mounting height same as panelboards.
- C. Finish: Degrease, clean, phosphatize prime and finish cabinets, deadfront panels and doors with baked enamel, color ASA-61 or standard factory grey. Galvanized cabinets are acceptable for flush cabinets.

D. Nameplates:

1. Provide nameplate identifying terminal cabinet in accordance with Section 26 01 00 - General Requirements for Electrical Work.
2. Provide a manufacturers nameplate on the deadfront interior panel.

E. Directory:

1. Provide a directory card which fits into slots in the back of the panelboard door. Protect directory with non-yellowing clear plastic.
2. Provide permanent fixed identification numbers of the printed wire marker type beside each terminal on the backboard. All wires shall have corresponding wire markers.

PART 3 EXECUTION (NOT USED)

END OF SECTION

SECTION 26 27 26
WIRING DEVICES

PART 2 PRODUCTS

1.01 ALL WIRING DEVICES

- A. Provide products listed and classified by Underwriters Laboratories Inc. as suitable for the purpose specified and indicated.

1.02 RELATED REQUIREMENTS

- A. Section 26 01 00: General Requirements for Electrical Work.

1.03 WIRING DEVICES

- A. Provide UL listed wiring devices, ivory or color selected by Engineer, with voltage and current ratings specified and wire terminations designed to contain stranded conductors. Provide grounding type receptacles. Provide RED color for all wiring devices connected to the emergency power system.
- B. Provide 120 volt single and duplex receptacles which meet Federal Specification W-C-596 as listed:
 - 1. HOSPITAL GRADE
- C. Provide receptacles other than 120 volt single and duplex as indicated.
- D. Provide 20 amp AC quiet type switches which meet federal specification W-C596 with voltage ratings to suit branch circuit requirements indicated and as listed.
- E. Listed manufacturers establish a standard of quality. Substitutions will be considered in accordance with Section 16010 - General Requirements for Electrical Work.
- F. Key Switches: Equivalent to listed switches, activated with removable key.
- G. Manufacturers: Hubbell, Pass & Seymour, Leviton.
- H. Wall Plates: Type 302 stainless steel, satin finish, minimum 0.040 inch thick, single or multiple gang.
- I. For outdoor wiring devices, provide lockable, hinged metal cover suitable for wet locations, while-in-use, Taymac #MX3200, or equal.

END OF SECTION

SECTION 31 00 00

EARTHWORK

PART 1 - GENERAL

1.01 INCLUSION OF OTHER CONTRACT DOCUMENTS

- A. The General Conditions, Supplementary Conditions and Division 1 are fully applicable to this Section, as if repeated herein.

1.02 RELATED WORK SPECIFIED ELSEWHERE

- A. Division 1 – District General Conditions and Contractual Requirements
- B. Section 31 23 33, Trenching and Backfilling.
- C. Section 31 25 00, Erosion and Sediment Controls.
- D. Section 31 32 00, Soil Stabilization.
- E. Section 32 12 00, Asphalt Concrete Paving.
- F. Section 32 12 16.36, Athletic Asphalt Concrete Paving.
- G. Section 32 15 40, Decomposed Granite Paving
- H. Section 32 16 00, Site Concrete.
- I. Section 32 17 23, Infilled Synthetic Turf System.
- J. Section 33 00 00, Site Utilities.
- K. Section 33 40 00, Site Drainage.

1.03 QUALITY ASSURANCE

- A. Use only new materials and products, unless existing materials or products are specifically shown otherwise on the Drawings to be salvaged and re-used.
- B. All materials, components, assemblies, workmanship and installation are to be observed by the Owner's Inspector of Record. Work not so inspected is subject to uncovering and replacement.
- C. The representatives of the Owner's testing lab will not act as supervisor of construction, nor will they direct construction operations. Neither the presence of the Owner's testing lab representatives nor the testing by the Owner's testing lab shall excuse the contractors or subcontractors for defects discovered in their work during or following completion of the project. Correcting of inadequate compaction or moisture content is the sole responsibility of the contractor.

- D. Tests (See Part 3 for Compaction Testing).
- E. Contractor shall be solely responsible for all subgrades built. Failures resulting from inadequate compaction or moisture content are the responsibility of the contractor. Contractor shall be solely responsible for any and all repairs.

1.04 SUBMITTALS

- A. Refer to Division 1 – District General Conditions and Contractual Requirements.
- B. Manufacturer's Data: Submit list and complete descriptive data of all products proposed for use. Include manufacturer's specifications, published warranty or guarantee, installation instructions, and maintenance instructions.

1.05 WARRANTY

- A. Refer to Division 1 – District General Conditions and Contractual Requirements

1.06 REFERENCES AND STANDARDS

- A. General: Site survey, included in the drawings, was prepared by Warren Consulting Engineers, Inc., dated September 29th, 2022, Project No. 22-119, and is the basis for data regarding current conditions. While the survey is deemed generally accurate, there exists discrepancies and variations due to elapsed time, weather, etc. Existing dirt grades may vary 0.2 ft. from that shown.
- B. Geotechnical Engineering Report: A geotechnical engineering report was not prepared specifically for this project. Base soil values have been assumed for the preparation of these specifications. Historical reports may be available and on file with the Architect/Engineer of record. The contractor is cautioned that should any historical reports be made available; conditions may not be exactly as described in such reports and the contractor should be cautioned about making any assumptions based on such reports. The contractor is responsible for any conclusions drawn from this data; should he prefer not to assume such risk he is under obligation to employ his own experts to analyze available information and/or to make additional explorations, at no cost to the Owner, upon which to base his conclusions. Neither Owner, Soils Engineer nor Architect guarantees information contained in such reports will be continuous over the entire site of work.
- C. Site Visitation: All bidders interfacing with existing conditions shall visit the site prior to bid to verify general conditions of improvements. Discrepancies must be reported prior to the bid for clarification.
- D. ANSI/ASTM D698-00 - Test Methods for Moisture-Density Relations of Soils and Soil-Aggregate Mixtures, Using 5.5 lb (2.49 Kg) Rammer and 12 inch (304.8 mm) Drop.
- E. ANSI/ASTM D1556-00 - Test Method for Density of Soil in Place by the Sand-Cone Method.
- F. ANSI/ASTM D1557-02e2 - Test Methods for Moisture-Density Relations of Soils and Soil-

- Aggregate Mixtures Using 10 lb. (4.54 Kg) Rammer and 18 inch (457 mm) Drop.
- G. ANSI/ASTM D 3017-05 Test Methods for Moisture Content of Soils and Soil-Aggregate Mixture by Nuclear Methods (Shallow Depth).
 - H. ANSI/ASTM D 422-63(2007) E1 Test Method for Particle Size Analysis of Soil.
 - I. ANSI/ASTM D 4318-05 Test Method for Liquid Limit, Plastic Limit, and Plasticity Limit.
 - J. CALTRANS Standard Specifications Section 17.
 - K. CAL-OSHA, Title 8, Section 1590 (e).
 - L. Any work within the street, highway or right-of-way shall be performed in accordance with the requirement of the governmental agencies having jurisdiction, and shall not begin until all of those governing authorities have been notified.

1.07 DELIVERY, STORAGE AND HANDLING

- A. Transport, store and handle in strict accord with the local jurisdiction.
- B. Make delivery to job when notified by Contractor verifying that the job is ready to receive the work of this Section and that arrangements have been made to properly store, handle and protect such materials and work.

1.08 PROJECT CONDITIONS

- A. Existing civil, mechanical and electrical improvements are shown on respective site plans to the extent known. Should the Contractor encounter any deviation between actual conditions and those shown, he is to immediately notify the Architect before continuing work.
- B. Excavation dewatering may be necessary. Contractor shall provide any and all tools, equipment and labor necessary for excavation dewatering no matter what the source. Dewatering shall be continuous until all site utilities are installed and backfilled.

1.09 EXISTING SITE CONDITIONS

- A. Contractor shall acquaint himself with all site conditions. If unknown active utilities are encountered during work, notify Architect promptly for instructions. Failure to notify will make Contractor liable for damage to these utilities arising from Contractor's operations subsequent to discovery of such unknown active utilities.

1.10 ON SITE UTILITY VERIFICATION AND REPAIR PROCEDURES

- A. Ground-breaking requirements:
 - 1. All underground work performed by a Contractor must be authorized by the District's Construction Manager or the Low Voltage Consultant prior to start of construction.
 - 2. The Contractor is to obtain and keep the original School's construction utility site plans on

site during all excavation operations. Contractor can contact the District's Construction Manager, Facilities Manager, or the Low Voltage Consultant to procure the drawings.

B. Private Underground Utility Locating:

The contractor **may** hire an Underground Utility Locating Service to locate existing underground utility pathways in areas affected by the scope of work for excavation. Damaged unforeseen utilities will require immediate repair which may be a burden to the project and Schedule. The following are recommended criteria for such locating:

1. Contractor must use an underground utility locator service with a minimum of 3 years' experience. The equipment operator must have demonstrated experience.
2. The Underground Utility Locator Service must have the use of equipment with the ability to locate by means of inductive clamping, induction, inductive metal detection, conductive coupling, or TransOnde (Radio detection) to generate signals, passive locating (free scoping) for "hot" electric, and metal detector.
3. The Underground Utility Locator Service must be able to locate existing utilities at a depth of at least 72".
4. The Underground Utility Locator Service must be able to locate but are not limited to locating the following types of utility pathways:
 - a) All conduit pathways containing 110 volt or greater 50-60Hz electrical wire.
 - b) All conduit pathways containing an active cable TV system.
 - c) All conduit pathways containing wire or conductor in which a signal can be attached and generated without damaging or triggering the existing systems.
 - d) All empty conduit pathways or pipe in which a signal probe or sonde (miniature transmitter) can be inserted.
 - e) All conduit pathways containing non-conductive cables or wires in which a signal probe or sonde (miniature transmitter) can be inserted.
 - f) All plastic and other nonconductive water lines in which a TransOnde (Radio detection) or other "transmitter" can be applied to create a low frequency pressure wave (signal) without damaging or triggering the existing systems.
 - g) All copper or steel waterlines and plastic or steel gas lines
6. All markings made by the Underground Utility Locator Service or other shall be clear and visible.
7. The contractor shall maintain all markings made by Underground Utility Locator Service or other throughout the entire length of the project.
8. The Underground Utility Locator Service shall provide the contractor with two sets of maps showing the location of utilities and average depth. They will be referenced to permanent buildings. Contractor will deliver one copy to the district at no additional charge.

C. Public Underground Utility Locating (USA):

1. Contractor **is responsible** to contact Underground Service Alert (U.S.A. 800/227-2600) and receive clearance prior to any excavation operations. This applies for both onsite and offsite improvements as public utilities may run through private properties.
2. Contractor shall inform the District's Construction Manager no later than five (5) days prior to the date scheduled for the utility locator service to be on site.

1.11 PROTECTION

- A. Adequate protection measures shall be provided to protect workmen and passers-by on and off the site. Adjacent property shall be fully protected throughout the operations. Blasting will not be permitted. Prevent damage to adjoining improvements and properties both above and below grade. Restore such improvements to original condition should damage occur. Replace trees and shrubs outside building area disturbed by operations.
- B. In accordance with generally accepted construction practices, the Contractor shall be solely and completely responsible for working conditions at the job site, including safety of all persons and property during performance of the work. This requirement shall apply continuously and shall not be limited to normal working hours.
- C. Any construction review of the Contractor's performance conducted by the Geotechnical Engineer is not intended to include review of the adequacy of the Contractor's safety measures, in, on, or near the construction site.
- D. Provide shoring, sheeting, sheet piles and or bracing to prevent caving, erosion or gulying of sides of excavation.
- E. Surface Drainage: Provide for surface drainage during period of construction in manner to avoid creating nuisance to adjacent areas. The contractor shall make a reasonable effort on a daily basis to keep all excavations and the site free from water during entire progress of work, regardless of cause, source, or nature of water.
- F. Adjacent streets and sidewalks shall be kept free of mud, dirt or similar nuisances resulting from earthwork operations.
- G. The site and adjacent influenced areas shall be watered as required to suppress dust nuisance. Dust control measures shall be in accordance with the local jurisdiction.

1.12 SEASONAL LIMITS

- A. No fill material shall be placed, spread or rolled during unfavorable weather conditions. When work is interrupted by rains, fill operations shall not be resumed until field tests indicate that moisture content and density of fill are satisfactory.
- B. Excessively wet fill material shall be bladed and aerated per section 3.08, B.

1.13 TESTING

- A. General: Refer to Division 1 – District General Conditions and Contractual Requirements.
- B. Geotechnical Engineer: Owner is retaining a Geotechnical Engineer to determine compliance of fill with Specifications, and to direct adjustments in fill operations. Costs of Geotechnical Engineer will be borne by Owner; except those costs incurred for re-tests or re-inspection will be paid by Owner and back charged to Contractor.
 - 1. If Contractor elects to process or mine onsite materials for use as Suitable Fill, Aggregate Sub Base, Aggregate Base, Rock, Crushed Rock or sand the cost of all testing of this

- material shall be paid for by the Contractor.
2. Testing of import fill for compliance with Department of Toxic Substance Control (DTSC) shall be paid for by the Contractor.

1.14 ARCHEOLOGICAL AND CULTURAL RESOURCES

- A. If archeological or cultural resources are discovered during the Work, the Contractor must cease all construction operations in the vicinity of the discovery until a qualified archeologist can assess the value of these resources and make recommendations to the State Historic Preservation Officer. Archeological and cultural resources include artifacts, large amounts of bone, shell, or flaked stone, and other evidence of human activity. If the State Historic Preservation Officer or the Owner directs that work be temporarily ceased at the location of an archeological or cultural find, the Contractor must temporarily suspend work at the location.

PART 2 - PRODUCTS

2.01 MATERIALS

- A. Engineered Fill Materials: All fill shall be of approved local materials supplemented by imported fill if necessary. **Onsite Clayey soils are not anticipated to be suitable within the upper 12" of, building, flatwork, and pavement, unless chemically treated per section 31 32 00.** "Approved" local materials are defined as local soils tested and approved by Geotechnical Engineer free from debris, and concentrations of clay and organics; and contain rocks no larger than 3-inches in greatest dimension. The soil and rock should be thoroughly blended so that all rock is surrounded by soil. This may require mixing of the soil and rock with a dozer prior to placement and compaction. Clods, rocks, hard lumps or cobbles exceeding 3-inches in final size shall not be allowed in the upper 12 inches of any fill. Native clay or clayey soils will not be permitted within the upper 12 inches of building pad areas, paving or synthetic turf areas.
- B. Imported Engineered Fill Material: Imported fill may be required to complete work. Proposed import fill material shall meet the above requirements; shall be similar to the native soils. Import fill shall meet the above requirements; shall be a compactable material, granular in nature. It shall have plasticity index of 15 or less per ASTM D4318; an Expansion Index of 20 or less per ASTM D4829; be free of particles greater than 3-inches in largest dimension; be free of contaminants and have corrosion characteristics within the acceptable limits. Be free of significant organic content and be at a moisture content that allows the degree of compaction required. All import fill material shall be tested and approved by Soils Engineer prior to transportation to the site. Proposed fill material shall comply with DTSC guidelines to include Phase 1 environmental site assessment and related tests. Refer to the October 2001 DTSC Information Advisory for clean imported fill material.
 1. DTSC TESTING: Site work contractor is to coordinate testing with an analytical lab, hired by the owner, licensed by the State of California for the DTSC testing. The costs associated with the testing will be paid by the contractor.
 2. DTSC testing shall include documentation as to the previous land use, location, and history. Soils shall be analyzed for all compounds of concern to ensure the imported soil is uncontaminated and acceptable. Testing shall be performed per the recommendations included in DTSC Imported Fill Advisory http://www.dtsc.ca.gov/Schools/upload/SMP_FS_Clea

nfill-Schools.pdf). Soils shall be tested prior to import to the project site.

Lab shall determine geographically which tests and analysis comparison will be appropriate for the testing. (CAM 17 / Title 22); (RWQCB) Regional Water Quality Control Board; or (OEHHA) Office of Environmental Health Hazard Assessment.

3. Frequency of testing shall be conducted in accordance with DTSC's Imported Fill Advisory as follows;

Fill Material Sampling Schedule

Area of Individual Borrow Area	Sampling Requirements
2 Acres or less	Minimum of 4 samples
2 to 4 Acres	Minimum of 1 sample every 1/2 Acre
4 to 10 Acres	Minimum of 8 Samples
Greater than 10 Acres	Minimum of 8 locations with 4 subsamples per location

Volume of Borrow Area Stockpile

Up to 1,000 Cubic Yards	1 sample per 250 cubic yards
1,000 to 5,000 Cubic Yards	4 samples for the first 1000 cubic Yards + 1 sample per each additional 500 cubic yards
Greater than 5,000 Cubic Yards	12 samples for the first 5,000 cubic yards + 1 sample per each additional 1,000 cubic yards

4. Reports/ Documentation

- a. Results of the testing analysis shall be sent to the Owner; Architect; Project Inspector, Project Civil Engineer, DTSC, and DSA. Letter shall reference DSA file and application numbers.

C. Landscape Backfill Material:

1. Following the stripping of organic material (lawn, weeds and other planting), the top 4" of native topsoil stripped from the site may be used for landscape backfill material provided it meets the requirements of the Districts Landscaper or Landscape Contractor.
2. Imported Topsoil may be required to complete work. Consult with districts landscaper or landscape contractor for requirements. Proposed Topsoil material shall comply with DTSC guidelines to include Phase 1 environmental site assessment and related tests. Refer to the October 2001 DTSC Information Advisory for clean imported fill material.

D. Water: Furnish all required water for construction purposes, including compaction and dust control. Water shall be potable.

E. Aggregate Base: Provide Class 2 3/4" Aggregate Base conforming to standard gradation as specified in Cal Trans Standard Specifications, Section 26,-1.02A.

- F. Decomposed Granite: Refer to Section 32 15 40 – Decomposed Granite Paving. Salvaged Decomposed granite may be reviewed by the site geotechnical engineer for use as engineered fill provided it meets the criteria for Engineered fill above.
- G. Lime: See section 31 32 00.

PART 3 – EXECUTION

3.01 INSPECTION LAYOUT AND PREPARATION

- A. Prior to installation of the work of this Section, carefully inspect and verify by field measurements that installed work of all other trades is complete to the point where this installation may properly commence
- B. Layout all work, establish grades, locate existing underground utilities, set markers and stakes, setup and maintain barricades and protection facilities; all prior to beginning actual earthwork operations. Layout and staking shall be done by a licensed Land Surveyor or Professional Civil Engineer.
- C. Verify that specified items may be installed in accordance with the approved design.
- D. In event of discrepancy, immediately notify Owner and the Architect. Do not proceed in discrepant areas until discrepancies have been fully resolved.

3.02 PERFORMANCE

- A. GENERAL:
 - 1. General: Do all grading, excavating and cutting necessary to conform finish grade and contours as shown. All cuts shall be made to true surface of subgrade.
 - 2. Archaeological Artifacts: Should any artifacts of possible historic interest be encountered during earthwork operations, halt all work in area of discovery and immediately contact the Architect for notification of appropriate authorities.
 - 3. Degree of Compaction: Percentage of maximum density, hereinafter specified as degree of compaction required, means density equivalent to that percentage of maximum dry density determined by ASTM D1557 Compaction Test method, and such expressed percentage thereof will be minimum acceptable compaction for specified work.
 - 4. Moisture Content: Moisture content shall be as noted below and as called for on the plans. Moisture content shall be maintained until subgrade is covered by surfacing materials.

3.03 DEMOLITION, DISPOSAL AND DISPOSITION OF UNDESIRABLE MAN-MADE FEATURES

- A. All other obstructions, such as abandoned utility lines, septic tanks, concrete foundations, and the like shall be removed from site. Excavations resulting from these removal activities shall be cleaned of all loose materials, dish shaped, and widened as necessary to permit access for compaction equipment. Areas exposed by any required over-excavation should be scarified to a

depth of 12", moisture-conditioned to at least the optimum moisture content, and recompact to at least 90% of the maximum dry density.

3.04 TESTING AND OBSERVATION

- A. All grading and earthwork operations shall be observed by the Geotechnical Engineer or his representative, serving as the representative of the Owner.
- B. Field compaction tests shall be made by the Geotechnical Engineer or his representative. If moisture content and/or compaction are not satisfactory, Contractor will be required to change equipment or procedure or both, as required to obtain specified moisture or compaction. Notify Geotechnical Engineer at least 48 hours in advance of any filling operation.
- C. Earthwork shall not be performed without the notification or approval of the Geotechnical Engineer or his representative. The Contractor shall notify the Geotechnical Engineer at least two (2) working days prior to commencement of any aspect of the site earthwork.
- D. If the Contractor should fail to meet the compaction or design requirements embodied in this document and on the applicable plans, he shall make the necessary readjustments until all work is deemed satisfactory, as determined by the Geotechnical Engineer or Architect/Engineer.
- E. After each rain event Geotechnical Engineer shall test fill material for optimum moisture. Do not place any fill material until desired moisture is achieved.

3.05 CLEARING AND GRUBBING

- A. Prior to grading, remove all debris off-site. Remove trees and brush including the root systems. Holes resulting from tree and brush removal should be prepared and backfilled in accordance with paragraphs 3.07, 3.08, 3.09, and 3.10. This may require deepening and/or widening the holes to adequately remove disturbed soil and provide room for compaction equipment. Strip the surface of all organics. Stripping's meeting the requirements of the Districts Landscaper or Landscape Contractor may be used in landscape areas only.

3.06 CUTTING & OVEREXCAVATION

- A. Following demolition and clearing operations, subgrades beneath buildings, pavement (asphalt and concrete), synthetic track and/or synthetic turf surfaces shall be over-excavated to at least 12" below proposed subgrade elevation. Excavated soil may be processed for use as engineered fill, however, clayey soils as determined by the site geotechnical engineer, may not be re-used in the upper 12" of such subgrades unless chemically treated, or removed and used in other non-structural or non-paving subgrades such as planting. Such soils may be used as engineered fill in accordance with this specification below the top 12" of subgrades, or exported from the site and replaced with imported non-expansive fill.

Note: If the top 12" of subgrade soils are to be lime treated, over-excavation will not be required. Contractor shall excavate to subgrade elevation and treat the subgrade with lime in accordance with specification section 31 32 00, or in fill to subgrade conditions, scarify underlying soil and place engineered fill in accordance with this specification, section 3.08 and 3.09, to subgrade and then treat the top 12" with lime as indicated.

- B. Building or other similar type of structural pads that are located within a cut/fill transition area will have to be overexcavated to provide a semi-uniform fill beneath the building pad. The portions of building pads located in cut areas shall be overexcavated to provide no more than 1 foot difference in fill placed in the same building pad.
- C. Do all cutting necessary to bring finish grade to elevations shown on Drawings.
- D. When excavation through roots is necessary, cut roots by hand.
- E. Carefully excavate around existing utilities to avoid unnecessary damage. The contractor shall anticipate and perform hand work near existing utilities as shown on the survey, without additional claims or cost.

3.07 STRUCTURAL EXCAVATION

- A. General: Excavate to bear on firm material at contract depth shown on Structural Drawings (if provided) or Footings for smaller non-structural type footings shown on Civil plans.
- B. Footings: All footing excavations shall be of sufficient width for installation of formwork, unless earth will retain its position during concreting. All portions of footings above grade must be formed. In the event that footings are placed against earth, footing widths below grade shall be increased 2 inches from those shown on Drawings and positive protection shall be provided for top corners of trench.
- C. Unsuitable Ground: Any errors in structural excavation, soft ground, or clay soils found when excavating shall be reported to Architect. In no case shall work be built on any such soft or clayey unsuitable surface without direction from the Architect. Restore excavations to proper elevation with engineered fill material compacted to 90% of dry density.

3.08 SUBGRADE PREPARATION

- A. Grade compact and finish all subgrades within a tolerance of 0.10' of grades as indicated on Drawings and so as not to pool water. Subgrade within building pads and concrete walks shall be within 0.05' of grades indicated.
- B. After clearing, grubbing and cutting, and over-excavation (where necessary) as outlined above, subsurface shall be plowed or scarified to a depth of at least 12", until surface is free from ruts, hummocks or other uneven features and uniform and free from large clods. Moisture condition to at least the optimum moisture content and recompact to at least 90% of the maximum dry density as determined by ASTM Test Method D1557. If the existing soils are at a water content higher than specified, the contractor shall provide multiple daily aerations by ripping, blading, and/or disking to dry the soils to a moisture content where the specified degree of compaction can be achieved. After five consecutive working days of daily aerations, and the moisture content of the soil remains higher than specified, the contractor shall notify the architect. If the existing soils have a moisture content lower than specified, the contractor shall scarify, rip, water and blade existing soil to achieve specified moisture content. The contractor shall make proper allowance in schedule and methods to complete this work.

Note: If the top 12" of subgrade soils are to be lime treated, over-excavation will not be required. Contractor shall excavate to subgrade elevation and treat the subgrade with lime in accordance with specification section 31 32 00, or in fill to subgrade conditions, scarify underlying soil and place engineered fill in accordance with this specification, section 3.08 and 3.09, to subgrade and then treat the top 12" with lime as indicated.

- C. Subgrade in areas to receive topsoil and landscaping shall be compacted to 90%.
- D. Where Contractor over-excavates building pads through error, resulting excavation shall be recompacted as engineered fill at Contractor's expense.
- E. Contractor may proof roll subgrades at any time to verify subgrade stability, but it shall be required as part of final subgrade compaction in section 3.10 below. Should a contractor wish to submit for direction with regard to unsuitable soils encountered, any proof roll as evidence shall be under the observation of the project inspector and special inspector and be accompanied by a field report prepared by the special inspector, which shall contain the observations and their recommended procedures to address. The above procedures for confirmation by the special inspector may be waived by the engineer of record for areas smaller than 500 sf, and contractor may submit for direction immediately, however proof roll shall be at least witness by project inspector and confirmed.

3.09 PLACING, SPREADING AND COMPACTING FILL MATERIAL IN BUILDING PAD, CONCRETE AND ASPHALT PAVEMENT AREAS AND SYNTHETIC TURF AREAS:

- A. Selected fill material shall be placed in layers which, when compacted, shall not exceed 6 inches in compacted thickness. Each layer shall be spread evenly and thoroughly mixed to insure uniformity in moisture content.
- B. Selected fill material shall be moisture-conditioned to specified moisture content. Selected fill material shall be unfrozen. When moisture content of fill material is below that specified, add water until proper moisture content is achieved. When moisture content is above that specified, aerate by blading or other methods mentioned in 3.08 B until moisture content is satisfactory.
- C. After each layer has been placed, mixed and spread evenly, it shall be thoroughly compacted to a minimum of 90% as determined by the ASTM D1557 Compaction Test. Compact each layer over its entire area until desired density has been obtained.
- D. **Recompaction of Fill in Trenches and Compaction of Fill Adjacent to Walls:** Where trenches must be excavated, backfill with material excavated. Place in lifts that when compacted do not exceed 6", moisture conditioned to at least the optimum moisture content, and compacted to a minimum of 90% relative compaction in building pad paving, flatwork and synthetic turf areas, and to 90% relative compaction in landscape areas, the final subgrade layer being compacted per 3.10, this specification.
- E. Jetting of fill materials will not be allowed.
- F. The final (top) 12" subgrades in building pads, flatwork/paving and synthetic turf areas, being all areas that are not planting, shall be one of the following:

1. 12" of imported non-expansive fill soil per section 31 00 00.
2. 12" of chemically treated soil per section 31 32 00.
3. 12" of Class II AB, moisture conditioned and compacted in two 6" lifts, each to 95%, see section 3.10 below. (note: Should AB be used to construct the top 12" of subgrades, it shall not count toward the paving section base rock (AB) per the paving section identified.)
4. 8" of Class II AB, moisture conditioned and compacted in two 4" lifts, each to 95%, over Tensar BX 110 or Triax 140, see section 3.10 below. (note: Should AB be used to construct the the top 8" of subgrades, it shall not count toward the paving section base rock (AB) per the paving section identified.)
- 5.

Native untreated soils processed for use onsite as engineered fill may not be used for direct support (top 12 inches of subgrades) of building pads, flatwork and synthetic turf areas.

- G. Chemical treatment of subgrade soils shall occur after the installation of underground utilities to the maximum extent possible, unless shallow utilities are present (within 12" of the bottom of lime treatment later), see Section 31 23 33, with the exception of the synthetic turf field subdrains. Subdrains shall be cut into the subgrade only after lime treatment and curing has occurred, and the synthetic turf base rock (Class II AB) has been placed and compacted. This will provide the cleanest method with fewest steps to cut and install these subdrains, and shall be performed this way unless negotiated otherwise.

3.10 FINAL SUBGRADE COMPACTION

- A. Building pads, flatwork/paving and synthetic turf areas: Upper 12" of all final subgrades (including future buildings) shall be chemically treated native material, regardless of whether final subgrade elevation is attained by filling, excavation, or is left at existing grade. After acceptance of final compaction test, contractor shall maintain the required moisture content of subgrade until base rock and concrete flatwork is placed.
1. Exception; The 12" of chemically treated soil may be replaced with 12" of Caltrans Class II AB, per Caltrans Section 26, placed in two event lifts, each moisture conditioned and compacted to 95%, but shall be placed over a 12" deep scarified, moisture conditioned and re-compacted material in accordance with these specifications. Subgrade treatment shall be uniform to a practical extent, meaning a patchwork of lime and AB shall not be used without the approval of the engineer and based on recommendations from the site geotechnical engineer. (note: Should AB be used to construct the top 12" of subgrades, it shall not count toward the paving section base rock (AB) per the paving section identified.)
- B. Other Fill and Backfill: Upper 12" of all other final subgrades or finish grades shall be compacted to 90% of maximum dry density. More clayey soils shall be moisture conditioned to at least the optimum to 2% above the moisture content, while more non-expansive granular fill materials, like Class II AB, may be moisture conditioned to the optimum content.
- C. Gravel Fill: Do not place compacted gravel fill until after underground work and foundations are in place. Compact gravel fill with vibratory plate or similar equipment to preclude settlement.

3.11 PLACING, SPREADING, AND COMPACTION OF LANDSCAPE BACKFILL MATERIALS

- A. All landscaped areas shall receive topsoil. After subgrade under landscape area has been scarified and brought to 90% maximum dry density, top soil shall be placed evenly to depth of 10" and compacted to 85% of maximum dry density. Placement of topsoil in two lifts is recommended.
- B. Project Inspector must verify that materials are uniformly spread to minimum depth specified.

3.12 DECOMPOSED GRANITE AND BASEBALL INFIELD MIX COMPACTION AND STABILIZATION

- A. See Section 31 15 40.

3.13 SLOPE CONSTRUCTION

- A. Final Grade cut slopes shall be constructed to no steeper than 2H:1V (horizontal:vertical). Temporary cut slopes may be cut to 1H:1V (horizontal:vertical) for short periods, not accessible to the public. Fill slopes shall be constructed to no steeper than 3H:1V (horizontal:vertical) whether permanent or temporary. Slopes anticipated to receive new lawn shall be sloped no steeper than 5H:1V (horizontal:vertical) to facilitate mowing equipment. Prior to placement of fill on an existing slope the existing slope shall be benched. The benches shall be in a ratio matching that of the proposed slope with a vertical depth not exceeding 36 inches. The face of the fill slopes shall be compacted as the fill is placed, or the slope may be overbuilt and then cut back to the design grade. Compaction by track walking will not be allowed.

3.14 FINISH GRADING

- A. At completion of project, site shall be finished graded, as indicated on Drawings. Finish grades shall be "flat graded" to grades shown on the drawing. Mounding of finish grades will not be allowed unless otherwise directed on the landscape drawings. Tolerances for finish grades in drainage swales shall be $\pm 0.05'$. Tie in new and existing finish grades. Leave all landscaped areas in finish condition for lawn seeding. Landscaped planters shall be graded uniformly from edge of planter to inlets. If sod is used for turf areas the finish grade on which it is placed shall be lowered to allow for sod thickness.
- B. Synthetic Turf Areas require special finish grading of aggregates prior to the installation of Synthetic Turf System. See section 3.15 below and refer to Section 32 12 16.36 and 32 18 23.39 for additional information.
- C. All landscape areas shall be left free of rock or foreign material.
- D. All landscape areas shall be approved by Architect prior to any planting.

3.15 SYNTHETIC TURF BASE CONSTRUCTION AND FINISHING

- A. After completion of required excavation, grading, soil treatment (when specified) and final grading and compaction of soils, site contractor shall install synthetic turf aggregate base layer as specified on plans, consisting of the following:

1. Class II AB compacted to 95% Relative compaction. Required surface tolerances may be difficult to achieve with the larger 3/4" aggregate in Class II AB so at contractors option a 1/4" minus angular crushed rock may be used to correct imperfections to meet surface tolerance as well as patch deficient areas in base. Depth of these fines may not exceed 1/2", and shall be used to fix imperfections only. A solid 1/2" layer across field is unacceptable. Should the entire field area require additional aggregate, a 1/2" crushed stone with a gradation similar to AB (minus larger particles) may be submitted for review and approval for re-surfacing the aggregate base layer. Gradation of all materials shall be submitted for review and approval.
- F. Subdrains shall be cut into the subgrade only after lime treatment, curing, and the synthetic turf base rock (Class II AB) has been placed and compacted. This will provide the cleanest method with fewest steps to cut and install these subdrains, and shall be performed this way unless negotiated otherwise. See plan details for subdrain trench section and permeable aggregate backfill.
- G. Finish base grading Tolerance:
1. Complete and uniformly grade the field in accordance with the finished surface grades shown on the grading plan. Contractor will be responsible for establishing the finished stone base elevation based on turf, safety pad or other turf system layers.
 2. The Grading shall be checked over then entire field area, along the edge curbs or trench drain, and as well as those at the ends of the field. Edge conditions are more subject to improper grading.
 3. Tolerance:
 - a) 0.4 inches maximum deviation in grade using a 10' (3 meter) straight edge over the entire field area. Straight edge used shall be rigid steel or aluminum, visually checked for planarity or bends before use. Modern grading equipment, when property operated, is capable of achieving a tolerance of 1/4" to 1/8" over 10 feet, and will be required to meet with this field tolerance. Older manually controlled equipment will likely not be able to meet with this tolerance criteria without repeated passes which can overwork and further fracture the base material. It should not be planned for use.
 - b) Testing of tolerance shall be performed as follows:
 - 1) In the presents of turf provider or turf installer.
 - 2) Each direction (N-S & E-W) within the survey grid noted below.
 - 3) Any apparent areas needing correction as a result of visual inspection by the turf installer.
 - c) At contractor's option, the string line method may be employed using a mason's string line. A mason's string line shall be pulled tight over a distance of 30 to 40 feet in line with grid noted below and every 5 feet between. No portions along string line shall deviate more than the tolerance stated above.
 - 1) Conformance Survey:
 - d) Contractor shall provide a conformance survey prepared by a licensed land surveyor, or civil engineer registered prior to January 1, 1982 (License number before 33966). Survey shall show the constructed and finished turf base elevations. Survey shall comply as follows.
 - e) Survey shall verify constructed grades on 20'-25' grid beginning with a row of grades along the centerline or ridgeline of the field and projecting outwards to

- the field edges.
- f) Survey shall be provided both in hardcopy and electronic format (AutoCAD), and shall depict the surveyed grade and design grade together.
 - g) Additional grades shall be verified at the edges of the field in line with this grid, and also 5 feet from the edges of the field on this grid.
 - h) Accuracy of elevations shall be certified as 0.01 feet.
 - i) Elevations must be within 1/2 inch of the design grades (0.04 feet), and adjoining points may not vary more than 3/4 inch total.
 - j) Any deviations from the design grades shall be corrected by the contractor so it is recommended contractor stringently verify the field prior to survey.
 - k) Corrected areas shall be re-surveyed at the contractor's expense. Once a passing survey has been achieved. Survey shall be certified accurate by surveyor as stated above and submitted to architect or construction manager for review and approval. An Additional copy shall be provided to the turf installer at time of visual inspection.

3.16 SURPLUS MATERIAL

- A. Excavated material not required for grading or backfill shall be removed from site at contractor's expense.

3.17 CLEANING

- A. Refer to Division 1 – District General Conditions and Contractual Requirements.
- B. Remove from fill all vegetation, wood, form lumber, casual lumber, and shavings, in contact with ground; buried wood will not be permitted in any fill.

END OF SECTION

SECTION 31 23 33

TRENCHING AND BACKFILLING

PART 1 – GENERAL

1.01 INCLUSION OF OTHER CONTRACT DOCUMENTS

- A. The general conditions, supplementary conditions and Division 1 are fully applicable to this section as if repeated herein.

1.02 RELATED WORK SPECIFIED ELSEWHERE

- A. Division 1 – District General Conditions and Contractual Requirements
- B. Section 31 00 00, Earthwork.
- C. Section 31 32 00 Soil Stabilization
- D. Section 33 40 00, Site Drainage.
- E. Section 33 00 00, Site Utilities.
- F. Section 32 12 00, Asphalt Concrete Paving
- G. Section 32 12 16.36, Athletic Asphalt Concrete Paving

1.03 QUALITY ASSURANCE

- A. Use only new materials and products, unless existing materials or products are specifically shown otherwise on the Drawings to be salvaged and re-used.
- B. All materials, components, assemblies, workmanship and installation are to be observed by the Owner's Inspector of Record. Work not so inspected is subject to uncovering and replacement.
- C. Contractor / Installer shall have been in business for five (5) years providing/finishing similar size projects and complexity.

1.04 SUBMITTALS

- A. Refer to Division 1 – District General Conditions and Contractual Requirements
- B. Submit Manufacturers data and shop drawings.

1.05 WARRANTY

- A. Submit fully executed warranty for work and materials in this section per Division 1 – District General Conditions and Contractual Requirements.

1.06 REFERENCES AND STANDARDS

- A. California Building Code 2019 edition.
- B. California Plumbing Code 2019 edition.

1.07 DELIVERY, STORAGE AND HANDLING

- A. Transport, store and handle in strict accord with the local jurisdiction.
- B. Make delivery to job when notified by Contractor verifying that the job is ready to receive the work of this Section and that arrangements have been made to properly store, handle and protect such materials and work.

1.08 PROJECT CONDITIONS

- A. Contractor shall acquaint himself with all existing site conditions. If unknown active utilities are encountered during work, notify Architect promptly for instructions. Failure to notify will make Contractor liable for damage to these utilities arising from Contractor's operations subsequent to discovery of such unknown active utilities.
- B. Field verify that all components, backing, etc. by others are installed correctly to proceed with installation of products as herein specified.
- C. Trench dewatering may be necessary. Contractor shall provide any and all tools, equipment and labor necessary for trench dewatering no matter what the source. Dewatering shall be continuous until all site utilities are installed and backfilled.

1.09 PROTECTION

- A. Adequate protection measures shall be provided to protect workers and passers-by on and off the site. Adjacent property shall be fully protected throughout the operations. Blasting will not be permitted. Prevent damage to adjoining improvements and properties both above and below grade. Restore such improvements to original condition should damage occur. Replace trees and shrubs outside building area disturbed by operations. Repair all trenches in grass areas with new sod (seeding not permitted) and "stake-off" for protection.
- B. Contractor shall be solely and completely responsible for working conditions at the job site, including safety of all persons and property during performance of the work. This requirement shall apply continuously and shall not be limited to normal working hours.
- C. Any construction review of the Contractor's performance conducted by the Architect or Owner is not intended to include review of the adequacy of the Contractor's safety measures, in, on or near the construction site.
- D. Provide shoring, sheeting, sheet piles and or bracing to prevent caving, erosion or gullyng of sides of excavation.

- E. Surface Drainage: Provide for surface drainage during period of construction in manner to avoid creating nuisance to adjacent areas. Keep all excavations free from water during entire progress of work, regardless of cause, source or nature of water.
- F. Adjacent streets and sidewalks shall be kept free of mud, dirt or similar nuisances resulting from earthwork operations.
- G. The site and adjacent influenced areas shall be watered as required to suppress dust nuisance.
- H. Trees: Carefully protect existing trees which are to remain.

1.10 TRENCH SAFETY PROVISIONS

- A. General Contractor shall be solely responsible for safety design, construction and coordination with agencies having jurisdiction. If such plan varies from shoring system standards established by Construction Safety Orders, plan shall be prepared by registered civil or structural engineer.
- B. Nothing herein shall be deemed to allow use of shoring, sloping or protective system less effective than that required by Construction Safety Orders of California State Division of Industrial Safety.
- C. When trenching through paved surface, provide steel trench plates to cover open trenches daily until trenches are backfilled.

1.11 SEASONAL LIMITS

- A. No backfill material shall be placed, spread or rolled during unfavorable weather conditions. When work is interrupted by heavy rains, full operations shall not be resumed until field tests indicate that moisture content and density of fill are satisfactory.
- B. Material above optimum moisture shall be processed per section 31 00 00, 3.08, B.

1.12 TESTING

- A. General: Refer to Division 1 – District General Conditions and Contractual Requirements

PART 2 – PRODUCTS

2.01 MATERIALS

- A. Backfill materials: Pipeline and conduit trench backfill as shown on the plans and as specified below.
 - 1. 3/4" clean crushed angular stone.
 - 2. Native Materials: Soil native to Project Site, free of wood, organics, and other deleterious substances. Rocks shall not be greater than 3-inches.

3. Sand: Fine granular material, free of organic matter, mica, loam or clay.
 4. Lean Mix Concrete:
 - a. May be used for trench backfill beneath and within 4 feet of footings and structures (with approval from Structural Engineer):
 - b. Shall be 3 sack sand/cement slurry.
 - c. Shall have a design strength between 250 and 500 psi
 5. Controlled Density Backfill:
 - a. May be used for trench backfill in non-structural applications difficult to backfill with traditional means and not within 4 feet of footings.
 - b. Shall be 2 sack sand/cement slurry.
 - c. Shall have a design strength between 100 and 200 psi
 6. Class 2 aggregate base, 3/4" crushed stone with gradation in accordance with Caltrans section 26. Recycled aggregates acceptable provided they meet Caltrans Section 26.
- B. Water: Furnish all required water for construction purposes, including compaction and dust control. Water shall be potable.
- C. Provide other bedding and backfill materials as described and specified in Section 31 00 00, Section 33 40 00 and Divisions 15 and 16.
- D. See plan details for drainage stone types and layers in synthetic turf field subdrain trenches.

PART 3 – EXECUTION

3.01 INSPECTION

- A. Verification of Conditions:
1. Examine areas and conditions under which work is to be performed.
 2. Identify conditions detrimental to proper or timely completion of work and coordinate with General Contractor to rectify.

3.02 COORDINATION

- A. General Contractor shall coordinate work as herein specified, in accordance with drawings and as required to complete scope of work with all related trades.

3.03 INSTALLATION

- A. Perform work in accordance with pipe manufacturer's recommendations, as herein specified and in accordance with drawings.

3.04 TRENCHING

- A. Make all trenches open vertical construction with sufficient width to provide free working space at both sides of trench around installed item as required for caulking, joining, backfilling and

compacting; not less than 12 inches wider than pipe or conduit diameter, unless otherwise noted.

- B. Carefully excavate around existing utilities to avoid unnecessary damage. The contractor shall anticipate and perform hand work near existing utilities as shown on the survey, without additional claims or cost.
- C. Trench straight and true to line and grade with bottom smooth and free of edges or rock points.
- D. Where depths are not shown on the plans, trench to sufficient depth to give minimum fill above top of installed item measured from finish grade above the utility as follows:
 - 1. Sewer pipe: depth to vary
 - 2. Storm drain pipe: depth to vary
 - 3. Water pipe - Fire Supply: 36 inches
 - 4. Water pipe – Domestic Supply: 30 inches
- E. Where trench through existing pavement saw cut existing pavement in straight lines. Grind existing asphalt on each side of trench 3" wide x ½ the depth of the section. Apply tack coat to vertical surfaces before installing new asphalt. Replace asphalt and concrete pavement sections to matched existing conditions. In concrete pavement provide expansion and control joints to match existing joint layout.
- F. Chemical treatment of subgrade soils shall occur after the installation of underground utilities to the maximum extent possible, unless shallow utilities are present (within 12" of the bottom of lime treatment later), see 3.06.E for any such areas to be trenched after lime treatment. The above is true with the exception of the synthetic turf field subdrains. Subdrains shall be cut into the subgrade only after lime treatment and curing has occurred, and the synthetic turf Base rock (Class II AB) has been placed and compacted. This will provide the cleanest method with fewest steps to cut and install these subdrains, and shall be performed this way unless negotiated otherwise, see section 3.05 below.

3.05 TRENCHING SYNTHETIC TURF SUBDRAIN TRENCHES.

- A. Synthetic turf subdrain trenches shall be cut into the subgrade only after lime treatment, curing and the synthetic turf Base rock (Class II AB) has been placed and compacted. This will provide the cleanest method with fewest steps to cut and install these subdrains, and shall be performed this way unless negotiated otherwise, see section 3.05 below.
- B. See typical field trench details shown on plans.
- C. Slope the trench walls for better consolidation of drain rock. Cut cleanly with no imperfections >3/4". Re-backfill, compact, and re-cut trench if so, at contractor's expense.
- D. Line clean-cut trench with filter fabric per details, non-woven geotextile, Mirafi 140n or equal. Permeable liner is recommended for most sites.

- E. Use a minimum of 4" rock bedding, 3/4" clean crushed stone. No round surfaces will be accepted.
- F. Subdrain pipe shall be perforated PVC or HDPE per Section 33 40 00.
- G. Backfill with 3/4" clean crushed stone, 100% crushed angular stone, no round surfaces will be accepted. Place crush stone in 12" max lifts, each lift mechanically compacted/consolidated.
- H. If needed for planarity, a 3/8"x1/2" fully fractured clean chip top stone, 100% crushed & washed, may be placed no deeper than 1/2" in select areas for planarity and lateral stability. A uniform layer of this stone is not acceptable. If the 3/4" stone layer can be compacted and consolidated and meet planarity, this stone layer is not required.
- I. There shall be no filter fabric lain above the drainage stone, see plan cross sections.

3.06 BACKFILL

- A. Pipe Trench Backfill is divided into three zones:
 - 1. Bedding: Layer of material directly under the pipe upon which the pipe is laid.
 - 2. Pipe Zone: Backfill from the top of the bedding to 6 inches (compacted) over the top of the pipe.
 - 3. Upper Zone: Backfill between top of Pipe Zone and to surface of subgrade.
- B. Bedding: Type of material and degree of compaction for bedding backfill shall be as defined in the Details and Specifications.
- C. Pipe Zone and Upper Zone Backfill:
 - 1. Type of material and degree of compaction Pipe Zone and Upper Zone Backfill shall be as required by Drawings, Details, & Specifications.
 - 2. Upper Zone Backfill shall not be placed until conformance of Bedding and Pipe Zone Backfill with specified compaction test requirements has been confirmed.
 - 3. Backfill shall be brought up at substantially the same rate on both sides of the pipe and care shall be taken so that the pipe is not floated or displaced. Material shall not be dropped directly on pipe.
- D. Backfill Compaction:
 - 1. Backfill shall be placed in layers which, when compacted shall not exceed 6 inches in thickness. Each layer shall be spread evenly and thoroughly mixed to insure uniformity. Do not backfill over, wet, frozen or soft subgrade surfaces. Employ a placement method that does not disturb or damage foundation walls, perimeter drainage, foundation damp-proofing, waterproofing or protective cover.
 - 2. When moisture content of fill material is below that required to achieve specified density, add water until proper moisture content is achieved. When moisture content is above that required, aerate by blading or other methods until specified moisture content is met, see section 31 00 00, 3.08, B.

3. After each layer has been placed, mixed and spread evenly, it shall be thoroughly compacted to 90% of maximum dry density while at specified moisture content. Compact each layer over its entire area until desired density has been obtained.
 4. The top 12 inches of subgrade compaction under pavement or building shall be per Earthwork section 31 00 00.
 5. Compaction: All backfill operations shall be observed by the Inspector of Record and/or Geotechnical Engineer. Field density tests shall be made to check compaction of fill material. If densities are not satisfactory, Contractor will be required to change equipment or procedure or both, as required to obtain specified densities. Notify Inspector and Architect at least 24 hours in advance of any operation.
- E. Backfill in Areas Previously Lime or Cement Treated
1. If trenching is necessary in areas that have been previously lime treated the contractor shall backfill the trench with class 2 aggregate base from the top of utility initial backfill up to subgrade in accordance with these specifications. **Lime treated soil may not be re-used once it has been compacted and cured. If re-excavated, it must be disposed of.**
 2. See Section 3.04F and 3.05 for exceptions for synthetic turf subdrain trenches.

3.05 TRENCH AND SITE RESTORATION

- A. Finished surface of trenches shall be restored to a condition equal to, or better than the condition as existed prior to excavation work.

3.06 PROTECTION

- A. Protect existing surfaces, structures, and utilities from damage. Protect work by others from damage. In the event of damage, immediately repair or replace to satisfaction of Owner.
- B. Repair existing landscaped areas to as new condition. Replant trees, shrubs or groundcover with existing materials if not damaged or with new materials if required. Replace damaged lawn areas with sod, no seeding will be permitted.
- C. Replace damaged pavement with new compatible matching materials. Concrete walks to be removed to nearest expansion joint and entire panel replaced. Asphalt to be cut neatly and replaced with new materials.
- D. Any existing materials removed or damaged due to trenching to be returned to new condition.

3.07 SURPLUS MATERIAL

- A. Remove excess excavated material, unused materials, damaged or unsuitable materials from site.

3.08 CLEANING

- A. Refer to Division 1 – District General Conditions and Contractual Requirements.

- B. Contractor will keep the work areas in a clean and safe condition so his rubbish, waste, and debris do not interfere with the work of others throughout the project and at the completion of work.
- C. After completion of work in this section, remove all equipment, materials, and debris. Leave entire area in a neat, clean, acceptable condition.

END OF SECTION

SECTION 31 25 00

EROSION AND SEDIMENT CONTROLS

PART 1 - GENERAL

1.01 SCOPE OF WORK

- A. **GENERAL:** Provide all materials, equipment and labor necessary to furnish and install erosion control measures and implement best management practices, including but not limited too; straw wattles, silt fence barriers; stabilized entrances, etc. at locations shown on the drawings and in the Storm Water Pollution Prevention Plan (when required, see below).
- B. **STORM WATER POLLUTION PREVENTION PLAN:**
1. Due to the project size and project timing (summer). A Storm Water Pollution Prevention Plan (SWPPP) is not anticipated to be required. Should size or timing change, Contractor will be responsible for development of a Storm Water Pollution Prevention Plan (SWPPP) by a Qualified SWPPP Developer (QSD) and also provide all necessary State Permitting with the States online "SMARTS" System. Although a SWPPP is not anticipated to be required, contractor will still be responsible to implement appropriate measures to prevent illicit discharges from the site, such as sediment or otherwise contaminated water and dust.
 2. If a SWPPP is required, Contractor shall provide a Qualified SWPPP Practitioner (QSP) to implement the SWPPP onsite and also provide and upload the necessary reports to the State SMARTS System. QSP shall be certified as such by the state of California. if Erosivity Waiver is granted as anticipated, contractor shall still assign site personnel the responsibility of implementing and maintaining erosion control devices to prevent erosion or illicit discharges by water or wind, regardless of the source.
 3. Contractor shall Comply with State Water Resources Control Board requirements and Local Jurisdiction where applicable.
 4. When SWPPP Required, the Contractor shall amend the SWPPP Map during the course of construction to the contractor's approach to the work in this contract. The Contractor shall as a minimum address and show:
 - a. Cut and fill operations
 - b. Temporary stockpile locations and protection measures
 - c. Vehicle and equipment storage, maintenance and fueling operations
 - d. Concrete and asphalt disposal areas and protective measures
 - e. Dust control measures
 - f. Tracking of dirt, mud and off-site streets and subsequent street cleaning when required.
 - g. Pipe flushing and disposal of sediment latent flush waters.

1.02 QUALITY ASSURANCE

- A. **GENERAL:** Comply with local governing codes and regulations.

1.03 SUBMITTALS

- A. SMARTS & NOTICE OF INTENT (NOI): If SWPPP required, contractor shall be responsible for submittal to the State of California Storm Water Multiple Application and Report Tracking System (SMARTS). A Copy of the complete SWPPP and NOI receipt letter is to be provided to the Architect and owner for record.

PART 2 - PRODUCTS

2.01 MATERIALS

- A. STRAW WATTLES: Shall be new manufactured straw roles in compliance with state requirements for sediment control.
- B. SILT FENCES: Comply with state and local requirements.
- C. HYDRO SEED MIX: Contractor shall provide a blended seed mix containing both seeds blends and in the following mixture:

Blando Brome – 12 lbs/acre (0.3 lbs per sf)

Annual Ryegrass – 9 lbs/acre (0.2 lbs per sf)

Contractor, or Contractor's erosion control specialist or subcontractor may submit an alternative seed mix for review, however, sample projects need to be provided in the greater Sacramento Area that show this mix design is effective.

- D. STRAW HYDROSEED /TACKIFIER: Straw Hydroseed with Tackifier mulch shall be composed of fibers derived from straw products with no growth or germination inhibiting substances. Mulch shall be manufactured in such a manner that when thoroughly mixed with seed, fertilizer, and water, in the proportions specified, it will form a homogeneous slurry which is capable of being sprayed to form a porous mat. The fibrous mulch in its air-dry state shall contain not more than fifteen percent by weight of water. The fiber shall have a temporary green dye and shall be accompanied by a certificate of compliance stating that the fiber conforms to these specifications. Product shall be HydrostrawTM or equal.
- E. CONCRETE WASHOUT(S): Shall be pre-constructed or built onsite with plastic sheeting and supporting material such as straw bales. Washouts shall be sized for expected concrete work, or multiple washouts provided.

PART 3 - EXECUTION

3.01 INSTALLATION

- A. STRAW WATTLES: Shall be installed per the drawings and/or as required by the SWPPP and Local Authority.
- B. SILT FENCES: Shall be installed per the Drawings and/or as required by the SWPPP and Local Authority.

C. HYDROSEEDING AREA:

1. Preparation: Do all slurry preparation at the job site:
 - a. Water, straw mulch w/tacifier, fertilizer, and other ingredients shall be added to the tank simultaneously so that the finished load is homogenous mix of the specified ingredients.
 - b. Seed shall be added last and shall be discharged within two hours (2hrs.). Loads held over four hours (4 hrs.) will be recharged with one-half (1/2) the seed rate before application.
 - c. Once fully loaded, the complete slurry shall be agitated for three to five minutes (3-5 min.) to allow for uniform mixing.

2. Application:

- a. General: All hydroseed applications are to be applied in a sweeping motion to form a uniform mat at the specified rates.

Two-step Slope Application

Step One

Material	Lbs/Ac
Hydrostraw	2,000
7.2.3 Slow Release Fertilizer	1,000

Seed as per section (2.02 Seed)	#
Am 120 Mycorrhizal Inoculant	60

Step Two

Material	Lbs/Ac
Hydrostraw	2,000

- b. Protection: Contractor is to apply the hydrostraw in such a way as to complete the application in an orderly manner and stay off partially and completely treated areas.
- c. Unused Loads: If mixture remains in tank for more than 8 hours it shall be removed from the job site at Contractor's expense.

3.02 MAINTENANCE AND REMOVAL:

- A. GENERAL: Maintain and repair existing and new erosion and sediment controls facilities throughout the construction period. Remove silt build up as needed. Repair damage to earth slopes and banks. Erosion and sediment controls measures shall be left in place until final paving and landscaping are complete or as required by SWPPP.
- B. MONITORING: Provide monitoring of erosion and sediment controls measures before and after storm events. Provide a daily log of construction activities and impact on erosion and sediment controls measures. Update SWPPP continuously throughout construction period.
- C. CLEANING: Keep area clean of debris.
- D. Remove erosion and sediment controls measures prior to placing finish landscaping.

END OF SECTION

SECTION 31 32 00

SOIL STABILIZATION

PART 1 – GENERAL

1.01 INCLUSION OF OTHER CONTRACT DOCUMENTS

- A. The General Conditions, Supplementary Conditions and Division 1 are fully applicable to this Section, as if repeated herein.

1.02 RELATED WORK SPECIFIED ELSEWHERE

- A. Division 1 – District General Conditions and Contractual Requirements
- A. Section 31 00 00 Earthwork
- B. Section 31 23 33, Trenching and Backfilling.

1.03 QUALITY ASSURANCE

- A. Use only new materials and products, unless existing materials or products are specifically shown otherwise on the Drawings to be salvaged and re-used.
- B. All materials, components, assemblies, workmanship and installation are to be observed by the Owner's Inspector of Record. Work not so inspected is subject to uncovering and replacement.
- C. The representatives of the Owner's testing lab will not act as supervisor of construction, nor will they direct construction operations. Neither the presence of the Owner's testing lab representatives nor the testing by the Owner's testing lab shall excuse the contractors or subcontractors for defects discovered in their work during or following completion of the project. Correcting inadequate compaction is the sole responsibility of the contractor.
- D. Tests (See Part 3 for Compaction Testing).
- E. Contractor shall be solely responsible for all subgrades built. Any repairs resulting from inadequate compaction are the responsibility of the contractor.
- F. Failures due to the lack of continuous moisture control during the curing period will be the sole responsibility of the contractor.
- G. Any trenching through the finished cured lime/cement section will result in the contractor having to backfill trench with class 2 aggregate base rock, or cement/sand slurry,

1.04 SUBMITTALS

- A. Refer to Division 1 – District General Conditions and Contractual Requirements

1.05 WARRANTY

- A. Refer to Division 1 – District General Conditions and Contractual Requirements.

1.01 SCOPE OF WORK

- A. Description: Provide Lime Stabilization Treatment, including spreading and mixing lime and water with in-place materials, and compacting the mixture to the lines, grades and dimensions shown on the plans and/or specified.
- B. Related Work Specified Elsewhere:
 - 1. Measure and Payment: Division 1 – District General Conditions and Contractual Requirements

1.02 QUALITY ASSURANCE

- A. General: All Quality Assurance procedures specified on the drawings shall apply to this Section in addition to those shown below.
- B. Testing:
 - 1. Geotechnical Engineer: Owner is retaining a Geotechnical engineer to determine compliance of Lime Stabilization Treatment with Specifications, and to direct adjustments in fill operations. Costs of Geotechnical Engineer will be borne by Owner; except that costs incurred for re-tests or re-inspection will be paid by Owner and back charged to Contractor.
- C. Inspection: Work shall not be performed without the physical presence and approval of Geotechnical Engineer. The Contractor shall notify the Geotechnical Engineer at least two working days prior to commencement of any aspect of site earthwork.
- D. Field Density: Field density and phenolphthalein reaction tests shall be made by the Geotechnical Engineer after completion of compaction. Where compaction equipment has disturbed the surface to a depth of several inches, density tests shall be taken in the compacted material below the disturbed surface.

1.03 SUBMITTALS

- A. Weighmaster Certificates: Provide certificates as required in Section 2.01B.

PART 2 - PRODUCTS

2.01 MATERIALS

- A. Lime Treated Engineered Fill: The materials to be treated shall consist of on-site soils or approved import material as described in Section 31 00 00.
- B. Lime: Shall be quicklime, High-calcium or Dolomitic. The percentage of lime shall be based on a soil weight of 100 pcf; hence, 4.5 pounds lime should be utilized per cubic foot. Should deeper treatments be found necessary by the site geotechnical engineer, the volume of lime added shall increase appropriately with the depth. A certification of compliance shall be submitted to the Geotechnical Engineer with each delivery of lime.
- C. Water: Water shall be added during the preliminary mixing operations and, if necessary, during final mixing and to keep the cured material moist until curing is complete. The amount of water added shall be subject to the approval of the Geotechnical Engineer at all times.

PART 3 - EXECUTION

3.01 PREPARATION

- A. General: Layout all work, establish grades, locate existing underground utilities, set markers and stakes, set up and maintain barricades and protection facilities; all prior to beginning actual earthwork operations.

3.02 EQUIPMENT

- A. Lime Spreader: The lime shall be spread by equipment which shall uniformly distribute the required amount of lime. The rate of spread per square foot of blanket shall not vary more than 5 percent from the designated rate, unless otherwise approved by the Geotechnical Engineer.
- B. Mixing Equipment: Mixing equipment shall be capable of mixing or remixing the materials to a uniform mixture free of streaks or pockets of lime to the full required depth.

3.03 START OF WORK UNDER THIS SECTION

- A. General: Prior to starting physical work under this Section, the property line is to be clearly staked and identified. No lime treated materials shall be allowed to contaminate areas outside of the property.
- B. Utilities; Contractor is to engage with a licensed contractor specialized in the Utility Locating Business. The contractor shall locate any and all utilities and pothole the same. The frequency of potholing shall be enough to establish the elevations of all utilities located.

3.04 LIME SPREADING

- A. Engineered Fill: Provide lime treatment in areas shown on plans and extending a minimum distance of two (2) feet from outside edge of curb, building footing, wood header, and to a depth of at least twelve (12) inches.

- B. Temperature: Lime shall not be spread while the atmospheric temperature is below 35 degrees Fahrenheit or when conditions indicate that the temperature may fall below 35 degrees Fahrenheit within 24 hours.

3.05 MIXING

- A. Lime shall be added to the material to be treated at a rate of 4.5 pounds lime per cubic foot based on a soil unit weight of 100 pcf.
- B. Lime shall be spread by equipment that will uniformly distribute the required amount of lime for the full width of the prepared material. The rate of spread per linear foot of blanket shall not vary more than five percent (5%) from the designated rate.
- C. The spread lime shall be prevented from blowing by suitable means selected by the Contractor. Quicklime shall not be used to make lime slurry. The spreading operations shall be conducted in such a manner that a hazard is not present to construction personnel or the public. All lime spread shall be thoroughly mixed into the soil the same day lime spreading operations are performed.
- D. The distance which lime may be spread upon the prepared material ahead of the mixing operation will be determined by the Geotechnical Engineer.
- E. No traffic other than the mixing equipment and water truck will be allowed to pass over the spread lime until after the completion of mixing. After mixing, grading and compacting are completed, only the water truck is allowed on the treated area to maintain the optimum moisture for curing.
- F. Mixing equipment shall be equipped with a visual depth indicator showing mixing depth, an odometer or footmeter to indicate travel speed and a controllable water additive system for regulating water added to the mixture.
- G. Mixing equipment shall be of the type that can mix the full depth of the treatment specified and leave a relatively smooth bottom of the treated section. Mixing and re-mixing, regardless of equipment used, will continue until the material is uniformly mixed free of streaks, pockets, or clods of lime), and moisture is at approximately two percent (2%) over optimum and the mixture complies with the following requirements:

<u>Minimum Sieve Size</u>	<u>Percent Passing</u>
1-1/2"	100
1"	95
No. 4	60

- H. Non-uniformity of color reaction when the treated material, exclusive of one inch or larger clods, as tested with the standard phenolphthalein alcohol indicator, will be considered evidence of inadequate mixing.

- I. Lime-treated material shall not be mixed or spread while the atmospheric temperature is below 35°F. The entire mixing operation shall be completed within seventy-two (72) hours of the initial spreading of lime, unless otherwise permitted by the Geotechnical Engineer.

3.06 SPREADING AND COMPACTING

- A. The treated mixture shall be spread to the required width, grade and cross-section. The maximum compacted thickness of a single layer may be determined by the Contractor provided he can demonstrate to the Geotechnical Engineer that his equipment and method of operation will provide uniform distribution of the lime and the required compacted density throughout the layer. If the Contractor is unable to achieve uniformity and density throughout the thickness selected, he shall rework the affected area using thinner lifts until a satisfactory treated subgrade meeting the distribution and density requirements is attained, as determined by the Geotechnical Engineer, at no additional cost to the Owner.
- B. The finished thickness of the lime-treated material shall not vary more than five hundredths of a foot (0.05') from the planned thickness at any point.
- C. The lime -treated soils shall be compacted to a relative compaction of not less than ninety percent (90%) as determined by the ASTM D1557-01 Compaction Test.
- D. Initial compaction shall be performed by means of a sheepsfoot type roller or a vibratory padfoot roller. Final rolling shall be by means of a smooth drum roller.
- E. Areas inaccessible to rollers shall be compacted to meet the minimum compaction requirement by other means satisfactory to the Geotechnical Engineer.
- F. Final compaction shall be completed within thirty-six (36) hours of final mixing. The surface of the finished lime -treated material shall be the grading plane and at any point shall not vary more than five hundredths of a foot (0.05') foot above or below the grade established by the plans.
- G. Before final compaction, if the treated material is above the grade tolerance specified in this section, uncompacted excess material may be removed and used in areas inaccessible to mixing equipment. After final compaction and trimming, excess material shall be removed and disposed of off site. The trimmed and completed surface shall be rolled with steel or pneumatic-tired rollers. Minor indentations may remain in the surface of the finished materials so long as no loose material remains in the indentations.
- H. At the end of each day's work, a construction joint shall be made in thoroughly compacted material and with a vertical face. After a part-width section has been completed, the longitudinal joint against which additional material is to be placed shall be trimmed approximately three inches (3") into treated material, to the neat line of the section, with a vertical edge. The material so trimmed shall be incorporated into the adjacent material to be treated.
- I. An acceptable alternate to the above construction joints, if the treatment is performed with cross shaft rotary mixers, is to actually mix three inches (3") into the previous day's work to assure a good bond to the adjacent work.

3.07 FINAL GRADING

- A. Finish all lime/cement treated engineered fill grades to within a tolerance of 0.05' of grades shown for top of lime/cement stabilization treatment or as indicated by drawings and specifications.
- B. Leave all areas in suitable condition for subsequent work.
- C. Excess materials not needed for final grading operations shall be removed from the site.

3.07 CURING

- A. The surface of compacted and finish graded lime treated soil shall be kept moist for at least 3 days after final trimming, rolling and compacting. No equipment or traffic shall be permitted on the lime treated material during the 3 day cure, except for the water truck to keep the treated area at or above the optimum moisture. After the 3 day cure apply aggregate base. Maintain moisture curing at optimum level until aggregate base is placed

3.08 TRENCHING

- B. If trenching is necessary in areas that have been previously lime treated the contractor shall backfill the trench with class 2 aggregate base from the top of utility initial backfill up to subgrade in accordance with these specifications. **Lime treated soil may not be re-used once it has been compacted and cured. If re-excavated, it must be disposed of.**

END OF SECTION

SECTION 32 01 91
Tree and Landscape Protection

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Work necessary to ensure that trees and landscaping in general designated on the Drawings to remain receive all due protection, care, and maintenance necessary to ensure their survival.
- B. Work specifically includes the following:
 - 1. Erection of barriers and other general protective measures.
 - 2. Placement of wood shavings.
 - 3. Care of roots during grading.
 - 4. Inspection and recommendations.

1.2 EXAMINATION

- A. At the outset of construction the Contractor shall have all trees to remain located within the Work area inspected by a qualified and experienced arborist, and the recommendations of the arborist shall be submitted in writing to the Architect.
- B. The Contractor shall be notified by the Architect of any changes or additions to the procedures herein specified.

1.3 PROTECTION

- A. In addition to the requirements of Division 1, every effort shall be made to protect all trees and landscaping on the site, except such shrubs and grasses which would be removed for grading at building sites and trees indicated to be relocated.
- B. Trees to be saved shall be clearly indicated and shall be protected by the Contractor, who shall erect temporary barricades placed no closer than the drip line of the tree or directed by Architect.
 - 1. Barricades shall be placed before commencing other Work and shall remain in place until completion of the entire construction or until removal is directed by the Architect.
 - 2. Where 100% control of vehicular traffic cannot be maintained, a 3" thick layer of wood shavings shall be placed around any tree subject to such

traffic prior to commencement of construction.

- C. No tree roots greater than 1" in diameter may be cut during the performance of demolition Work or installation of utilities.
 - 1. Tree roots shall be carefully uncovered and the material removed without root damage, after which the excavation shall be immediately backfilled.
 - 2. Where it is not possible to avoid cutting roots, the Architect shall be notified, and the Work shall be done only by a qualified tree surgeon.
- D. Existing trees and landscaping to be saved shall be protected from the following:
 - 1. Stockpiling of any materials under the spread of the trees.
 - 2. Driving or parking vehicles under the spread of the trees.
 - 3. Dumping of refuse or chemically injurious materials or liquids.
 - 4. Continual puddling or running of water.
 - 5. Gathering of workmen under the trees during breaks or lunch periods.
- E. After building construction, dispose fallen debris present around the existing trees and landscaping within the Work area. Restore the grounds around the trees to their existing natural condition.

PART 2 - PRODUCTS

Not used

PART 3 - EXECUTION

Not used

END OF SECTION

SECTION 32 12 00

ASPHALT PAVING

PART 1 - GENERAL

1.01 INCLUSION OF OTHER CONTRACT DOCUMENTS

- A. The General Conditions, Supplementary Conditions and Division 1 are fully applicable to this Section, as if repeated herein.

1.02 RELATED WORK SPECIFIED ELSEWHERE

- A. Division 1 – District General Conditions and Contractual Requirements.
- B. Section 31 00 00, Earthwork.
- C. Section 31 23 33, Trenching and Backfilling.
- D. Section 32 80 00, Irrigation
- E. Section 33 40 00, Site Drainage.

1.03 QUALITY ASSURANCE

- A. Use only new materials and products, unless existing materials or products are specifically shown otherwise on the Drawings to be salvaged and re-used.
- B. All materials, components, assemblies, workmanship and installation are to be observed by the Owner's Inspector of Record. Work not so inspected is subject to uncovering and replacement.
- C. The representatives of the Owner's testing lab will not act as supervisor of construction, nor will they direct construction operations. Neither the presence of the Owner's testing lab representatives nor the testing by the Owner's testing lab shall excuse the contractors or subcontractors for defects discovered in their work during or following completion of the project. Correcting inadequate compaction is the sole responsibility of the contractor.
- D. Contractor shall provide verification that asphalt mix temperature meets the requirements of this specification at time of application.
- E. Contractor shall be solely responsible for all subgrades built. Any repairs resulting from inadequate compaction are the responsibility of the contractor.
- F. Sieve analysis from testing laboratories identifying rock/sand percentages within the asphalt mix shall have a testing date within 90 days of contract signing.
- G. Sieve analysis from a testing laboratory identifying rock/sand percentages within the class 2 aggregate base rock shall have a testing date within 90 days of contract signing.

1.04 SUBMITTALS

- A. Refer to Division 1 – District General Conditions and Contractual Requirements.
- B. Manufacturer's Data: Submit list and complete descriptive data of all products proposed for use. Include manufacturer's specifications, published warranty or guarantee, installation instructions, and maintenance instructions.

1.05 WARRANTY

- A. Refer to Division 1 – District General Conditions and Contractual Requirements.

1.06 REFERENCES AND STANDARDS

- A. ANSI/ASTM D698-00 - Test Methods for Moisture-Density Relations of Soils and Soil-Aggregate Mixtures, Using 5.5 lb (2.49 Kg) Rammer and 12 inch (304.8 mm) Drop.
- B. ANSI/ASTM D1556-00 - Test Method for Density of Soil in Place by the Sand-Cone Method.
- C. ANSI/ASTM D1557-02 - Test Methods for Moisture-Density Relations of Soils and Soil-Aggregate Mixtures Using 10 lb. (4.54 Kg) Rammer and 18 inch (457 mm) Drop.
- D. ANSI/ASTM D 3017-05 Test Methods for Moisture Content of Soils and Soil-Aggregate Mixture by Nuclear Methods (Shallow Depth).
- E. ANSI/ASTM D 422-63 Test Method for Particle Size Analysis of Soil.
- F. ANSI/ASTM D 4318-05 Test Method for Liquid Limit, Plastic Limit, and Plasticity Limit.
- G. CALTRANS Standard Specifications.
- H. CAL-OSHA, Title 8, Section 1590 (e).
- I. Any work within the street, highway or right-of-way shall be performed in accordance with the requirement of the governmental agencies having jurisdiction, and shall not begin until all of those governing authorities have been notified.

1.07 DELIVERY, STORAGE AND HANDLING

- A. Transport, store and handle in strict accord with the local jurisdiction.
- B. Make delivery to job when notified by Contractor verifying that the job is ready to receive the work of this Section and that arrangements have been made to properly store, handle and protect such materials and work.

1.08 PROJECT CONDITIONS

- A. Environmental Requirements:

1. Base Course: Do not lay base course on muddy subgrade, during wet weather, or when atmospheric temperature is below 40 degrees F.
2. Asphalt Surfacing: Do not apply asphaltic surfacing on wet base, during wet weather, or when atmospheric temperature is below 50 degrees F.

1.09 EXISTING SITE CONDITIONS

- A. Contractor shall acquaint himself with all site conditions. If unknown active utilities are encountered during work, notify Architect promptly for instructions. Failure to notify will make Contractor liable for damage to these utilities arising from Contractor's operations subsequent to discovery of such unknown active utilities.

1.10 PROTECTION

- A. Adequate protection measures shall be provided to protect workmen and passers-by on and off the site. Adjacent property shall be fully protected throughout the operations. Blasting will not be permitted. Prevent damage to adjoining improvements and properties both above and below grade. Restore such improvements to original condition should damage occur. Replace trees and shrubs outside building area disturbed by operations.
- B. In accordance with generally accepted construction practices, the Contractor shall be solely and completely responsible for working conditions at the job site, including safety of all persons and property during performance of the work. This requirement shall apply continuously and shall not be limited to normal working hours.
- C. Any construction review of the Contractor's performance conducted by the owner's representative is not intended to include review of the adequacy of the Contractor's safety measures, in, on, or near the construction site.
- D. Surface Drainage: Provide for surface drainage during period of construction in manner to avoid creating nuisance to adjacent areas. The contractor shall make a reasonable effort on a daily basis to keep all excavations and the site free from water during entire progress of work, regardless of cause, source, or nature of water.
- E. Adjacent streets and sidewalks shall be kept free of mud, dirt or similar nuisances resulting from earthwork operations.
- F. The site and adjacent influenced areas shall be watered as required to suppress dust nuisance. Dust control measures shall be in accordance with the local jurisdiction.

1.11 SEASONAL LIMITS

- A. No fill material shall be placed, spread or rolled during unfavorable weather conditions. When work is interrupted by rains, fill operations shall not be resumed until field tests indicate that moisture content and density of fill are satisfactory.

1.12 TESTING

- A. General: Refer to Division 1 – District General Conditions and Contractual Requirements.

- B. Geotechnical Engineer: Owner is retaining a Geotechnical Engineer to determine compliance of fill with Specifications, and to direct adjustments in fill operations. Costs of Geotechnical Engineer will be borne by Owner; except those costs incurred for re-tests or re-inspection will be paid by Owner and backcharged to Contractor.

PART 2 - PRODUCTS

2.01 MATERIALS

- A. Sterilant: Soil sterilizer shall be CIBA GEIGY's Pramitol 25-E, Treflan EC or Esplanade 200 SC.
 - 1. Soil sterilizer shall be applied in strict accordance with manufacturer's instructions.
- B. Base Course Aggregate: State Specifications, Section 26, Class 2 aggregate base (3/4" max.).
- C. Asphalt Binder: Steam-refined paving asphalt conforming to State Specifications, Section 92, viscosity grade PG 64-10. Asphalt binder additives for WMA per Caltrans approved list of manufacturer's.
- D. Liquid Asphalt Tack Coat: Per CALTRANS section 94.
- E. Surface Course Aggregate: Mineral aggregates for Type "B" asphalt concrete, conforming to State Specifications 39-2.02, Type B, 1/2" maximum, medium grading. 3/8" maximum grading at Playcourts. **Refer to Section 32 12 16.36 for Synthetic Track paving.**
- F. Seal Coat: shall be a pre-mixed asphalt emulsion blended with select fillers and fibers such as:
 - 1. "Park-Top No. 302", Western Colloid Products.
 - 2. "OverKote", Reed and Gram.
 - 3. "Drivewalk", Conoco Oil.
- G. Wood Headers and Stakes: Pressure treated.
- H. Pavement Marking: Colors as directed by Architect. Colors of painted traffic stripes and pavement markings must comply with ASTM D 6628.
 - 1. Waterborne traffic line - colors white, yellow and red, State specification PTWB-01R3.
 - 2. Waterborne traffic line for the international symbol of accessibility and other curb markings – blue, red and green, Federal specification TT-P-1952F.
- I. Precast Concrete Bumpers: 3000 psi at 28 day minimum strength; 48" length unless otherwise indicated; provide with steel dowel anchors and concrete epoxy.
- J. Pavement Epoxy; K-Lite; KtepX-590; Ennis Epoxy HPS2 or an approved equal.
- K. Crack Filler;
 - 1. Cracks up to 1/2": QPR model CAR08, 10oz asphalt crack filler; Star STA-FLEX Trowel Grade crack filler or approved equal.

2. Cracks ¼" – 1": "Docal 1100 Viscolastic, distributed by Conoco, Inc., Elk Grove, CA, (916) 685-9253, or approved equal.
 3. Cracks greater than 1": Hot Mix, Topeka.
- L. Reclaimed Asphalt Paugment (RAP). HMA Type A or Type B may be produced using RAP providing it does not exceed 15% of the aggregate blend.

2.02 MIXES

- A. General: Plant mixed conforming to State Specifications, Section 39, Type B, ½" maximum, medium grading. 3/8" maximum grading shall be used at hardcourt. Refer to Section 32 12 16.36 for Synthetic Track paving.
- B. Temperature of Hot Mix Asphalt: Not less than 275 degrees F nor more than 325 degrees F when added to aggregate.
- C. Temperature of Hot Mix Aggregate: Not less than 250 degrees F nor more than 325 degrees F when asphalt is added.
- D. Temperature of Hot Mix Asphalt Concrete: Asphalt shall be not less than 285 degrees at time of application, nor more than 350 degrees. Asphalt not meeting the required temperature shall not be used.
- E. Temperature of Warm Mix Asphalt: Mixing and placement; Per the approved manufactures heat range recommendations for mixing and placement.

PART 3 - EXECUTION

3.01 EXAMINATION OF CONDITIONS

- A. Conditions of Work in Place: Subsurfaces which are to receive materials specified under this Section shall be carefully examined before beginning work hereunder, and any defects therein shall be reported, in writing, to the Architect. Work shall not be started until such defects have been corrected. Starting of work shall imply acceptance of conditions as they exist.

3.02 PREPARATION

- A. Sub-Grade: Clean, shape and compact to hard surface free from elevations or depressions exceeding 0.05' in 10' from true plan. Compact per Section 310000. Compaction and moisture content shall be verified immediately prior to placement of aggregate base. Proof roll subbase in presence of geotechnical engineer prior to placement of aggregate base.
- B. Cleaning: Existing surfaces and new surface shall be clean of all dirt, sand, oil or grease. All cracks shall be cleaned and free of all debris and vegetation. Hose down entire area with a strong jet of water to remove all debris.

3.03 INSTALLATION

A. Headers:

1. General: Install as edging to asphalt paving, except where adjoining existing pavement, concrete curbs, walks or building.
2. Existing Headers: Remove existing headers where new paving will join existing. Saw cut existing asphalt to provide clean edge.
3. Lines and Levels: Install true to line and grade. Cut off tops of stakes 2-inches below top of header so they will not be visible on completion of job.

B. Asphalt Paving:

1. Base Course: Install in accord with State Specifications, Section 26. Compact to relative compaction of not less than 95%, ASTM D1557. The material shall be deposited on the subgrade in such a manner as to provide a uniform section of material within five percent tolerance of the predetermined required depth. Deposition will be by spreader box or bottom dump truck to prevent segregation of the material. The material so deposited on the subgrade shall have sufficient moisture which, in the opinion of the Architect is adequate to prevent excessive segregation. It shall then be immediately spread to its planned grade and cross section. Undue segregation of material, excessive drifting or spotting of material will not be permitted. If in the opinion of the site geotechnical engineer, the material is unsuitably segregated, it shall be removed or completely reworked to provide the desired uniformity of the material.
 - a. Moisture content and compaction of base material shall be tested immediately prior to placement of asphalt paving.
2. Sterilant: Apply specified material at manufacturer's recommended rate. Applicator of sterilant material shall be responsible for determining location of all planter areas. Apply specified material over entire base course area just prior to application of asphalt. Follow manufacturer's printed directions.
3. Liquid Asphalt Tack Coat: Apply as "tack coat" to all vertical surfaces of existing paving, curbs, walks, and construction joints in surfacing against which paving is to be placed.
4. Asphalt Concrete Surface Course:
 - a. Comply with State Specifications, 39-6 except as modified below.
 - 1) Final gradation shall be smooth, uniform and free of ruts, humps, depressions or irregularities, with a minimum density of 95% of the test maximum density determined by California Test Methods #304 and 375. Maximum variation 1/8 inch in 10' when measured with steel straightedge in any one direction. Test paved areas for proper drainage by applying water to cover area. Correct portions that do not drain properly by patching with plant mix. In no case shall accessible parking spaces or loading and unloading areas exceed 2% slope in any direction.
 - 2) Asphalt material shall be delivered to the project site in a covered condition to maintain acceptable temperature. Onsite inspector shall verify temperature of asphalt upon truck arrival to the site.
5. Placement and adjustment of Frames, Covers, Boxes and Grates: The Contractor shall set and adjust to finish grade all proposed and existing frames, covers, boxes, and grates of all manholes, drop inlets, drain boxes, valves, cleanouts, electrical boxes and other appurtenant structures prior to placement of asphaltic concrete.
6. Water Testing: All paved areas shall be water tested, to check drainage, in the presence of the project inspector prior to placement of seal coat. The surface of asphalt paving

shall not vary more than 1/8 inch above or below the grade established on the plans. If variations in grade are present, they will be corrected by overlaying paving and/or pavement removal and replacement as directed by the Architect.

7. Patching: Cut existing paving square and plumb at all edges to be joined by new paving. In trenches; grind existing asphalt on each side of trench 3" wide x 1/2 the depth of the section. Apply tact coat to vertical surfaces before installing new work. Warp carefully to flush surface, with seal over joints, and feather edge. Sawcut, remove and patch existing paving where cutting is necessary for installation of piping or conduits under Divisions 2, 15 and 16.

C. Seal Coat:

1. Seal coat shall be applied no sooner than 30 days from time of asphalt placement, no exceptions.
2. Surface Preparation: surface and cracks shall be clean of all dirt, sand, oil or grease. All cracks shall be filled to a level condition after curing. Make multiple fill applications until a level condition is achieved. Failure to do so will be the reason for rejection. Hose down entire area with a strong jet of water to remove all debris. Remove soft, loose, or otherwise damaged areas of asphalt concrete to full depth of damage and replace with compacted hot mix asphalt concrete as specified herein. Minor holes and imperfections may be patched using hot mix asphalt or mastic using sand/SS-1-H. Use wire brush for removal of oil and grease; prime with shellac or synthetic resin as recommended by manufacturer of pavement sealer material.
3. Seal Coat Seal Application: Thoroughly mix materials and apply in the presence of the onsite inspector. Failure to do so will be cause for rejection. Apply in accordance with manufacturer's written instructions.
 - a. The minimum application rate for each applied coat shall be 30gals per 1000 sq. ft. Two coats of sealcoat will be required.
 - b. Clean-Up and Precautions: As recommended by pavement sealer material manufacturer.

D. Asphalt Concrete Overlay Paving:

1. Comply with State Specifications, 39-6 except as modified below.
2. Grind or remove existing asphalt concrete paving at limits of overlay paving to provide a minimum 1 1/2" overlay thickness. Limits of grinding or removal shall be field verified to insure that finished paving surface will have a one percent minimum slope.
3. Thoroughly clean surface to remove vegetation, dirt, sand, gravel and water from surface and from cracks. Vegetation shall be treated 7 days prior to removal with an herbicide.
4. Cracks greater than 1 inch shall be filled with hot mix asphalt and rolled and compacted. Cracks less than one inch shall be filled with crack filler. Potholes shall be filled with hot-mix rolled and compacted. Contractor shall have Engineer approve crack and pothole repair prior to overlay. Provide leveling courses of hot mix asphalt as required to achieve finish grades shown on the drawings.
 - a. Cracks less than one inch in width shall be level after curing. Contractor shall make multiple filling applications as necessary to achieve a level condition.
5. Place overlay when ambient air temperature is 40 degrees F. and rising, and when pavement is dry.
6. An asphalt tack coat shall be applied to existing surface area at a rate of 0.20 gallons

- per square yard. Application width shall be width of fabric plus 2 to 6 inches.
7. Place, spread and compact asphalt overlay to provide a minimum density of 95% of maximum theoretical unit weight as determined by California Test Method #304. Maximum variation 1/8" in 10' when measured with steel straight edge in any one direction. Test paved areas for proper drainage by applying water to cover area. Correct portions that do not drain properly by patching with plant mix. Minimum compacted overlay thickness 1 1/2 inches.
- E. Pavement Marking: pavement markings shall be done only after the seal coat has thoroughly dried. Existing surfaces to be striped with traffic paint shall be cleaned of dust, dirt, grime, oil, rust or other contaminants which will impair the quality of work or interfere with proper bond of paint coats. Surfaces shall be thoroughly cleaned by whatever means necessary that will satisfactorily accomplish the purpose without damage to asphalt concrete. Provide measured layouts, temporary markings, templates, and other means necessary to provide required marking. Prepare and apply paint in accordance with manufacturer's instructions; paint shall be applied by spray and shall achieve complete coverage free from voids and thin spots. Where indicated on the Drawings, paint parking stall strips, lettering, arrows, accessible symbols, playfield markings, etc. on asphalt concrete paving. Paint strips shall be 4 inches wide (except otherwise indicated) and applied with two (2) coats of herein specified Traffic Line Paint; white (except as otherwise specified or indicated).
1. Paints shall be delivered to the site in unopened containers.
 - a. Paint shall not be diluted, or watered down.
 - b. Paint shall be applied in 10-12 wet mil thickness (4-6 mil dried). Each coat thickness shall be verified by the project inspector.
 2. International Accessible Symbol: Symbol shall be white figures on a blue background. Blue shall be equal to color No. 15090 in Fed. Std. 595c. Lines and symbols shall be accurately formed and true to line and form; lines shall be straight and uniform in width. Painted edges shall be clean cut and free from raggedness, and corners shall be cut sharp and square. Tolerances: Apply striping within a tolerance 1/2 inch in 50 feet. Apply markings and striping to widths indicated with a tolerance of 1/4 inch on straight sections and 1/2 inch on curved sections.
- F. Colors: As directed by Architect
- G. Precast Concrete Bumpers: Install in location where shown, using steel rebar dowels, and epoxy.

3.04 DEFECTIVE ASPHALT;

Defective asphalt is as described below.

- A. Exposed rock pockets on the finished surface that lack the # 8- #200 fines that is required per the sieve analysis.
- B. Asphalt not placed to the design grades.
- C. Asphalt that ponds water.
- D. Asphalt that was compacted below the minimum required temperature and is cracked.

- E. Asphalt that fails to meet the minimum compaction requirements.
- F. Asphalt that lacks the minimum thickness required per plan.
- G. New asphalt contaminated by a petroleum product, or spilled paint.
- H. Asphalt that has depressions, cracks, scored divits from dumpster wheels, heavy equipment use, heavy construction products,
- I. Asphalt placed on pumping, unstable sub-grades.

3.05 CLEANING

- A. Refer to Division 1 – District General Conditions and Contractual Requirements.
- B. Upon completion of work of this Section promptly remove from the working area all scraps, debris and surplus material of this Section.
- C. Clean excess material from surface of all concrete walks and utility structures.

END OF SECTION

SECTION 31 15 40

DECOMPOSED GRANITE PAVING

PART 1 - GENERAL

1.01 SCOPE OF WORK

- A. DESCRIPTION: Provide decomposed granite, complete, as shown on the Drawings.
- B. RELATED WORK SPECIFIED ELSEWHERE:
 - 1. Division 1 – District General Conditions and Contractual Requirements.
 - 2. Earthwork: Section 31 00 00.
 - 3. Landscaping: Section 32 80 00.

1.02 SUBMITTALS

- A. GENERAL: Refer to Division 1 – District General Conditions and Contractual Requirements.
- B. SAMPLES: Provide samples of decomposed granite.
- C. PRODUCT DATA: Submit manufacturer's specifications, data and installation instructions.
- D. SUBSTITUTIONS; Provide all pertinent information on substituted product. Show comparison between specified product and substituted product. Failure to provide required information is reason for rejection.

1.03 PRODUCT HANDLING

- A. GENERAL: All work shall be manufactured and/or fabricated in ample time so as to not delay construction progress.
- B. DELIVERY: All materials shall be delivered to the site at such time as required for proper coordination of the work.

1.04 GUARANTEE

- A. GUARANTEE - WARRANTY: Submit upon completion of the work, in the form prescribed under Division 1 – District General Conditions and Contractual Requirements, covering all materials and workmanship under this Section for a period of one (1) year from the date of final acceptance by the Owner.

PART 2 - PRODUCTS

2.01 MATERIALS

- A. DECOMPOSED GRANITE: Shall be well-graded mixture of fine to 1/4" size with no clods. The material shall be free of vegetation, other soils, debris and rocks. The material shall be reddish brown to tan in color.

Salvaged existing DG may be re-used in all but the top 2" of proposed DG, provide the DG is stripped cleanly from the site without significant (>3%) soil or organics.
- B. Redwood Header: 2"X4" Redwood board construction grade No. 2 or better. Radiuses shall be made using 2- 1" X 4" Redwood boards fastened together with screws.
- C. Screws: Laps; #8 X 1 1/2" deck screws, Stake screws #8 X 3" deck screws
- D. Stakes; Redwood 2" X 2" X 18" long
- E. Decomposed Granite Stabilizer; "Stabilizer", By Stabilizer Solutions; "G3 Commercial Surfaces", by Technisoil; or an approved equal. Pre-stabilized DG may be used subject to review and approval. If pre-stabilized DG is used, it shall make up the top 4" of proposed DG paving unless approved otherwise.

PART 3 - EXECUTION

3.01 EXAMINATION OF CONDITIONS

- A. CONDITIONS OF WORK IN PLACE: Subsurfaces which are to receive materials specified under this Section shall be carefully examined before beginning work of this Section. Any defects shall be reported, in writing, to the Architect. Work shall not be started until such defects have been corrected. Starting work of this Section implies acceptance of conditions as they exist.
- B. Project inspector shall verify that all substrate conditions are compacted to 90% compaction prior to the decomposed granite installation.

3.02 INSTALLATION

- A. GENERAL: Installation shall be in strict conformance with manufacturers referenced standards, the manufacturer's written directions, and as shown on the Drawings and as herein specified.
- B. HEADER BOARDS (If specified, see plans);
 - 1. Install straight and true to grades shown in the drawings.
 - 2. Radiuses shall be made using 2- 1"X4" Redwood boards screwed together. Laps shall be 3 ft. minimum in length, and staggered a minimum of 6 ft in between splices.
 - 3. Screws at laps shall be staggered with a minimum of 8 screws on each side of lap.
 - 4. Stakes shall be driven 4ft o.c. and 1-1/2" below the finish surface. Fasten header board to stake using a 3" screw, one per stake. If stake breaks or splits, it shall be replaced. Stakes shall be spaced 2 ft o.c. on the radiuses
- C. DECOMPOSED GRANITE:

1. Subbase Preparation: Prepare subbase per Section 31 00 00, Earthwork. Subgrades shall be approved prior to placement of decomposed granite.
2. Placement: Place stabilizing additive to decomposed granite per the manufacturers requirements, but no less than the optimum moisture content for Decomposed Granite. Place decomposed granite in two 2" lifts compacting each lift to 90% compaction.
3. After work is completed, the decomposed granite walk not be walked upon/driven upon until stabilizing material has completely dried and cured. All damaged surfaces shall be reworked per the manufactures, and or Architects recommendations.

3.03 CLEANING

- A. GENERAL: The new cured surface shall be kept free from accumulation of construction debris and rubbish. At the completion of the work and as necessary during the progress of the work, remove from the premises all surplus materials, rubbish, and debris. Rubbish shall not be buried or burned on the site.

END OF SECTION

SECTION 32 16 00

SITE CONCRETE

PART 1 - GENERAL

1.01 INCLUSION OF OTHER CONTRACT DOCUMENTS

- A. The General Conditions, Supplementary Conditions and Division 1 are fully applicable to this Section, as if repeated herein.

1.02 RELATED WORK SPECIFIED ELSEWHERE

- A. Division 1 – District General Conditions and Contractual Requirements.
- B. Section 31 00 00, Earthwork.

1.03 QUALITY ASSURANCE

- A. Use only new materials and products.
- B. Use materials and products of one manufacturer whenever possible.
- C. All materials, components, assemblies, workmanship and installation are to be observed by the Owner's Inspector of Record. Work not so inspected is subject to uncovering and replacement.
- D. Sieve analysis from testing laboratories identifying rock/sand percentages within the concrete mix; or class 2 aggregate base shall have the current project name and project location identified on the report. Outdated analytical reports greater than 90 days old will not be accepted

1.04 SUBMITTALS

- A. Refer to Division 1 – District General Conditions and Contractual Requirements
- B. Manufacturer's Data: Submit list and complete descriptive data of all products proposed for use. Include manufacturer's specifications, published warranty or guarantee, installation instructions, and maintenance instructions.
- C. Materials list: Submit to the Architect a complete list of all materials proposed to be used in this portion of the work. Submitted items should include but are not limited to sand, gravel, admixtures, surface treatments, coloring agents, sealers, fibers, cast-in-place accessories, forming and curing products and concrete mix designs.
- D. With concrete submittal, provide documented history of mix design performance.

1.05 WARRANTY

- A. Refer to Division 1 – District General Conditions and Contractual Requirements

1.06 REFERENCES AND STANDARDS

- A. California Building Code, latest edition.
- B. ACI Standards, ACI 211.1, ACI 318-14, ACI 302, IR-04, ACI 301-16, ACI 305R-10, ACI 306R-

16, ACI 308-16.

- C. ASTM C-94, Specification for Ready-Mixed Concrete.
- D. Concrete Reinforcing Steel Institute (CRSI) Manual of Standard Practice (latest edition).
- E. ASTM – American Society for Testing and Materials.

1.07 DELIVERY, STORAGE AND HANDLING

- A. Deliver undamaged products to job in manufacturer's sealed containers and/or original bundles with tags and labels intact.
- B. Store materials in protected, dry conditions off of ground and in areas so as to not interfere with the progress of the work.
- C. Transport, store and handle in strict accord with the manufacturer's written recommendations.
- D. Make delivery to job when notified by Contractor verifying that the job is ready to receive the work of this Section and that arrangements have been made to properly store, handle and protect such materials and work.
- E. Store cement in weather tight building, permitting easy inspection and identification. Protect from dampness. Lumpy or stale cement will be rejected.
- F. Aggregates: Prevent excessive segregation, or contamination with other materials or other sizes of aggregate. Use only one supply source for each aggregate stock pile.

1.08 TESTING

- A. General: Refer to Division 1 – District General Conditions and Contractual Requirements.
- B. Cement and Reinforcing shall be tested in accordance with CBC Section 1910A. Testing of reinforcing may be waived in accordance with Section 1910A.2 when approved by the Structural Engineer and DSA.

1.09 ADEQUACY AND INSPECTION

- A. Design, erect, support, brace and maintain formwork and shoring to safely support all vertical and lateral loads that might be applied until such loads can be carried by concrete.
- B. Notify Inspector, Architect and DSA at least 48 hours prior to placing of concrete.

1.10 PROTECTION

- A. Finish surfaces shall be protected at all times from concrete pour. Inspect forming against such work and establish tight leak-proof seal before concrete is poured. Finish work damaged, defaced or vandalized during the course of construction shall be replaced by contractor at contractor expense.

1.11 FIELD MEASUREMENTS

- A. Make and be responsible for all field dimensions necessary for proper fitting, slopes and completion of work. Report discrepancies to Architect before proceeding.

PART 2 - PRODUCTS

2.01 MATERIALS

- A. Cement: Portland cement, ASTM C150, Type II, per ACI 318-14 Section 26.4.
- B. Concrete Aggregates: Normal weight aggregates shall conform to ASTM C33, except as modified by this section. Combined grading shall meet limits of ASTM C33. Lightweight aggregate shall conform to ASTM C330, suitably processed, washed and screened, and shall consist of durable particles without adherent coatings.
- C. Water: Clean and free from deleterious amounts of acids, alkalis, scale, or organic materials and per ACI 318-14 Section 26.4.1.3.1.
- D. Fly Ash: Western Fly Ash, conforming to ASTM C618 for Class N or Class F materials (Class C is not permitted). Not more than 15% (by mass) may be substituted for portland cement.
- E. Water Reducing Admixture: Admixture to improve placing, reduce water cement ratio, and ultimate shrinkage may be used. Provide WRDA 64 by Grace Construction Products or approved equal. Admixture shall conform to ASTM C494 and ACI 318-14 Section 26.4.1.4.19(a). Such admixture must receive prior approval by the Architect, Structural Engineer, and the Testing Lab, and shall be included in original design mix.
- F. Air-entraining Admixture: Daravair 1000 by Grace Construction Products or approved equal. Admixture must conform to ASTM C260 and ACI 318-14, section 26.4.1.4.
- G. Exterior Flatwork Expansion Joint Sealant: 1-part polyurethane sealant, Sikaflex -1c SL or approved equal.
- H. Surface Retarder (for exposed aggregate finishes): Rugasol-S by Sika Corporation or approved equal.
- I. Form Coating: Material which will leave no residue on concrete surface that will interfere with surface coating, as approved by the Architect.
- J. Reinforcement Bars: New billet steel deformed bars conforming to requirements of ASTM A615 or ASTM A706; Grade 60. Dowels for installation through expansion joints or construction joints to existing sidewalks or concrete features shall be smooth or shall be sleeved on one end for slippage.
- K. Wire Mesh may be used in difficult areas where contractor may wish for added protection from cracking, not as general slab reinforcing, see Reinforcing Bars above. If elected to provide in addition to reinforcing specified, it shall be 6"x6" #10 W.W.F. in 5'x10' flat sheets. 6"x6" #10 wire rolls will not be accepted.
- L. Reinforcing supports: Galvanized metal chairs or spacers or metal hangers, accurately placed 3'-0" O.C.E.W. Staggered and each support securely fastened to steel reinforcement in place. Bottom bars in footings may be supported with 3" concrete blocks with embedded wire ties. Concrete supports without wire ties will not be allowed.
- M. Truncated Domes: Vitrified Polymer Composite (VPC), Cast-In-Place Detectable/Tactile Warning Surface Tiles; "Armor-Tile", "Access Tile Tactile Systems", or approved equal. Tiles shall comply

with Americans with Disabilities Act and the California Code of Regulations (CCR) Title 24, Part 2, Chapter 11B (dome spacing shall be 2.35"). Install tiles as recommended by manufacturer.

1. Color: Federal Yellow, No. 33538
- N. Curing Compound (for exterior slabs only): Burke Aqua Resin Cure by Burke by Edoco, 1100 Clear by W.R. Meadows or accepted equal. Water based membrane-forming concrete curing compound meeting ASTM C 309 and C1315.
- O. Concrete Bonding Agent: Weld-Crete by Larson Products Corp., Daraweld C by Grace Construction Products or accepted equal.
- P. Patching Mortar: Meadow-Crete GPS, one-component, trowel applied, polymer enhanced, shrinkage-compensated, fiber reinforced, cementitious repair mortar for horizontal, vertical and overhead applications as manufactured by W.R. Meadows or accepted equal.
- Q. Non-shrink Grout: Masterflow 713 Plus by Master Builders or approved equal. Premixed, non-metallic, no chlorides, non-staining and non-shrinking per CRD-C621, Corps of Engineers Specification and ASTM C 1107, Grades B and C.
- R. Aggregate Base: Class 2 AB per Caltrans specification section 26-1.02A.
- S. Expansion Joint Material: Preformed 3/8" fiber material, full depth of concrete section, with bituminous binder manufactured for use as concrete expansion joint material, as accepted by the Architect.
- T. Joint sealant for expansion joints: Single component silicone sealant, Type S, ASTM D5893
- U. Pre- Formed plastic Expansion Joint; W.R. Meadows 3/8" "Snap Cap", Tex-Trude expansion joint cap, or an approved equal.
- V. Adhesive Anchoring (Epoxy): Hilty HIT-HY 200 Safe Set, or approved equal.

2.02 CONCRETE DESIGN AND CLASS

- A. Proportion concrete mix designs according to ACI 211.1 and ACI 301 to provide normal weight Class "B" Concrete with the following properties:
 1. Compressive Strength at 28 Days:
 - a. Light Strength Concrete - 2,500 psi. min.
 1. Water main Thrust blocking.
 2. Backflow assembly housekeeping pads.
 3. Sign/fence post footings (use surrounding slab mix strength when in concrete paved areas)
 4. Bollard post footings (use surrounding slab mix strength when in concrete paved areas)
 - b. Medium Strength Concrete - 3,500 psi. min.
 1. Sidewalks & other pedestrian (non-vehicular) slabs
 2. Concrete curbs
 3. Concrete mow strips
 4. Concrete fence aprons
 5. Landscape & seating walls not exceeding 4' in retained

height.(measured top of footing to top of retained soil, or if no footing, top of lower grade to top of retained soil)

- c. Heavy Strength Concrete - 4,000 psi. min.
 - 1. Vehicular Concrete Slabs
 - 2. Vehicular Flush Curbs (driven over)
 - 3. Vehicular Rolled Curbs (driven over)
 - d. Maximum Water-Cement Ratio at Point of Placement: 0.50.
- B. Slump Limits: Provide concrete, at point of final discharge, of proper consistency determined by Test Method ASTM C143 with a slumps of 4" plus or minus 1".
- C. Mix Design: All concrete used in this work will be designed for strength in accordance with provisions of ASI 318-14 Section 26.4. Should the Contractor desire to pump concrete, a modified mix design will need to be submitted for review. Fly ash may be used in concrete to improve workability in amounts up to 15% of the total cementitious weight.
- D. Air Entrainment: 1.5%
- E. Slab Thickness: As shown on plans.

2.03 MIXING OF CONCRETE

- A. Conform to requirements of 2019 CBC, Chapter 19A.
- B. All concrete shall be mixed until there is uniform distribution of material and mass is uniform and homogenous; mixer must be discharged completely before the mixer is recharged.
- C. Concrete shall be Ready-mixed Concrete: Mix and deliver in accordance with the requirements set forth in ASTM C94 and ACI 301. Batch Plant inspection may be waived in accordance with CBC Section 1705A.3.3.1, when approved by Structural Engineer and DSA.
 - 1. Approved Testing Laboratory shall check the first batching at the start of the work and furnish mix proportions to the Licensed Weighmaster.
 - 2. Licensed Weighmaster to positively identify materials as to quantity and to certify to each load by ticket.
 - 3. Ticket shall be transmitted to Project Inspector by truck driver with load identified thereon. Project Inspector will not accept load without load ticket identifying mix and will keep daily record of pours, identifying each truck, its load and time of receipt and will transmit two copies of record to DSA.
 - 4. At end of project, Weighmaster shall furnish affidavit to DSA on form satisfactory to DSA, certifying that all concrete furnished conforms in every particular and to proportions established by mix designs.
 - 5. Placement of concrete shall occur as rapidly as possible after batching and in a manner which will assure that the required quality of the concrete is maintained. In no case may concrete be placed more than 90 minutes from batch time.
 - 6. Water may be added to the mix only if neither the maximum permissible water-cement ratio nor the maximum slump is exceeded. In no case shall more than 10 gallons of water shall be added to a full 9 yard load, or 1 gal. per yard on remaining concrete within the drum providing load tag indicates at time of mixing at plant will allow for additional water.

2.04 MATERIALS TESTING

- A. Materials testing of concrete and continuous batch plant inspection may be waived in accordance CBC Sections 1704A.4.4 when approved by Structural Engineer and DSA.
- B. Testing of concrete shall be performed per article 3.12 of this specification.

2.05 EQUIPMENT

- A. Handling and mixing of concrete: Project Inspector may order removal of any equipment which in his opinion is insufficient or in any way unsuitable.

PART 3 - EXECUTION

3.01 APPROVAL OF FORMS AND REINFORCEMENTS

- A. Forms and reinforcements are subject to approval by the Project Inspector, and notice of readiness to place first pour shall be given to DSA, Architect and Structural Engineer 48 hours prior to placement of concrete. Before placing concrete, clean tools, equipment and remove all debris from areas to receive concrete. Clean all reinforcing and other embedded items off all coatings oil, and mud that may impair bond with concrete.
- B. All reinforcing steel and or W.W.F. shall be adequately supported by approved devices on centers close enough to prevent any sagging.
- C. All reinforcing bar lap splices shall be staggered a minimum of 5 ft.
- D. If used, W.W.F. shall be lapped a minimum of 6" on each side of sheets and 12" on each end. Laps shall be wired together 2ft on center maximum spacing. End laps shall be staggered 2'-0" minimum from adjacent reinforcement.
- E. Additional reinforcing steel shall be placed around all utility boxes, valve boxes, manhole frames and covers that are located within the concrete placements.
 - 1. The bars shall be placed so that there will be a minimum of 1 1/2" clearance and a maximum of 3" clearance. The reinforcing steel shall be placed mid-depth of concrete slab.
- F. At all right angles or intersections of concrete walks, additional 2'x2' #5, 90 degree bars shall be added at all inside corners for additional crack control. The bars shall be placed 2" from concrete forms and supports at mid-depth of slab.

3.02 PROTECTION

- A. Protect work and materials of this Section prior to and during installation, and protect the installed work and materials of other trades.
- B. In the event of damage, make all repairs and replacements necessary to the approval of the Architect at no additional cost to the Owner.
- C. Sub-Grade in vehicular concrete paved areas: Subgrade shall be clean, shaped and compact to hard surface free from elevations or depressions exceeding 0.05' in 10' from true plan. Compact per Section 31 00 00. Compaction and moisture content shall be verified immediately prior to placement of concrete. Proof roll subbase in presence of geotechnical engineer prior to placement of aggregate base.

3.03 CLEANING

- A. Reinforcement and all other embedded items at time of placing concrete to be free of rust, dirt oil or any other coatings that would impair bond to concrete.
- B. Remove all wood chips, sawdust, dirt, loose concrete and other debris just before concrete is to be poured. Use compressed air for inaccessible areas. Remove all standing water from excavations.

3.04 FORMING

- A. Form material shall be straight, true, sound and able to withstand deformation due to loading and effects of moist curing. Materials which have warped or delaminated, or require more than minor patching of contact surfaces, shall not be reused.
- B. Build forms to shapes, lines, grades and dimensions indicated. Construct form work to maintain tolerances required by ACI 301. Forms shall be substantial, tight to prevent leakage of concrete, and properly braced and tied together to maintain position and shape. Butt joints tightly and locate on solid backing. Chamfer corners where indicated. Form bevels, grooves and recesses to neat, straight lines. Construct forms for easy removal without hammering, wedging or prying against concrete.
- C. Space clamps, ties, hangers and other form accessories so that working capacities are not exceeded by loads imposed from concrete or concreting operations.
- D. Build openings into vertical forms at regular intervals if necessary to facilitate concrete placement, and at bottoms of forms to permit cleaning and inspection.
- E. Build in securely braced temporary bulkheads, keyed as required, at planned locations of construction joints.
- F. Slope tie-wires downward to outside of wall.
- G. Brace, anchor and support all cast-in items to prevent displacement or distortion.
- H. During and immediately after concrete placing, tighten forms, posts and shores. Readjust to maintain grades, levels and camber.
- I. Concrete paving, Curbs, Curb and Gutters, Ramps:
 - 1. Expansion Joints: Install at locations indicated, and so that maximum distance between joints is 20' for exterior concrete unless otherwise shown. Expansion joint material shall be full depth of concrete section. Recess for backer rod and sealant where required. Expansion joints shall not exceed 1/4 inch depth measured from finish surface to top of felt or sealant, and 1/2 inch width.
 - 2. Curbs, Valley Gutter, and Curb & Gutter: Install expansion joints at 60' on center, except when placing adjacent to concrete walks, the expansion joints shall align with the expansion joints shown for the concrete walks. Expansion joint material shall be full depth of concrete section. Recess for backer rod and sealant will be required.
 - 3. Isolation Joints: 3/8" felt between walls and exterior slabs or walks so that paved areas are isolated from all vertical features, unless specifically noted otherwise on plans.
 - 4. Exterior Concrete Paving: Install expansion joints at 20' on center maximum, both directions, unless shown otherwise on plans.

5. Ramps; whether shown or not all ramps shall have control joints and expansion joints.
 - a. Control joints on ramps shall be aligned and be placed in between with the vertical posts for the handrails. The curbs, if required shall have control joints that align with the handrail posts.
 - b. Expansion joints shall be placed at the upper, intermediate, and bottom landings.

3.05 FORM COATING

- A. Before placement of reinforcing steel, coat faces of all forms to prevent absorption of moisture from concrete and to facilitate removal of forms. Apply specified material in conformance with manufacturer's written directions.
- B. Before re-using form material, inspect, clean thoroughly and recoat.
- C. Seal all cut edges.

3.06 INSTALLATION

- A. General: Reinforcement shall be accurately placed at locations indicated on the drawings within required tolerances and providing required clearances. Reinforcement shall be secured prior to placement of concrete such that tolerances and clearances are maintained. Coverage shall be in accordance with Section 1907A.7 of the CBC. Keep a person on the job to maintain position of reinforcing as concrete is placed. Reinforcement must be in place before concreting is begun. Install dowels as shown on drawings. Give notice whenever pipes, conduits, sleeves, and other construction interferes with placement; obtain method of procedure to resolve interferences. All expansion and construction joints in concrete shall have dowels of size and spacing as shown, or as approved by Architect.
- B. Placing Tolerances:
 1. Per ACI 301 or CRSI/WCRSI Recommended Practice for Placing Reinforcing Bars, unless otherwise shown.
 2. Clear distance between parallel bars in a layer shall be no less than 1", the maximum bar diameter not 1 ½ times the maximum size of coarse aggregate.
- C. Splices:
 1. General: Unless otherwise shown on drawings, splice top reinforcing at midspan between supports, splice bottom reinforcing at supports and stagger splices at adjacent splices 5 foot minimum. Bar laps shall be wired together. Reinforcing steel laps shall be as follows:
 - a. Lap splices in concrete: Lap splice lengths shall not be less than 62 bar diameter for No. 5 bar, 56" minimum for No. 6 bars. No. 4 bar shall have a minimum of 24" splice. 93 bar diameters for No. 7 bars and larger.
 - b. All splices shall be staggered at 5 feet minimum.

3.07 INSPECTION

- A. Approval of reinforcing steel, after installation, must be received from Inspector. Architect, Structural Engineer and DSA must be notified 48 hrs. in advance of beginning of concrete placement operations.
- B. Slope of concrete forms and finish condition shall be checked with a two foot (2') digital level.

3.08 PLACING OF CONCRETE

- A. Adjacent finish surfaces shall be protected at all times during the concrete pour and finishing. Verify that all formwork is tight and leak-proof before concrete is poured. Finish work defaced during the concrete pour and finishing shall be replaced at no extra cost to the owner.
- B. Transport concrete from mixer to place of final deposit as rapidly as practicable by methods which will prevent separation or loss of ingredients. Deposit as close as practicable in final position to avoid re-handling or flowing. Partially hardened concrete must not be deposited in work. Concrete shall not be wheeled directly on top of reinforcing steel.
- C. Placing: Once started, continue concrete pour continuously until section is complete between predetermined construction joints. Prevent splashing of concrete onto adjacent forms or reinforcement and remove such accumulation of hardened or partially hardened concrete from forms or reinforcement before work proceeds in that area. Free fall of concrete shall not to exceed 4'-0" in height. If necessary, provide lower openings in forms to inject concrete and to reduce fall height.
- D. Remove form spreaders as placing of concrete progresses.
- E. Place footings as monolithic and in one continuous pour.
- F. Keep excavations free of standing water, but moisture condition sub-grade before concrete placement.
- G. Compacting: All concrete shall be compacted by mechanical vibrators. Concrete shall be thoroughly worked around reinforcement and embedded fixtures and into corners of forms. Vibrating shall not be applied to concrete which has already begun to initially set nor shall it be continued so long as to cause segregation of materials.
- H. Grout under column bearing plates: Dry pack with specified Non-shrink Grout, as recommended by manufacturer. Use as little water as practicable. Ram grout solid into place.
- I. Concrete Flatwork:
 - 1. All flatwork shall be formed and finished to required line and grades. Flatwork shall be true and flat with a maximum tolerance of 1/8" in 10' for flatness. Flatwork which is not flat and are outside of the maximum specified tolerances shall be made level by the Contractor at no additional expense to the Owner.
 - 2. Concrete vibrator shall be used to assist concrete placement. Contractor shall have spare concrete vibrator on site during concrete placement.
- J. Placing in hot weather: Comply with ACI 305R-10. Concrete shall not exceed 85 degrees F at time of placement. Concrete shall be delivered, placed and finished in a sufficiently short period of time to avoid surface dry checking. Concrete shall be kept wet continuously after tempering until implementation of curing compound procedure in accordance with this specification.
- K. Placing in cold weather: Comply with ACI 306R-16. Protect from frost or freezing. No antifreeze admixtures are permitted. When deposited concrete during freezing or near-freezing weather, mix shall have temperature of at least 50 degrees F but not more than 90 degrees F. Concrete shall be maintained at temperature of at least 50 degrees F for not less than 72 hours after placing or until it has thoroughly hardened. Provide necessary thermal coverings for any flat work exposed to freezing temperatures.

- L. Horizontal construction joint: Keep exposed concrete face of construction joints continuously moist from time of initial set until placing of concrete; thoroughly clean contact surface by chipping entire surface not earlier than 5 days after initial pour to expose clean hard aggregate solidly embedded, or by approved method that will assure equal bond, such as green cutting. If contact surface becomes contaminated with soil, sawdust or other foreign matter, clean entire surface and re-chip entire surface to assure proper adhesion.

3.09 CONCRETE FINISHES

- A. Concrete Slab Finishing: Finish slab as required by ACI 302.1R. Use manual screeds, vibrating screeds to place concrete level and smooth. Use "jitterbugs" or other special tools designed for the purpose of forcing the coarse aggregate below the surface leaving a thick layer of mortar 1 inch in thickness. Surface shall be free from trowel marks, depressions, ridges or other blemishes. Tolerance for flatness shall be 1/8" in 10'. Provide final finish as follows:
 - 1. Flatwork, medium broom finish: Typical finish to be used at all exterior walks and stairs.
 - 2. Ramps, heavy broom finish: Concrete surfaces with slope greater than 5% including all ramps. Brooming direction shall run perpendicular to slope to form non-slip surface
 - 3. Under no circumstances can water be added to the top surface of freshly placed concrete.
- B. Curb Finishing: Steel trowel.
- C. Joints and Edges: Mark-off exposed joints, where indicated, with 1/4" radius x 1" deep jointer or edging tool. Joints to be clean, cut straight, parallel or square with respect to concrete walk edge. Tool all edges of exposed expansion and contraction joints, walk edges, and wherever concrete walk adjoins other material or vertical surfaces.
 - 1. The expansion joints shall be full depth as shown in the plan details. Failure to do so will result in non-compliance and shall be immediately machine cut by the contractor at his expense.
- D. Exposed Concrete Surface Finishing (not including top surface of flatwork): Remove fins and rough spots immediately following removal of forms from concrete which is to be left exposed. Damaged and irregular surfaces and holes left by form clamps and sleeves shall be patched with grout. Tie wires are to be removed to below exposed surface and holes pointed up with neat cement paste similar to procedure noted under "Patching" below. Removal of tie wires shall extend to distance of 2" below established grade lines. Ends of tie wires shall be cut off flush at all other, unexposed locations. Care shall be taken to match adjacent finishes of exposed concrete surface. After patching, all concrete that is to remain exposed, shall be sacked with a grout mixture of 1-part cement, 1 1/2- parts fine sand and sufficient water to produce a consistency of thick paint. After first wetting the concrete surface, apply mixture with a brush and immediately float entire surface vigorously using a wood float. Keep damp during periods of hot weather. When set, excess grout shall be scraped from wall with edge of steel trowel, allowed to set for a time, then wiped or rubbed with dry burlap. Entire finishing operation of any area shall be completed on the same day. This treatment shall be carried to 4" below grade, and all patching and sacking shall be done immediately upon removal of the forms.
- E. Stair Treads and Risers: Tool exterior stair tread nosing per ADA requirements and as detailed. Paint or stain tooled area at every stair tread nosing or as detailed. Stair tread nosing shall contain no pockets, voids or spalls. Patching is not allowed. Damaged nosing shall be replaced.

3.10 CURING

- A. Cured Concrete in Forms: Keep forms and top on concrete between forms continuously wet until removal of forms, 7 days minimum. Maintain exposed concrete in a continuous wet condition for 14 days following removal of forms.
- B. Flatwork/Variable Height Curbs, Curb and gutter, Valley Gutter: Cure utilizing Curing Compound. If applicable, the Contractor shall verify that the approved Curing Compound is compatible with the approved colorant system. Upon completion of job, wash clean per manufacturer's recommendations.
 - 1. Curing compound shall be applied in a wet puddling application. Spotty applications shall be reason for rejection and possibly concrete removal and replacement at the contractor's expense with no compensation from the owner.
- C. No Curing Compound shall be applied to areas scheduled to receive resilient track surface including, curbs, ramps, run ways, etc.

3.11 DEFECTIVE CONCRETE

- A. Determination of defective concrete shall be made by the Architect or Engineer. His opinion shall be final in identifying areas to be replaced, repaired or patched.
- B. The Owner reserves the right to survey the flatwork, if it is determined to be outside of the maximum tolerance for flatness. If the flatwork is found to be out of tolerance, then the Contractor will be required to replace concrete. The Contractor will be responsible for reimbursing the Owner for any surveying costs incurred. Determination of flatwork flatness, surveying and any remedial work must be completed far enough in advance so that the project schedule is maintained, delays are avoided and the new flatwork or flatwork repairs are properly cured.
- C. As directed by Architect, cut out and replace defective concrete. All defective concrete shall be removed from the site. No patching is to be done until surfaces have been examined by Architect and permission to begin patching has been provided.
- D. Permission to patch any area shall not be considered waiver of right, by the Owner, to require removal of defective work, if patching does not, in opinion of Architect, satisfactorily restore quality and appearance of surface.
- E. Defective concrete is:
 - 1. Concrete that does not match the approved mix design for the given installation type.
 - 2. Concrete not meeting specified 28-day strength.
 - 3. Concrete which contains rock pockets, voids, spalls, transverse cracks, exposed reinforcing, or other such defects which adversely affect strength, durability or appearance.
 - 4. Concrete which is incorrectly formed, out of alignment or not plumb or level.
 - 5. Concrete containing embedded wood or debris.
 - 6. Concrete having large or excessive patched voids which were not completed under Architect's direction.
 - 7. Concrete not containing required embedded items.
 - 8. Excessive Shrinkage, Traverse cracking, Cracking, Curling; or Defective Finish. Remove and replace if repair to an acceptable condition is not feasible.
 - 9. Concrete that is unsuitable for placement or has set in truck drum for longer than 90 minutes from the time it was batched.
 - 10. Expansion joint felt that is not isolating the full depth of the concrete section, and

- recessed as required for backer rod and sealant where required.
11. Concrete that is excessively wet or excessively dry and will not meet the minimum or maximum slump required per mix design.
 12. Finished concrete with oil stains from equipment use, and or rust spots that cannot be removed.
 13. Control joints (weakened planed joints) that do not meet the required minimum depth shown on the drawings.
- F. Patching: Install specified Patching Mortar per manufacturer's recommendations. REPAIRS TO DEFECTIVE CONCRETE WHICH AFFECT THE STRENGTH OF ANY STRUCTURAL CONCRETE MEMBER OR COMPONENT ARE SUBJECT TO APPROVAL BY THE ARCHITECT AND DSA.

3.12 CONCRETE TESTING

- A. Comply with CBC Section 1903A, 1905A.1.16, 1910A and 1705A.3 and as specified in B. below. Costs of tests will be borne by the Owner.
- B. Four identical cylinder samples for strength tests of each class of concrete placed each day shall be taken not less than once a day, or not less than once for each 50 cubic yards of concrete, or not less than once for each 2,000 square feet of surface area for slabs or walls. In addition, samples for strength tests for each class of concrete shall be taken for seven-day tests at the beginning of the concrete work or whenever the mix or aggregate is changed.
- C. Strength tests will be conducted by the Testing Lab on one cylinder at seven (7) days and two cylinders at twenty-eight (28) days. The fourth remaining cylinder will be available for testing at fifty-six (56) days if the 28-day cylinder test results do not meet the required design strength.
- D. On a given project, if the total volume of concrete is such that the frequency of testing required by paragraph B. above would provide less than five strength tests for a given class of concrete, tests shall be made from at least five randomly selected batches or from each batch if fewer than five batches are used.
- E. Cost of retests and coring due to low strength or defective concrete will be paid by Owner and back-charged to the Contractor.
- F. Each truck shall be tested for slump before concrete is placed.

3.13 REMOVAL OF FORMS

- A. Remove without damage to concrete surfaces.
- B. Sequence and timing of form removal shall insure complete safety of concrete structure.
- C. Forms shall remain in place for not less than the following periods of time. These periods represent cumulative number of days during which temperature of air in contact with concrete is 60 degrees F and above.
 1. Vertical forms of foundations, walls and all other forms not covered below: 5 days.
 2. Slab edge screeds or forms: 7 days.
 3. Concrete columns and beam soffits: 28 days.
- D. Concrete shall not be subjected to superimposed loads (structure or construction equipment) until it has attained its full design strength and not for a period of at least 21 days after placing.

Concrete systems shall not be subjected to construction loads in excess of design loads.

3.14 CLEANING

- A. Refer to Division 1 – District General Conditions and Contractual Requirements.
- B. Upon completion of work of this Section promptly remove from the working area all scraps, debris and surplus material of this Section.
- C. Clean excess material from surface of all concrete walks and utility structures.
- D. Power wash all concrete surfaces to remove stains, dried mud, tire marks, and rust spots.

END OF SECTION

SECTION 32 17 23 Pavement Markings

PART 1 - GENERAL

1.1 INCLUSION OF OTHER CONTRACT DOCUMENTS

- A. The General Conditions, Supplementary Conditions and Division I are fully applicable to this section, as if repeated herein.

1.2 SCOPE OF WORK

- A. Provide all materials, labor, and equipment necessary for proper installation and completion of the pavement markings as shown on Drawings and specified herein.

1.3 RELATED WORK SPECIFIED ELSEWHERE

- A. SUBMITTAL PROCEDURES: Section 01 33 00.
- B. CLOSEOUT PROCEDURES: Section 01 77 00.

1.4 SUBMITTALS

- A. Refer to Section 01 30 00.
- B. Manufacturer's Data: Submit list and complete descriptive data of all products proposed for use. Include manufacturer's specifications, published warranty or guarantee, installation instructions, and maintenance instructions.
- C. CAL-GREEN Submittals:
 - 1. Product Data – VOC Limits: For adhesives, sealants, fillers and primers, documentation including printed statement of VOC contents, comply with limits specified in Section 01 61 16
 - 2. Low/No-VOC Paints and Coatings: Provide certification that all primers and coatings meet VOC emission limits specified in Section 01 61 16. List manufacturer, brand, application, type (flat or non-flat), number of gallons, and the VOC emissions in gram/liter. Include MSDS and production data sheet indicating VOC limits for each product provided.
- D. Guarantee of Contractor/Subcontractor per Article 1.5.

1.5 GUARANTEE

- A. Refer to General Conditions and Section 01 30 00.
- B. Submit fully executed Guarantee with submittal package by Article 1.4.

1.6 REFERENCES AND STANDARDS

- A. California Building Code (CBC), edition as noted on the drawings.
- B. California Green Building Standards Code, edition as noted on the drawings.

1.7 DELIVERY, STORAGE AND HANDLING

- A. Store materials in protected, dry conditions off of ground and in areas so as to not interfere with the progress of the work.
- B. Transport, store and handle in strict accord with the manufacturer's written recommendations.
- C. Make delivery to job when notified by Contractor verifying that the job is ready to receive the work of this Section and that arrangements have been made to properly store, handle and protect such materials and work.

1.8 FIELD MEASUREMENTS

- A. Make and be responsible for all field dimensions necessary for proper layout and completion of work. Report discrepancies to Architect before proceeding.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. VOC limits for adhesive, sealants, fillers, coatings and primers. Comply with limits specified in related Section.
- B. Provide products conforming to local, State, and Federal government requirements limiting the amount of volatile organic compounds contained in the product, for its intended application. If specified product exceeds current requirement, provide confirming product at no additional cost. Provide written confirmation to Landscape Architect describing reason for revision and demonstrate compliance of replacement product with specified requirement.

2.2 PAVEMENT MARKING PAINT

- A. Approved Manufacturer: FS TTP-1952 B traffic paint.
- B. Colors: As directed by Landscape Architect.

PART 3 - EXECUTION

3.1 INSPECTION

- A. Prior to installation of the work of this Section, carefully inspect and verify that installed work of all other trades is complete to the point where this installation may properly commence.
- B. Verify that specified items may be installed in accordance with the approved design.

- C. Field Measurements: The Contractor shall take field measurements for this work and be responsible for same. In even of discrepancy, immediately notify Architect. Do not proceed in discrepant areas until discrepancies have been fully resolved.

3.2 INSTALLATION

- A. All items shall be installed by a skilled tradesman and shall be in accordance with the best standard practice or manufacturer's recommendations, or as indicated on the Drawings.
- B. Painted pavement markings shall be done only after the asphalt and/or concrete has thoroughly dried and cured.
- C. Clean surfaces to be painted of dust, dirt, grime, oil, rust or other contaminants which will impair the quality of work or interfere with proper bond of paint coats. Surface shall be cleaned to the extent and by whatever means that will satisfactorily accomplish the purpose without damaging the surface.
- D. Provide measured layouts, temporary markings, templates, and other means necessary to provide required markings.
- E. Prepare and apply pain accordance with manufacturer's instructions; paint shall be applied by spray and shall achieve complete coverage free from voids and thin spots.
- F. Where indicated on the Drawings, paint markings shall be 3" inch wide unless otherwise indicated and applied with two (2) coats of herein specified Traffic Line Paint; white unless otherwise indicated.
 - 1. International Accessible Symbol: Symbol shall be white figures on a blue background. Blue shall be equal to color No. 15080 in Fed. Std. 595a.
- G. Lines and symbols shall be accurately formed and true to line and form; lines shall be straight and uniform in width.
- H. Painted edges shall be clean cut and free from raggedness, and corners shall be cut sharp and square.
- I. Tolerances: Apply striping within tolerances of ½ inch in 50 feet. Apply markings and stripings to widths indicated with a tolerance of ¼ inch on straight sections and ½ inch on curved sections.

3.3 CLEANING

- A. Upon completion of installation, thoroughly wash surfaces and remove foreign material. Leave entire work in neat, orderly, clean and acceptable, condition.
- B. Clean excess material from surfaces of all concrete and asphalt.

3.4 PROTECTION

- A. Protect work and materials of this Section prior to and during installation and protect the installed work and materials of other trades.

- B. In the event of damage, make all repairs necessary to the approval of the Architect at no additional cost to the Owner.

END OF SECTION

SECTION 32 31 13

CHAIN LINK FENCES AND GATES

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Fence framework, fabric, and accessories.
- B. Excavation for post bases; concrete foundation for posts.
- C. Manual gates and related hardware.

1.02 RELATED SECTIONS

- A. Division 1 – District General Conditions and Contractual Requirements.

1.03 REFERENCES

- A. ANSI/ASTM A123 - Zinc (Hot Dip Galvanized) Coatings on Iron and Steel Products.
- B. ANSI/ASTM F567 – Installation of Chain link Fence.
- C. ASTM A153 - Zinc Coating (Hot-Dip) on Iron and Steel Hardware.
- D. ASTM C94 – Ready-mixed Concrete.
- E. Chain link Fence Manufacturers’ Institute (CLFMI) – Product Manual.

1.04 SYSTEM DESCRIPTION

- A. Fence Height: 12’-0” unless otherwise noted.
- B. Line Post Spacing: At intervals not exceeding 10 feet.

1.05 QUALITY ASSURANCE

- A. Manufacturer: Company specializing in manufacturing the products specified in this section with minimum three years experience.
- B. Installer: Company specializing in installations of chain-link fencing with a minimum of five years of experience. If any welding is required provide welders’ certificates, verifying AWS qualification within the previous 12 months.

1.06 FIELD MEASUREMENTS

- A. Verify field measurements are as indicated on shop drawings.

1.07 SUBMITTALS

- B. Submit shop drawings and product data under provisions of Division 1 – District General Conditions and Contractual Requirements.

1.08 WARRANTY

- A. Manufacture of slats to provide a 25 year warranty against color fading and breakage of slats.

PART 2 – PRODUCTS

2.01 MATERIALS

- A. Fabric:
 - 1. Fabric: Standard Industrial grade, 2" mesh, 9 gauge hot-dipped galvanized steel wire, top selvage, knuckle end closed, bottom selvage, knuckled end closed.
 - a. 48" Nominal Height, where specified.
 - b. 72" Nominal Height, where specified.
- B. Line Posts: ASTM F1083 SCH 40 galvanized, round, 2.875 inch diameter.
- C. Terminal and Corner Posts: ASTM F1083 SCH 40 galvanized, round, 4.000 inch diameter.
- D. Gate Posts:
 - 1. ≤10' leaf = ASTM F1083 SCH 40 galvanized, round, 4.0 inch diameter.
 - 2. >10' leaf = ASTM F1083 SCH 40 galvanized, round, 6.0 inch diameter.
- E. Gate Frame: 1-7/8 inch SCH 40 galvanized diameter, for fittings and truss rod fabrication.
- F. Top Rail, Middle Brace Rail and Bottom Rail: ASTM F1083 SCH 40 galvanized, round, 1.66 inch diameter, plain end, sleeve coupled **at top**.
- G. Tie Wires: 9 gauge galvanized steel wire.
- H. Concrete: ASTM C94; Portland Cement, 2,500 p.s.i. strength at 28 days, 3 inch slump; one inch maximum sized coarse aggregate.
- I. Kickplate: 12 ga. Steel hot dipped galvanized.
- J. Cane Bolt Receiver: 1-1/4" x 8" galvanized pipe.
- K. Yellow Safety Cap (Ballfield 6' tall Outfield and Sideline Fences only):
 - 1. Aer-Flo PlastiCap by Anthem Sports.

2. PolyCap By Richardson Athletics or Hoover Fence CO.
3. Approved Equal.
Note: "Box" type caps that come in short 5'-8' sections are not acceptable.
Install per manufacturers recommendations and using manufacturer supplied installation materials.

2.02 ACCESSORIES

- A. Caps: Cast steel galvanized; sized to post diameter, set screw retainer.
- B. Fittings: Sleeves, bands, clips, rail ends, tension bars, fasteners and fittings; steel galvanized.
- C. Gate Hardware: Fork latch with gravity drop mechanical keepers; three 180 degrees gate hinges per leaf and hardware for padlock. Padlock to be provided by District.
- D. ADA Accessible Gate Latch (when specified), Lockable; Paddle type lever that opens gate without full rotation.

2.03 FINISHES

- A. Components and Fabric: Galvanized to ANSI/ASTM A123; 1.2 oz./sq. ft.
- B. Hardware: Galvanized to ASTM A153, 1.2 oz./sq. ft. coating.
- C. Accessories: Same finish as framing.

PART 3 - EXECUTION

3.01 INSTALLATION

- A. Install framework, fabric, accessories and gates in accordance with ANSI/ASTM F567-93 and manufacturer's instructions.
- B. Drill caissons to diameter and depth as shown in the drawings, and or details. Clean holes and remove all loose dirt to a hard undisturbed bottom.
 1. When placing fence posts in existing asphalt, the existing asphalt shall be cored drilled with a diamond core hole saw 3' larger than the caisson diameter. Under no circumstances shall an auger dirt bit be used to drill through the asphalt.
 2. When placing fence posts where the new surrounding finish surface will be asphalt, the fence posts shall be placed first before the asphalt is laid. Top of post caisson shall be at the top of aggregate base.
- C. Set intermediate, terminal and gate posts plumb in concrete caisson. Slope top of concrete for water runoff. Use concrete vibrator in each caisson during concrete placement to settle and seat concrete.

- D. Line, Terminal, and Gate Post Footing Depth Below Finish Grade: See plans.
- E. Brace each gate and corner post to adjacent line post with horizontal center brace rail and

- diagonal truss rods. Install brace rail, on bay from end and gate post.
- F. Provide top rail through line post tops and splice with 6 inch long rail sleeves.
 - G. Install center and bottom rails all around enclosure.
 - H. Stretch fabric between terminal posts.
 - I. Position bottom of fabric 1 inch above finished grade.
 - J. Fasten fabric to top, center and bottom rail and line posts with tie wire at maximum 12 inches on centers.
 - K. Attach fabric to end, corner and gate posts with tension bars and tension bar clips at 12 inches on center.
 - L. Install gate with fabric to match fence. Install three hinges per leaf, Install latches, catches, retainers and locking clamp.
 - M. Provide kickplate at all gates on plan specified to be "accessible". Weld to gate frame with 3/16" x 1" welds at 4" o.c. Weld all 4 corners. Grind all welds and edges smooth. Treat all welds with galvanizing zinc "Hot Stick."
 - N. All field welding to be performed by certified welder and all welds are to be ground down smooth and treated.
 - O. All areas of welds are to be thoroughly cleaned, fluxed, and treated with galvanizing zinc "Hot Stick". Do not over heat pipe when treating.
 - P. At double swing gates, install cane bolt receiver in concrete measuring 8" diameter, 12" deep.

3.02 ERECTION TOLERANCES

- A. Maximum variation from plum: 1/8 inch.
- B. Maximum offset from true position: 3/8 inch.
- C. Components shall not infringe adjacent property lines.

END OF SECTION

SECTION 32 31 19

ORNAMENTAL METAL FENCING AND GATES

PART 1 – GENERAL

1.01 WORK INCLUDED

The contractor shall provide all labor, materials and appurtenances necessary for installation of the welded ornamental steel fence system defined herein at Highlands High School Baseball & Softball Field Improvements.

1.02 RELATED WORK

Section 31 00 00 - Earthwork
Section 32 16 00 - Concrete

1.03 SYSTEM DESCRIPTION

The manufacturer shall supply a total fence system of Montage II® **Welded and Rackable** (ATF – All Terrain Flexibility) Ornamental Steel Majestic™ 3-rail design. The system shall include all components (i.e., panels, posts, gates and hardware) required, or approved equal.

Manufactures listed above are either the basis of design, or have pre-approved products. Alternative manufacturers of similar products may be submitted for review and approval. While it is impossible for products to be an exact match, any such products will be reviewed using the following criteria in comparison to the basis of design listed:

- i. Quality and value of the product.
- ii. Size, shape and construction/manufacturing of the product
- iii. Function of the product.
- iv. Cost of the product.
- v. Availability and lead time of the product.
- vi. Manufacturer warrantee/guarantees of the product.
- vii. Manufactured/Assembled location (Made in the USA)
- viii. Available Certifications/Warrantees of the product.
- ix. Carbon footprint of the product (if applicable).
- x. Compliance with governmental statues and codes.
- xi. Compliance with administrative authorities.

1.04 QUALITY ASSURANCE

The contractor shall provide laborers and supervisors who are thoroughly familiar with the type of construction involved and materials and techniques specified.

1.05 REFERENCES

- ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy Coated (Galvannealed) by the Hot-Dip Process.
- ASTM B117 - Practice for Operating Salt-Spray (Fog) Apparatus.
- ASTM D523 - Test Method for Specular Gloss.
- ASTM D714 - Test Method for Evaluating Degree of Blistering in Paint.
- ASTM D822 - Practice for Conducting Tests on Paint and Related Coatings and Materials using Filtered Open-Flame Carbon-Arc Light and Water Exposure Apparatus.
- ASTM D1654 - Test Method for Evaluation of Painted or Coated Specimens Subjected to Corrosive Environments.
- ASTM D2244 - Test Method for Calculation of Color Differences from Instrumentally Measured Color Coordinates.
- ASTM D2794 - Test Method for Resistance of Organic Coatings to the Effects of Rapid Deformation (Impact).
- ASTM D3359 - Test Method for Measuring Adhesion by Tape Test.
- ASTM F2408 – Ornamental Fences Employing Galvanized Steel Tubular Pickets.

1.06 SUBMITTAL

- A. The manufacturer’s literature shall be submitted prior to installation.
- B. Shop drawing shall be provided for review and approval.

1.07 PRODUCT HANDLING AND STORAGE

Upon receipt at the job site, all materials shall be checked to ensure that no damage occurred during shipping or handling. Materials shall be stored in such a manner to ensure proper ventilation and drainage, and to protect against damage, weather, vandalism and theft.

1.08 PRODUCT WARRANTY

- A. All structural fence components (i.e. rails, pickets, and posts) shall be warranted within specified limitations, by the manufacturer for a period of 20 years from date of original purchase. Warranty shall cover any defects in material finish, including cracking, peeling, chipping, blistering or corroding.
- B. Reimbursement for labor necessary to restore or replace components that have been found to be defective under the terms of manufactures warranty shall be guaranteed for five (5) years from date of original purchase.

PART 2 – MATERIALS

2.01 MANUFACTURER

The fence system shall conform to Montage II® **Welded and Rackable** (ATF – All Terrain Flexibility) Ornamental Steel, Majestic™ design, flush bottom bottom rail treatment, 3-Rail style manufactured by Ameristar Fence Products, Inc., in Tulsa, Oklahoma., or approved equal, see section 1.03.

2.02 MATERIAL

- A. Steel material for fence panels and posts shall conform to the requirements of ASTM A653/A653M, with a minimum yield strength of 45,000 psi (310 MPa) and a minimum zinc (hot-dip galvanized) coating weight of 0.90 oz/ft² (276 g/m²), Coating Designation G-90.
- B. Material for pickets shall be 1" square x 14 Ga. tubing. The rails shall be steel channel, 1.75" x 1.75" x .105". Picket holes in the rail shall be spaced 4.715" o.c. Fence posts and gate posts shall meet the minimum size requirements of Table 1.
- C. Hinges: Gorilla Brand Weld on Hinges with bearings and grease fitting, or approved equal.
- D. Accessible Gate Hardware: See plan details.

2.03 FABRICATION

- A. Pickets, rails and posts shall be pre-cut to specified lengths. Rails shall be pre-punched to accept pickets.
- B. Pickets shall be inserted into the pre-punched holes in the rails and shall be aligned to standard spacing using a specially calibrated alignment fixture. The aligned pickets and rails shall be joined at each picket-to-rail intersection by Ameristar's proprietary fusion welding process, thus completing the rigid panel assembly (Note: The process produces a virtually seamless, spatter-free good-neighbor appearance, equally attractive from either side of the panel).
- C. The manufactured panels and posts shall be subjected to an inline electrodeposition coating (E-Coat) process consisting of a multi-stage pretreatment/wash, followed by a duplex application of an epoxy primer and an acrylic topcoat. The minimum cumulative coating thickness of epoxy and acrylic shall be 2 mils (0.058 mm). The color shall be Black. The coated panels and posts shall be capable of meeting the performance requirements for each quality characteristic shown in Table 2 (Note: The requirements in Table 2 meet or exceed the coating performance criteria of ASTM F2408).
- D. The manufactured fence system shall be capable of meeting the vertical load, horizontal load, and infill performance requirements for Industrial weight fences under ASTM F2408.
- E. Swing gates shall be fabricated using 1.75" x 14ga Forerunner double channel rail, 2" sq. x 12ga. gate ends, and 1" sq. x 14ga. pickets. Gates that exceed 6' in width will have a 1.75" sq. x 14ga. intermediate upright. All rail and upright intersections shall be joined by welding. All picket and rail intersections shall also be joined by welding. Gusset plates will be welded at each upright to rail intersection. Cable kits will be provided for additional trussing for all gates leaves over 6'.

- F. Pedestrian swing gates shall be self-closing, having a gate leaf no larger than 48" width. Integrated hinge-closer set (2 qty) shall be ADA compliant that shall include a variable speed and final snap adjustment with compact design (no greater than 5" x 6" footprint). Hinge-closer set (2 qty) shall be tested to a minimum of 500,000 cycles and capable of self-closing gates up to a maximum gate weight of 260 lbs. and maximum weight load capacity of 1,500 lbs. Hinge-closer device shall be externally mounted with tamper-resistant security fasteners, with full range of adjustability, horizontal (.5" - 1.375") and vertical (0 - .5"). Maintenance free hinge-closer set shall be tested to operate in temperatures of negative 20 F to 200 F degrees, and swings to negative 2 degrees to ensure reliable final lock engagement.

PART 3 – EXECUTION

3.01 PREPARATION

All new installation shall be laid out by the contractor in accordance with the construction plans.

3.02 FENCE INSTALLATION

Fence post shall be spaced according to Table 3, plus or minus 1/2". For installations that must be raked to follow sloping grades, the post spacing dimension must be measured along the grade. Fence panels shall be attached to posts with brackets supplied by the manufacturer. Posts shall be set in concrete footers having a minimum depth of 36". The "Earthwork" and "Concrete" sections of this specification shall govern material requirements for the concrete footer. Posts setting by other methods such as plated posts or grouted core-drilled footers are permissible only if shown by engineering analysis to be sufficient in strength for the intended application.

3.03 FENCE INSTALLATION MAINTENANCE

When cutting/drilling rails or posts adhere to the following steps to seal the exposed steel surfaces;

- 1) Remove all metal shavings from cut area.
- 2) Apply zinc-rich primer to thoroughly cover cut edge and/or drilled hole; let dry.
- 3) Apply 2 coats of custom finish paint matching fence color. Failure to seal exposed surfaces per steps 1-3 above will negate warranty. Ameristar spray cans or paint pens shall be used to prime and finish exposed surfaces; it is recommended that paint pens be used to prevent overspray. Use of non-Ameristar parts or components will negate the manufactures' warranty.

3.04 GATE INSTALLATION

Gate posts shall be spaced according to the manufacturers' gate drawings, dependent on standard out-to-out gate leaf dimensions and gate hardware selected. Type and quantity of gate hinges shall be based on the application; weight, height, and number of gate cycles. The manufacturers' gate drawings shall identify the necessary gate hardware required for the application. Gate hardware shall be provided by the manufacturer of the gate and shall be installed per manufacturer's recommendations.

3.05 CLEANING

The contractor shall clean the jobsite of excess materials; post-hole excavations shall be scattered uniformly away from posts.

Table 1 – Minimum Sizes for Montage II Posts			
Fence Posts	Panel Height		
2-1/2" x 12 Ga.	Up to & Including 6' Height		
3" x 12 Ga.	Over 6' Up to & Including 8' Height		
Gate Leaf	Gate Height		
	Up to & Including 4'	Over 4' Up to & Including 6'	Over 6' Up to & Including 8'
Up to 4'	2-1/2" x 12 Ga.	3" x 12 Ga.	3" x 12 Ga.
4'1" to 6'	3" x 12Ga.	4" x 11 Ga.	4" x 11 Ga.
6'1" to 8'	3" x 12 Ga.	4" x 11 Ga.	6" x 3/16"
8'1" to 10'	4" x 11 Ga.	6" x 3/16"	6" x 3/16"
10'1" to 12'	4" x 11 Ga.	6" x 3/16"	6" x 3/16"
12'1" to 14'	4" x 11 Ga.	6" x 3/16"	6" x 3/16"
14'1" to 16'	6" x 3/16"	6" x 3/16"	6" x 3/16"

Table 2 – Coating Performance Requirements		
Quality Characteristics	ASTM Test Method	Performance Requirements
Adhesion	D3359 – Method B	Adhesion (Retention of Coating) over 90% of test area (Tape and knife test).
Corrosion Resistance	B117, D714 & D1654	Corrosion Resistance over 1,500 hours (Scribed per D1654; failure mode is accumulation of 1/8" coating loss from scribe or medium #8 blisters).
Impact Resistance	D2794	Impact Resistance over 60 inch lb. (Forward impact using 0.625" ball).
Weathering Resistance	D822 D2244, D523 (60° Method)	Weathering Resistance over 1,000 hours (Failure mode is 60% loss of gloss or color variance of more than 3 delta-E color units).

Table 3 – Montage II – Post Spacing By Bracket Type										
Span	For INVINCIBLE® 8' Nominal (91-1/2" Rail)				For CLASSIC, GENESIS, & MAJESTIC 8' Nominal (92-5/8" Rail)					
	2-1/2"	3"	2-1/2"	3"	2-1/2"	3"	2-1/2"	3"	2-1/2"	3"
Bracket Type	Industrial Flat Mount (BB301)*		Industrial Line 2-1/2" (BB319) 3" (BB320)		Industrial Universal 2.5" (BB302) 3" (BB303)		Industrial Flat Mount (BB301)		Industrial Swivel (BB304)*	

Post Settings ± 1/2" O.C.	94- 1/2"	95"	94- 1/2"	95"	96"	96- 1/2"	96"	96- 1/2"	*96"	*96- 1/2"
<p>*Note: When using BB304 swivel brackets on either or both ends of a panel installation, care must be taken to ensure the spacing between post and adjoining pickets meets applicable codes. This will require trimming one or both ends of the panel. When using the BB301 flat mount bracket for Invincible style, rail may need to be drilled to accommodate rail to bracket attachment.</p>										

SECTION 32 80 00 **Irrigation**

PART 1 - GENERAL

Construction Documents and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification sections, apply to this section.

1.1 DESCRIPTION

- A. Scope of Work: Furnish all labor, materials, tools, equipment, and transportation required to perform and complete the installation of an automatic sprinkler irrigation system, including all piping, sprinkler heads, controls, connections, testing, etc. as shown on the Drawings and as specified herein. The water source for this project is potable water.
- B. Utilize and accept as standards manufacturer's recommendations and/or installation details for any information not specifically detailed on the Drawings.

1.2 RELATED SECTIONS

- A. SUBMITTAL PROCEDURES: Section 01 33 00.
- B. CLOSEOUT PROCEDURES: Section 01 77 00.
- C. EARTHWORK: Section 31 00 00.
- D. LANDSCAPING: Section 32 90 00.

1.3 GUARANTEE

- A. Guarantee all workmanship and materials hereunder against defective workmanship and materials, including damage by leaks and settlement of irrigation trenches, for the duration specified in Division 01 of these Specifications. (The Contractor is not responsible for vandalism or theft after date of final acceptance.)

1.4 QUALITY CONTROL

- A. Qualifications of Contractor: Work must be completed by a licensed Landscape Contractor. Provide proof of five years of continuous experience in landscaping and irrigation of projects of similar size (+\ - 20% of the construction cost) and scope for education campuses. Contractor to have a minimum of two projects either completed or in construction in the last five years.
- B. Work Force: Ensure that an experienced foreman is present at all times during installation. Keep the same foreman and workers on the job from commencement to completion.
- C. Reviews: Specifically request reviews of all items listed below in "Inspection Requirements" prior to progressing to the next level of work.

- D. Certification: Ensure that the contractor installing the Central Control System is trained and certified in the installation of the Central Control System. The training and certification must have been completed within two years prior to the installation date.
- E. Standards:
 - 1. Provide work and material in full accordance with the rules and regulations of the National Electric Code; the Uniform Plumbing Code; and other applicable state or local laws or regulations.
 - 2. Furnish, without extra charge, additional material and labor required to comply with these rules and regulations, though the work may not be specifically indicated in the Specifications or Drawings.
 - 3. Where the Specification requirements exceed those of the above-mentioned codes and regulations, comply with the requirements in the Specifications.
- F. Delivery, Storage, and Handling:
 - 1. Use all means necessary to protect irrigation system materials before, during, and after installation and to protect related work and material.
 - 2. Handle plastic pipe carefully, especially protecting it from prolonged exposure to sunlight. Store pipe on beds that are the full length of the pipe, and keep pipe flat and off the ground with blocks.
- G. Comply with the requirements of Section 01 77 00 – CLOSEOUT PROCEDURES.

1.5 INSPECTION REQUIREMENTS

- A. Request and hold a pre-construction meeting prior to beginning the work of this Section. Parties required to be in attendance are the Landscape Contractor, Project Inspector, Owner's Representative, and the Landscape Architect.
- B. Prior to commencement of the work of this Section, obtain written verification from the project Civil Engineer that the rough grade in landscape areas is in conformance with Section 31 00 00 - EARTHWORK.
- C. Obtain verification from Project Inspector for the following at the appropriate times during construction and prior to further progression of work in this Section:
 - 1. Pressure testing of all mainlines and lateral lines (See "Hydrostatic Tests – Open Trench" in Part 3.15 of this Section),
 - 2. Trench depth,
 - 3. Sleeves under pavement,
 - 4. Flushing of all mainlines and lateral lines,
 - 5. Backfill and pipe bedding,

6. Layout of heads,
 7. Operation of system and coverage adjustments (with Landscape Architect) after system is fully automated and operational, backfill of trenching is completed, and surface has been restored to original grades.
- D. In case of failure to obtain any verification by the Project Inspector as required above, remove and replace work as necessary to obtain the verification at no additional cost to the Owner.

1.6 SUBMITTALS AND SUBSTITUTIONS

- A. Comply with requirements of Section 01 33 00 – SUBMITTAL PROCEDURES.
- B. Product names are used as standards; provide proof as to equality of any proposed material and do not use other materials or methods unless approved in writing by the Owner's Representative. Submit no more than one request for substitution for each item. The decision of the Owner's Representative is final.
- C. Use equipment capacities specified herein as the minimum acceptable standards.
- D. List materials in the order in which they appear in Specifications; include substitutions. Submit the list for approval by the Owner's Representative.
- E. Make any mechanical, electrical, or other changes required for installation of any approved, substituted equipment to satisfaction of Owner's Representative and without additional cost to Owner. Approval by Owner's Representative of substituted equipment and/or dimensional drawing does not waive these requirements.
- F. Do not construe approval of material as authorization for any deviations from Specifications unless attention of Owner's Representative has been directed to specified deviations.

1.7 PROJECT CONDITIONS, AND PROTECTION

- A. Information on Drawings relative to existing conditions is approximate. During progress of construction, make deviations necessary to conform to actual conditions, as approved by Owner's Representative, without additional cost to Owner. Accept responsibility for any damage caused to existing services. Promptly notify Owner's Representative if services are found which are not shown on Drawings.
- B. Protect existing trees-to-remain as specified in "Existing Tree Protection" in Part 3.02 of this Section.
- C. Protect existing utilities within construction area. Repair damages to utility lines that occur as a result of operations of this work.
- D. Verify dimensions at building site and check existing conditions before beginning work. Make changes necessary to install work in harmony with other crafts after receiving approval by Owner's Representative.

1.8 MAINTENANCE AND OPERATING INSTRUCTIONS

- A. Furnish three complete sets of operating maintenance instructions bound in a hardback binder and indexed. Start compiling data upon approval of list of materials. Do not request final inspection until booklets are approved by Owner's Representative.
- B. Incorporate the following information in these sets:
 - 1. Complete operating instructions for each item of irrigation equipment.
 - 2. Typewritten maintenance instructions for each item of irrigation equipment.
 - 3. Manufacturer's bulletins which explain installation, service, replacement parts, and maintenance.
 - 4. Service telephone numbers and/or addresses posted in an appropriate place as designated by Owner's Representative.

1.9 RECORD DRAWINGS

Upon completion of work, and as a precedent to final payment, deliver to Owner's Representative one complete set of reproducible originals of Drawings showing work exactly as installed. (See "Record Drawings" in Part 3.18 of this Section)

PART 2 - PRODUCTS

2.1 GENERAL

Use materials as specified; any deviation from the Specifications must first be approved by the Owner's Representative in writing. All material containers or certificates shall be clearly marked by manufacturer as to contents for inspection.

2.2 MATERIALS

- A. Automatic Control Valves: As indicated on Drawings.
- B. Gate Valve: As indicated on Drawings.
- C. Pipe and Fittings:
 - 1. PVC pipe: As indicated on Drawings.
 - 2. PVC fittings three-inch (3") size and smaller: High impact, standard weight, Schedule 40, molded PVC as manufactured by George Fischer, Lasco, Spears, or approved equal.
 - 3. All plastic pipe and fittings: Continuously and permanently marked with manufacturer's name, type of material, IPS size, schedule, NSF approval, and code number.
 - 4. Threaded PVC pipe and nipples: IPS Schedule 80 when necessary to use

threaded connections to gauges, valves, or control valves. Threaded adapters may be used in place of nipples when making pipe to valve connections.

5. Use 45-degree fittings for changes in depth of pipe, and at transition from main line to automatic control valves.
 6. Piping above ground: Schedule 40 galvanized steel with cast-iron fittings.
 7. Piping used for electrical purposes to be Schedule 40 PVC Rigid Nonmetallic Conduit electrical conduit.
- D. PVC Primer: Weld-On P-70 Purple Primer or approved equal.
- E. PVC Glue: Weld-On 711 Gray heavy bodied PVC Cement or approved equal.
- F. Sprinkler Heads: As indicated on Drawings.
- G. Quick Coupler Valves: As indicated on Drawings.
- H. Sleeves: As indicated on Drawings.
- I. All Valve Boxes and Covers: Manufactured, green with "Irrigation – Non-Potable" permanently embossed on cover. Carson, Rainbird or approved equal.
- J. Automatic Sprinkler Control Wire:
1. Connections between remote control valves and controller: UF-14 direct burial plastic polyethylene (PE) insulated wire, Paige Electric P7079D or approved equal. Common wire to be white, and lead wire to be colored. If multiple controllers are used, a different color is to be used for each controller's lead wire. (Use red for the first controller). Spare wires are to be yellow.
 2. UL Listed waterproof sealing pack for wire connections: 3M DBR/Y-6, or approved equal.
 3. Provide adequate working space around electrical equipment in compliance with local codes and ordinances.
 4. Electrical, other than low voltage, such as power wiring, conduit, fuses, thermal overloads and disconnect switches, is included under Division 26 of these Specifications.
- K. Trace Wire:
1. Direct burial #12 AWG Solid, steel core soft drawn tracer wire, 250# average tensile break load, 30 mil high molecular-high density polyethylene jacket complying with ASTM-D-1248, 30-volt rating. Color shall be green.
 2. Connectors: UL Listed waterproof sealing pack for wire connections: 3M DBR/Y-6, or approved equal.
- L. Unions And Flanges:

1. Steel unions and flanges two inches (2") and smaller: 150 lb. screwed black (brass to iron seat) or galvanized malleable iron (ground joint).
 2. Steel unions and flanges two and one-half inches (2 ½") and larger: 150 lb. black flange union, flat-faced, full gasket.
 3. Gaskets: One-sixteenth inch (1/16") thick rubber Garlock No. 122, Johns-Manville or approved equal.
 4. Flange Bolts: Open-hearth bolt steel, square heads with cold pressed hexagonal nuts, cadmium plated in ground. Provide copper-plated steel bolts and nuts or brass bolts and nuts for brass flanges.
- M. Valve Identification Tags: Christy's irrigation ID tags, standard yellow color or approved equal.
- N. Sand for Trench Backfill: Natural sand, free of roots, bark, sticks, rags, or other extraneous material.

PART 3 - EXECUTION

3.1 SITE CONDITIONS

Locations of existing utilities and other improvements shown on the Drawings are approximate. Verify existing conditions and, should any utilities be encountered that are not indicated on the plans, notify the Owner's Representative immediately. Accept responsibility for any damages caused to existing services.

3.2 PREPARATION

- A. Scheduling: Notify the Project Inspector prior to commencing and/or continuing the work of this Section. Remove and replace, at no cost to Owner, any work required as a result of failure to give the appropriate notification.
- B. Examination: Examine conditions of work in place before beginning work; report defects.
- C. Measurements: Take field measurements; report variance between plan and field dimensions.
- D. Protection: Maintain warning signs, shoring and barricades as required. Prevent injury to, or defacement of, existing improvements. At no additional cost to Owner, repair or replace items damaged by installation operations.
- E. Existing Tree Protection:
1. Avoid unnecessary root disturbance, compaction of soils within drip line, or limb breakage.
 2. Do not store material or dispose of any material other than clean water within the drip line.

3. Provide adequate irrigation during construction.
 4. Replace any tree damaged during construction with a tree of equal size and value at no additional cost to Owner.
 5. Adjust trench locations in field to minimize damage to existing elements and plant roots of trees-to-remain at no additional cost to Owner.
- F. Surface Preparation: Prior to beginning sprinkler irrigation work, complete placement of topsoil as specified in Section 31 00 00 – EARTHWORK. Notify Project Inspector of irregularities if any.

3.3 AUTOMATIC CONTROLLER

- A. Connect automatic control valves to controller(s) in sequence as shown on Drawings.

3.4 GRADING

Install all irrigation features to their finished grade and at depths indicated. Complete and /or accommodate all rough grading and/or finish grading before commencing with trenching.

3.5 LAYOUT

- A. Lay out work as accurately as possible to Drawings. Drawings are generally diagrammatic to extent that swing joint offsets and fittings are not shown. Record all changes on the Record Drawings.
- B. Do not willfully install the irrigation system as shown on Drawings when it is obvious, in the field, that obstructions or other discrepancies exist which may not have been considered in the design. Notify Owner's Representative of discrepancies before proceeding.

3.6 EXCAVATING AND TRENCHING

- A. General: Perform excavations as required for installation of work included under this Section, including shoring of earth banks to prevent cave-ins. Restore surfaces, existing underground installations, etc., damaged or cut as result of this work to their original condition and in a manner approved by the Landscape Architect.
- B. Width:
1. Make trenches wide enough to allow a minimum of six inches (6") between parallel pipelines and three inches (3") between side of pipe and side of trench. Do not allow stacking of pipe within trench.
 2. Allow a minimum clearance of twelve inches (12") in any direction from parallel pipes of other trades.
- C. Preparation of Excavations: Remove rubbish and rocks from trenches. Bed pipe on a minimum of three inches (3") of clean, rock-free soil to provide a firm, uniform bearing for entire length of pipeline. Cover pipe with a minimum of three inches (3") of clean, rock-free soil. If clean, rock-free soil is not available, use sand for pipe bedding and

three inches (3") of backfill above the pipe. The remainder of the trench backfill material can be native soil. Do not allow wedging or blocking of pipe.

- D. Minimum depth of cover: Unless shown otherwise, provide the following minimums:
 - 1. Mainline: twenty-four inches (24") cover.
 - 2. Lateral line: twelve inches (12") cover for spray heads, and eighteen inches (18") cover for rotor heads.
- E. Conflicts with other trades:
 - 1. Hand-excavate trenches where potential conflict with other underground utilities exist.
 - 2. Where other utilities interfere with irrigation trenching and piping work, adjust the trench depth as instructed by Owner's Representative.

3.7 THRUST BLOCKS

- A. To resist system pressure on ring-tite pipe and fittings, provide thrust blocks at any change of direction, change of size, dead end, and/or valves at which thrust develops when closed. See thrust block details for examples.
- B. Use cast-in-place concrete and size thrust blocks based on an average soil-safe bearing load of 700 lbs. per square foot.
- C. Form thrust blocks in such a manner that concrete comes in contact only with the fittings. Place thrust block between adequately compacted soil and the fitting.
- D. Thrust blocks are to be constructed of concrete with a minimum of 2500psi.
- E. Thrust blocks are to be free, separate, and independent of adjacent or nearby thrust blocks.

3.8 BACKFILL AND COMPACTING

- A. General: Do not begin until hydrostatic tests are completed. When system is operating and after required tests and inspections have been made, backfill trenches under paving areas to the compaction rate specified in Section 31 00 00 – EARTHWORK.
- B. Place backfill in six-inch (6") layers and compact with an acceptable mechanical compactor.
 - 1. Compact backfill material in landscape areas to eighty-five percent (85%) maximum dry density of the soil.
 - 2. If settlement occurs along trenches, make adjustments in pipes, valves, and sprinkler heads, soil, sod or paving as necessary to bring the system, soil, sod or paving to the proper level or the permanent grade, without additional cost to the Owner.

- C. Excess Soil: Remove all rocks, debris, and excess soil that results from sprinkler irrigation trenching operations, landscape planting, and soil preparation operations off site at no additional cost to the Owner. If soil meets topsoil requirements in Section 31 00 00 – EARTHWORK, it may be used for finish grading.
- D. Finishing: Dress-off areas to eliminate construction scars.

3.9 CONTROL WIRES

- A. General: Install control wires beneath sprinkler main line whenever possible; tape wires to mainline pipe. Provide one spare wire for each controller.
- B. Slack Wire: Provide eighteen inches (18") of slack wire for each wire connected to automatic control valve. Slack wire shall be coiled and left in the valve box. Tape wires in bundles every ten feet (10'); do not tape wires in sleeves.
- C. Expansion and Contraction: Snake wire in trench to allow for contraction of wire.
- D. Wire Passing Under Existing or Future Paving or Construction: Encase in PVC Schedule 40 or galvanized steel conduit extending at least twelve inches (12") beyond edges of paving or construction.
- E. Wire Connections: Install wire connections in a waterproof sealing pack.
- F. Wire Splicing: Permit splicing only on runs exceeding 500 feet. Locate all splices within valve boxes.
- G. Wire Termination: Install wire in a valve box with eighteen inches (18") of slack wire coiled and individually capped with approved waterproof sealing pack.
- H. Spare Wire: Install two (2) spare wires along each wire path. If there is more than one wire path from the controller, the contractor to install two (2) spare wires per path. Provide eighteen inches (18") of slack wire at each automatic control valve.

3.10 TRACE WIRE

- A. General: Install trace wire above sprinkler main line whenever possible; tape wire to mainline pipe at 10' intervals to ensure the wire remains adjacent to the pipe.
- B. Wire Connections: Install wire connections in a waterproof sealing pack.
- C. Trace wire access points shall be accessible at all automatic control valves.
- D. At all mainline end caps, a minimum of six feet (6') of tracer wire shall be coiled and secured to the cap for future connections. The end of the tracer wire shall be spliced to the wire of a six-pound zinc anode and is to be buried at the same elevation as the

irrigation mainline.

- E. Testing: The contractor shall perform a continuity test on all trace wires in the presence of the client. If the trace wire is found to be not continuous after testing, Contractor shall repair or replace the failed segment of the wire.

3.11 FLUSHING LINES

Thoroughly flush lines prior to installing valves, performing hydrostatic testing, or installing sprinklers. Divert water to prevent washouts.

3.12 AUTOMATIC CONTROL AND QUICK COUPLER VALVES

- A. Install where shown and where practical; place no closer than twelve inches (12") to walk edges, building walls, or fences. Refer to detail for example.
- B. Thoroughly flush mainline before installing valve.
- C. Install valves in ground cover areas where possible.

3.13 PIPING

- A. General: Install in conformance with reference standards, manufacturer's written directions, as shown on Drawings and as herein specified.
- B. Workmanship:
 - 1. General: Install sprinkler irrigation equipment in planted areas throughout the site.
 - 2. Coordination: Organize location of sleeves with other trades as required.
- C. Pipe Line Assembly:
 - 1. General:
 - a. Cutting: Cut pipe square; remove rough edges or burrs.
 - b. Solvent-welded Connections: Use materials and methods recommended by the pipe manufacturer.
 - c. Brushes: Use non-synthetic brushes to apply solvents and primer.
 - d. Cleaning: Clean pipe and fittings of dirt, moisture, and debris prior to applying solvent or primer.
 - e. Assembly: Allow pipe to be assembled and welded on the surface or in the trench.
 - f. Expansion and Contraction: Snake pipe from side to side of trench to allow for expansion and contraction.

- g. Location: Locate pipes as shown on Drawings except where existing supply valves, utilities or obstructions prohibit or where slight changes are approved to better suit field conditions.
2. Flexible Elastomeric Seal Joints:
- a. General: Assemble in strict conformance with the pipe manufacturer's instruction.
 - b. Rubber Rings: Use rubber rings specific for water service systems.
 - c. Cleaning: Thoroughly clean ring and groove of dirt, moisture and debris using a clean, dry cloth. Do not use solvents, lubricants, cleaning fluids or other material for cleaning.
 - d. Seating: Properly seat ring in groove.
 - e. Spigot:
 - 1.) General: Clean spigot-end of pipe as in "Cleaning" above prior to applying lubricant recommended by pipe manufacturer.
 - 2.) Seating: Insert spigot into bell and seat to full depth required.
3. Connections:
- a. Threaded Plastic Pipe Connection:
 - 1.) Use Teflon tape or pipe joint compound.
 - 2.) When assembling to threaded pipe, take up joint no more than one full turn beyond hand-tight.
 - b. Metal Valves and Plastic Pipe: Use threaded plastic male adapters.
 - c. Metal to Metal Connections:
 - 1.) Use specific joint compound or gasket material for type of joint made. Where pipe of dissimilar metals are connected, use dielectric fittings.
 - 2.) Where assembling, do not allow more than three full threads to show when joint is made up.
 - d. Where assembling soft metal (brass or copper) or plastic pipe, use strap-type friction wrench only; do not use a metal-jawed wrench.
 - e. Threading:
 - 1.) Do not permit the use of field-threading of plastic pipe or

fittings. Use only factory-formed threads.

- 2.) Use factory-made nipples wherever possible. Permit the use of field-cut threads in metallic pipe only where absolutely necessary. When field-threading, cut threads accurately on axis with sharp dies.
- 3.) Use pipe joint compound for all threaded joints. Apply compound to male thread only.

4. Sleeves and conduits:

- a. Use sleeves of adequate size to accommodate retrieval for repair of wiring or piping and extend a minimum of twelve inches (12") beyond edges of walls or paving.
- b. Provide removable, non-decaying plug at end of sleeve to prevent entrance of soil.

5. Unions: Locate unions for easy removal of equipment or valve.

6. Capping: Plug or seal opening as lines are installed to prevent entrance materials that would obstruct pipe. Leave in place until removal is necessary for completion of installation.

D. Drip Irrigation Tubing: Install as per Drawings.

3.14 SPRINKLER HEADS

A. Sprinkler heads: Locate as shown on the Drawings except where existing conditions prohibit, or slight changes are approved to achieve as good or better coverage under the same conditions. Do not allow sprinkler head spacing to exceed the maximum shown on the Drawings. Plumb heads.

B. Handling, Assembly of Pipe, Fittings, and Accessories: Allow only skilled tradesmen to handle and assemble pipe, fittings and equipment. Keep interior of pipes, fittings and accessories clean at all times. Close ends of pipe immediately after installation; leave closure in place until removal is necessary for completion of installation. Do not permit bending of pipe.

C. Flushing: Remove end heads and operate system at full pressure until all rust, scale, and sand is removed. Divert water to prevent ponding or damage to finished work.

D. Coverage: Accept responsibility for full and complete coverage of irrigated areas to satisfaction of Landscape Architect and make necessary adjustments to better suit field conditions at no additional costs to Owner.

3.15 FIELD QUALITY CONTROL

- A. Visual Inspection: Verify that all pipe is homogenous throughout and free from visual cracks, holes, or foreign materials. Inspect each length of pipe. All materials are subject to impact test at the discretion of the Landscape Architect.
- B. Hydrostatic Tests – Open Trench:
 - 1. Center-load piping with a small amount of backfill to prevent arching or slipping under pressure.
 - 2. Request the presence of the Project Inspector in writing at least forty-eight hours in advance of testing.
 - 3. At no additional cost to Owner, test in the presence of the Project Inspector.
 - 4. Apply continuous static water pressure of 100 psi when welded plastic joints have cured at least twenty-four hours, and with the risers capped, as follows: test main lines and submains for four hours; test lateral lines for two hours.
 - 5. Repair leaks resulting from tests; and repeat tests.
 - 6. Test to determine that all sprinkler heads function according to manufacturer's data and give full coverage according to intent of Drawings. Replace any sprinklers not functioning as specified with ones that do, or otherwise correct system to provide satisfactory performance.
- C. Continuity Testing: Test locating device and control wires for continuity prior to and after back-filling operations.

3.16 CLEAN-UP

Remove debris resulting from work of this Section.

3.17 ADJUSTMENTS AND MAINTENANCE

- A. Adjusting System: Prior to acceptance, satisfactorily adjust and regulate entire system. Set watering schedule on controller appropriate to types of plants and season of year. Adjust remote control valves to operate sprinkler heads at optimum performance based on pressure and simultaneous demands through supply lines.
- B. System Layout: Provide reduced prints of Record Document irrigation plans, laminated in four (4) mil. plastic, of size to fit controller door. Enlarge remote-control valve designations as necessary for legibility. Color-code areas covered by each station. Affix plans to inside of controller door.
- C. Instructions: Upon completion of work, instruct maintenance personnel on operation and maintenance procedures for entire system.
- D. Flow Charts: Record and prepare an accurate flow-rate chart for each automatic control valve.

3.18 RECORD DRAWINGS

- A. Regularly update plans of the system and any changes made to the system throughout the project. Record all changes on this plan before trenches are back-filled.
- B. Record the as-built information on reproducible plans provided by the Architect. Complete and submit the Record Drawings to the Architect before applying for payment for work installed.
- C. As-built drawings are to be completed electronically with a pdf editing software or computer aided drafting software. As-built drawing done by hand will not be accepted for final submittal.
- D. Show the following on the Record Drawings accurately to scale and dimensioned from two permanent points of reference:
 - 1. Distance of mainline from nearby hardscape.
 - 2. Location of automatic control valves, quick couplers, and gate valves.
 - 3. Location and size of all sleeves.
 - 4. Location of automatic control wires and spares.

3.19 OPERATION MANUALS

Deliver two complete sets of manufacturer's warranties, Contractor guarantees, instruction sheets, parts lists and operation manuals to the Architect before requesting final acceptance of the project. Do not request final inspection until the sets are approved.

END OF SECTION

SECTION 32 90 00 Landscaping

PART 1 - GENERAL

1.1 DESCRIPTION

- A. Scope of Work: Furnish all labor, materials, tools, equipment, and transportation required to perform and complete the following work as specified herein:
 - 1. Soil Preparation and Fertilization
 - 2. Planting
 - 3. Sodding
 - 4. Weed Control
 - 5. Mulch
 - 6. Clean-up
 - 7. Landscape Maintenance Period
 - 8. Guarantee
- B. Work not included in this Section: Landscape elements such as concrete walks, fencing, outdoor lighting, rough grading, and clearing are not a part of this Section unless shown on the landscape Drawings.
- C. Construction Documents and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specifications sections, apply to this section.

1.2 RELATED SECTIONS

- A. SUBMITTAL PROCEDURES: Section 01 33 00.
- B. CLOSEOUT PROCEDURES: Section 01 77 00.
- C. EARTHWORK: Section 31 00 00.
- D. IRRIGATION: Section 32 80 00.

1.3 GUARANTEE

- A. The guarantee period for lawn and plant material shall be the duration of the landscape maintenance period, from commencement until final acceptance of the work of this Section. See Division 01 for other applicable guarantee requirements.
- B. During the guarantee period, repair and/or replace plants and lawn not in satisfactory growing condition, as determined by Owner's Representative, without additional cost to

Owner. Plants are to be replaced as per "Landscape Maintenance" in Part 3.9 of this Section, using plants of the same kind and size specified in plant list.

1.4 QUALITY CONTROL

- A. Qualifications: Work must be completed by a licensed Landscape Contractor. Provide proof of five years of continuous experience in landscaping and irrigation of projects of similar size (+\ - 20% of the construction cost) and scope for education campuses. Contractor to have a minimum of two projects either completed or in construction in the last five years.
- B. Work Force: Ensure that an experienced foreman is present at all times during installation. Keep the same foreman and workers on the job from commencement to completion.
- C. Reviews: Specifically request reviews of all items listed below in "Inspection Requirements" prior to progressing to the next level of work. The Owner's Representative reserves the right to inspect and reject material, both at place of growth and at site, before and/or after planting, for compliance with requirements for name, variety, size and quality.
- D. Reference Standards: Meet or exceed Federal, State and County laws requiring inspection of all plants and planting materials for plant disease and insect control.
- E. Delivery, Storage, and Handling:
 - 1. Packaged Materials: Deliver packaged materials in original, unopened containers showing weight, certified analysis, name and address of manufacturer, and indication of conformance with state and federal laws if applicable.
 - 2. Bulk Materials:
 - a. Do not dump or store bulk materials near structures, utilities, walkways or pavements, or on existing turf areas or plants.
 - b. Provide erosion-control measures to prevent erosion or displacement of bulk materials, discharge of soil-bearing water runoff, and airborne dust reaching adjacent properties, water conveyance systems, or walkways.
 - c. Accompany each delivery of bulk fertilizers and soil amendments with appropriate certificates.
- F. Plant Material:
 - 1. Conform to the current edition of Horticultural Standards for quality of Number 1 grade nursery stock as adopted by the American Association of Nurserymen. Conform to sizes specified on plant legend. Select plants which have a natural shape and appearance.
 - 2. Select only plants that are true to name, and tag one of each bundle or lot with the name of the plant in accordance with the standards of practice of the

American Association of Nurserymen. In all cases, botanical names shall take precedence over common names.

3. Tag each plant of a patented variety with the variety and identification number, where applicable, as it is delivered to the job site.
4. Select only plants which have been nursery-grown in accordance with good horticultural practices and which have been grown under climatic conditions similar to those in the locality of the project for at least one year.
5. Select only plants which are typical of their species or variety; have normal habits of growth; are sound, healthy, vigorous, well-branched and densely-foliated when in leaf; are free of disease, insect pests, eggs or larvae; and have a healthy and well-developed root system.
6. Select only container stock that has been grown in the containers in which delivered for at least six (6) months, but not over two (2) years. Provide samples to show that there are no root-bound conditions.
7. Do not use plants that are severely pruned or headed-back to meet size requirements.
8. Do not plant container-grown plants that have cracked or broken balls of earth when taken from the container. Remove canned stock carefully from cans after containers have been cut on two sides with tin snips or other approved cutter.
9. Coordinate a time for the Landscape Architect to inspect the plants upon their delivery to the project site.
10. At any time prior to final acceptance, be prepared to replace any plants that are rejected by the Owner's Representative because of physical damage to the plant.
11. Do not remove container-grown stock from containers before time of planting.
12. Be prepared to replace plants which are rejected by the Owner's Representative for the following reasons:
 - a. Trunk bark damage caused by sunburn,
 - b. Trunk bark wounds caused by rubbing stakes or ties,
 - c. Trunk bark damage caused by ties that have girdled the tree,
 - d. Tree head development that is lopsided and not symmetrical in form,
 - e. Tree branches that cross or touch,
 - f. Tree branches with double leaders (unless multi-trunk trees are specified).
13. Stake shrubs with one-inch by one-inch by eighteen-inch (1"x1"x18") stakes in

such manner that the stakes are not visible, and tie to upright position if they lean and/or are not growing in a vertical position.

14. Furnish quantities necessary to complete the work as shown on the Drawings and, if necessary, make up for any discrepancies in the quantities given in the Plant List at no additional cost to Owner.

G. Comply with the requirements of Section 01 77 00 – CLOSEOUT PROCEDURES.

1.5 INSPECTION REQUIREMENTS

- A. Landscape Architect reserves the right to examine and reject plant material both at place of growth and at site, before and after planting, for compliance with requirements of name, variety, size, and quality.
- B. Request and hold a pre-construction meeting prior to beginning the work of this Section. Parties required to be in attendance are the Landscape Contractor, Project Inspector, Owner's Representative, and Landscape Architect.
- C. Obtain verification from Project Inspector for the following at the appropriate times during construction and prior to further progression of work in this Section:
 1. Rough grading is to tolerances specified in Section 31 00 00 – EARTHWORK.
 2. The placement of landscape backfill material is as specified in this Section.
 3. Prior to the commencement of the work specified in this Section, the coverage and operation of the sprinkler irrigation system are as specified in Section 32 80 00 - IRRIGATION.
 4. The soil amendment does not include any metal fragments. (Obtain a letter from the manufacturer stating that the material submitted for use on this project has no metal or foreign objects. Submit this letter as part of the Data Sheet submittal package [see "Submittals and Substitutions" in this Section])
 5. Required Test: For each load of soil amendment delivered to the site, spread at least two cubic yards (2 cy) of material onto a paved surface approximately two inches (2") deep. Pass a magnetic rake over the material in two directions. If any metal is found, test the entire load in the same manner. Perform all testing in the presence of the Project Inspector.
 6. Soil amendments, fertilizer, bark mulch and materials used for hydroseeding have been delivered to the site by the supplier, the invoices from the supplier indicate the project name and quantities delivered, and the Project Inspector has received copies of all such documents.
 7. Prior to planting, amendments and conditioners have been incorporated as per pre-planting recommendations, and planting areas have been made ready to receive planting.
- D. In case of failure to obtain any verification by the Project Inspector as required above, remove and replace work as necessary to obtain the verification at no additional cost

to the Owner.

- E. Beginning of Maintenance Period: Verify all work is complete, then request and hold a meeting to include the Landscape Architect, Project Inspector, Architect and Owner's Representative for authorization to begin the landscape maintenance period.
- F. End of Maintenance: Verify that all work is complete and acceptable, and that the maintenance has been completed per specifications; and continue to provide landscape maintenance until the Owner's Representative has accepted the work.

1.6 SUBMITTALS AND SUBSTITUTIONS

- A. See Section 01 33 00 – SUBMITTAL PROCEDURES for additional requirements.
- B. Plant Material: Within fifteen (15) days after award of contract, locate plant materials required for construction. Ensure that trees and shrubs are contract- grown from a certified nursery. Notify Owner's Representative of plant material "tied off" for review at selected nursery. If specified material is not obtainable, submit the following to Owner's Representative: proof of non-availability, proposal for use of equivalent material, photographs of alternative choices of plant material. Include clear, written description of type, size, condition, and general character of plant material.
- C. Data Sheets: Provide product data for each type of landscape material indicated in the Drawings and Specifications.
- D. Samples: Submit samples of the following materials to Landscape Architect for approval:
 - 1. Soil amendment: (3) one-quart zip-locked plastic bags.
 - 2. Bark Mulch: (3) one-quart zip-locked plastic bags.
 - 3. Imported Topsoil: (3) one-quart zip-locked plastic bags. (if needed)
- E. Provide soils analysis reports prepared by a qualified soils laboratory in compliance with the Soil Testing Requirements under "Soil Testing" in Part 3.02 of this Section.
- F. Prior to planting, submit copies of all trucking or packaging tags for all soil amendment, fertilizer and other additives to Landscape Architect so the quantities can be verified.

1.7 PROTECTION AND CLEAN-UP

- A. Provide protection for persons and property throughout progress of work. Use temporary barricades as required. Proceed with work in such manner as to minimize spread of dust and flying particles and to provide safe working conditions for personnel. Store materials and equipment where directed.
- B. Existing Construction: Execute work in an orderly and careful manner to protect paving, work of other trades, and other improvements.
- C. Existing Utilities: Provide protection for existing utilities within construction area. At no additional cost to Owner, repair any damages to utility lines that occur as a result of this work.

- D. Landscaping: Protect landscape work and materials from damage due to landscape operations, operations by other contractors and trades, and trespassers. Maintain protection during installation and maintenance periods.
- E. Paving: Maintain cleanliness of paving areas and other public areas used by equipment, and immediately remove spillage; remove rubbish, debris, and other material resulting from landscaping work, leaving site in a safe and clean condition.

1.8 PLANTING SCHEDULE / ENVIRONMENTAL REQUIREMENTS

- A. Install, establish, and maintain all lawn areas for a minimum of ninety (90) days prior to date of substantial completion. Coordinate schedule with other work and overall project schedule. Failure to install lawn areas by this date shall result in assessment of liquidated damages.
- B. Proceed with work in an orderly and timely manner to complete installation of landscaping within contract limits.
- C. Planting Season Limits: Do not plant when grounds are wet or temperature is below 25° F. Do not proceed with any soil preparation and fertilization if all planting cannot be completed within Planting Season Limit.

1.9 LANDSCAPE MAINTENANCE PERIOD REQUIREMENTS

- A. Beginning of Landscape Maintenance Period:
 - 1. General: Landscape Maintenance Period does not begin until all work is installed as determined by Landscape Architect, in writing.
 - 2. On-site Inspection: When all work is complete, request and hold a meeting to include the Landscape Architect, Project Inspector, Architect and Owner's Representative who must together authorize and determine the start date for the landscape maintenance period. Coordinate and give notice of the date and time of the on-site meeting to all parties at least forty-eight (48) hours in advance.
 - 3. Acceptability: In cases where the lawn has reached adequate fullness and germination in some areas but not all, and authorization has not been given to begin the maintenance period, proceed with mowing, trimming, spraying, etc., as necessary prior to the beginning of the maintenance period.

- B. Duration of Landscape Maintenance Period:

The Landscape Maintenance Period shall continue for a minimum of ninety (90) calendar days. During this time, continuously maintain all areas involved until final acceptance of the work by the Owner's Representative. See Landscape Maintenance Period procedure in Part 3.9 of this Section.

- C. Final Acceptance of the Landscape Maintenance Period:

Request the final inspection forty-eight (48) hours in advance. If items require attention, hold on-site meetings until Landscape Architect can certify, in writing, and in

concurrence with the Owner's Representative, the successful completion of the Landscape Maintenance Period.

1.10 RECORD DRAWINGS

Upon completion of work, and as a precedent to final payment, deliver to Owner's Representative one complete set of reproducible originals of Drawings showing work exactly as installed.

PART 2 - PRODUCTS

2.1 GENERAL

Use material in new and perfect condition as specified. Any deviations or substitutions from the Specification and Drawings must first be approved by Owner's Representative in writing prior to use.

2.2 SOIL PREPARATION MATERIALS

- A. Topsoil: Fertile; friable; natural loam surface soil; reasonably free of subsoil, clay lumps, brush, weeds and other litter; and free of roots, stumps, stones/rocks, and other extraneous or toxic matter harmful to plant growth.
- B. Soil Amendment: One-percent nitrogen-impregnated bark product with a ninety-percent (90%) bark base and zero to one-quarter inch (0-1/4") particle size, or approved equivalent. Do not spread until testing requirements have been satisfied.
- C. Fertilizer/Soil Conditioner: Gro-Power Plus or approved equal.
- D. Fertilizer for Trees and Shrubs: Seven-gram Gro-Power Planting Tablets (12-8-8 NPK) or approved equal.
- E. Vitamin B-1: "Superthrive", "Liquinox Start", "Cal-Liquid", or approved equal.

2.3 MISCELLANEOUS LANDSCAPE MATERIALS

- A. Bark Mulch: Untreated, shredded cedar.
- B. Tree-staking System: As indicated on Drawings.
- C. Pre-Emergent Weed Control: Oxadiazon, "Treeflan", "Ronstar 2G", "Surflan" (Elano Products Company), or approved equal.
- D. Root Barrier: As indicated on Drawings.

2.4 PLANT MATERIAL:

- A. Nursery Plant Stock:
 - 1. As indicated on Drawings. Do not remove container-grown stock from containers until planting time. Plants shall be true to name.

2. Healthy, shapely, well-rooted, not pot-bound, free from insect pests or plant diseases and properly "hardened off" before planting. Replace plants that are not alive or are not in satisfactory growing condition, as determined by the Landscape Architect, without additional cost to Owner. The Landscape Architect may reject plants before and/or after planting.
 3. Labeled. Label at least one tree and one shrub of each species with a securely-attached, waterproof tag bearing legible designation of botanical and common name.
- B. Lawn Sod: Ninety percent (90%) Dwarf Fescue and ten percent (10%) Kentucky Bluegrass.

PART 3 - EXECUTION

3.1 SITE CONDITIONS

- A. Examine the site, verify grade elevations, and observe conditions under which work is to be performed. Do not proceed with work until unsatisfactory conditions have been corrected in a manner acceptable to the Owner's Representative.
- B. Proceed with complete landscape work as rapidly as portions of the site become available, working within seasonal limitations for each kind of landscape work required.
- C. Determine location of underground utilities and perform work in a manner which will avoid possible damage. 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 parties concerned.
- D. When conditions detrimental to sod or plant growth are encountered, such as rubble fill, adverse drainage condition, or other obstructions, notify the Owner's Representative before planting.

3.2 SOIL TESTING

- A. Coordinate soil testing in an expeditious and timely manner as required for on-site topsoil materials. Contract with a soil laboratory and include cost of sampling and testing in contract price. Take one (1) sample for every 5,000 square feet of landscape area up to a maximum of six (6) samples under the direction of and in the presence of the Owner's Representative.
- B. Submit each sample, according to the quantity of soil required by testing laboratory, to a competent laboratory approved by the Owner's Representative.
- C. Provide analysis of soil samples for pH, salinity, ammonia, phosphate, potassium, calcium, magnesium, boron, and sodium levels. Provide appraisal of chemical properties, including particle size determination, and recommendations for types and quantities of amendments and fertilizers.

3.3 PREPARATION

A. Clearing of Vegetation:

1. If live perennial weeds exist on site at the beginning of work, spray with a non-selective systemic contact herbicide as recommended and applied by an approved licensed landscape pest control advisor and applicator. Leave sprayed plants intact for at least 15 days.
2. Clear and remove existing weeds by mowing or grubbing off all plant parts at least one-quarter inch ($\frac{1}{4}$ ") inch below surface of soil over entire areas to be planted.

B. Soil preparation:

1. Loosen soil in all planting areas, and on slopes flatter than 3:1 gradient, to a depth of six to eight inches (6" - 8") below finish grade. All debris, foreign matter, and stones shall be removed prior to the placing of any fertilizers or conditioners. Soil preparation is for all shrub planting beds, lawn hydroseeded areas and sodded lawn areas.
2. Conduct the required soil tests and instruct the lab to include a minimum of the following soil improvements in the recommendation on the soils report.
 - a. Soil Amendment: Two cubic yards (2 cy) per 1,000 square feet.
 - b. Gro-Power Plus: One hundred fifty pounds (150 lbs) per 1,000 square feet.
 - c. If the lab recommends less than six cubic yards (6 cy) of soil amendment, the excess bid amount shall be applied to the cost of any additional recommended soil improvements, or returned to the Owner as a credit
3. Apply amendments as follows, using rates recommended by the soils testing laboratory (the rates of amendments shown below are for bidding purposes only):
 - a. Fertilizer/Soil Conditioner: Broadcast 150 pounds of Gro Power Plus per 1,000 square feet in all planting areas and rototill to a depth of six to eight inches (6" - 8"). Remove from the site any rock and debris brought to the surface by cultivations. "Cultipack" all areas to receive sod or hydroseed.
 - b. Apply soil amendment to all planting areas at the rate of six cubic yards (6 cy) per 1,000 sf and rototill into the top six to eight inches (6" – 8").
4. Upon completion of finish grading, request a review and obtain approval of Landscape Architect prior to commencement of planting or hydroseeding.

C. Finish Grading for all Planting areas

1. Refer to Earthwork Specification Section for Rough Grading.
2. Grade to elevations and contours shown on Drawings. Fill low spots with

landscape backfill material and grade to surface drain in manner indicated on Drawings.

3. Finish-grade so that the entire area within the contract lines has a natural and pleasing appearance as specified and as directed by Landscape Architect.
4. Adjust sprinkler heads flush to finish grade in preparation to receive hydroseeding or one-half inch above finish grade in preparation to receive sod. Reset sprinkler heads flush to grade after turf has germinated.
5. Flag the sprinkler heads and valve markers.

D. Planting Pits for Trees:

1. Excavate pits with vertical sides and with bottom of excavation slightly raised at center to provide proper drainage.
2. Set container-grown stock in center of pit on earth pedestal. Separate roots and/or prune roots as directed by Landscape Architect. In hot weather, pre-wet pit. Loosen outside roots from sides and bottom of root ball. When set, place additional backfill around base and sides of root ball. Work each layer to settle backfill and eliminate voids and air pockets. Water after placing final layer of backfill.
3. Loosen hard subsoil in bottom of excavation. Extend excavation as required to insure proper drainage from plant pits.
4. Fill excavated planting pits with water to half the depth of pit. Pits should drain within four hours (4 hrs). If planting pits do not drain, notify Project Inspector immediately. Do not proceed with planting until Landscape Architect has resolved a method to provide drainage.

E. Planting Pits for Shrubs/Groundcover:

1. Excavate pits and trenches with vertical sides and with bottom of excavation slightly raised at center to provide proper drainage.
2. Loosen hard subsoil in bottom of excavation. Extend excavation as required to insure proper drainage from plant pits.
3. Fill excavated planting pits with water to half the depth of pit. Pits should drain within four hours (4 hrs). If planting pits do not drain, notify Project Inspector immediately. Do not proceed with planting until Landscape Architect has resolved a method to provide drainage.

3.4 ROOT BARRIER INSTALLATION

A. Root barriers location are specifically shown on the plan. If a tree is moved during construction to a location where root barrier is not shown on the plan, the following minimum requirements are to be met:

1. Install root barrier where trees are planted within sixty inches (60") of paving or

other hardscape elements, such as walls, curbs, and walkways.

2. Install root barrier continuously for a distance of five feet (5') in each direction from the tree trunk, for a total distance of ten feet (10') per tree. If trees are spaced closer, use a single continuous piece of root barrier.
- B. Align root barrier vertically and run it linearly along and adjacent to the paving or other hardscape elements to be protected from invasive roots.
 - C. Position top of root barrier just below the top of adjacent hardscape element but above finish grade of the soil so that is visible.
 - D. If there are concrete spoils or overpour that is impeding the root barrier from being installed directly adjacent to the hardscape element, the contractor is to remove the extra concrete in a manner that does not damage the integrity of the hardscape element.
 - E. Do not distort or bend root barrier during construction activities.
 - F. Do not install root barrier surrounding the root ball of tree.

3.5 PLANTING

- A. Lawn Sod:
 1. Cultivate all lawn areas to a depth of six inches (6"). If cultivation does not break lumps, pull a spike-toothed harrow over the area behind the tractor.
 2. Give all lawn areas that are to be sodded a smooth finish to prevent pockets. Do not allow any abrupt changes of surface. Prior to installation of sod, roll the grade with a 200-pound water-ballast roller. Request that the lawn grade be inspected and approved by the Landscape Architect prior to sodding to determine its suitability for planting. Obtain such approval prior to commencing sodding operations.
 3. Do not take heavy objects (except lawn rollers) over lawn areas after they have been prepared for planting.
 4. Completely lay the sod within twelve hours (12 hrs.) of delivery. Do not leave sod on pallets in the hot sun longer than necessary.
 5. Unroll sod carefully. Lay sod tight without any visible open joints, and without overlapping; stagger end joints twelve inches (12") minimum. Do not stretch or overlap sod pieces. Do not place sod in pieces smaller than twenty-four inches (24") in length by width of roll.
 6. When new sod is to match existing turf, cut the edge of the existing turf in a series of straight lines that will accept new sod rolls in full width of the sod roll. Make the transition of grade between existing turf and new sod to be seamless with no change in elevation.
 7. Immediately after laying sod, roll lawn areas with a 200-pound water-ballast roller.

8. Trim sod to conform to lawn shapes designated in Drawings.
 9. On slopes of six inches (6") per foot and steeper, lay sod perpendicular to slope and secure every row with wooden pegs at a maximum of two feet (2') on center. Drive pegs flush with soil portion of sod.
 10. Ensure that finished appearance is that of one continuous lawn.
 11. Do not lay whole lawn before watering. When a conveniently large area has been sodded, water lightly to prevent drying. Continue to lay sod and to water until installation is complete.
 12. All sod areas must be approved by Landscape Architect.
 13. Water the complete lawn surface thoroughly. Moisten soil at least eight inches (8") deep. Repeat sprinkling at regular intervals to keep sod moist at all times until rooted. After sod is established, decrease frequency and increase amount of water per application as necessary.
- B. Trees, Shrubs, and Groundcover:
1. Lay out individual tree and shrub locations and areas for multiple plantings. Stake the locations, outline the areas, and secure the Owner's Representative's acceptance before beginning the planting work. Make minor adjustments as requested.
 2. Scarify root ball prior to planting. Plant in holes twice the diameter of the root ball and to a depth equal to the container's height. Place the shrub and/or groundcover so the top of the root ball is one inch (1") higher than the surrounding grade; place the tree so that the crown of the trunk is two inches (2") higher than the surrounding grade. Set container-grown stock in center of pit. In hot weather, pre-wet the pit. When set, place additional backfill around base and sides of root ball. Work each layer to settle backfill and eliminate voids and air pockets. Thoroughly compact lower half of backfill in plant pit. See staking or guying detail. Water after planting. Provide a berm or watering basin for each tree. Add Vitamin B-1, in the proper solution as recommended by the manufacturer, to the second watering of the basin.
 3. Place fertilizer planting tablets in root zone and alongside each plant. Follow manufacturer's instructions for number of tablets to use for each container size.
 4. See Drawings for additional information.
 5. Grooming and Staking of Trees:
 - a. Prune, thin-out and shape trees in accordance with standard horticultural practice. Prune trees to retain required height and spread. Unless otherwise directed by Landscape Architect, do not cut tree leaders, and remove only injured or dead branches from flowering trees.
 - b. Paint cuts over one-half inch (1/2") in size with standard tree paint or compound, covering exposed, living tissue. Use paint that is

waterproof, antiseptic, adhesive, elastic and free of kerosene, coal tar, creosote, and other substances harmful to plants. Do not use shellac.

- c. Stake or guy trees immediately after planting, as indicated on Drawings.

6. Grooming of Shrubs:

- a. Prune, thin-out and shape shrubs in accordance with standard horticultural practice. Prune shrubs to retain natural character and to accomplish their use in landscape design. The required plant size is its size after pruning.
- b. Remove and replace excessively pruned or malformed new plants resulting from improper pruning.

- C. Request review by the Landscape Architect after locating, but prior to planting all trees. Under the direction of the Landscape Architect, make slight adjustments to plant material location as necessary to reflect original intention of Drawings.

3.6 WEED CONTROL

Apply pre-emergent weed control to all planting areas (except lawn) after completion of all planting and one complete watering. Follow manufacturer's directions. To prevent washing away of weed control, do not over-water after its application. Do not allow any weed control into lawn areas. Treat any existing noxious weeds, such as Johnson grass, with Roundup in successive treatments until all roots are destroyed, then remove all grass and roots. Notify Owner's Representative of time of installation for verification of application.

3.7 BARK MULCH

Apply mulch at the rate of three inches (3") deep to all planting areas, exclusive of lawn, after the planting and weed control are completed. Twelve inches (12") from planter edges, taper full depth of mulch to meet adjacent grades. Do not place mulch within three inches (3") of trunk or stems.

3.8 CLEAN-UP

- A. During construction, keep the site free of rubbish and debris, and clean up the site promptly when notified to do so. Take care to prevent spillage on streets from hauling and immediately clean up any such spillage and/or debris deposited on streets due to the work of this Section.
- B. During all phases of the construction work, take all precautions to abate dust nuisance by clean-up, sweeping, sprinkling with water, or other means as necessary.

3.9 LANDSCAPE MAINTENANCE

- A. The Landscape Maintenance Period will begin when all the Landscape Maintenance Period Requirements have been met (See Part 1 of these Specifications).
- B. Cleaning: Maintain cleanliness on paving areas and other public areas used by equipment and immediately remove all spillage. Remove from project site all rubbish

and debris found thereon and all material and debris resulting from landscaping work, leaving the site in a safe and clean condition.

C. Maintenance:

1. Sprinkler Irrigation System:

- a. Check system weekly for proper operation. Flush lateral lines out after removing last sprinkler head or two at each end of lateral. Adjust all heads as necessary for unimpeded coverage.
- b. Set and program automatic controllers for seasonal water requirements. Provide the Owner's Representative with keys to the controllers and instructions on how to turn off system in case of emergency.
- c. Repair all damages to sprinkler irrigation system as part of the contract work. Make repairs within one watering period or one week, whichever is the least amount of time.

2. Turf Areas:

- a. Begin mowing turf when grass has reached a height of three inches (3") and cut to a height of one and one-half inches to two inches (1 ½" - 2"). Mow at least weekly after the first cut. Turf must be well-established and free of bare spots and weeds, to satisfaction of Landscape Architect, prior to final acceptance. Do not mow lawns when the soil is not able to support maintenance equipment. Repair wheel marks and ruts caused by the maintenance equipment at no additional cost to the Owner.
- b. Pick up grass clippings and remove from the site and premises.
- c. Trim edges at least twice monthly for neat appearance. Vacuum or blow clippings off walks.
- d. Water the lawns at such frequency as weather conditions require to replenish soil moisture below the root zone. Normally, a total of one and one-half inches (1 ½") of water is needed weekly in hot weather.
- e. Fertilize the lawn areas at the beginning of the Landscape Maintenance Period and at the completion of the Landscape Maintenance Period. Use a fertilizer with the following characteristics:
 - 1.) Slow release, Best 16-6-8, or approved equal, at the rate of 6.25 lbs per 1,000 square feet from March through October.
 - 2.) Calcium Nitrate (15-0-0) at the rate of 6.5 lbs per 1,000 square feet from November through February.
- f. Broadcast fertilizer using a mechanical spreader; do not apply by hand-broadcasting. Sweep all fertilizer off hardscape into adjacent planters.

- g. Weekly as needed and as directed, re-sod lawn areas with material that matches previously installed material. Use sod to repair any bare areas. Repair areas to receive sod as follows:
 - 1.) Mark out areas to receive new sod repair.
 - 2.) Cut straight lines that will accept sod the full width of the roll and a minimum of twenty-four inches (24") in length.
 - 3.) Transition the grade between existing turf and new sod seamlessly, with no change in elevation.
- 3. Trees and Shrubs:
 - a. Water enough that moisture penetrates throughout root zone and only as frequently as necessary to maintain healthy growth.
 - b. Construct and/or remove water basins around each plant, depending on the time of the year and as directed.
 - c. Do not prune unless directed by the Landscape Architect.
 - d. Re-stake and re-tie trees as needed and as directed by the Landscape Architect. Do not allow tops of tree stakes to protrude into head of tree.
 - e. Replace any dead, dying or vandalized plant material on a weekly basis throughout the Landscape Maintenance Period.
- 4. Insecticide and Herbicide Application:
 - a. If needed, control weeds with selective herbicides and sprays. In areas where crabgrass has infested the lawn, apply pre-emergent herbicides such as Dacthal by Amvac, Balan, or Betasan by Gowan for control prior to crabgrass germination. Control insect pests if necessary.
 - b. Use only a licensed Pest Control Operator to apply herbicides and sprays and to maintain a log for applications indicating material, timing, and rate.
- 5. Pre-scheduled On-site Meetings: Hold regularly-scheduled (monthly or bimonthly as determined by the Landscape Architect) on-site meetings with the Landscape Architect, Project Inspector and Owner's Representative. Dates and times will be jointly agreed upon.
- 6. Request, forty-eight hours (48 hrs.) in advance, on-site visits by the Landscape Architect to determine the end of the Landscape Maintenance Period.

END OF SECTION

**SECTION 33 00 00
SITE UTILITIES**

PART 1 - GENERAL

1.01 INCLUSION OF OTHER CONTRACT DOCUMENTS

- A. The General Conditions, Supplementary Conditions and Division 1 are fully applicable to this Section, as if repeated herein.

1.02 SCOPE OF WORK

- A. The work includes, but is not necessarily limited to, the following:
 - 1. Domestic water piping system.
 - 2. Fire protection piping systems.
 - 3. Sewer piping system.
- B. Other items that may be specified or shown on the Drawings.

1.03 RELATED WORK SPECIFIED ELSEWHERE

- A. Division 1 – District General Conditions and Contractual Requirements
- B. Section 31 23 33, Trenching and Backfilling.
- C. Section 32 16 00, Site Concrete.
- D. Section 33 00 00, Earthwork.
- E. Section 31 32 00, Soil Stabilization

1.04 QUALITY ASSURANCE

- A. Use only new materials and products, unless existing materials or products are specifically shown otherwise on the drawings to be salvaged and re-used.
 - 1. Sun damaged or discolored PVC pipe will be rejected.
- B. All materials, components, assemblies, workmanship and installation are to be observed by the Owner's Inspector of Record. Work not so inspected is subject to uncovering and replacement.
- C. The representatives of the Owner's testing lab will not act as supervisor of construction, nor will they direct construction operations. Neither the presence of the Owner's testing lab representatives nor the testing by the Owner's testing lab shall excuse the contractors or subcontractors for defects or deficiencies discovered in their work during or following completion of the project. Correcting inadequate compaction is the sole responsibility of the contractor.

- D. Contractor shall be solely responsible for all subgrades built. Any repairs resulting from inadequate compaction or incorrect grades will be the responsibility of the contractor.
- E. Per 2016 NFPA 13 provide Contractor's material and test certificate to the Owner, Architect, Project Inspector and Local Fire Authority.

1.05 SUBMITTALS

- A. Refer to Division 1 – District General Conditions and Contractual Requirements
- B. Manufacturer's Data: Submit list and complete descriptive data of all products proposed for use. Include manufacturer's specifications, published warranty or guarantee, installation instructions, and maintenance instructions.
- C. Provide sieve analysis from accredited testing lab on pipe bedding material. Analysis shall have a current date not older than project contract signing date.
- D. Substitution: Provide all data of proposed material being submitted as a substitution. Provide comparison with specified product data and identify all differences. Failure to provide comparison will be reason for rejection.

1.06 FEES, PERMITS, AND UTILITY SERVICES

- A. Obtain and pay for permits and service charges required for installation of Work. Arrange for required inspections and secure written approvals from authorities having jurisdiction.
- B. Upon completion of work within right-of-way, provide copies of written final approval to the Architect.

1.07 WARRANTY

- A. Refer to Division 1 – District General Conditions and Contractual Requirements

1.08 REFERENCES AND STANDARDS

- A. ANSI/ASTM D698-00 - Test Methods for Moisture-Density Relations of Soils and Soil-Aggregate Mixtures, Using 5.5 lb (2.49 Kg) Rammer and 12 inch (304.8 mm) Drop.
- B. ANSI/ASTM D1556-00 - Test Method for Density of Soil in Place by the Sand-Cone Method.
- C. ANSI/ASTM D1557-02 - Test Methods for Moisture-Density Relations of Soils and Soil-Aggregate Mixtures Using 10 lb. (4.54 Kg) Rammer and 18 inch (457 mm) Drop.
- D. ANSI/ASTM D 3017-05 Test Methods for Moisture Content of Soils and Soil-Aggregate Mixture by Nuclear Methods (Shallow Depth).
- E. ANSI/ASTM D 422-63 Test Method for Particle Size Analysis of Soil.
- F. ANSI/ASTM D 4318-05 Test Method for Liquid Limit, Plastic Limit, and Plasticity Limit.

- G. CALTRANS Standard Specifications.
- H. CAL-OSHA, Title 8, Section 1590 (e).
- I. Any work within the street, highway or right-of-way shall be performed in accordance with the requirement of the governmental agencies having jurisdiction, and shall not begin until all of those governing authorities have been notified.
- J. NFPA 13, 24 and 25, latest editions.
- K. California State Health and Safety Code Section 116875, Lead Free Public Water Systems.
- L. California Plumbing Code, latest edition.

1.09 DELIVERY, STORAGE AND HANDLING

- A. Transport, store and handle in strict accord with the local jurisdiction.
- B. Make delivery to job when notified by Contractor verifying that the job is ready to receive the work of this Section and that arrangements have been made to properly store, handle and protect such materials and work.

1.10 PROJECT CONDITIONS

- A. Existing civil, mechanical and electrical improvements are shown on respective site plans to the extent known. Should the Contractor encounter any deviation between actual conditions and those shown, he is to immediately notify the Architect before continuing work.

1.11 EXISTING SITE CONDITIONS

- A. Contractor shall acquaint himself with all site conditions. If unknown active utilities are encountered during work, notify Architect promptly for instructions. Failure to notify will make Contractor liable for damage to these utilities arising from Contractor's operations subsequent to discovery of such unknown active utilities.

1.12 PROTECTION

- A. Adequate protection measures shall be provided to protect workmen and passers-by on and off the site. Adjacent property shall be fully protected throughout the operations. Blasting will not be permitted. Prevent damage to adjoining improvements and properties both above and below grade. Restore such improvements to original condition should damage occur. Replace trees and shrubs outside building area disturbed by operations.
- B. In accordance with generally accepted construction practices, the Contractor shall be solely and completely responsible for working conditions at the job site, including safety of all persons and property during performance of the work. This requirement shall apply continuously and shall not be limited to normal working hours.

- C. Any construction review of the Contractor's performance conducted by the Geotechnical Engineer is not intended to include review of the adequacy of the Contractor's safety measures, in, on, or near the construction site.
- D. Provide shoring, sheeting, sheet piles and or bracing to prevent caving, erosion or gulying of sides of excavation.
- E. Surface Drainage: Provide for surface drainage during period of construction in manner to avoid creating nuisance to adjacent areas. The contractor shall make a reasonable effort on a daily basis to provide pumps and all equipment necessary to keep all excavations and the site free from water during entire progress of work, regardless of cause, source, or nature of water.
- F. Adjacent streets and sidewalks shall be kept free of mud, dirt or similar nuisances resulting from earthwork operations.
- G. The site and adjacent influenced areas shall be watered as required to suppress dust nuisance. Dust control measures shall be in accordance with the local jurisdiction.
- H. Trees: Carefully protect existing trees that are to remain. Provide temporary irrigation as necessary to maintain health of trees.

1.13 SEASONAL LIMITS

- A. No fill material shall be placed, spread or rolled during unfavorable weather conditions. When work is interrupted by rains, fill operations shall not be resumed until field tests indicate that moisture content and density of fill are satisfactory.

1.14 RECORD DRAWINGS

- A. Keep a daily record of all pipe placed in ground, verified by Project Inspector.
- B. Upon completion of this Contract, furnish one tracing showing all outside utility lines, piping, etc., installed under this Contract. Locate and dimension all work with reference to permanent landmarks.
- C. All symbols and designations used in preparing "RECORD" drawings shall match those used in Contract drawings.
- D. Properly identify on as-builts and provide dimensions for all stubs for future connections. Provide concrete markers 6" dia. 12" deep, flush with finish grade at the ends of all stubbed pipes.

PART 2 – PRODUCTS

2.01 MATERIALS - GENERAL

- A. Provide each item listed herein or shown on drawings of quality noted or approved equal. All

material shall be new, full weight, standard in all respects and in first-class condition. Insofar as possible, all materials used shall be of same brand or manufacture throughout for each class of material or equipment. Materials shall be of domestic manufacture and shall be tested within Continental United States.

- B. Grade or quality of materials desired is indicated by trade names or catalog numbers stated herein.
- C. Dimensions, sizes, and capacities shown are minimum and shall not be changed without permission of Architect.
- D. All materials in this section used for any public water system or domestic water for human consumption shall be lead free.
 - 1. For the purposes of this section, "lead free" means not more than 0.2 percent lead when used with respect to solder and flux and not more than 8 percent when used with respect to pipes and pipe fittings.
 - 2. All pipe, pipe or plumbing fitting or fixtures, solder, or flux shall be certified by an independent American National Standards Institute (ANSI) accredited third party, including, but not limited to, NSF International, as being in compliance with this section.
- E. All materials used for fire system piping shall be UL and FM approved.

2.02 VALVE BOXES

- A. Provide at each valve or cock in ground a Christy, Brooks, or equal to Christy G05CT, concrete valve box with cover marked for service, domestic water shall be marked "Water" and fire supply shall be marked "Fire". Furnish extension handles for each size square nut valve, and provide "fork" handle for each size of "wheel handle" valve as required. Do not locate valve boxes in walk, or covered passages, curbs, or curb & gutters, unless necessary. If valve location is within concrete or asphalt paved surface valve box shall be as detailed on plans for such condition. Provide valve box extensions as required to set bottom of valve box to bottom of piping in which valve is installed. Provide Owner with set of special wrenches and/or tools as required for operation of valves.
- B. See plans for Field type valve boxes within synthetic turf areas.

2.03 PIPES AND FITTINGS

- A. Sanitary Sewer: PVC sewer pipe and fittings with Ring-Tite joints, ASTM D3034 SDR35.
- B. Domestic water Lines 3 1/2" and smaller: Type K copper tubing, hard temper, with wrought copper fittings. Schedule 80 PVC pipe and fittings is also acceptable.
- C. Water lines 4" and larger: AWWA C-900 Class 150/DR18 with rubber gasket joints.
- D. Fire lines 4" and larger: AWWA C-900 Class 200/DR14 with rubber gasket joints.

- E. Solder: Lead Free. 95/5; 95% Tin / 5% Antimony.
- F. Ductile Iron Pipe; AWWA Class 51, Cement Lined
- G. Ductile Iron Pipe Fittings; AWWA C110, C153, Ebba Iron, Star Romac, Sigma, or approved equal.
- H. PVC Mechanical Fittings; Ebba Iron, , Star; Romac; Sigma or approved equal.
- I. Ductile Iron Pipe/PVC C-900 Pipe Restrained Fittings; Ebba Iron # 3800 Mega Coupling, Ebba Iron 1100CH Split Restrained Harness for pipe couplings. StarGrip Series 4000
- J. Ductile Iron Pipe/PVC C900, C905 Restrained Degreedand Blind Cap Fittings; Mega Lug; Sigma; Romac; or an approved equal
- K. Mechanical Fitting Bolts; Bolts and nuts shall be carbon steel with a minimum 60,000 psi tensile strength conforming to ASTM A 307, Grade A. Bolts shall be standard ANSI B1.1 Class 2A course threads. Nuts shall conform to ASTM A 563 and be standard ANSI B1.1, Class 2A course thread. All bolts and nuts shall be zinc coated.
- L. Fasteners Anti-Rust Coatings; After assembly, coat all fasteners with an Asphaltic Bituminous coatings conforming to latest edition NFPA 24.
- M. Ductile Iron Pipe Wrap; 8 mil polyethylene pipe wrap conforming to ANSI/AWWA C105/A21.5 standards.
- N. Pipe Insulation; Pipe exposed to atmospheric conditions 1/2" thru 4" NPT; Johns Manville rigid fiberglass insulation, Micro Lok HP; Owens Corning Fiberglas SSL II; Conforming to ASTM C 612, Type 1A or type 1B.
- O. Aluminum field applied pipe insulation jacket; comply with ASTM B209, ASTM C1729, ASTM C1371 Manufacturers; Childers Metals; ITW Insulation Systems Aluminum Jacketing; or an approved equal.
 - 1. Finish shall be flat mill finish
 - 2. Factory Fabricated Fitting Covers; 45 and 90 degree elbows, tee's, valve covers, end caps, unions, shall be of the same thickness and finish of jacket.
 - 3. The fittings shall be composed of 2-pieces
 - 4. Adhesives; per the manufacturers requirements
 - 5. Joint Sealant; shall be silicone, and shall be aluminum in color.
- P. Sewer Forced Main; HDPE, DR 11, color gray with green stripe by JM Eagle or approved equal.

2.04 SANITARY SEWER MANHOLES

- A. None.

2.05 CLEANOUTS

- B. Cleanouts of same diameter as pipe up to 8" in size shall be installed in all horizontal soil and waste lines where indicated and at all points of change in direction. Cleanouts shall be located not less than 18" from building so as to provide sufficient space for rodding. No horizontal run over 100 feet shall be without cleanout whether shown on drawings or not.
- C. All cleanout boxes shall be traffic rated with labeled lid, Christy G05CT or approved equal. Lid shall be vandal proof with stainless steel screws

2.06 UNIONS

- A. Furnish and install one union at each threaded or soldered connection to equipment and 2 unions, one on each side of valves on pipes 1/2" to 3".
- B. Locate unions so that piping can be easily disconnected for removal of equipment or valve. Provide type specified in following schedule:

Type of Pipe Union

Steel Pipe:	150 lb. Screwed malleable ground joint, brass, brass-to-iron seat, black or galvanized to match pipe.
Copper tubing:	Brass ground joint with sweat connections.
PVC Sch 80 pipe:	PVC union, FIPT X FIPT

2.07 VALVES

- A. Provide valves as shown and other valves necessary to segregate branches or units. Furnish valves suitable for service intended. Valves shall be properly packed and lubricated. Valves shall be non-rising stem. Place unions adjacent to each threaded or sweat fitting valve. Install valves with bonnets vertical. All valves shall be lead free.
- B. Valves 1/2" thru 2"; shall be made of bronze, full size of pipe and lead free. Nibco S-113-FL Series; American G-300 Series; Matco 511 FL Series; Apollo 102T-FL Series. Brass valves of brass parts within valves will not be accepted.
- C. Valves, 2 1/2" thru 3" shall be class 150; Shall be made of bronze, full size of pipe; Jenkins Fig. 2310 J; Lunkenheimer Fig. 2153; Crane Fig. 437; Stockham Fig. B-128.
- D. Valves, Flanged; 4" thru 12" Ductile Iron Resilient Wedge Gate Valve; Nibco F 609 RW; American 2500 Series; Kennedy 8561; Mueller 2360 Series.

2.07 FIRE HYDRANTS

- A. Clow 960 Factory Painted or per Local Jurisdiction Requirements, or an approved equal, 36" minimum bury, two 2-1/2" hose nozzles, one 4-1/2" pumper nozzle, and break-off check valve, Clow LBI 400A or approved equal. Hydrant shall conform to, and installation shall comply with the Local Jurisdiction.

2.08 POST INDICATOR

- A. None.

2.09 BACKFLOW PREVENTERS

Double Check Valve, Double Check Detector and Reduced Pressure Backflow Preventers

- A. Backflow preventers shall be as approved by the local agency and by the State of California's Department of Health Services most recent list of approved reduced pressure backflow preventers. All approved backflow preventers shall have ductile iron bodies.
 - 1. Provide Backflow preventer blankets with locking device. Weatherguard R-30 insulated or equal.
 - 2. Provide ball valve at all test ports with brass plug in valve.
 - 3. Provide a minimum of 2 valve tamper switches on fire prevention Backflows.

2.10 TAPPING SLEEVE

- A. Shall be used on pipe sizes 6" thru 12" and shall be made with stainless steel material including stainless steel bolts. Flanges shall be ductile iron or high carbon steel. Gaskets shall seal full circumference of pipe. Shall be manufactured for operating pressure of 200 psi, and shall pass test pressure of 300 psi. Romac SST series; Smithblair 662; Mueller H304; Ford "FAST" tapping sleeve.

2.11 SERVICE SADDLES

- A. Shall be used on pipe size 2" thru 4". Body shall be made from ductile iron with epoxy coating or bronze. Cascade Style CSC-1; A.Y. McDonald model 3891 AWWA/3892 FNPT; Smith-Blair #317; Ford S70, S71, S90, (style B).

2.11 TRACER WIRE

- A. No. 10 THW solid copper wire. Solder all joints

PART 3 - EXECUTION

3.01 DRAWINGS AND COORDINATION

- A. General arrangement and location of piping, etc., are shown on Drawings or herein specified. Install work in accord therewith, except for minor changes that may be necessary on account of other work or existing conditions. Before excavation, carefully examine other work that may conflict with this work. Install this work in harmony with other craft and at proper time to avoid delay of work.
- B. Verify invert elevations at points of connection to existing systems prior to any excavation. If invert elevations differ from that shown on drawings, notify Architect immediately.

- C. In advance of construction, work out minor changes if conflicts occur with electrical or mechanical. Relocate services to suit actual conditions and work of other trades to avoid conflict therewith. Any adjustments or additional fittings to make adjustments shall not be cause for additional costs to the owner.
- D. Execute any work or apparatus shown on drawings and not mentioned in specifications, or vice versa. Omission from Drawings or Specifications of any minor details of construction, installation, materials, or essential specialties does not relieve Contractor of furnishing same in place complete.
- E. Graded pipes shall take precedence. If conflict should occur while placing the domestic water and fire service piping, the contractor shall provide any and all fittings necessary to route the water lines over or under such conflicting pipes at no additional costs to the owner.

3.02 ACCESS

- A. Continuously check for clearance and accessibility of equipment or materials specified herein to be placed. No allowance of any kind shall be made for negligence on part of Contractor to foresee means of installing his equipment or materials into proper position.

3.03 EXCAVATING AND BACKFILLING

- A. Excavation and Bedding:
 - 1. General: Trench straight and true to line and grade with bottom smooth and free of irregularities or rock points. Trench width to be a minimum of 12" wider than outside diameter of pipe. Follow manufacturer's recommendations for use of each kind and type of pipe.
 - 2. Bedding: Provide a bedding as noted on drawing details for the full length of the pipe. Bedding shall have a minimum thickness beneath the pipe of 4" or 1/8 the outside diameter of the pipe, which ever is greater. Provide bell holes and depressions for pipe joints only of size required to properly make joint.
 - 3. If the trenches for the site utilities falls within areas to be lime treated, the piping shall be installed prior to any lime treatment operations, providing the elevation of the piping is below the treatment section. If trenching is necessary in areas that have been previously lime treated the contractor shall backfill the trench with class 2 aggregate base from the top of utility initial backfill up to subgrade in accordance with these specifications. **Lime treated soil may not be re-used once it has been compacted and cured. If re-excavated, it must be disposed of.** In Synthetic track and Synthetic Turf areas, following backfill to subgrade, a 13' wide bridging geogrid, Tensar BX 1100 or Tx140 shall be lain centered over trench on subgrade along entire length of the trench.
- B. Laying of Pipe:
 - 1. General: Inspect pipe prior to placing. Sun damaged pipe will be rejected. Set aside any defective or damaged material. Do not place pipe in water nor place pipe when trenches or weather are unsuitable. Lay pipe bell up grade, true to line and grade.

- a. Sewer pipe shall be laid in strict conformity to the prescribed line and grade, with grade bars set and each pipe length checked to the grade line. Three consecutive points on the same rate of slope shall be used at all times to detect any variation from a straight grade. In any case of discrepancy, work shall be stopped and the discrepancy immediately reported to the Owner's Representatives. In addition, when requested by the Owner's Representative, a string line shall be used in the bottom of the trench to insure a straight alignment of the sewer pipe between manholes. The maximum deviation from grade shall not be in excess of 1/4 inch. In returning the pipe to grade, no more than 1/4" depression shall result.
 - b. The Contractor shall expose the end of existing pipe to be extended, for verification of alignment and elevation, prior to trenching for any pipe which may be affected. All costs of such excavation and backfill shall be included in the price paid for the various items of work.
 - c. A temporary plug, mechanical type shall be installed on sewer pipe at the point of connection to existing facilities. If connecting to a public facility the plug shall conform to the requirements of the local jurisdiction. This plug shall remain in place until the completion of the balling and flushing operation.
2. Bell and Spigot Joints: Lubricate inside of bells and outside of spigots with soap solution. Wedge joints tight. Bell of bell and spigot pipe to be pointed upgrade.

C. Backfilling:

1. General: Do not start backfill operations until required testing has been accomplished.
2. Compaction and Grading: Remainder of backfill shall be in accordance with Section 312333 – TRENCHING AND BACKFILLING.
3. If trenching is necessary in areas that have been previously lime treated the contractor shall backfill the trench with class 2 aggregate base from the top of utility initial backfill up to subgrade in accordance with these specifications. **Lime treated soil may not be re-used once it has been compacted and cured. If re-excavated, it must be disposed of.** In Synthetic track and Synthetic Turf areas, following backfill to subgrade, a 13' wide bridging geogrid, Tensar BX 1100 or Tx140 shall be lain centered over trench on subgrade along entire length of the trench.

3.04 INSTALLATION OF WATER PIPING

- A. Immediately cap or plug ends of, and opening in, pipe and fittings to exclude dirt until final connections made. Use reducing fittings where any change in pipe size occurs. Bushings shall not be used.
- B. General: Should existing conditions or other work prevent the running of pipes or the setting of equipment at the points indicated by drawings, changes as authorized by the Architect shall be made without additional cost to the Owner.
- C. All bolts used on mechanical fittings shall be thoroughly coated with an asphaltic bituminous coating conforming to 2016 NFPA 24, 10.4.1.1.

- D. All buried metal shall be incased with 8 mil polyethylene wrap so that no soil is in contact with metal. Ends of polyethylene wrap shall be taped to provide seal with pipe.
- E. Do not install water lines in same trench with non-metallic sewer lines unless bottom of water pipe at all points is at least 12" above top of sewer line and water line is placed on solid shelf excavated at one side of common trench with a minimum of 12 inch horizontal separation.
- F. Under no circumstance shall a fitting be located directly under a structural footing without prior approval from the Architect.
- G. In locations where existing domestic pipe is rerouted, the new pipe shall be assembled using restrained fittings at all joints including factory pipe joints. Tapped restrained blind flanges shall be temporarily installed at each end of the assembled pipes until testing and chlorination is completed and approved.

3.05 CLOSING IN OF UNINSPECTED WORK

- A. Do not allow or cause work installed to be covered up or enclosed before it has been inspected, tested, and approved. Should work be enclosed or covered up before it has been approved, uncover work at own expense. After it has been inspected, tested and approved, make repairs necessary to restore work of other contractors to condition in which it was found at time of cutting.

3.06 CARE AND CLEANING

- A. Repair or replace broken, damaged, or otherwise defective parts, materials, and work. Leave entire work in new condition satisfactory to Architect. At completion, carefully clean and adjust equipment, fixtures and trim that are installed as part of this work. Leave systems and equipment in satisfactory new operating condition.
- B. Drain and flush piping to remove grease and foreign matter.
- C. Sewer piping shall be balled and flushed.
- D. Clean out and remove surplus materials and debris resulting from the work, including surplus excavated material.
- E. Flush fire service piping 3 times in the presence of the project inspector. Each flushing shall be 3 minutes minimum.

3.07 SEWER INTERNAL INSPECTIONS

- A. Upon completion of construction and prior to final inspection, the Contractor shall clean the entire new pipeline of all dirt and debris. Any dirt or debris in previously existing pipes or ditches in the area, which resulted from the new installation, shall also be removed. Pipes shall be cleaned by the controlled balling and flushing method. Temporary plugs shall be installed and maintained during cleaning operations at points of connection to existing facilities to prevent water, dirt, and debris from entering the existing facility.

3.08 TEST OF PIPING

- A. Pressure Test piping at completion of roughing-in, in accord with following schedule, and show no loss in pressure or visible leaks after minimum duration or four (4) hours at test pressures indicated.
- B. Chlorination tests shall be performed after all fixtures and any required mechanical devices are installed and the entire system is complete and closed up.
- C. In cases where new domestic water piping is assembled for re-routing of existing domestic water pipe, the contractor shall perform the following testing prior to connecting the new water pipe to the existing system.
 - 1. The pipe shall be pressure tested and per the test schedule.
 - 2. The pipe shall be pressure tested down within the trench.
 - 3. The contractor shall dig a temporary ditch below the existing pipe to drain to a sump that is lower than the bottom of the trench and to the side of the trench. The sump shall be 30% larger than the total volume of water within the testing pipe assembly.
 - 4. After pressure testing and chlorination has taken place and accepted, the contractor shall drain the pipe into the sump and pump the sump out as it is filling.
 - 5. The temporary test fittings at each end of the pipe assembly shall be removed and the final restrained couplings installed.
 - 6. The existing piping shall be cut and the water within the pipe shall drain below the pipe to the temporary sump. Pump the sump as it is being filled up. Take extreme caution not to contaminate the existing pipe with any contaminates within the trench.
 - 7. Before making the final coupling connections, the restrained couplings at each end of the new pipe shall be thoroughly swabbed inside the fitting with a solution of chlorine mixed with water at a rate of 1 part chlorine to 4 parts potable water.
 - 8. After final connections are made, a visual inspection shall be made after fittings are wiped off. If after 1 hr, no noticeable drips are noted the pipe can be backfilled.
 - 9. The contractor shall flush all water piping affected by chlorination until it is within acceptable levels approved by certified testing lab.

TEST SCHEDULE

<u>System Tested</u>	<u>Test Pressure PSIG Test With</u>
Public Water Mains	Per local jurisdiction requirements.
Private Domestic Water Piping:	150 Lbs. Water 4 hrs.
Fire Protection Piping:	200 Lbs. Water pressure, 4 hrs duration with no pressure loss.
Sanitary Sewer Piping:	Sewer system shall be tested for leakage per local jurisdiction requirements.

- D. Testing equipment, materials, and labor shall be furnished by contractor.

3.09 WATER SYSTEM STERILIZATION

- A. Public Water Mains: Shall be flushed and disinfected per the local jurisdiction requirements
- B. Clean and disinfect all site water systems connected to the domestic water systems in accordance with AWWA Standard C651 and as required by the local Building and Health Department Codes, and EPA.
 - 1. Clean and disinfect industrial water system in addition to the domestic water system.
 - 2. Disinfect existing piping systems as required to provide continuous disinfection upstream to existing valves. At Contractors option, valves may be provided to isolate the existing piping system from the new piping system.
- C. Domestic water sterilization shall be performed by a licensed "qualified applicator" as required by CAL-EPA Pesticide Enforcement Branch for disinfecting and sterilizing drinking water.
- D. Disinfecting Agent: Chlorine product that is a registered product with Cal-EPA for use in California potable water lines, such as Bacticide, CAL-EPA Registration No. 37982-20001.
- E. Contractor to provide a 1" service valve connected to the system at a point within 2'-0" of its junction with the water supply line. After sterilization is complete Contractor to provide cap at valve.
- F. Sterilization Procedure to be as follows:
 - 1. Flush pipe system by opening all outlets and letting water flow through the system until clear water flows from all outlets.
 - 2. Inject disinfecting agent to provide a minimum chlorine residual concentration of at least 50 parts per million (ppm) of free chlorine at each outlet.
 - 3. Provide sign at all outlets which reads "Water Sterilization in Progress – Do not operate". Remove signs at conclusion of test.
 - 4. Close all outlets and valves, including valve connecting to water supply line and 1" service valve. Retain treated water in pipe for a minimum of twenty-four hours. Should chlorine residual at pipe extremities be less than 50 PPM at this time, pipe shall be re-chlorinated. As an option, the water systems may be filled with a water-chlorine solution containing a minimum of 200 PPM of chlorine and allowed to stand for three hours.
 - 5. After chlorination, flush lines of chlorinated water and refill from domestic supply. Continue flushing until residual chlorine is less than or equal to 0.2 ppm, or a residual the same as that of the test water.
- G. Chemical and bacteriological tests shall be conducted by a state-certified laboratory and approved by the local authorities having jurisdiction.
- H. Submit written report to Health Department as required by State Regulations. Provide a copy of report to Architect prior to completion of project.
- I. The costs of sterilization and laboratory testing shall be paid for by the contractor.

3.10 CLEANING

- A. Refer to Division 1 – District General Conditions and Contractual Requirements.
- B. Upon completion of work of this Section promptly remove from the working area all scraps, debris and surplus material of this Section.

END OF SECTION

SECTION 33 40 00

SITE DRAINAGE

PART 1 - GENERAL

1.01 INCLUSION OF OTHER CONTRACT DOCUMENTS

- A. The General Conditions, Supplementary Conditions and Division 1 are fully applicable to this Section, as if repeated herein.

1.02 RELATED WORK SPECIFIED ELSEWHERE

- A. Division 1 – District General Conditions and Contractual Requirements.
- B. Section 31 23 33, Trenching and Backfilling.
- C. Section 32 12 00, Asphalt Concrete Paving.
- D. Section 32 16 00, Site Concrete

1.03 QUALITY ASSURANCE

- A. Use only new materials and products, unless existing materials or products are specifically shown otherwise on the Drawings to be salvaged and re-used.
- B. All materials, components, assemblies, workmanship and installation are to be observed by the Owner's Inspector of Record. Work not so inspected is subject to uncovering and replacement.
- C. The representatives of the Owner's testing lab will not act as supervisor of construction, nor will they direct construction operations. Neither the presence of the Owner's testing lab representatives nor the testing by the Owner's testing lab shall excuse the contractors or subcontractors for defects discovered in their work during or following completion of the project. Correcting inadequate compaction is the sole responsibility of the contractor.
- D. Contractor shall be solely responsible for all subgrades built. Any repairs resulting from inadequate compaction are the responsibility of the contractor.

1.04 SUBMITTALS

- A. Refer to Division 1 – District General Conditions and Contractual Requirements.
- B. Manufacturer's Data: Submit list and complete descriptive data of all products proposed for use. Include manufacturer's specifications, published warranty or guarantee, installation instructions, and maintenance instructions.

1.05 WARRANTY

- A. Refer to Division 1 – District General Conditions and Contractual Requirements.

1.06 REFERENCES AND STANDARDS

- A. ANSI/ASTM D698-00 - Test Methods for Moisture-Density Relations of Soils and Soil-Aggregate Mixtures, Using 5.5 lb (2.49 Kg) Rammer and 12 inch (304.8 mm) Drop.
- B. ANSI/ASTM D1556-00 - Test Method for Density of Soil in Place by the Sand-Cone Method.
- C. ANSI/ASTM D1557-02 - Test Methods for Moisture-Density Relations of Soils and Soil-Aggregate Mixtures Using 10 lb. (4.54 Kg) Rammer and 18 inch (457 mm) Drop.
- D. ANSI/ASTM D 3017-05 Test Methods for Moisture Content of Soils and Soil-Aggregate Mixture by Nuclear Methods (Shallow Depth).
- E. ANSI/ASTM D 422-63 Test Method for Particle Size Analysis of Soil.
- F. ANSI/ASTM D 4318-05 Test Method for Liquid Limit, Plastic Limit, and Plasticity Limit.
- G. CALTRANS Standard Specifications.
- H. CAL-OSHA, Title 8, Section 1590 (e).
- I. Any work within the street, highway or right-of-way shall be performed in accordance with the requirement of the governmental agencies having jurisdiction, and shall not begin until all of those governing authorities have been notified.
- J. California Plumbing Code current edition.

1.07 DELIVERY, STORAGE AND HANDLING

- A. Transport, store and handle in strict accord with the local jurisdiction.
- B. Make delivery to job when notified by Contractor verifying that the job is ready to receive the work of this Section and that arrangements have been made to properly store, handle and protect such materials and work.

1.08 PROJECT CONDITIONS

- A. Existing civil, mechanical and electrical improvements are shown on respective site plans to the extent known. Should the Contractor encounter any deviation between actual conditions and those shown, he is to immediately notify the Architect before continuing work.

1.09 EXISTING SITE CONDITIONS

- A. Contractor shall acquaint himself with all site conditions. If unknown active utilities are encountered during work, notify Architect promptly for instructions. Failure to notify will make Contractor liable for damage to these utilities arising from Contractor's operations subsequent to

discovery of such unknown active utilities.

1.10 PROTECTION

- A. Adequate protection measures shall be provided to protect workmen and passers-by on and off the site. Adjacent property shall be fully protected throughout the operations. Blasting will not be permitted. Prevent damage to adjoining improvements and properties both above and below grade. Restore such improvements to original condition should damage occur. Replace trees and shrubs outside building area disturbed by operations.
- B. In accordance with generally accepted construction practices, the Contractor shall be solely and completely responsible for working conditions at the job site, including safety of all persons and property during performance of the work. This requirement shall apply continuously and shall not be limited to normal working hours.
- C. Any construction review of the Contractor's performance conducted by the Geotechnical Engineer is not intended to include review of the adequacy of the Contractor's safety measures, in, on, or near the construction site.
- D. Provide shoring, sheeting, sheet piles and/or bracing to prevent caving, erosion or gulying of sides of excavation.
- E. Surface Drainage: Provide for surface drainage during period of construction in manner to avoid creating nuisance to adjacent areas. The contractor shall make a reasonable effort on a daily basis to provide pumps and all equipment necessary to keep all excavations and the site free from water during entire progress of work, regardless of cause, source, or nature of water.
- F. Adjacent streets and sidewalks shall be kept free of mud, dirt or similar nuisances resulting from earthwork operations.
- G. The site and adjacent influenced areas shall be watered as required to suppress dust nuisance. Dust control measures shall be in accordance with the local jurisdiction.
- H. Trees: Carefully protect existing trees that are to remain.

1.11 SEASONAL LIMITS

- A. No fill material shall be placed, spread or rolled during unfavorable weather conditions. When work is interrupted by rains, fill operations shall not be resumed until field tests indicate that moisture content and density of fill are satisfactory.

1.12 TESTING

- A. General: Refer to Division 1 – District General Conditions and Contractual Requirements.
- B. Geotechnical Engineer: Owner is retaining a Geotechnical Engineer to determine compliance of fill with Specifications, and to direct adjustments in fill operations. Costs of Geotechnical Engineer will be borne by Owner; except those costs incurred for re-tests or re-inspection will be

paid by Owner and backcharged to Contractor.

1.13 RECORD DRAWINGS

- A. Keep a daily record of all pipe placed in ground, verified by Project Inspector.
- B. Upon completion of this Contract, furnish one tracing showing all outside utility lines, piping, etc., installed under this Contract. Locate and dimension all work with reference to permanent landmarks.
- C. All symbols and designations used in preparing "RECORD" drawings shall match those used in Contract drawings.
- D. Properly identify all stubs for future connections, as to location and use, by setting of concrete marker at finished grade in the manner suitable to Architect.

PART 2 - PRODUCTS

2.01 MATERIALS

- A. Pipe: Use one of the following, unless noted on the Drawings otherwise.
 - 1. Polyvinyl Chloride Pipe (PVC): SDR35 conforming to ASTM D3034 with elastomeric joints conforming to ASTM D3212. Sun damaged pipe will be rejected.
 - 2. High density polyethylene pipe (HDPE): The pipe shall be corrugated exterior/smooth interior pipe and water tight per ASTM D3212 with dual wall water tight gasket fittings.
- B. Perforated Pipe (for subdrains): Shall be ADS N12 pipe, 3 hole, ASTM F 405, AASHTO M 252; PVC ASTM D3034 SDR-35 storm drain pipe
- C. Manhole: Shall be as shown on the drawing details.
- D. Drop Inlet: Shall be as shown on the drawing details.
- E. Curb Inlet: Shall be as shown on the drawing details.
- F. Mortar: For pipe connections to concrete drainage structures, conform to ASTM C270 type N mortar. Place within one half hour after adding water.
- G. Crushed Rock: Imported washed crushed rock. Minimum 100% passing 3/4 inch sieve.
- H. Trench drain: Polycast, Polydrain or equal and as shown on drawings.
- I. Area Drains: Shall be as shown on the drawing details.
- J. Floor Drains: Shall be as shown on the drawing details.

- K. Clean-outs: Shall be as shown on the drawing details.
- L. Planter drains: Shall be as detailed on the drawing details.
- M. Filter Fabric: Mirafi 140N.

PART 3 - EXECUTION

3.01 INSPECTION LAYOUT AND PREPARATION

- A. Prior to installation of the work of this Section, carefully inspect and verify by field measurements that installed work of all other trades is complete to the point where this installation may properly commence
- B. Layout all work, establish grades, locate existing underground utilities, set markers and stakes, setup and maintain barricades and protection facilities; all prior to beginning actual earthwork operations. Layout and staking shall be done by a licensed Land Surveyor or Professional Civil Engineer.
- C. Verify that specified items may be installed in accordance with the approved design.
- D. In event of discrepancy, immediately notify Owner and the Architect. Do not proceed in discrepant areas until discrepancies have been fully resolved.

3.02 INSTALLATION

- A. General: Installation shall be in strict conformance with referenced standards, the manufacturer's written directions, as shown on the drawings and as herein specified.
- B. Verify invert elevations at points of connection to existing systems prior to any excavation. If invert elevations differ from that shown on drawings, notify Architect immediately.
- C. Excavation and Bedding:
 - 1. General: Trench straight and true to line and grade with bottom smooth and free of irregularities or rock points. Trench width in accordance with pipe manufacturer's recommendations and as per the drawings. Follow manufacturer's recommendations for use of each kind and type of pipe.
 - 2. Bedding: Provide bedding as detailed on plans for the full length of the pipe. Bedding shall have a minimum thickness beneath the pipe of 4" or 1/8 the outside diameter of the pipe, whichever is greater. Provide bell holes and depressions for pipe joints only of size required to properly make joint.
 - 3. If trenching is necessary in areas that have been previously lime treated the contractor shall backfill the trench with class 2 aggregate base from the top of utility initial backfill up to subgrade in accordance with these specifications. **Lime treated soil may not be re-used once it has been compacted and cured. If re-excavated, it must be disposed of.**
- D. Laying of Pipe:

1. General: Inspect pipe prior to placing. Set aside any defective or damaged material. Do not place pipe in water nor place pipe when trenches or weather are unsuitable. Lay pipe upgrade, true to line and grade.
 2. Bell and Spigot Joints: Lubricate inside of bells and outside of spigots with soap solution or as recommended by manufacture. Wedge joints tight. Bell of bell and spigot pipe to be pointed upgrade.
 3. Pipe shall be bedded uniformly throughout its length.
 4. Pipe elevation shall be within 0.02 feet of design elevation as shown on plans.
 5. Off Site Work: All work beyond the property lines shall be done in strict conformance with the requirements of the governing agency.
- E. Backfilling:
1. General: Do not start backfill operations until required testing has been accomplished.
 2. Trenches and Excavations: Backfill with material as detailed on plans, filling both sides of the pipe at the same time, carefully tamping to hold pipe in place without movement. Refer to Section 31 23 33 – TRENCHING AND BACKFILLING for fill above this layer.
- F. Grouting of Pipes: Grout pipes smooth and water tight at drop inlet, manholes, and curb inlets. Grout back side of hood at curb inlets all grouting shall be smooth and consistent.
- G. Off Site Work: All work beyond the property lines shall be done in strict conformance with the requirements of the local agency.
- H. Cutting and Patching: Remove and replace existing surface features per applicable specification section (i.e. asphaltic concrete or concrete paving) where pipe is installed in areas of existing improvements.

3.03 TOLERANCES

- A. Storm Drain structure grates
1. In landscape and lawn areas $\pm 0.05'$.
 2. In sidewalk and asphalt pavement $\pm 0.025'$.
 3. In curb and gutter application $\pm 0.0125'$.
- B. Cleanout Boxes and Lids
1. In landscape areas; 0.10 higher than surrounding finish grade, $\pm 0.05'$.
 2. In sidewalks and asphalt pavement; Flush with surrounding finish grade, $\pm 0.025'$.

3.03 DEWATERING

- A. Contractor to provide trench dewatering as necessary, no matter what the source is, at no additional cost to the owner.
- B. If the previously excavated material from trenching is too wet to achieve trench backfill compaction the contractor shall make a reasonable effort to aerate and dry the material per

section 31 00 00, 3.08, B

3.04 FLUSHING

- A. The Contractor shall thoroughly ball and flush the storm drain system to remove all dirt and debris. Discharge water to an approved location.

3.05 CLEANING

- A. Refer to Division 1 – District General Conditions and Contractual Requirements.
- B. Upon completion of work of this Section promptly remove from the working area all scraps, debris and surplus material of this Section.
- C. Clean the dirt, rocks, and debris from all storm drain inlets, structures, and connecting pipes.

END OF SECTION