MANGINI | ARCHITECTURE INGENUITY
McLAIN BARENG MORRELLI SCOTT

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DATE: November 26, 2020
MAI NO.: 2143

PROJECT MANUAL FOR:

NEW MODULAR FOOD SERVICE BUILDING AT KINGS LAKE EDUCATION CENTER

CORCORAN JOINT UNIFIED SCHOOL DISTRICT
CORCORAN, KINGS COUNTY, CALIFORNIA

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SET NUMBER

TABLE OF CONTENTS

DIVISION 6 - WOOD, PLASTICS, AND COMPOSITES

Not Used

DIVISION 7 - THERMAL AND MOISTURE PROTECTION

Not Used

DIVISION 8 - DOORS AND WINDOWS

Not Used

DIVISION 9 - FINISHES

09 2400	Cement Plaster
09 9100	Painting

DIVISION 10 - SPECIALTIES

10 1400	Signage
10 7500	Flagpoles

DIVISION 11 - EQUIPMENT

11 400	Food Service Equipment

DIVISION 12 - FURNISHINGS

Not Used

DIVISION 13 - SPECIAL CONSTRUCTION

Not Used

DIVISION 14 - CONVEYING SYSTEMS

Not Used

DIVISION 21 - FIRE SUPPRESSION

Not Used

DIVISION 22 - PLUMBING

Not Used

DIVISION 23 - MECHANICAL

Not Used

DIVISION 26 - ELECTRICAL

DIVISION 27 - COMMUNICATION SYSTEMS

Not Used

DIVISION 28 - ELECTRONIC SAFETY AND SECURITY

Not Used

DIVISION 31 - EARTHWORK

DIVISION 32 - EXTERIOR IMPROVEMENTS

DIVISION 33 - UTILITIES

Not Used

END OF TABLE OF CONTENTS

SECTION 01 1100 - SUMMARY OF WORK

PART 1 - GENERAL

1.1 SUMMARY:

A. Related Sections: Close coordination between this Section, the General and Supplementary Conditions, and Divisions 1 through 33 is required.

B. Project Location: 1128 S. Dairy Avenue, Corcoran, CA 93212

C. Project: The Project consists of the total construction of which the Work performed under the Contract Documents is a part and which may include construction by the Owner or by separate contractors, for:

NEW MODULAR FOOD SERVICE BUILDING AT KINGS LAKE EDUCATION CENTER

D. Work: The Work of the Project consists of all labor, material, equipment, and services to perform all selective demolition and construction required by the Contract Documents, including but not limited to 1 new modular food service building with related on-site development at Kings Lake Education Center.

E. Applicable Codes: All work shall be performed in accordance with the plans, specifications and the following regulations:
1. 2019 Building Standards Administrative Code, Part 1, Title 24 CCR.
2. 2019 California Building Code (CBC), Part 2, Title 24 CCR.
3. 2019 California Electrical Code (CEC), Part 3, Title 24 CCR.
4. 2019 California Mechanical Code (CMC) Part 4, Title 24 CCR.
5. 2019 California Plumbing Code (CPC), Part 5, Title 24 CCR.
6. 2019 California Energy Code (CEC), Part 6, Title 24 CCR.
7. 2019 California Fire Code, Part 9, Title 24 CCR.
8. 2019 California Referenced Standards, Part 12, Title 24 CCR.
9. Title 19 CCR, Public Safety, State Fire Marshal Regulations.
10. 2019 NFPA 72 National Fire Alarm Code, as amended.

F. Conflicts in the Drawings and Specifications:
1. When conflicts are noticed prior to bidding, the bidder shall notify the architect immediately in order that an addendum can be issued to all bidders prior to bidding. When the discrepancy is noticed after the bid, the architect shall be notified and will review the discrepancy and interpret the intent. For the purpose of bidding and interpreting, **the most restrictive and potentially most expensive condition may prevail.**
2. In the case of ambiguity, conflict, or lack of information, the Architect shall respond with reasonable promptness and provide additional instructions, by means of drawings and/or written instructions, as may be otherwise necessary for proper execution of the work. All such drawings and instructions shall be consistent with the contract documents, true developments thereof, and reasonably inferable therefrom.

1.2 CONTRACTS

A. All work of this project will be let as a single lump sum General Contract.

1.3 FEES AND PERMITS

A. The Owner will be responsible to obtain and pay for the following:
1. Building permit and field inspection fee from governing jurisdiction.
2. Service connection fees to gas, permanent telephone, and permanent power utilities.

B. The Contractor shall be responsible to obtain and pay for the following:
   1. Permits and licenses required for work performed in the public right-of-way.
   2. Permits, licenses, and inspection fees required for execution and completion of the Work which are not the responsibility of the Owner.

C. The Contractor shall be responsible for requesting all inspections required by the governing jurisdictions.

1.4 WORK SEQUENCE

A. Refer to Section 00 3100 for preliminary schedule requirements.

B. Construct the Work within the following constraints:
   1. Fire Department Requirements: Maintain access to existing hydrants and maintain existing fire lanes free of obstruction.

1.5 CONTRACTOR'S USE OF PREMISES

A. Limit use of the site to construction activities in the areas indicated.

B. Confine operations to areas within the Contract Limits indicated. Portions of the site beyond areas in which construction operations are indicated shall not be disturbed.

C. Keep all exits required by code open during construction period; provide temporary exit signs if exit routes are temporarily altered.

D. Keep driveways and entrances serving the premises clear and available at to the Owner, the Owner's employees, and the public at all times.

E. Keep bus lanes and drop-off zones clear and available to the Owner at all times.

F. Use of existing toilets within the existing buildings, by the Contractor, shall not be permitted.

G. Store and stockpile materials on the property, excluding public rights-of-way.

1.6 OWNER OCCUPANCY

A. Owner intends to occupy the Project by the date stated in the Agreement as the Contract Completion Date.

B. Owner intends to continue to occupy adjacent portions of the existing site and/or buildings during the entire construction period. Do not interfere with the Owner's and public's use of the site and existing buildings outside of the Contract Limits indicated. Schedule the Work to accommodate Owner occupancy during construction. Cooperate with Owner to minimize conflict and to facilitate Owner's operations.

1.7 WORK BY OWNER

A. Items noted as NIC (Not In Contract) will be furnished and installed by the Owner.

B. The Owner will furnish and install the following work:
   1. Miscellaneous equipment and furnishings indicated as NIC.
   2. Grading and re-seeding of existing lawn areas damaged by construction operations.
   3. Repair and reconfiguration of existing landscape irrigation systems made necessary by the Work.
   4. Relocatable buildings secured to concrete stem-wall foundations provided by the Owner under separate contact.

END OF SECTION 01 1110

SECTION 01 2500 - SUBSTITUTION PROCEDURES

PART 1 - GENERAL

1.1 SUMMARY

A. This Section describes procedures for securing approval of proposed substitutions.

B. Related Sections:
1. Documents affecting work of this Section include, but are not necessarily limited to, General Conditions, Supplementary Conditions, and Sections in Division l of these Specifications.
2. Make submittals in accordance with pertinent provisions of Section 01 3300.

1.2 SUBSTITUTIONS

A. Substitutions: Contractors, subcontractors and/or material suppliers shall comply with the requirements set forth in this Section. All requests for material substitutions shall be submitted with all required substantiating data, comparisons to the material specified, including samples and colors as needed to determine their acceptance. Failure to provide the required documentation is justification for rejection.
1. Prior to Bid: Substitution Requests shall be submitted a minimum of 10 days prior to the bid (if material is to be included on the final addendum). Substitutions may be submitted by general contractor or subcontractor bidders directly to the Architect.
2. After Award of Contract. Substitution Requests may be submitted not more than 35 days after the award of the contract. Substitution requests shall only be submitted by the General Contractor.
3. Substitution Requests received greater than 35 days after the award shall be rejected.

B. Required Substitution Submittal Requirements:
1. Submit required substitution information with a completed “Substitution Request Form” found at the end of this Section.
2. Manufacturer's descriptive literature and product specifications for each product, with the proposed products clearly identified.
3. Comparative specification data between the specified item and the proposed substitution, showing compliance with the specified requirements.
4. Test reports indicating compliance with ASTM standards and ICC ES approvals where compliance with such standards is required by the Contract Documents or where compliance is claimed by the Contractor requesting substitution.
5. Samples of actual material and color, where applicable.
6. **Submittal without this information will automatically be rejected.**

C. Approval of Substitutions:
1. Where the phrase "or equal," or "or equal as approved by the Architect," occurs in the Contract Documents, do not assume that the materials, equipment, or methods will be approved as equal unless the item has been specifically so approved for this Work by the Architect.
2. The burden of proof as to the equivalency of any material, process, or product shall rest with the Contractor. Any or all of the following will be used by the Architect to determine if a proposed substitution is equivalent to the specified products or materials:
a. Code and legislative compliance.
b. Functional performance and characteristics.
c. Industry standard compliance.
d. Composition of materials.
e. Cost.
f. Aesthetic characteristics.

g. Environmental characteristics.
h. Manufacturer characteristics.
i. Installation characteristics.
j. Maintenance requirements.
k. Warranty characteristics.

3. **Approvals shall be at the sole discretion of the Architect and the decision of the Architect shall be final and binding.**
4. The provisions allowing submission of substitutions shall not in any way authorize an extension of time for performance of the Work.

D. Substitution of any material, system, or product that would normally be reviewed by DSA (Structural Safety, Fire/Life Safety, Access Compliance, or Energy) shall be submitted to and approved by DSA prior to fabrication or use. Such substitutions shall be considered Construction Change Document in accordance with Section 01 2600.

1.3 DELAYS

A. Delays in construction arising by virtue of the non-availability of a specified material due to late approval and/or ordering of materials will not be considered as justifying an extension of the agreed Time of Completion, or reason for change.

B. All additional time required by the Architect or his consultants in dealing with such delay will be charged to the Contractor at the rates listed above.

C. Equal or better material replacements caused by delay in approvals and/or ordering may cost more than the original material specified. Increased costs shall be absorbed by the Contractor and not the Owner.

END OF SECTION 01 2500

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SUBSTITUTION REQUEST FORM

PROJECT: _____

SPECFICIATION SECTION: _____ **ARTICLE/PARAGRAPH:** _____

SPECIFIED SECTION: _____

PROPOSE SUBSTITUTION: _____

Attach complete technical data including laboratory tests and code approvals, detailed drawings, and other data indicating compliance with the requirements of the Contract Documents. Clearly identify products being proposed for substitution. Include complete information on changes to Drawings and/or Specifications which proposed substitution will require for its proper installation.

FILL IN BLANKS BELOW:

A. Does the substitution affect dimensions on Drawings? ☐Yes ☐No

B. Will the undersigned pay for changes to the building design, including building design, engineering and detailing costs caused by the requested substitution? **(Negative response may be cause for rejection)**
☐Yes ☐No Explain: _____

C. What affect does substitution have on other trades? _____

D. Differences between proposed substitution and specified item? _____

E. Manufacturer's guarantee of the proposed and specified items are: ☐Same ☐Different
Explain: _____

F. Manufacturer will provide colors that match color selection in finish schedule: ☐Yes ☐No

The Undersigned hereby certifies that the function, appearance, and quality are equivalent to or superior to the specified item. The undersigned agrees to waive all claims for additional costs related to accepted substitution, including costs associated with changes to building design, engineering, or details, which may subsequently become apparent.

Submitted by: _____

Signature: _____ Date: _____

Firm: _____

Phone: _____ Address: _____

Fax: _____

ARCHITECT'S REVIEW AND ACTION

☐Accepted – Make submittals in accordance with Section 01 2500.
☐Accepted as noted – Make submittals in accordance with Section 01 2500.
☐Rejected – Use specified materials.
☐Received too late – Use specified materials.

By: _____ **Date:** _____

MANGINI ASSOCIATES INC.

Remarks: _____

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REQUEST FOR INFORMATION RFI NO.

TO: **Mangini Associates Inc.** **DATE:**
Attn: **ARCHITECT'S RFI NO.:**
PROJECT NO.:
PROJECT: **DSA APPL. NO.:**

Subject:
Plan/Spec. Ref:
Question:

Suggestion:

Attachments:

Contractor's Contract Status:

- ☐ No change in contract time of sum required
- ☐ Change in contract time may be required
- ☐ Change in contract sum may be required

The undersigned certifies that the Contractor has thoroughly reviewed all Contract Documents and determines that the information requested is not contained in the Contract Documents.

By: **Company:** **Title:**
Phone: **Fax:** **Email:**

Response:

By: **Date:**
MANGINI ASSOCIATES INC.

CC:

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BULLETIN NO. 01

TO:	Contractor Name Contractor Address Contractor Address	**DATE:**	January 25, 2017
		BULLETIN NO.:	One
		PROJECT NO.:	XXXX
		DSA FILE NO.:	02-123456
PROJECT:	Project Name Owner Name	**DSA APPL. NO.:**	54-12

☐ **Supplemental Instructions:** The Work shall be carried out in accordance with the following supplementary instructions, clarifications, or interpretations issued in accordance with the Contract Documents without change in Contract Sum or Contract Time. Proceeding with the Work in accordance with these instructions indicates your acknowledgment that there will be no change in Contract Sum or Contract Time.

☐ **Proposal Request:** Submit an itemized proposal for changes in Contract Sum and/or Time for to the proposed modifications to the Contract Documents described herein. **This is not a Change Order, a Construction Change Directive, or a direction to proceed with the changes to the Work described herein.**

BULLETIN DESCRTIPTION:

Item BX.01: Description

Item BX.02: Description

ATTACHMENTS:

Drawing B1.1 dated November 29, 2017

END BULLETIN NO. XX

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CHANGE ORDER NO. 01

TO: Contractor Name
Contractor Address
Contractor Address

DATE: February 8, 2017
CO NO.: One
PROJECT NO.: XXXX

PROJECT: Project Name
Owner Name

THE CONTRACT IS CHANGED AS FOLLOWS:

See attached Exhibit "A" for Description of Work

TOTAL THIS CHANGE ORDER: **DEDUCT** **$0.00**

Attachments: None

The Contractor agrees that this resolution constitutes a final accord and satisfaction of the Contractor's rights with respect to this change order.

The original Contract Sum was	$	-
Net change by previous Change Orders	$	-
The Contract Sum prior to this Change Order was	$	-
The Contract Sum will be changed by this Change Order	$	-
The new Contract Sum including this Change Order will be	$	-

The Contract Time will be **unchanged** **ZERO** (0) days.
The Date of Completion as of the date of this Change Order therefore is **Month, Day, Year**

Contractor: _____ Date: _____
Name, President
Company

Architect: _____ Date: _____
Architect
Mangini Associates Inc.

Owner: _____ Date: _____
Name, Superintendent
Owner Name

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CHANGE ORDER NO. 1
PROJECT NAME

EXHIBIT "A"

Description of Work

Item No. 1:	**BL #0:** Description of Work **Reason:**	ADD	$0.00
Item No. 2:	**BL #0:** Description of Work **Reason:**	DEDUCT	$0.00

TOTAL THIS CHANGE ORDER **$0.00**

SECTION 01 2610 - CONTRACT MODIFICATION PROCEDURES AND FORMS

PART 1 - GENERAL

1.1 SUMMARY:

A. This section includes procedural requirements for consideration and execution of modifications to and interpretations of the Contract Documents. This section is intended to supplement requirements set forth in the Agreement and the General and Supplementary Conditions.

B. Section includes:
1. Documentation of changes in Contract Sum and Contract Time.
2. Interpretation and clarification procedures.
3. Change procedures.
4. Correlation of Contractor submittals based on changes.

C. Related Sections:
1. Close coordination between this Section, the General and Supplementary Conditions, and Divisions 1 through 33 is required.
2. Section 00 5210: Agreement, Contract Sum, retainage, payment period, values of unit prices.
3. Section 00 7210: Requirements for progress payments, final payment, changes in the Work.
4. Section 00 7310: Percentage allowances for Contractor's overhead and profit.
5. Section 01 2100: Payment procedures relating to allowances.

1.2 DEFINITIONS

A. **Authority Having Jurisdiction (AHJ):** Officials, agencies, departments, and other organizations having statutory approval and enforcement authority, including federal, state, local, or other regional authorities having jurisdiction over the Project.

B. **Approved Construction Documents:** The approved construction documents are the drawings, specifications, addenda, deferred approvals, changes and bulletins approved by the governing code jurisdiction.

C. **Bulletin:** A bulletin is a document produced by the Architect to memorialize all changes, clarifications and interpretations to the approved Construction Documents. A bulletin may or may not change the Contract Sum or the Contract Time.

D. **Bulletin Log:** The Bulletin Log is an organized method of numbering, logging, cost accounting, and tracking the status of each bulletin issued.

E. **Change:** A change is a revision, modification, deletion, addition, or substitution to the approved Construction Documents.

F. **Change Order:** A document defining and memorializing construction changes that result in changes to the Construction Contract, usually changing Contract Sum or Contract Time.

G. **Clarification:** A clarification is a statement that clarifies (but does not change) the requirements of the approved Construction Documents.

H. **Contract:** A written agreement for construction, alteration, reconstruction, repair, or other construction activities.

1.3 REGULATORY REQUIREMENTS

A. In addition to the modification requirements of this section, the Agreement, and the General and Supplementary Conditions, the AHJ may require that changes to the approved construction documents be submitted to and approved by the AHJ.

1.4 MODIFICATION PROCEDURES

A. For minor changes not involving an adjustment to the Contract Sum or Contract, the Architect will issue a Bulletin which provides supplementary instructions and information, including a detailed description of the change with supplementary or revised drawings and specifications.
   1. Proceeding with the changes described in the Bulletin indicates the Contractor's acknowledgment that there will be no change in Contract Sum or Contract Time.
   2. In the event the Contractor believes that such Bulletin constitutes a change to the adjustment to the Contract Sum or Contract Time, the Contractor shall immediately give written notice to the Architect within 10 calendar days of receipt of the Bulletin stating that the Contractor considers the Bulletin to be a Change Order. Failure to give such written notice shall waive the Contractor’s right to seek additional time or cost.

B. For changes involving adjustment to the Contract Sum or Contract Time, Architect will issue a Bulletin which provides a detailed description of the proposed change with supplementary or revised drawings and specifications.
   1. Contractor shall prepare and submit a fixed price quotation in the form of a Change Order Request (COR) within 14 calendar days.
   2. The Owner shall provide written acceptance of the Contractor's COR prior to the Contractor commencing work described in the COR.

C. The Contractor may propose a change by submitting a Change Order Request (COR) to Architect, describing the proposed change and its full effect on the Work, with a statement describing the reason for the change, and the effect on the Contract Sum and Contract Time with full documentation and a statement describing the effect on Work by separate or other contractors. Document any requested substitutions in accordance with Section 01 6200.

D. Execution of Change Orders: Architect will issue Change Orders on the form attached at the end of this Section for signatures of parties as provided in the Conditions of the Contract.

E. After execution of Change Order, promptly revise Schedule of Values and Application for Payment forms to record each authorized Change Order as a separate line item and adjust the Contract Sum.

F. Promptly revise progress schedules to reflect any change in Contract Time, revise sub-schedules to adjust times for other items of work affected by the change, and resubmit.

G. Promptly enter changes in Project Record Documents.

1.5 CONTRACT INTERPRETATION AND CLARIFICATION PROCEDURES

A. Request for Information (RFI): A written request from the Contractor to the Architect, seeking an interpretation or a clarification of some requirement of the Contract Documents. The Contractor shall clearly and concisely set forth the issue for which it seeks clarification or interpretation and why a response is needed from the Architect. The Contractor shall, in the written request, set forth its interpretation or understanding of the contract’s requirements along with reasons why it has reached such an understanding.
   1. The Architect will review all RFI to determine whether they are RFI within the meaning of this term. Project communications; substitution submittals; product data, shop drawings, or samples submittals, or

construction schedule submittals shall not transmitted by RFI. Project communications shall not be considered RFI.

2. Responses to RFI shall be issued within 10 calendar days of receipt of the request from the Contractor unless the Architect determines that a longer time is necessary to provide an adequate response. If a longer time is determined necessary by the Architect, the Architect will, within 10 calendar days of receipt of the request, notify the Contractor of the anticipated response time. If the Contractor submits a Request for Information on an activity with 10 calendar days or less of float on the current project schedule, the Contractor shall not be entitled to any time extension due to the time it takes the Architect to respond to the request provided that the Architect responds within the 10 calendar days set forth above.
3. In the event the Contractor believes that a response to a Request for Information will cause a change to the requirements of the Contract Documents, the Contractor shall immediately give written notice to the Architect within 10 calendar days of receipt of the request the Architect stating that the Contractor considers the response to be a Change Order. Failure to give such written notice shall waive the Contractor's right to seek additional time or cost under the Changes article of the General Conditions.
4. Failure on the part of the Contractor to provide timely Requests for Information does not constitute a crisis solution from the Architect.
5. Requests for Information that affect structural, accessibility, or fire/life safety portions of the Project made after a contract for the Work has been let shall be submitted to and approved by DSA as a Construction Change Document prior to commencement of the Work shown thereon.

END OF SECTION 01 2610

SECTION 01 2910 - PAYMENT PROCEDURES

PART 1 - GENERAL

1.1 SUMMARY

A. Provide a detailed breakdown of the agreed Contract Sum showing values allocated to each of the various parts of the Work, as specified herein and in other provisions of the Contract Documents.

B. Related Sections:
1. Section 00 7210: General Conditions related to payment procedures.
2. Section 01 3210: Construction schedules and schedule updates.

1.2 SCHEDULE OF VALUES

A. One week prior to first application for payment, submit proposed Schedule of Values to Architect.
1. Meet with the Architect and determine additional data, if any, required to be submitted.
2. Secure Architect's approval of Schedule of Values prior to submitting first application for payment.
3. Without documentation, the Architect will value the work and spread the costs throughout the project.

B. Construction Schedule Correlation: Schedule of Values line items shall be identical to construction schedule activity items.

C. Activity Dollar Value: Assign a dollar value to each activity which includes overhead and profit.

D. Construction Activity Breakdown:
1. Limit activities to a single floor level.
2. Separate vertical activities from horizontal activities.
3. Separate site work into quadrants.
4. Separate on-site work from off-site work.
5. For plumbing, mechanical, and electrical work, separate activities into underground, rough-in, and finish activities.
6. Separate costs (cabling, devices, installation, programming, testing) for each of the following systems from the other power and lighting electrical costs:
a. Fire alarm.
b. Data
c. Telephone.
d. Intercom / clock.
e. Intrusion alarm.
7. For concrete work, separate activities into footings, exterior walks, interior slabs, curbs/mowstrips.

E. Stored Materials: When the Contractor desires to request payment for stored materials (on-site or off-site), such materials shall be identified in the schedule as a material line item. Materials not identified as material line item will not be considered for payment as stored materials and will only be considered for payment when incorporated into the Work.

F. Division 1 Activities: At a minimum, break down Division 1 costs into the following categories:
1. Mobilization.
2. Surveying.
3. Supervision/administration.
4. Bonds and insurance.
5. Temporary facilities and controls.

6. Demobilization.

G. Cost Correlation: Progress in terms of Contractor's applications for payment shall be measured as a percentage and shall be based on an estimate of actual dollar value of work completed and materials stored, versus total dollar value for each activity included in Schedule of Values, less applicable retainage.

1.3 QUALITY ASSURANCE

A. Assure arithmetical accuracy of the sums described.

B. When so requested by the Architect, provide copies of the subcontracts or other data acceptable to the Architect, substantiating the sums described.

1.4 PAYMENT FOR STORED MATERIALS

A. The Contractor is encouraged to order materials early in order to prevent delays. **Delays arising from non-availability of a specified material due to late approval and/or ordering of materials will not be considered as justifying an extension of time or reason for change. Refer to Section 01 6200.**

B. The Architect and Owner will consider payment for materials stored properly in accordance with the General Conditions. Payment for materials stored off-site will require, at a minimum:
1. Storage at a bonded or insured yard or warehouse with the stored materials properly tagged and identifiable for the project;
2. Insurance certificate acceptable to the Owner naming the Owner as additional insured, with the stored items specifically described on the certificate;
3. Verification by the Inspector of Record;
4. Manufacturer's invoices for materials and freight.

1.5 APPLICATIONS FOR PAYMENT

A. **General:** Use AIA Document G702, "Application for Payment" as summary and certification page.

B . **Initial Application for Payment:** Submittal of the following items is a condition precedent to certification and payment of the first application for payment. The Architect may refuse to certify payment, and the Owner shall have the right to refuse to pay any certified amount, if the Contractor has not completed or submitted any or all of the following:
1. Listing of subcontractors and principal suppliers and fabricators.
2. Schedule of Values approved by the Architect.
3. Construction Schedule reviewed by the Architect.
4. Listing of Contractor's staff assignments and principal consultants.
5. Inspector of Record signature on the AIA G702 document.

C. **Progress Payments:** Submittal of the following items is a condition precedent to certification and payment of each progress application for payment. **The Architect may refuse to certify payment, and the Owner shall have the right to refuse to pay any certified amount, if the Contractor has not completed and submitted any or all of the following:**
1. Updated construction schedule as specified in Section 01 3210.
2. Recovery schedule specified in Section 01 3210 when required.
3. Inspector of Record signature on the AIA G702 document.

D. **Final Application for Payment:** Submittal of the following items is a condition precedent to certification and payment of the final application for payment. **The Architect may refuse to certify payment, and the Owner shall have the right to refuse to pay any certified amount, if the Contractor has not completed and submitted any or all of the following:**
   1. Administrative actions and submittals specified in Section 01 7700 as preliminary procedures for Final Acceptance.
   2. Inspector of Record signature on the AIA G702 document.

END OF SECTION 01 2910

SECTION 01 3110 - PROJECT MEETINGS

PART 1 - GENERAL

1.1 DESCRIPTION

A. To enable orderly review during progress of the Work, and to provide for systematic discussion of problems, the Architect will conduct project meetings throughout the construction period. The Contractor's relations with his subcontractors and materials suppliers and discussions relative thereto, are the Contractor's responsibility and normally are not part of project meetings content.

B. Related Sections: Documents affecting work of this Section include, but are not necessarily limited to, General Conditions, Supplementary Conditions, and Sections in Division 1 of these Specifications.

1.2 SUBMITTALS

A. Agenda Items: To the maximum extent practicable, advise the Architect at least 48 hours in advance of project meetings regarding items to be added to the agenda.

B. Minutes: The Architect will compile minutes of each project meeting, and will furnish one copy to the Contractor and to the Owner. Recipients of copies may make and distribute such other copies as they wish.

1.3 QUALITY ASSURANCE

A. For those persons designated by the Contractor to attend and participate in project meetings, provide required authority to commit the Contractor to solutions agreed upon in the project meetings.

1.4 MEETING SCHEDULE

A. Except as noted below for Preconstruction Meeting, project meetings will be held weekly.

B. Coordinate as necessary to establish mutually acceptable schedule for meetings.

1.5 MEETING LOCATION

A. The Architect will establish meeting location. To the maximum extent practicable, meetings will be held at the job site.

1.6 PRECONSTRUCTION MEETING

A. Preconstruction Meeting will be scheduled to be held within 15 working days after the Owner has issued the Notice to Proceed.
   1. Mandatory attendance by authorized representatives of the Contractor and major subcontractors, including but not limited to:
      a. Earthwork.
      b. Concrete.
      f. Plumbing/mechanical.
      g. Electrical.
   2. The Architect will advise other interested parties, including the Owner, and request their attendance.

B. Minimum Agenda: Data will be distributed and discussed on at least the following items:
   1. Organizational arrangement of Contractor's forces and personnel, and those of subcontractors, materials suppliers, and Architect.
   2. Channels and procedures for communications.
   3. Construction schedule, including sequence of critical work.
   4. Contract Documents, including distribution of required copies of original Documents and revisions.
   5. Processing of Shop Drawings and other data submitted to the Architect for review.
   6. Processing of Requests for Information, Proposal Requests, Change Orders and Payment Requests.
   7. Rules and regulations governing performance of the Work; and
   8. Procedures for safety and first aid, security, quality control, housekeeping, and related matters.

1.7 PROJECT MEETINGS

A. Attendance:
   1. To the maximum extent practicable, assign the same person or persons to represent the Contractor at project meetings throughout progress of the Work.
   2. Subcontractors, materials suppliers, and others may be invited to attend those project meetings in which their aspect of the Work is involved.

B. Minimum Agenda:
   1. Review, revise as necessary, and approve minutes of previous meetings.
   2. Review progress of the Work since last meeting, including status of submittals for approval.
   3. Identify problems which impede planned progress.
   4. Develop corrective measures and procedures to regain planned schedule.
   5. Complete other current business.
   6. Verify that Record Drawings are current and accurate.

C. Revisions to Minutes:
   1. Unless published minutes are challenged in writing prior to the next regularly scheduled progress meeting, they will be accepted as properly stating the activities and decisions of the meeting.
   2. Persons challenging published minutes shall reproduce and distribute copies of the challenge to all indicated recipients of the particular set of minutes.
   3. Challenge to minutes shall be settled as priority portions of "old business" at the next regularly scheduled meeting.

END OF SECTION 01 3110

SECTION 01 3210 - CONSTRUCTION PROGRESS SCHEDULES (Bar Chart)

PART 1 - GENERAL

1.1 SUMMARY

A. Prepare and maintain construction schedules as specified in this Section.

B. Documents affecting work of this Section include, but are not necessarily limited to, General Conditions, Supplementary Conditions, and Sections in Division 1 of these Specifications.
   1. Section 00 3110: Preliminary Schedules.
   2. Section 01 1110: Work sequences and constraints, Owner occupancy, and Owner furnished items.
   3. Section 01 2910: Schedule of values and payments.
   4. Section 01 3300: Requirements for shop drawings, product data, and samples.
   5. Section 01 7700: Project completion and closeout requirements.

1.2 SUBMITTALS

A. Schedule Development Submittals: Submit 3 color copies of schedule diagram with each submittal.

B. Schedule Updates: Submit 3 color copies of schedule diagram with each with each application for payment.

1.3 SCHEDULE DEVELOPMENT AND UPDATES:

A. Schedule: Submit schedule within 30 calendar days after date of Owner's Notice of Award and prior to first application for payment. Architect may refuse to certify application for payment if a construction schedule has not been submitted.

B. Schedule Updates:
   1. Update schedule monthly as part of the application for payment specified in Section 01 2910.
      a. Record actual start and finish dates.
      b. Graphically indicate progress of each active activity and remaining duration.
   2. In addition to updates required for applications for payment, provide a complete schedule submittal whenever the Contractor's planned sequence of construction is changed, when approved change orders impact critical path activities, or when time extension is approved by change order.

1.4 RESPONSIBILITY FOR THE SCHEDULE

A. Responsibility for construction planning and the effective and efficient implementation of such to meet the Contract Completion Date and any required milestones are the sole responsibility of the Contractor.

B. Review of the schedule and subsequent revisions by the Owner or the Architect shall be limited to review for compliance with the requirements of the Contract Documents; review shall not imply agreement of the Owner or Architect to the Contractor's planned procedures, coordination, scheduling, etc., as being appropriate or reasonable. Comments offered by the Owner or Architect relating to schedule logic or sequence which are the Contractor's responsibility are offered as a courtesy and are not conditions of acceptance.

C. Non-Waiver:
   1. If the accepted schedule and subsequent revisions do not include contractually required constraints, review and/or acceptance of the schedule and subsequent revisions by the Owner or the Architect shall not waive such requirements.

2. Review of the schedule and subsequent revisions by the Owner or the Architect shall not constitute a waiver of any contract requirement.
3. Contract requirements shall take precedence in the event of conflicts between the accepted schedule and contract requirements.

1.5 CONTRACT MODIFICATIONS

A. When a contract modification is required, submit proposed schedule revisions reflecting the proposed change impact.

B. Time Impact Analysis: Time impact analysis shall be provided as support of a time extension request, claim or request for equitable adjustment by the Contractor.
1. Submit a time impact analysis illustrating the influence of each change or delay on the Contract Completion Date or milestones. The current monthly updated schedule accepted by the Architect shall be used to display the impacts of the change. No other non-approved modifications shall be incorporated into the schedule being used to justify the change impact.
2. Each time impact analysis shall include a fragmentary network demonstrating how the Contractor proposes to incorporate the impact into the schedule. The fragmentary network shall identify the predecessors to the new activities and demonstrate the impact to successor activities.
3. Include a narrative report describing the effects of new activities and relationships to interim and Contract Completion Dates.
4. Include written certification signed by the major subcontractors that they have reviewed and accepted proposed schedule revisions.

C. Determination of contract time extension shall be based on the schedule updates in effect for the time period in question, and other factual information. Actual delays found to be caused by the Contractor's own actions, which result in the extension of the schedule, will not be cause for time extension to the Contract Completion Date.

1.6 TIME EXTENSIONS

A. Extension of time for performance will be granted only to the extent that a delay occurs which impacts activities currently on the critical path, consumes all available float, and extends completion of the Work beyond the current Contract Completion Date.

B. The Contractor acknowledges and agrees that delays in activities which, according to the schedule, does not in fact actually affect any milestone completion or the Contract Completion Date shown on the schedule at the time of delay, will not be a basis for a time extension.

1.7 SCHEDULE RECOVERY

A. The Contractor shall take action to put the Project back on schedule, at no additional cost to the Owner, when it becomes apparent from the current schedule that, through no fault of the Owner:
1. The critical path becomes more than 5% behind the time remaining for completion of the Work.
2. Any milestone required by the Contract Documents may not be met.
3. Any schedule update reveals that the Work will complete later than the Contract Completion Date.

B. Action by the Contractor to put the Work back on schedule may include any or all of the following:
1. Increase construction manpower;
2. Increase the number of working hours per shift, shifts per working day, working days per week, or the amount of construction equipment, or any combination of the foregoing;
3. Reschedule activities to achieve maximum practical concurrency of activities;
4. Expedite delivery of materials.

C. Notify the Architect of the specific measures taken or planned to increase the rate of progress together with an estimate of when scheduled progress will be regained and submit planned revisions to construction schedule prior to implementation of such measures and schedule revisions.

1.8 VOLUNTARY ACCELERATION

A. Early completion or voluntary acceleration of the schedule by the Contractor is acceptable provided that:
   1. The Owner is agreeable to such acceleration and so notifies the Contractor in writing;
   2. At the time of submission of the Preliminary Construction Schedule, such acceleration is clearly indicated and the Owner is notified of actions on the Owner's part necessary to accommodate the change or acceleration;
   3. The Owner is compensated for any inconvenience or expense associated with such acceleration;
   4. The time between early completion date and the Contract Completion date is identified as a schedule activity as “Project Float Time.” Such “Project Float Time” within the construction schedule is not for the exclusive use or benefit of either the Owner or the Contractor but is a jointly owned, expiring project resource available to both parties as needed to meet contract milestones and the Contract Completion Date.

B. The Owner may require various changes in the Work. Pursuant to the voluntary acceleration and float sharing provisions of this Section, no time extensions will be granted nor delay damages paid until a delay occurs that impacts activities currently on the critical path, consumes all available float, and extends completion of the Work beyond the current Contract Completion Date.

1.9 PROJECT SCHEDULE

A. Contract Time: As established by the Agreement Between the Owner and Contractor and amended by change order.

B. Progress of the Work:
   1. Time is of the essence in the performance of this Contract.
   2. Schedule the Work in such a manner as to provide for timely completion.
   3. Begin schedule with the Notice to Proceed and conclude with the late-finish date of the critical path on the Contract Completion Date which shall be the date of Notice of Completion.

C. Plan of the Work: The schedule shall reflect Contractor’s actual plan for prosecution of the Work.

D. DSA Oversight Process: In connection with the DSA Construction Oversight Process, which includes the use of inspection cards and review of changes to the DSA-approved construction documents, the Contractor must (a) include specific tasks in its baseline schedule to take into account these procedures since they are critical path issues; and (b) include a reasonable amount of float in the baseline schedule to accommodate the additional time required by these DSA procedures.

E. Detail: Time scale network diagram in calendar days and prepare at level of detail and logic which will schedule as separate activities all salient features of the Work. At a minimum, include:
   1. Project mobilization.
   2. Schedule preparation and updates.
   3. Submittal and shop drawing preparation.
   4. Review and DSA approval of deferred approvals.
   5. Review of submittals and shop drawings for critical materials and equipment.
   6. Procurement, fabrication, delivery, and installation of major equipment and critical materials.
   7. Testing and inspection.

8. Significant activities of the work of each trade.
    a. Separate plumbing, mechanical, and electrical into underground, rough-in, and finish activities.
    b. Separate concrete work activities into footings, exterior walks, interior slabs, curbs/mowstrips.
9. Separate the following systems from other power and lighting electrical activities:
    a. Fire alarm system.
    b. Data, telephone, intercom / clock, intrusion alarm, audio visual systems.
10 Power shut-downs.
11. All milestone dates.
12. Testing of concrete floor slabs for moisture and pH.
13. Remediation of concrete floor slabs due to unsatisfactory moisture or pH conditions.
14. Final clean-up.
15. Start-up and testing.
16. Commissioning.
17. Correction list work.
18. Building flush out (100% outside air for 14 days).
19. Demobilization.
20. Closeout documentation.

F. Provide for schedule, logic, and operating constraints of the Work as specified in Section 01 1100.

1.10 BAR CHART SCHEDULE

A. Prepare a bar chart graphically showing the order of all activities necessary to complete the Work, and the sequence in which each activity is to be accomplished, as planned by the Contractor. Indicate a separate time bar for each activity.

B. Format:
1. Sequence of Listings: The Table of Contents of this Project Manual.
2. Coordination of Listings: Correspond each schedule activity to a line item listed in the Schedule of Values. Refer to Section 01 2910.
3. Time Scale: Provide a continuous line to identify the first working day of each week.

C. Identify work of each separate stage and other logically grouped activities. In the case of multiple buildings on 1 site, separate the significant elements of the work of each trade for each building as a sub-schedule. Graphically group activities of separate stages and buildings, **do not use a random (or scattered) format.**

1.11 SCHEDULE ACTIVITIES

A. **Schedule Activities:**
1. 30 day maximum duration.
2. Limit activities to a single floor level.
3. Separate vertical activities from horizontal activities.
4. Separate site work into quadrants.
5. Separate on-site work from off-site work.

B. **Activity Information:** Indicate the following information for each activity on network diagram:
1. Activity description.
2. Activity number corresponding to the CSI section numbers listed in the Table of Contents.
3. Duration.
4. Start and completion dates.
5. Status indicator (started or complete).

C. Milestone Activities: Indicate date on the diagram for each of the following milestone activities:
   1. Start project: Start schedule no earlier than the contract award date and the project duration shall start on the Notice to Proceed date.
   2. Early completion: If the Contractor's schedule shows completion of the project prior to the Contract Completion Date, the Contractor shall include an activity named "contractor early completion".
   3. End project: Include as the last activity an activity named "end project" finish date equal to the Contract Completion Date.

END SECTION 01 3210

SECTION 01 3300 - SUBMITTAL PROCEDURES

PART 1 - GENERAL

1.1 SUMMARY

A. Make submittals required by the Contract Documents, and revise and resubmit as necessary to establish compliance with the specified requirements, all as described in this Section.
   1. The section includes requirements for building systems described as Deferred Approval Items on the drawings or in the specifications.

B. Related Sections:
   1. Documents affecting work of this Section include, but are not necessarily limited to, General Conditions, Supplementary Conditions, and Sections in Division 1 of these Specifications.
   2. Other requirements for submittals may be described in pertinent Sections of these Specifications.
   3. Section 01 3560: High Performance Criteria Summary.

C. Work not Included:
   1. Submittals not required by the Contract Documents will not be reviewed by the Architect.
   2. The Contractor may require his subcontractors to provide drawings, setting diagrams, and similar information to help coordinate the Work, but such data shall remain between the Contractor and his subcontractors and will not be reviewed by the Architect unless specifically called for within the Contract Documents.

1.2 SUBMITTALS

A. Make submittals of Shop Drawings, Samples, substitution requests, and other items in accordance with the provisions of this Section.

B. Substitutions shall comply with the procedures for substitutions specified in Section 01 2500.

C. High Performance Criteria: Submit in accordance with Section 01 3560 - High Performance Criteria Summary under Submittals.

1.3 QUALITY ASSURANCE

A. Coordination of Submittals:
   1. Prior to each submittal to the Architect, the **General Contractor shall** carefully review and coordinate all aspects of each item being submitted.
   2. Verify that each item and the submittal for it conform in all respects with the specified requirements.
   3. By affixing the Contractor's signature to each submittal, certify that this coordination has been performed.

B. Accuracy of Submittals:
   1. By approving and submitting Shop Drawings, Product Data, Samples, and similar submittals, the Contractor represents that the Contractor has determined and verified materials, field measurements, and field construction criteria relate thereto, or will so, and has checked and coordinated the information contained within such submittals with the requirements of the Work and of the Contract Documents.

2. The Contractor shall not be relieved of responsibility for deviations from requirements of the Contract Documents by the Architect's review or approval of Shop Drawings, Product Data, Samples, or similar submittals unless the Contractor has specifically informed the Architect in writing of such deviation at the time of submittal requesting a substitution and the Architect has given written approval to the specific deviation. The Contractor shall not be relieved of responsibility for errors or omissions in Shop Drawings, Product Data, Samples, or similar submittals by the Architect's review thereof.

1.4 USE OF ARCHITECT'S CAD DRAWINGS

A. General:
1. Electronic CAD files of the Contract Drawings may be provided for Contractor's convenience and use in preparing submittals, subject to the requirements of this Section.
2. All requests by subcontractors for CAD drawings shall be transmitted through the Contractor and CAD files released by the Architect shall only be released to the Contractor.

B. Requirements for Release of Architect's Electronic CAD Files:
1. Release of CAD files is subject to Contractor's acceptance of Architect's "Waiver of Liability for Electronic CAD Files", a copy of which is attached at the end of this section.
2. Receipt of executed liability waiver agreement is a condition precedent to releasing architectural CAD files.

C. Requirements for Release of Civil Engineer's Electronic CAD Files:
1. Cost of Civil Engineer's preparation of civil CAD files shall be borne by the Contractor and is in addition to the Contract Sum.
2. Release of civil CAD files is subject to Contractor's acceptance of Civil Engineer's "Waiver of Liability for Electronic CAD Files". Contact the Civil Engineer to obtain the waiver form.
3. Receipt of executed liability waiver agreement is a condition precedent to releasing civil CAD files.

D. The Contractor assumes all liability and risk for use of electronic CAD files. Architectural / engineering drawings are essentially diagrammatic in terms of graphics and are not intended to provide scalable dimensional accuracy. Electronic CAD files are an incomplete representation of the Contract Documents which may not include addendum information or hand drawn additions or modifications. In the event of a conflict between the signed and approved Construction Documents and the electronic CAD files, the signed and approved Construction Documents shall govern.

E. The transfer of CAD files to the Contractor is for the Contractor's convenience only, and does not in any way release the Contractor from the requirement to produce its own shop drawings by the normal method of preparing plans and details by drafting. Delays in the release of CAD files shall not relieve the Contractor of preparing submittals in a timely fashion and such delays shall not provide a basis for claims of delay and damages.

PART 2 - PRODUCTS

2.1 TYPES OF SUBMITTALS

A. Shop Drawings:
1. Scale and Measurements: Make Shop Drawings accurately to a scale sufficiently large to show all pertinent aspects of the item and its method of connection to the Work.
2. Types of Prints Required: Submit Shop Drawings in the form of blackline prints of each sheet.
3. Review comments of the Architect will be shown on the sepia transparency when it is returned to the Contractor. The Contractor may make and distribute such copies as are required for his purposes.

B. Manufacturer's Literature:
   1. Where contents of submitted literature from manufacturers includes data not pertinent to the submittal, clearly show and highlight the portion of the contents being submitted for review.
   2. Submit seven copies of each item.

C. Samples:
   1. Provide Sample or Samples identical to the precise article proposed to be provided. Identify as described under "Identification of Submittals" below.
   2. Provide three samples; one to be retained by the Architect, one to be returned to the Contractor, and one to be retained by the Inspector of Record.

D. Colors and Patterns: Unless the precise color and pattern is specifically called out in the Contract Documents, and whenever a choice of color or pattern is available in the specified products, submit accurate color and pattern charts to the Architect for selection.

2.2 ELECTRONIC SUBMITTALS

A. Electronic submittal are acceptable in lieu of hard copies providing the following requirements are met:
   1. Submittal shall be in PDF format, with book marks for table of contents and each tab, and sub-bookmarks for each item.
   2. All text shall be searchable, except text that is part of a graphic.
   3. Submittal shall include all items required by the Contract Documents, except a binder is not required.
   4. Electronic submittals shall be processed through normal channels. Do not submit directly to the Architect's consultants.
   5. Contractor shall provide Owner and Inspector with hard copies of the final Submittal. Coordinate exact number required with the Architect.
   6. One hard copy of any submittal may be required upon the Architect's request for use during review.

B. Electronic submittals which do not comply with the above requirements will be rejected.

PART 3 - EXECUTION

3.1 IDENTIFICATION OF SUBMITTALS

A. Consecutively number all submittals.
   1. When material is submitted for any reason, transmit under a new letter of transmittal and with a new transmittal number.
   2. On resubmittals, cite the original submittal number for reference.

B. Accompany each submittal with a letter of transmittal showing all information required for identification and checking.

C. On at least the first page of each submittal, and elsewhere as required for positive identification, show the submittal number in which the item was included.

3.2 GROUPING OF SUBMITTALS

A. Unless otherwise specified, make submittals in groups containing all associated items to assure that information is available for checking each item when it is received.
   1. Partial submittals may be rejected as not complying with the provisions of the Contract.
   2. The Contractor may be held liable for delays so occasioned.

3.3 TIMING AND REVIEW OF SUBMITTALS

A. Make submittals far enough in advance of scheduled dates for installation to provide time required for reviews, for securing necessary approvals, for possible revisions and resubmittals, and for placing orders and securing delivery.

B. In scheduling, allow at least 30 calendar days for review by the Architect following the Architect's receipt of the submittal, unless mutually agreed otherwise in writing by the Architect and the Contractor.

C. Resubmittal Costs: The Architect and the Architect's consultants will review the original submittal only as part of their services to the Owner. If the time expended in resubmittal reviews exceeds normal resubmittal review time, the costs of resubmittal reviews by the Architect or the Architect's consultants will be paid to the Architect by the Owner as additional services on an hourly basis.
   1. The Architect will bill the Owner for the additional services required by the Architect and/or the Architect's consultants for such resubmittal reviews, time expended, and reimbursable expenses incurred, and the Owner shall be reimbursed by deducting the same amount from the Contractor's subsequent Application for Payment.

3.5 REQUIRED SUBMITTALS

A. Provide Submittals as required by each Specification Section.

END OF SECTION 01 3300

WAIVER OF LIABILITY FOR ELECTRONIC CAD FILES

Electronic CAD files for [Project Name and Location], have been requested by CONTRACTOR. These files are being provided, subject to the following terms and conditions, pursuant to the acceptance and execution of this agreement. For the purposes of this agreement the term ARCHITECT shall mean the Architect and all of its Consultants.

Electronic files provided are compatible with AutoCAD. ARCHITECT makes no representation as to the compatibility of these files with CONTRACTOR'S hardware or software. Due to the potential that the information presented on the electronic files can be modified, unintentionally or otherwise, ARCHITECT has the right to remove all indicia of ownership and or all involvement from electronic display.

Data contained on these electronic files are part of ARCHITECT'S instruments of service which are copyrighted and proprietary in nature and shall not be used by CONTRACTOR or any other entity receiving this data through or from CONTRACTOR for any purpose other than as a convenience in the preparation of shop drawings and field engineering for the referenced project. The CONTRACTOR agrees that the use of digital information provided by the ARCHITECT for any purpose or activity that constitutes the practice of Land Surveying and/or Civil Engineering, as defined by the California Business and Professions Code, will be by or under the direct supervision of a Land Surveyor or Civil Engineer licensed to practice in the State of California. Such practices include, but are not limited to creating a GPS model for earthwork. Any use or reuse by CONTRACTOR or by others will be at CONTRACTOR'S sole risk and without liability or legal exposure to ARCHITECT.

The transfer of electronic files to CONTRACTOR is for the CONTRACTOR'S convenience only, and does not in any way relieve CONTRACTOR from the requirement to produce shop drawings by the normal method of preparing plans and details by drafting. Delays in release of CAD files shall not relieve CONTRACTOR of responsibility for preparing shop drawings or providing field engineering in a timely fashion and such delays shall not provide a basis for claims of delay and damages.

The CONTRACTOR agrees to reciprocate with the ARCHITECT, upon request, relative to drawing files produced by it or its subcontractors for the subject project, under the same conditions as we have received digital files from the ARCHITECT.

The CONTRACTOR assumes all liability and risk for use of architectural / engineering electronic CAD files and agrees these electronic files are not construction documents and that differences may exist between these electronic files and corresponding hard copy construction documents. Electronic CAD files are an incomplete representation of the Contract Documents which may not include addendum information or hand drawn additions or modifications. In the event a conflict arises, signed and sealed hard copy construction documents will govern. By using these electronic files the CONTRACTOR is in no way relieved of its duty to fully comply with the contract documents, including, and without limitation, the need to check, confirm and coordinate all dimensions and details, take field measurements, verify field conditions and coordinate work with that of other CONTRACTORS on the project.

CONTRACTOR recognizes the instability of electronic storage media and that the transfer of electronic data may not be total or accurate, because of equipment and/or software incompatibility, or changes that may be made by CONTRACTOR and/or other entities receiving this data through or from CONTRACTOR during the editing of the information provided.

CONTRACTOR agrees to make no claim, and hereby waives, to the fullest extent permitted by law, any claim or cause of action against ARCHITECT, ARCHITECT'S officers, directors, employees, agents, or consultants that may arise out of or in connection with CONTRACTOR'S use of the electronic files. CONTRACTOR agrees to the fullest extent permitted by law, to indemnify and hold ARCHITECT and OWNER harmless from any damage, liability, or cost, including reasonable attorneys' fees and costs of defense, arising from any reuse or modification of the plans and specifications by CONTRACTOR or any person or entity which acquires or obtains the plans and specifications. In no event shall ARCHITECT or OWNER be liable for any loss of profit or any damages. It is understood that CONTRACTOR shall be solely responsible for verification of conditions and coordination of their work into the work product.

Under no circumstances shall delivery of the electronic files to CONTRACTOR be deemed a sale by ARCHITECT, and ARCHITECT makes no warranties, either express or implied, of merchantability and fitness for any particular purpose.

_____	_____
CONTRACTOR Name	Printed Name and Title
_____	_____
CONTRACTOR Address	Authorized Signature
_____	_____
	Date

List drawing sheets requested below or attach separate list:

_____

_____

SECTION 01 4520 - TESTING AND SPECIAL INSPECTION SERVICES

PART 1 - GENERAL

1.1 SUMMARY

A. This Section describes testing and inspection to be provided by the Owner and cooperation required from the Contractor with the Owner's selected testing agency and others responsible for testing and inspecting the Work. For detailed testing requirements, refer to the quality control requirements of the following sections:
   1. Section 03 1510: Concrete expansion anchor testing.
   2. Section 03 3000: Concrete testing and inspection.
   3. Section 31 2000: Soils inspection and testing, import soil toxic testing.

B. Testing may be required per the Specification Sections noted above that is not specifically noted on Form DSA-103, Statement of Structural Tests and Special Inspections.

C. Related Sections: Documents affecting work of this Section include, but are not necessarily limited to, General Conditions, Supplementary Conditions, and Sections in Division 1 of these Specifications.
   1. Section 01 4320: DSA construction oversight.

D. Work Not Included:
   1. Selection of testing laboratory: The Owner will select a prequalified independent testing laboratory.
   2. Payment for initial testing: The Owner will pay all services of the DSA approved testing laboratory as further described in Part 2 of this Section.

1.2 SUBMITTALS

A. Test Reports:
   1. The testing laboratory will provide test and inspection reports for all testing and inspection required by this Section and the Division of the State Architect in accordance with DSA Procedure 13-1.
   2. One copy of all test and inspection reports shall be forwarded by the testing laboratory to DSA, the Owner, the Architect, the Engineer, the Inspector, and the Contractor.
   3. Reports shall include all tests made regardless of whether such tests indicate that the material is satisfactory or unsatisfactory.
   4. Samples taken but not tested shall also be reported.
   5. Reports shall indicate that the material or materials were sampled and tested in accordance with the requirements of Title 24, California Code of Regulations, and the Contract Documents.
   6. Reports shall indicate the specified design strength and state definitely whether or not the material or materials tested comply with the requirements.

B. Contractor's Statement of Responsibility: In accordance with CBC Section 1704A.4, Contractor shall submit a statement of responsibility to the Architect, the Owner, and DSA prior to the commencement of work of the main wind or seismic force resisting systems or component. Statement of responsibility shall contain acknowledgment of awareness of the special inspection requirements contained in the statement of special inspections.

C. Verified Reports: The testing laboratory will provide interim and final verified reports in accordance with Section 01 4320 and DSA Procedure PR 13-1.

1.3 QUALITY ASSURANCE

A. The Owner will select an independent testing laboratory to conduct tests. Testing laboratory shall be approved by the Architect, Structural Engineer, and the Division of the State Architect.

B. Selection of material required for testing shall be by the laboratory or the Owner's representative and not by the Contractor.

C. Testing, when required, will be in accordance with all pertinent codes and regulations, and with selected standards of the American Society for Testing and Materials.

D. Division of the State Architect Testing & Inspection: At a minimum, the testing required for the project is indicated in the Form DSA-103, Statement of Structural Tests and Special Inspections attached at the end of this Section.
   1. Where no testing requirements are described, but the Owner or DSA decides that testing is required, the Owner or DSA may require such testing to be performed under current pertinent standards for testing. Payment for such testing will be made as described in this Section.
   2. Testing may be required by other Specification Sections that is not specifically noted on Form DSA-103, Statement of Structural Tests and Special Inspections.

1.4 MATERIALS, TESTING, AND INSPECTION STANDARDS

A. Comply with the California Building Code, 2019 Edition.

B. Concrete - Section 03 3000:
   1. Material Standards:
      a. Portland cement: CBC Section 1903A.1, ACI 318, Table 26.4.1.1.1(a).
      b. Fly ash: ACI 318, Table 26.4.1.1.1(a).
      c. Concrete aggregates: CBC Section 1903A.5; ACI 318, Section 26.4.1.2.1(a)(1).
   2. Material Tests:
      a. Reinforcing bar test: CBC Section 1910A.2.
      b. Waiver of reinforcing bar testing: CBC Section 1910A.2.
      c. Concrete strength: ACI 318, Section 26.12.
      d. Drilled expansion / epoxy bolt: CBC Section 1910A.5.
      e. Composite construction cores: CBC Section 1910A.4.
   3. Special Inspections:
      a. Job site inspection: CBC Section 1704A.3, Table 1705A.3.
      b. Batch plant inspection: CBC Section 1705A.3.3.
      c. Waiver of batch plant inspection: CBC Section 1705A.3.3.1.
      d. Post-installed anchors: CBC Table 1705A.3, Type 4, Section 1910A.5.

C. Earth Fill, Foundations, and Excavations - Section 31 2000:
   1. Special Inspection:
      a. Fill and Compaction: CBC Section 1705A.6 and Table 1705A.6.
      b. Pier Foundations: CBC Section 1704A.8.

D. Toxic Testing of Import Fill Material - Section 31 2000:
   1. Testing and Inspection: Refer to Section 31 2000.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Promptly process and distribute required copies of test reports and related instructions to assure necessary re-testing and replacement of materials with the least possible delay in progress of the Work.

PART 2 - PRODUCTS

2.1 PAYMENT FOR TESTING

A. Initial Testing: The Owner will pay for services requested by the Owner.

B. Retesting: When initial tests indicate non-compliance with the Contract Documents, subsequent retesting occasioned by the non-compliance shall be performed by the same testing agency and the costs thereof will be paid by the Contractor.

2.2 CONTRACTOR'S CONVENIENCE TESTING

A. Inspecting and testing performed exclusively for the Contractor's convenience shall be the sole responsibility of the Contractor.

2.3 OWNER'S INSPECTOR

A. The Owner shall employ a DSA approved Inspector in accordance with the requirements of the California Code of Regulations, Title 24. The Inspector's duties are specifically defined in Title 24, Part 1, Section 4-342.
1. Refer to Section 01 4320 - DSA Construction Oversight.

B. The work of construction in all stages of progress shall be subject to the personal continuous inspection of the Inspector. The Inspector shall have free access to any or all parts of the work at any time. The Contractor shall furnish the Inspector reasonable facilities for obtaining such information as may be necessary to keep the Inspector fully informed respecting the progress and manner of the work and character of the materials. Inspection of the work shall not relieve the Contractor from any obligation to fulfill this Contract.

PART 3 - EXECUTION

3.1 COOPERATION WITH TESTING LABORATORY

A. Representatives of the Owner and the testing laboratory shall have access to the Work at all times and at all locations where the Work or parts of the Work is in progress. The Contractor shall facilities for such access to enable the laboratory to perform its functions properly and safely.

3.2 TAKING SPECIMENS

A. Test specimens and prisms required for concrete, grout and mortar shall be taken by the testing laboratory and delivered directly to the testing laboratory as required by the California Building Code, 2019 Edition.

B. The testing laboratory shall be responsible for testing the samples.

C. Miscellaneous materials to be tested shall be tagged by the Project Inspector and delivered to the testing laboratory for testing. The testing laboratory shall provide specimen containers for the Project Inspector for the required tests.

3.3 SCHEDULES FOR TESTING

A. Establishing Schedule:
1. The Contractor shall notify the Project Inspector a sufficient time in advance of the manufacture of material to be supplied under the Contract Documents, which must by terms of the Contract be tested, in order that the Inspector may arrange for testing of the material at the source of supply.

2. The Contractor shall provide time within the construction schedule required for the laboratory to perform its tests and to issue each of its findings.
3. Contractor shall coordinate times for testing of materials and/or installations with the testing laboratory not less than 48 hours prior to the need for testing.

B. Revising Schedule: When changes of construction schedule are necessary during construction, coordinate all such changes with the testing laboratory as required.

C. Adherence to Schedule: When the testing laboratory is ready to test according to the established schedule, but is prevented from testing or taking specimens due to incompleteness of the Work, all extra charges for testing attributable to the delay may be back charged to the Contractor and shall not be borne by the Owner.

D. Tests and Inspections Required:
1. Refer to attached Form DSA 103.
2. Testing may be required by other Specification Sections that is not specifically noted on Form DSA-103, Statement of Structural Tests and Special Inspections.

3.4 UNTESTED MATERIALS

A. Any material shipped by the Contractor from the source of supply prior to having satisfactorily passed any required testing and inspection, or prior to receipt of notice from the Architect that testing and inspection will not be required, shall not be incorporated into the Work.

B. If such non-inspected and non-tested material is incorporated into the project, it shall be removed at the Contractor’s expense and no consideration will be given for delays or additional cost caused by this action.

END OF SECTION 01 4520

SECTION 01 5000 - TEMPORARY FACILITIES AND CONTROLS

PART 1 - GENERAL

1.1 SUMMARY

A. Provide construction facilities and temporary controls needed for the Work including, but not necessarily limited to:
1. Temporary utilities such as heat, water, electricity, and telephone;
2. Sanitary facilities;
3. Enclosures such as tarpaulins, barricades, safety devices, and canopies;
4. Temporary fencing of the construction site and/or buildings as required to secure the project;
5. Temporary protect of new and existing work;
6. Temporary protection of existing buildings and site.

B. Related Sections:
1. Documents affecting work of this Section include, but are not necessarily limited to, General Conditions, Supplementary Conditions, and Sections in Division 1 of these Specifications.
2. Except that equipment furnished by subcontractors shall comply with requirements of pertinent safety regulations, such equipment normally furnished by the individual trades in execution of their own portions of the Work is not part of this Section.
3. Permanent installation and hookup of the various utility lines are described in other Sections.

1.2 QUALITY ASSURANCE

A. Comply with governing regulations and rules/recommendations of utility companies and governmental agencies having jurisdiction.

1.3 DELIVERY, STORAGE, AND HANDLING

A. Maintain temporary facilities and controls in proper and safe condition throughout progress of the Work.

PART 2 - PRODUCTS

2.1 TEMPORARY UTILITIES

A. Water:
1. Provide necessary temporary piping and water supply and, upon completion of the Work, remove such temporary facilities.
2. Provide and pay for water used in construction.

B. Electricity:
1. Provide all necessary temporary poles and wiring and, upon completion of the Work, remove such temporary facility.
2. Provide area distribution boxes so located that the individual trades may furnish and use 100 ft maximum length extension cords to obtain power and lighting at points where needed for work, inspection, and safety.
3. Provide lighting as needed to permit safe and reasonable lighted working conditions.
4. Provide and pay for electricity used in construction.

C. Fire Protection: Provide for and maintain fire safety during construction and/or alteration of a building per Chapter 33 of the 2019 California Fire Code.

D. Safeguards During Construction: Provide for and maintain safeguards during construction and/or alteration of a building per Chapter 33 of the 2019 California Building Code.

E. Heating: Provide and maintain heat necessary for proper conduct of operations and temperature conditions needed for the Work.

F. Ventilation: Ventilate enclosed areas to achieve curing of materials, to dissipate humidity, and prevent accumulation of dust, fumes, vapors, or gases.

G. Telephone/Fax:
   1. Make necessary arrangements and pay costs for installation and operation of telephone, FAX, internet service and copier service in the Contractor's office at the site.

2.2 FIELD OFFICES AND SHEDS

A. Sanitary Facilities:
   1. Provide temporary sanitary facilities in the quantity required for use by all personnel per local and state health and sanitary regulations.
   2. Maintain in a sanitary condition at all times and in reasonable proximity of the work.

2.3 TEMPORARY ENCLOSURES

A. Provide and maintain for the duration of construction all scaffolds, tarpaulins, canopies, warning signs, steps, platforms, bridges, lighting, and other temporary construction necessary for the safe and proper completion of the Work in compliance with pertinent safety and other regulations.

B. Provide and maintain suitable temporary sidewalks, closed passageways, fences, and other structures required by law so as not to obstruct or interfere with traffic in public streets, alley ways, or private right-of-way. Leave an unobstructed way along public and private places for pedestrians and vehicles.

C. Provide temporary partitions and ceilings as needed 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.

2.4 TEMPORARY FENCING

A. Provide and maintain temporary fencing for the duration of construction to prevent unauthorized entry to construction areas and to protect existing facilities and adjacent properties from damage from construction operations.

B. Minimum fence height shall be 6'-0" high. Fence panels shall be stretched over 4-sided pipe frames.

2.5 VEHICULAR ACCESS AND PARKING

A. Access the site as indicated on the Drawings, or as directed by the Owner.

B. Do not use existing parking areas for the Contractor's parking or storage of materials.

C. Schedule deliveries to minimize space and time requirements for storage of materials and equipment on the site.

D. Construct and maintain temporary roads accessing public thoroughfares to serve construction area. Extend and relocate as the Work requires.

E. Provide and maintain access to fire hydrants, free of obstructions, with an all-weather hard surface able to support 50,000 pounds minimum fire apparatus. Fire hydrants shall be charged and accessible by local fire authorities prior to loading the site with combustible materials.

F. Employees vehicles not required for the direct construction of the Work shall be parked offsite unless otherwise authorized by the Owner.

2.6 DUST PROTECTION

A. Provide dust suppression measures, including watering of all graded or excavated material at least twice a day, stopping grading and excavation activities when the wind speed exceeds 20 mph for one hour, watering or covering all material transported off-site, and minimizing the area disturbed by grading and excavation activities.

B. Maintain adequate water and trucks to be used throughout the progress of the project to mitigate airborne dust. Maintain the site in a damp condition, not allowing excessive powdering of soil.

2.7 PROTECTION

A. Landscaping: Protect all existing trees, shrubs, lawns, and landscape work from damage, providing guards and coverings. Maintain by irrigation any existing trees, shrubs, lawns, and landscape work though-out the Contract which are within the Contractor's temporary fencing. Damaged landscaping shall be repaired or replaced at the Contractor's expense.

B. Public and Private Streets, Curbs, and Walks:
   1. Protect all existing streets, curbs, walks, and other street improvements and immediately make all necessary repairs for damage occurring thereto during the course of the Work at the Contractor's expense.
   2. Keep all public and private streets and ways clean of debris, spilled materials and products, and wet and dry earth at all times and clean at the end of each working day. Clean wet earth from vehicles prior to their leaving the site.

C. Weather: Provide protection at all times against weather--rain, winds, storms, frost, or heat--so as to maintain all work, materials, apparatus, and fixtures free from injury or damage. At the end of the day's work, cover all work likely to be damaged.
   1. Water Protection: Protect excavations, trenches, and/or building from damage from rain water, spring water, ground water, backing up of drains or sewers, and all other water at all times. Provide pumps and equipment and enclosure necessary to provide this protection.
   2. Drainage: Construct and maintain all necessary temporary drainage and do all pumping necessary to keep excavations free of water.
   3. Cold Weather: During cold weather, protect all work from damage.
   4. Snow and Ice: Remove all snow and ice as may be required for proper protection and/or prosecution of the Work.

D. Installed Roofing Materials: Provide means for protection of roofing materials during construction activities. Provide a minimum of 3/4" plywood as protection for storage or materials, walking areas, and working areas. Protect from solvents, oils, or other materials harmful to the installed roofing material.

E. Existing Utilities and Services: Maintain in operation through-out the Contract all existing utilities and services serving the existing facilities occupied by the Owner or by others.

F. Existing Structures and Improvements: The Contractor shall be responsible for all existing structures and improvements within the work area, and shall provide adequate protection. Any existing structure or improvement damaged during construction shall be repaired or replaced with materials, fixtures, or equipment of the same kind, quality, and size. Any materials, and/or equipment temporarily removed for protection and not damaged, shall be reinstalled.

G. Adjacent Property: Provide necessary protection for adjacent property and the lateral support therefor in conformance with the 2019 California Building Code.

2.8 SECURITY

A. The Contractor shall be responsible for security and protection of his equipment and the site-stored and installed products whether paid for by the Owner or not, until the Owner accepts the Project.

B. On-site security lighting shall be hooded and adjusted to reduce or eliminate illumination of surrounding properties and roadways.

2.9 DEBRIS CONTROL

A. Keep site clean and orderly in appearance at all times. Do not allow debris to accumulate over the site.

B. Collect debris daily and store in a central location or container. Remove from the site monthly prior to review of payment request.

PART 3 - EXECUTION

3.1 MAINTENANCE AND REMOVAL

A. Maintain temporary facilities and controls as long as needed for safe and proper completion of the Work.

B. Remove such temporary facilities and controls as rapidly as progress of the Work will permit, or as directed by the Architect.

END OF SECTION 01 5000

SECTION 01 5710 - EROSION CONTROL

PART 1 - GENERAL

1.1 SUMMARY

A. In accordance with pertinent provisions of this Section, install erosion control straw mat, straw wattles, and/or straw bales as needed to meet the requirements of the construction shown in the Contract Documents.

B. Related Sections:
1. Documents affecting work of this Section include, but are not necessarily limited to, General Conditions, Supplementary Conditions, and Sections in Division 1 of these Specifications.
2. Section 01 5725: Storm Water Pollution Prevention Plan.
3. Section 31 1000: Site clearing.
4. Section 33 4000: Storm drainage.

1.2 QUALITY ASSURANCE

A. Use equipment adequate in size, capacity, and numbers to accomplish the work in a timely manner.

B. In addition to complying with requirements of governmental agencies having jurisdiction, comply with the directions of the geotechnical engineer.

C. Install erosion control materials prior to expected rainfall and maintain throughout the construction period.

D. Comply with storm water pollution prevention plan.

1.3 SLOPE PROTECTION

A. Minor Slopes: Provide continuous straw mat protection over all soils disturbed by construction operations. Minor slopes shall be slope with finish grade less than 10 horizontal to 1 vertical, up to 6.5 horizontal to 1 vertical.

B. Major Slopes: Provide continuous straw mat protection plus horizontal trench with continuous straw wattles at 4' on center over all soils disturbed by construction operations. Major slopes shall be slope with finish grade equal to or greater than 6.5 horizontal to 1 vertical.

1.4 EXISTING UTILITIES

A. Field verify the location of all existing underground utilities prior to beginning any earthwork. Work around and protect all existing utilities during the course of the Work.

B. Where existing utilities are indicated on the drawings, extreme care shall be exercised in excavating near these utilities to avoid damage, and the Contractor will be held responsible for any damage caused by construction operations.

PART 2 - PRODUCTS

2.1 EROSION CONTROL MATTING

A. Erosion control matting shall be straw blanket of 100% agricultural straw fiber matrix with a functional longevity of 6 months or greater. Evenly distribute straw fiber over the entire area of the mat. The blanket shall be covered on the top and bottom with a lightweight photodegradable polypropylene net with mesh size of approximately ½" by ½". Sew blanket together on 1.5" centers with degradable thread.

B. Acceptable Products:
1. North American Green, S150 straw erosion control blanket.
2. Cascade Geotechnical Inc., S-31 LD straw erosion control blanket.
3. Erosion Control Systems, ProGuard SS straw erosion control blanket.
4. Other equal product approved by the Architect.

2.2 STRAW WATTLES

A. Straw wattles are intended to capture and keep sediment on the slopes. Wattles shall be manufactured from 100% agricultural rice straw and wrapped in tubular black plastic netting or hemp. They are approximately 8" in diameter or larger by 25'-30' in length.

B. Acceptable Products:
1. California Straw Works,
2. Other equal product approved by the Architect

2.3 STRAW BALES

A. Provide Straw Bales continuously around all drainage inlets and maintain them to prevent silt build-up in storm drainage pipe. Clean storm drain pipes prior to acceptance of the project and verify there are no obstructions.

PART 3 - EXECUTION

3.1 SURFACE CONDITIONS

A. Examine the areas and conditions under which work of this Section will be performed. Correct conditions detrimental to timely and proper completion of the Work. Do not proceed until unsatisfactory conditions are corrected.

3.2 EROSION CONTROL MATTING

A. Provide straw bales as required for loose spreading straw over native disturbed soil during grading operations and foundation and stem wall construction. Fine grade soil as soon after floor and wall framing is complete but before anticipated rainfall.

B. Install erosion control matting at the top of the slope by anchoring the mat into an earthen trench and anchor as recommended by the manufacturer.

C. Roll mats downhill and then horizontally with laps and staples as recommended by the manufacturer.

3.3 STRAW WATTLES

A. Prepare slope with Erosion Control Matting prior to laying the wattling material.

B. Dig and smooth trenches across the slope on contour, to place rolls. Provide trench depth as recommended by the manufacturer, but not less than ½ the diameter of the roll.

C. Trenches shall be placed 4' on center and perpendicular to water flow.

D. Anchor wattles in place with stakes driven and spaced as recommended by manufacturer.

3.4 FIELD QUALITY CONTROL

A. Inspect the erosion control blanket and wattles immediately following the first significant storm. Make sure all rolls are in full contact with soils.

B. Repair any gullys or washouts immediately.

C. Provide gravel or river rock in areas of excessive erosion acceptable to the Architect and at no additional cost to the Owner.

END OF SECTION 01 5710

SECTION 01 5725 - STORM WATER POLLUTION PREVENTION PLAN

PART 1 - GENERAL

1.1 SUMMARY

A. The State Water Resources Control Board (SWRCB) regulates storm water discharges associated with construction and land disturbance activities. Certain projects are required to obtain permit coverage under California's Construction General Permit (GCP), Order No. 2009-0009-DWQ. A site-specific Storm Water Pollution Prevention Plan (SWPPP) is required to obtain permit coverage under the CGP.

B. Related Sections
1. Section 01 5710: Erosion Control

C. This project disturbs less than one acre, therefore permit coverage has not been obtained and a SWPPP is **NOT** required, however the Contractor shall comply with the applicable sections of the California Green Building Code.

1.2 REFERENCES

A. Section 5.106 of the California Green Building Code, latest edition

END OF SECTION 01 5725

SECTION 01 6200 - PRODUCT OPTIONS

PART 1 - GENERAL

1.1 SUMMARY

A. This Section describes product options available to bidders and the Contractor.

B. Related Sections:
1. Documents affecting work of this Section include, but are not necessarily limited to, General Conditions, Supplementary Conditions, and Sections in Division l of these Specifications.
2. Section 01 2500: Substitution procedures.
3. Section 01 3300: Submittal procedures.

1.2 PRODUCT OPTIONS

A. The Contract shall be based on standards of quality established in the Contract Documents.
1. In agreeing to the terms and conditions of the Contract, the Contractor has accepted a responsibility to verify that the specified products will be available and to place orders for all required materials in such a timely manner as is needed to meet his agreed construction schedule.
2. Neither the Owner nor the Architect has agreed to the substitution of materials or methods called for in the Contract Documents, except as they may specifically otherwise state in writing.

B. Colors: Provide finish selections indicated in the Finish Schedule.
1. Acceptable Manufacturers: The products and manufacturers specified in the Finish Schedule are for purposes of establishing color and quality. Refer to each Specification Section for additional manufacturers and Section 01 2500 for substitution requirements.
2. Manufacturer’s Standard Colors and Finishes: Where the Finish Schedule specifies a manufacturer’s standard color or finish, the Architect makes no guarantee that matching colors or finishes are available as other manufacturer’s “standard colors” from the listing of acceptable manufacturers. The Contractor shall be responsible for providing colors matching those indicated on the Drawings.
3. Custom Colors: Where the Finish Schedule indicates a specific manufacturer’s colors, other acceptable manufacturers shall provide matching custom colors where a standard color is not acceptable.

1.3 DELAYS

A. Delays in construction arising by virtue of the non-availability of a specified material due to late approval and/or ordering of materials will not be considered as justifying an extension of the agreed Time of Completion, or reason for change.

B. All additional time required by the Architect or his consultants in dealing with such delay will be charged to the Contractor at the rates listed above.

C. Equal or better material replacements caused by delay in approvals and/or ordering may cost more than the original material specified. Increased costs shall be absorbed by the Contractor and not the Owner.

END OF SECTION 01 6200

SECTION 01 6600 - STORAGE AND PROTECTION

PART 1 - GENERAL

1.1 SUMMARY

A. Protect products scheduled for use in the Work by means including, but not necessarily limited to, those described in this Section.

B. Related Sections:
   1. Documents affecting work of this Section include, but are not necessarily limited to, General Conditions, Supplementary Conditions, and Sections in Division 1 of these Specifications.
   2. Additional procedures also may be prescribed in other Sections of these Specifications.

1.2 QUALITY ASSURANCE

A. Include within the Contractor's quality assurance program such procedures as are required to assure full protection of work and materials.

B. **Materials not properly stored will not be paid for by the owner. Materials previously paid for but not properly stored at time of payment request will be deducted from the request.**

1.3 MANUFACTURERS' RECOMMENDATIONS

A. Except as otherwise approved by the Architect, determine and comply with manufacturers' recommendations on product handling, storage, and protection.

1.4 PACKAGING

A. Deliver products to the job site in their manufacturer's original container, with labels intact and legible.
   1. Maintain packaged materials with seals unbroken and labels intact until time of use.
   2. Promptly remove damaged material and unsuitable items from the job site, and promptly replace with material meeting the specified requirements, at no additional cost to the Owner.

B. The Architect may reject as noncomplying such material and products that do not bear identification satisfactory to the Architect as to manufacturer, grade, quality, and other pertinent information.

1.5 PROTECTION

A. Protect finished surfaces, including jambs and soffits of openings used as passageways, through which equipment and materials are handled.

B. Provide protection for finished floor surfaces in traffic areas prior to allowing equipment or materials to be moved over such surfaces.

C. Maintain finished surfaces clean, unmarred, and suitably protected until accepted by the Owner.

1.6 REPAIRS AND REPLACEMENTS

A. In event of damage, promptly make replacements and repairs to the approval of the Architect and at no additional cost to the Owner. Additional time required to secure replacements and to make repairs will not be considered by the Architect to justify an extension in the Contract Time of Completion.

END OF SECTION 01 6600

SECTION 01 7120 - FIELD ENGINEERING

PART 1 - GENERAL

1.1 SUMMARY

A. Provide such field engineering, staking services, and required certifications as required for proper completion of the Work including, but not necessarily limited to establishing and maintaining lines and levels.

B. Related Sections:
1. Documents affecting work of this Section include, but are not necessarily limited to, General Conditions, Supplementary Conditions, and Sections in Division 1 of these Specifications.
2. Additional requirements for field engineering also may be described in other Sections of these Specifications.
3. As described in the General Conditions, the Owner will furnish survey describing the physical characteristics, legal limitations, utility locations, and legal description of the site.

1.2 SUBMITTALS

A. Comply with pertinent provisions of Section 01 3300.

B. Submit the following:
1. Data demonstrating qualifications of persons proposed to be engaged for field engineering services.
2. Documentation verifying accuracy of field engineering work
3. Certification, signed by the Contractor's retained licensed land surveyor or civil engineer, certifying that Bottom of Excavations, Top of Slab Elevations and locations of improvements are in conformance with requirements of the Contract Documents.

1.3 QUALITY ASSURANCE

A. Use adequate numbers of skilled workmen who are thoroughly trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and the methods needed for proper performance of the work of this Section.

1.4 PROCEDURES

A. In addition to procedures directed by the Contractor for proper performance of the Contractor's responsibilities:
1. Locate and protect control points before starting work on the site.
2. Preserve permanent reference points during progress of the Work.
3. Do not change or relocate reference points or items of the Work without specific approval from the Architect.
4. Promptly advise the Architect when a reference point is lost or destroyed, or requires relocation because of other changes in the Work.
    a. Upon direction of the Architect, require the field engineer to replace reference stakes or markers.
    b. Locate such replacements according to the original survey control.

END OF SECTION 01 7120

SECTION 01 7300 - EXECUTION REQUIREMENTS

PART 1 - GENERAL

1.1 SUMMARY

A. This Section establishes administrative and supervisory requirements pertaining to project coordination and general installation provisions.

B. Related Sections: Documents affecting work of this Section include, but are not necessarily limited to, General Conditions, Supplementary Conditions, and Sections in Division 1 of these Specifications.

1.2 COORDINATION

A. Coordinate construction activities included under various Sections of these Specifications to assure efficient and orderly installation of each part of the Work. Coordinate construction operations included under different Sections of the Specifications that are dependent upon each other for proper installation, connection, and operation.
   1. Where installation of one part of the Work is dependent on installation of other components, either before or after its own installation, schedule construction activities in the sequence required to obtain the best results.
   2. Where availability of space is limited, coordinate installation of different components to assure maximum accessibility for required maintenance, service, and repair.

B. Coordinate scheduling, submittals, and work of the various sections of the Project Manual to ensure efficient and orderly sequence of installation of interdependent construction elements, with provisions for accommodating items installed later.

C. Notify affected utility companies and comply with their requirements.

D. Verify that utility requirements and characteristics of new 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.

E. Coordinate space requirements, supports, 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 lines of building. Utilize spaces efficiently to maximize accessibility for other installations, for maintenance, and for repairs.

F. In finished areas except as otherwise indicated, conceal pipes, ducts, and wiring within the construction. Coordinate locations of fixtures and outlets with finish elements.

1.3 QUALITY ASSURANCE

A. Use adequate numbers of skilled workmen who are thoroughly trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and the methods needed for proper performance of the Work.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verify that existing site conditions and substrate surfaces are acceptable for subsequent work. Start of work means acceptance of existing conditions.

B. Verify that existing substrate is capable of structural support or attachment of new work being applied or attached.

C. Examine and verify specific conditions described in individual specification sections.

D. Take field measurements before confirming product orders or beginning fabrication, to minimize waste due to over-ordering or misfabrication.

E. Verify that utility services are available, of the correct characteristics, and in the correct locations.

F. Inspection of Conditions: Require the installer of each major component to inspect both the substrate and conditions under which Work is to be performed. Do not proceed until unsatisfactory conditions have been corrected in an acceptable manner.

G. Inspect materials or equipment immediately upon delivery and again prior to installation. Reject damaged and defective items.

3.2 PREPARATION

A. Clean substrate surfaces prior to applying next material or substance.

B. Seal cracks or openings of substrate prior to applying next material or substance.

C. Apply manufacturer required or recommended substrate primer, sealer, or conditioner prior to applying any new material or substance in contact or bond.

3.3 GENERAL INSTALLATION REQUIREMENTS

A. Install products as specified in individual sections, in accordance with manufacturer's instructions and recommendations, and so as to avoid waste due to necessity for replacement. Comply with manufacturer’s installation instructions and recommendations, to the extent that those instructions and recommendations are more explicit or stringent than requirements contained in the Contract Documents.

B. Make vertical elements plumb and horizontal elements level, unless otherwise indicated.

C. Install equipment and fittings plumb and level, neatly aligned with adjacent vertical and horizontal lines, unless otherwise indicated.

D. Make consistent texture on surfaces, with seamless transitions, unless otherwise indicated.

E. Make neat transitions between different surfaces, maintaining texture and appearance.

F. Provide attachment and connection devices and methods necessary for securing Work. Allow for expansion and building movement.

G. Provide uniform joint widths in exposed work. Arrange joints in exposed work to obtain the best visual effect. Refer questionable choices to the Architect for final decision.

H. Recheck measurements and dimensions prior to starting installation.

I. Install each component during weather conditions and project status that will ensure the best possible results. Isolate each part of the completed construction from incompatible material as necessary to prevent deterioration.

J. Coordinate temporary enclosures with required inspections and tests, to minimize the necessity of uncovering completed construction for that purpose.

K. Where mounting heights are not indicated, install individual components at standard mounting heights recognized within the industry for the particular application indicated. Refer questionable mounting height decisions to the Architect for final decision.

3.4 SITE CONDITIONS

A. Where existing utilities are indicated on the drawings, extreme care shall be exercised in excavating near these utilities to avoid damage, and the Contractor will be held responsible for any damage caused by construction operations.

B. Should utilities not indicated on the drawings be found during construction, the Contractor shall promptly notify the Architect for instructions as to further action. Failure to do so will make the Contractor liable for any damage arising from construction operations after discovery of these utilities.

3.5 CLEANING AND PROTECTION

A. During handling and installation, clean and protect construction in progress and adjoining materials in place. Apply protective covering where required to ensure protection from damage or deterioration until Notice of Completion.

B. Clean and maintain completed construction as frequently as necessary through the remainder of the construction period. Adjust and lubricate operable components to ensure operability without damaging effects.

C. Supervise construction activities to ensure that no part of the construction, completed or in progress, is subject to harmful, dangerous, damaging, or otherwise deleterious exposure during the construction period.

END OF SECTION 01 7300

SECTION 01 7330 - CUTTING AND PATCHING

PART 1 - GENERAL

1.1 SUMMARY

A. This Section establishes general requirements pertaining to cutting (including excavating), fitting, and patching of the Work.

B. Provide boring, fitting, and patching of the Work, as specified, as indicated, and as needed to:
1. Make the several parts fit properly;
2. Install new work into existing construction.
3. Uncover work to provide for installing, inspecting, or both, of ill-timed work;
4. Remove and replace work not conforming to requirements of the Contract Documents;
5. Remove and replace defective work; and
6. Remove samples of installed work for testing.

C. Related Sections: Documents affecting work of this Section include, but are not necessarily limited to, General Conditions, Supplementary Conditions, and Sections in Division 1 of these Specifications.

D. Special Requirements:
1. In addition to other requirements specified, upon the Architect's request uncover work to provide for inspection by the Architect of covered work, and remove samples of installed materials for testing.
2. Prior to cutting, notching, or boring of any structural elements, including bearing/shear walls, footings, beams, etc., not specifically detailed in the drawings, obtain approval from the Architect and DSA prior to commencement of work.
3. Do not cut or alter work performed under separate contracts without the Architect's written permission.
4. The Contractor shall provide all encroachment permits or others as required in the right-of-way of any adjacent jurisdiction.

1.2 SUBMITTALS

A. Request for Architect's Consent:
1. Prior to cutting which effects structural safety, submit written request to the Architect for permission to proceed with cutting.
2. Should conditions of the Work, or schedule, indicate a required change of materials or methods for cutting and patching, so notify the Architect and secure his written permission and the required Change Order prior to proceeding.

B. Notices to Architect:
1. Prior to cutting and patching performed pursuant to the Architect's instructions, submit cost estimate to the Architect. Secure the Architect's approval of cost estimates and type of reimbursement before proceeding with cutting and patching.
2. Submit written notice to the Architect designating the time the Work will be uncovered, to provide for the Architect's observation.

1.3 QUALITY ASSURANCE

A. Use adequate numbers of skilled workmen who are thoroughly trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and the methods needed for proper performance of the work of this Section.

PART 2 - PRODUCTS

2.1 MATERIALS

A. For replacement of items removed, use materials complying with pertinent Sections of these Specifications.

2.2 PAYMENT FOR COSTS

A. The Owner will reimburse the Contractor for cutting and patching performed pursuant to a written Change Order, after claim for such reimbursement is submitted by the Contractor. Perform other cutting and patching needed to comply with the Contract Documents at no additional cost to the Owner.

B. For uncovering work and replacement of work for inspection by the Architect:
   1. If work is not compliant, Contractor shall pay all costs,
   2. If work is compliant, Owner shall pay for removal and replacement as a Change Order.

PART 3 - EXECUTION

3.1 SURFACE CONDITIONS

A. Inspection: Inspect existing conditions, including elements subject to movement or damage during cutting, excavating, patching, and backfilling. After uncovering the work, inspect conditions affecting installation of new work.

B. Discrepancies: If uncovered conditions are not as anticipated, immediately notify the Architect and secure needed directions. Do not proceed until unsatisfactory conditions are corrected.

3.2 BORING

A. Provide mechanical boring equipment to bore under existing asphalt, concrete, or other surfaces or objects as noted on the drawings. All borings shall be a minimum of 24" under the substrate material unless otherwise authorized by the Architect.

B. Holes shall be bored not to exceed 1" larger diameter than the largest component remaining in the excavation.

C. **Water or air pressure jetting** are not permitted, unless they comply with the following requirements.
   1. All surfaces of the hole can be visually inspected with 6' maximum length and,
   2. all objects shall be supported continuously to prevent sagging and,
   3. the hole shall be filled with compacted damp sand and inspected by the Project Inspector or Materials Testing lab technician.

3.3 PREPARATION PRIOR TO CUTTING

A. Provide required protection including, but not necessarily limited to, shoring, bracing, and support to maintain structural integrity of the Work.

B. Provide protection for other portions of the work which may be affected.

C. Provide protection from the elements when needed.

3.4 CUTTING AND REMOVAL - GENERAL

A. Perform required excavating and backfilling as required under pertinent other Sections of these Specifications.
   1. Perform cutting and demolition by methods which will prevent damage to other portions of the Work and provide proper surfaces to receive installation of repair and new work.
   2. Perform fitting and adjusting of products to provide finished installation complying with the specified tolerances and finishes.

B. Remove existing work indicated to be removed, or as needed for installation of new work.

3.5 MATCHING AND PATCHING

A. Where items are removed from existing walls, ceilings, floors, partitions, or roofs to remain, repair walls, ceilings, floors, partitions, roofs, etc., disturbed by removal.

B. Where existing construction is removed, repair abutting walls, ceilings, floors, partitions, or roofs disturbed by removal.

C. Where existing construction is cut or otherwise disturbed to permit installation of new work, match and patch existing disturbed construction.

D. Use methods similar in appearance, and equal in quality to areas and surfaces being repaired.

E. Remove and replace areas, surfaces, or items which cannot be satisfactorily matched or patched.

END OF SECTION 01 7330

SECTION 01 7400 - CLEANING

PART 1 - GENERAL

1.1 SUMMARY

A. Throughout the construction period, maintain the buildings and site in a standard of cleanliness as described in this Section.

B. Related Sections:
1. Documents affecting work of this Section include, but are not necessarily limited to, General Conditions, Supplementary Conditions, and Sections in Division l of these Specifications.
2. In addition to standards described in this Section, comply with requirements for cleaning as described in pertinent other Sections of these Specifications.

1.2 QUALITY ASSURANCE

A. Conduct daily inspection, more often if necessary, to verify that requirements for cleanliness are being met.

B. In addition to the standards described in this Section, comply with pertinent requirements of governmental agencies having jurisdiction, including the SWPPP requirements.

C. Contractor shall include the costs of cleaning and trash disposal in his/her bid designate it in the Schedule of Values.

PART 2 - PRODUCTS

2.1 CLEANING MATERIALS AND EQUIPMENT

A. Provide required personnel, equipment, and materials needed to maintain the specified standard of cleanliness.

B. Use only the cleaning materials and equipment which are compatible with the surface being cleaned, as recommended by the manufacturer of the material.

PART 3 - EXECUTION

3.1 PROGRESS CLEANING

A. General:
1. Retain stored items in an orderly arrangement allowing maximum access, not impeding traffic or drainage, and providing required protection of materials.
2. Do not allow accumulation of scrap, debris, waste material, and other items not required for construction of this Work.
3. At least twice each month, and more often if necessary, completely remove all scrap, debris, and waste material from the job site.
4. Provide adequate storage for all items awaiting removal from the job site, observing requirements for fire protection and protection of the ecology.

3.2 FINAL CLEANING

A. "Clean," for the purpose of this Article, and except as may be specifically provided otherwise, shall be interpreted as meaning the level of cleanliness generally provided by skilled cleaners using commercial quality building maintenance equipment and materials.

B. Prior to completion of the Work, remove from the job site all tools, surplus materials, equipment, scrap, debris, and waste. Conduct final progress cleaning as described in Article 3.1 above.

C. Site: Unless otherwise specifically directed by the Architect, broom clean paved areas on the site and public paved areas adjacent to the site. Completely remove resultant debris.

D. Structures:
   1. Exterior:
      a. Visually inspect exterior surfaces and remove all traces of soil, waste materials, smudges, and other foreign matter visible from 5'.
      b. Remove all traces of splashed materials from adjacent surfaces.
      c. If necessary to achieve a uniform degree of cleanliness, hose down the exterior of the structure.
      d. In the event of stubborn stains not removable with water, the Architect may require light sandblasting or other cleaning at no additional cost to the Owner.
   2. Interior:
      a. Visually inspect interior surfaces and remove all traces of soil, waste materials, smudges, and other foreign matter visible from 5'.
      b. Remove all traces of splashed material from adjacent surfaces.
      c. Remove paint droppings, spots, stains, and dirt from finished surfaces.
   3. Glass: Clean inside and outside.
   4. Polished surfaces: Apply polish to surfaces requiring routine application of buffed polish as recommended by the manufacturer of the material.

E. Schedule final cleaning as approved by the Architect to enable the Owner to accept a completely clean Work.

3.3 CLEANING DURING OWNER'S OCCUPANCY

A. Should the Owner occupy the Work or any portion thereof prior to its completion by the Contractor and acceptance by the Owner, responsibilities for interim and final cleaning shall be as determined by the Architect in accordance with the General Conditions of the Contract.

END OF SECTION 01 7400

SECTION 01 7425 - CONSTRUCTION WASTE MANAGEMENT AND CONTROL

PART 1 - GENERAL

1.1 SUMMARY:

A. This section specifies diversion of construction and demolition waste from the landfill. Contractor shall develop and follow a Waste Management Plan designed to implement these requirements.

B. Related Sections:
1. Documents affecting work of this Section include, but are not necessarily limited to, General Conditions, Supplementary Conditions, and Sections in Division 1 of these Specifications.
2. Section 01 3110: Additional requirements for project meetings and reports.
3. Section 01 3300: Additional requirements for submittal procedures and project documentation.
4. Section 01 5000: Additional requirements related to trash and waste collection and removal facilities and services.
5. Section 01 6600: Waste prevention requirements related to delivery, storage, and handling.
6. Section 01 7330: Trash/waste prevention procedures related to cutting and patching, installation, protection, and cleaning.
7. Section 31 1000: Handling and disposal of excavated soils and land clearing debris.

C. The following sources may be useful in developing the Waste Management Plan:
1. County engineering or building departments.
2. Sample forms found in “A Guide to the California Green Building Standards Code (Nonresidential)” located at www.bsc.ca.gov/Home/CALGreen.aspx may be used to assist in documenting compliance with the waste management plan.
3. Mixed construction and demolition debris (C&D) processors can be located at the California Department of Resources Recycling and Recovery (CalRecycle).

1.2 SCOPE OF CONSTRUCTION WASTE MANAGEMENT AND CONTROL

A. Intent: Construction waste management and control is intended to achieve the following specific objectives:
1. Generate the least amount of trash and waste possible.
2. Employ processes that ensure the generation of as little waste as possible due to error, poor planning, breakage, mishandling, contamination, or other factors.
3. Minimize trash/waste disposal in landfills; reuse, salvage, or recycle as much waste as economically feasible.

B. Construction Waste Management Requirement: Recycle and/or salvage for reuse a minimum of **65 percent** of the nonhazardous construction and demolition waste in accordance with Option 1, 2 or 3 listed below; or meet a local construction and demolition waste management ordinance, whichever is more stringent.
1. Option 1 - Construction waste management plan. (Cal Green Code 5.408.1.1) Where a local jurisdiction does not have a construction and demolition waste management ordinance that is more stringent, submit a construction waste management plan that:
a. Identifies the construction and demolition waste materials to be diverted from disposal by efficient usage, recycling, reuse on the project or salvage for future use or sale.
b. Determines if construction and demolition waste materials will be sorted on-site (source-separated) or bulk mixed (single stream).
c. Identifies diversion facilities where construction and demolition waste material collected will be taken.
d. Specifies that the amount of construction and demolition waste materials diverted shall be calculated by weight or volume, but not by both.

2. Option 2 - Waste Management Company. (Cal Green Code 5.408.1.2) Utilize a waste management company that can provide verifiable documentation that the percentage of construction and demolition waste material diverted from the landfill complies with this section.
3. Option 3 - Waste Stream Reduction Alternative. (Cal Green Code 5.408.1.3) The combined weight of new construction disposal that does not exceed two pounds per square foot of building area may be deemed to meet the 65 percent minimum requirement as approved by the enforcing agency.
4. Documentation: Documentation shall be provided to the enforcing agency which demonstrates compliance with option 1, 2 or 3 above. The waste management plan shall be updated as necessary and shall be accessible during construction for examination by the enforcing agency.

C. Recycling Incentive programs are mandatory for this project; Contractor is responsible for implementation:
1. Any revenue or savings shall accrue to Contractor.
2. Any rebates and credits shall be applied for by Owner and shall accrue to Owner.

D. Owner may decide to pay for additional recycling, salvage, and/or reuse based on Landfill Alternatives Proposal specified below.

E. Required Recycling, Salvage, and Reuse: The following may not be disposed of in landfills or by incineration:
1. Aluminum and plastic beverage containers.
2. Corrugated cardboard.
3. Wood pallets.
4. Clean dimensional wood.
5. Excavated soils and land clearing debris, including brush, branches, logs, and stumps.
6. Concrete.
7. Concrete masonry units.
8. Asphalt paving.
9. Metals, including packaging banding, sheet metal, structural steel, piping, reinforcing bars, door frames, and other items made of steel, iron, galvanized steel, stainless steel, aluminum, copper, zinc, lead, brass, and bronze.
10. Glass.
11. Gypsum board and plaster.
12. Plastic buckets.
13. Carpet, carpet cushion, carpet tile, and carpet remnants.
14. Asphalt roofing shingles.
15. Paint.
16. Plastic sheeting.
17. Windows, doors, and door hardware.
18. Plumbing fixtures.
19. Mechanical and electrical equipment.
20. Fluorescent lamps (light bulbs).
21. Acoustical ceiling tile and panels.

F. Methods of trash/waste disposal that are not acceptable are:
1. Burning on the project site.
2. Burying on the project site.
3. Dumping or burying on other property, public or private.
4. Other Illegal dumping or burying.
5. Incineration either on- or off-site.

G. Regulatory Requirements: Contractor is responsible for knowing and complying with regulatory requirements, including but not limited to federal, state and local requirements, pertaining to legal disposal of all construction and demolition waste materials.

1.3 DEFINITIONS:

A. Clean: Untreated and unpainted; not contaminated with oils, solvents, caulk, or the like.

B. Construction and Demolition Waste: Solid wastes typically including building materials, packaging, trash, debris, and nibble resulting from construction, remodeling, repair and demolition operations. Excavated soils and land clearing debris and hazardous or toxic waste are excluded from construction and demolition waste.

C. Hazardous: Exhibiting the characteristics of hazardous substances (i.e., ignitibility, corrosivity, toxicity or reactivity).

D. Nonhazardous: Exhibiting none of the characteristics of hazardous substances, i.e., ignitibility, corrosivity, toxicity or reactivity.

E. Nontoxic: Neither immediately poisonous to humans nor poisonous after a long period or exposure.

F. Recyclable: The ability of a product or material to be recovered at the end of its life cycle and remanufactured into a new product for reuse by others.

G. Recycle: To remove a waste material from the project site to another site for remanufacture into a new product for reuse by others.

H. Recycling: The process of sorting, cleansing, treating and reconstituting solid waste and other discarded materials for the purpose of using the altered form. Recycling does not include burning, incinerating, or thermally destroying waste.

I. Return: To give back reusable items or unused products to vendors for credit.

J. Reuse: To reuse a construction waste material in some manner on the project site.

K. Salvage: To remove a waste material from the project site to another site for resale or reuse by others.

L. Sediment: Soil and other debris that has been eroded and transported by storm or well production run-off water.

M. Source Separation: The act of keeping different types of waste materials separate beginning from the first time they become waste.

N. Toxic: Poisonous to humans either immediately or after a long period of exposure.

O. Trash: Any product or material unable to be reused, returned, recycled, or salvaged.

P. Waste: Extra material or material that has reached the end of its useful life In Its Intended use. Waste includes salvageable, returnable, recyclable, and reusable material.

1.4 SUBMITTALS:

A. General: Submit in accordance with Section 01 3300.

B. Landfill Alternatives Proposal: Within 10 calendar days after receipt of Notice to Proceed, or prior to any trash or waste removal, whichever occurs sooner, submit a projection of trash/waste that will require disposal and alternatives to landfilling, with net costs.
   1. Submit to Architect for Owner’s review and approval.

2. If Owner wishes to implement any cost alternatives, the Contract Sum will be adjusted as specified elsewhere.
3. Include an analysis of trash/waste to be generated and landfill options as specified for Waste Management Plan described below.
4. Describe as many alternatives to landfilling as possible:
    a. List each material proposed to be salvaged, reused, or recycled.
    b. List the proposed local market for each material.
    c. State the estimated net cost resulting from each alternative, after subtracting revenue from sale of recycled or salvaged materials and landfill tipping tees saved due to diversion of materials from the landfill.
5. Provide alternatives to landfilling for at least the materials that cannot be recycled, salvaged, or reused as stated under Waste Management Requirements above.
6. Once Owner has determined which of the landfill alternatives addressed in the Proposal above ore acceptable, prepare and submit Waste Management Plan; submit within 10 calendar days after notification by Architect.

D. Submit Waste Management Plan within 10 calendar days after receipt of Notice to Proceed, or prior to any trash or waste removal, whichever occurs sooner; submit projection of all trash and waste that will require disposal and alternatives to land filling.

E. Waste Management Plan: Include the following information:
1. Analysis of the trash and waste projected to be generated during the entire project construction cycle, including types and quantities.
    a. Identify construction waste materials to be diverted from disposal by efficient usage, recycling, reuse on the project or salvage for future use or sale.
2. Materials Handling Procedures: Describe the means by which materials to be diverted from landfills will be protected from contamination and prepared for acceptance by designated facilities; include separation procedures for recyclables, storage, and packaging.
    a. Indicate if construction waste materials will be sorted on-site (source separated) or bulk mixed (single stream).
    b. Indicate how the amount of construction waste materials diverted shall be calculated; by weight or volume, but not both.
    c. Indicate deconstruction, salvage, and recycling strategies and processes.
3. Landfill Options: The name, address, and telephone number of the landfill(s) where trash/waste will be disposed of, the applicable landfill tipping fee(s), and the projected cost of disposing of all project trash/waste in the landfill(s).
4. Landfill Alternatives: List all waste materials that will be diverted from landfills by reuse, salvage, or recycling.
    a. List each material proposed to be salvaged, reused, or recycled.
    b. List the local market for each material.
    c. State the estimated net cost versus landfill disposal.
5. Meetings: Describe regular meetings to be held to address waste prevention, reduction, recycling, salvage, reuse, and disposal.
6. Transportation: Identify the destination and means of transportation of materials to be recycled; i.e. whether materials will be site-separated and self-hauled to designated centers, or whether mixed materials will be collected by a waste hauler.
7. Recycling Incentives: Describe procedures required to obtain credits, rebates, or similar incentives.

F. Waste Disposal Reports: Submit at specified intervals, with details of quantities of trash and waste, means of disposal or reuse, and costs; show both totals to date and since last report.
1. Submit updated Report with each Application for Progress Payment; failure to submit Report will delay payment.
2. Submit Report on a form acceptable to Owner.

3. Landfill Disposal: Include the following information:
   a. Identification of material.
   b. Amount, in tons or cubic yards of trash/waste material from the project disposed of in landfills.
   c. State the identity of landfills, total amount of tipping fees paid to landfill, and total disposal cost.
   d. Include manifests, weight tickets, receipts, and Invoices as evidence of quantity and cost.
4. Incinerator Disposal: Include the following information:
   a. Identification of material.
   b. Amount, in tons or cubic yards of trash/waste material from the project delivered to Incinerators.
   c. State the identity of Incinerators, total amount of fees paid to Incinerator, and total disposal cost.
   d. Include manifests weight tickets, receipts, and invoices as evidence of quantity and cost.
5. Recycled and Salvaged Materials: Include the following Information for each:
   a. Identification of material, including those retrieved by installer for use on other projects.
   b. Amount in tons or cubic yards, date removed from the project site, and receiving party.
   c. Transportation cost, amount paid or received for the material, and the net total cost or savings of salvage or recycling each material.
   d. Include manifests, weight tickets, receipts, and invoices as evidence of quantity and cost.
   e. Certification by receiving party that materials will not be disposed of in landfills or by incineration.
6. Material Reused on Project: include the following information for each:
   a. Identification of material and how it was used in the project.
   b. Amount, in tons or cubic yards.
   c. Include weight tickets as evidence of quantity.
7. Other Disposal Methods: include information similar to that described above, as appropriate to disposal method.

G. Recycling Incentive Programs:
   1. Where revenue accrues to Contractor, submit copies of documentation required to qualify for incentive.
   2. Where revenue accrues to Owner, submit any additional documentation required by Owner in addition to information provided in periodic Waste Disposal Report.

PART 2 - PRODUCTS

2.1 PRODUCT SUBSTITUTIONS:

A. See Section 01 6200 - Product Requirements for substitution submission procedures.

B. For each proposed product substitution, submit the following information in addition to requirements specified in Section 01 6200:
   1. Relative amount of waste produced, compared to specified product.
   2. Cost savings on waste disposal, compared to specified product, to be deducted from the Contract Sum.
   3. Proposed disposal method for waste product.
   4. Markets for recycled waste product.

PART 3 - EXECUTION

3.2 WASTE MANAGEMENT PLAN IMPLEMENTATION:

A. Manager: Designate an on-site person or persons responsible for instructing workers and overseeing and documenting results of the Waste Management Plan.

B. Communication: Distribute copies of the Waste Management Plan to job site foreman, each subcontractor, Owner, and Architect.

C. Instruction: Provide on-site instruction of appropriate separation, handling, and recycling, salvage, reuse, and return methods to be used by all parties at the appropriate stages of the project.

D. Meetings: Discuss trash/waste management goals and issues at project meetings; particularly at:
   1. Pre-bid meeting.
   2. Pre-construction meeting.
   3. Regular job-site meetings.
   4. Job safety meetings.

E. Facilities: Provide specific facilities for separation and storage of materials for recycling, salvage, reuse, return, and trash disposal for use by all contractors and installers.
   1. As a minimum, provide:
      a. Separate area for storage of materials to be reused on site, such as wood cut-offs for blocking.
      b. Separate dumpsters for each category of recyclable.
      c. Recycling bins at worker lunch area.
   2. Provide containers as required.
   3. Provide temporary enclosures around piles of separated materials to be recycled or salvaged.
   4. Provide materials for barriers and enclosures that ore nonhazardous, recyclable, or reusable to the maximum extent possible; reuse project construction waste materials if possible.
   5. Locate enclosures out of the way of construction traffic.
   6. Provide adequate space for pick-up and delivery and convenience to subcontractors.
   7. If an enclosed area is not provided, clearly lay out and label a specific area on-site.
   8. Keep recycling and trash/waste bin areas neat and clean and dearly marked In order to avoid contamination of materials.

F. Excavated Soils and Land Clearing Debris: 100% of trees, stumps, rocks, and associated vegetation and soils resulting primarily from land clearing shall reused or recycled, except for reuse, either on site or off site of vegetation or soil contaminated by disease or pest infestation.
   1. For a phased project, such material may be stockpiled on site until the storage site is developed.
   2. If contamination by disease or pest infestation is suspected, contact the County Agricultural Commissioner and follow its direction for recycling or disposal of the material.
   3. See www.cdfa.ca.gov/exec/county/county_contacts.html.

G. Hazardous or Toxic Waste: Separate, store, and dispose of hazardous waste according to applicable regulations.

H. Recycling: Separate, store, protect, and handle at the site identified recyclable waste products in order to prevent contamination of materials and to maximize recyclability of identified materials. Arrange for timely pickups from the site or deliveries to recycling facility In order to prevent contamination of recyclable materials.

I. Reuse of Materials On-Site: Set aside, sort, and protect separated products in preparation for reuse.

J. Salvage: Set aside, sort, and protect products to be salvaged for reuse oft-site.

END OF SECTION 01 7425

SECTION 01 7700 - CONTRACT CLOSEOUT

PART 1 - GENERAL

1.1 SUMMARY

A. This Section specifies administrative and procedural requirements for an orderly and efficient transfer of the completed Work to the Owner.

B. Related Sections:
1. Documents affecting work of this Section include, but are not necessarily limited to, General Conditions, Supplementary Conditions, and Sections in Division 1 of these Specifications.
2. Section 01 3300: Submittal procedures.
3. Section 01 4520: Payment procedures for retesting.
4. Section 01 7400: Final cleaning.
5. Section 01 7820: Operation and maintenance data.
6. Section 01 7840: Project record documents.
7. Certifications and Warranties as noted in each specification section.

1.2 QUALITY ASSURANCE

A. Prior to requesting inspection by the Architect, use adequate means to assure that the Work is completed in accordance with the specified requirements and is ready for the requested inspection.

1.3 SUBSTANTIAL COMPLETION

A. Preliminary Procedures: Complete the following prior to requesting inspection for substantial completion.
1. Prepare and submit the list of items to be completed or corrected required by the General Conditions.
2. Closeout Submittals:
a. Prepare and submit an electronic submittal of each closeout submittals including, but not limited to, the following:
i. In-Service Certifications required by Divisions 1 through 33 of the specifications executed by the appropriate persons on form provided in this Section.
ii. Project Asbestos Certification executed by Contractor on form provided in this Section;
iii. Project record documents complying with the requirements of Section 01 7840;
iv. Project Warranty executed by the Contractor on form provided in this Section.
v. Special warranties as specified in Divisions 1 through 33 of the specifications.
vi. Maintenance agreements required by Divisions 1 through 33 of the specifications;
vii. Operation and maintenance manuals required by Divisions 1 through 33 of the specifications complying with the requirements of Section 01 7820;
viii. Manufacturer's recommended cleaning procedures required by Divisions 1 through 33;
ix. Certifications required by Divisions 1 through 33 of the specifications.
x. Test reports required by Divisions 1 through 33 of the specifications.
b. Upon the Architect’s acceptance of the Closeout Submittal, provide one complete hard copy in 3-ring binders, including “wet-signature” original documents for the Owner’s record.
3. Advise Owner of pending insurance change over requirements.
4. Obtain and submit releases from governmental agencies having jurisdiction enabling the Owner unrestricted use of the Work and access to service and utilities; include occupancy permits, operating certificates, and similar releases.
5. Deliver special tools, spare parts, extra materials, and similar items.
6. Make final change-over of permanent locks and transmit keys to the Owner. Advise the Owner's personnel of change-over in security provisions.

7. Complete start-up testing and balancing of systems, and instruction and demonstration of the Owner's operating and maintenance personnel. Discontinue or change over and remove temporary facilities from the site, along with construction tools, mock-ups, and similar elements.
8. Complete final clean-up requirements, including touch-up painting. Touch-up and otherwise repair and restore marred exposed finishes.
9. Submit a list of subcontractors, service organizations, and principal vendors, including names, addresses, and telephone numbers where they can be reached for emergency service at all times including nights, weekends, and holidays.
10. In the presence of the Owner and the Inspector of Record, locate all utility devices required for control, manipulation, or shut-off of building and site utility systems including, but not limited to cleanouts, valves, dampers, valve boxes, pull boxes, handholes, manholes, etc., whether exposed, concealed, or in-ground.

B. Inspection Procedures:
1. Within 5 days of receipt of Contractor's list of items to be completed or corrected, the Architect will make an "initial inspection" and provide the Contractor with an additional list of discrepancies. When the Contractor corrects the items indicated by the Architect and any other, the Contractor shall notify the Architect for the Final Acceptance Inspection.
2. All closeout submittal items as listed in paragraph 1.3.A above shall be completed prior to Notice of Completion being submitted to the Owner for acceptance.

1.4 FINAL ACCEPTANCE

A. Preliminary Procedures: Prior to requesting final inspection for certification of final acceptance and final payment, prepare and submit the following:
1. Final application for payment with release of liens/stop notices and supporting documentation not previously submitted and accepted.
2. Updated final statement, accounting for final additional changes to the Contract Sum;
3. Final meter readings for utilities, a measured record of stored fuel, and similar data as of the date of Substantial Completion, or when the Owner took possession of and responsibility for corresponding elements of the Work.
4. Final liquidated damages settlement statement, where applicable.
5. Payment by the Contractor of all backcharge items, including but not limited to utilities, materials retesting, and reinspections.
6. Contractor's final verified report, DSA-6C.
7. Contractor shall coordinate switch-over of utilities following Substantial Completion and approval of the Architect. Provide proof of payment for electricity, water, gas and other utilities that are a part of this contract.

B. Inspection Procedures:
1. Within 5 days of receipt of Contractor's written request for Final Acceptance Inspection, the Architect will make a "final inspection" to review the "initial inspection" list of discrepancies and identify any additional discrepancies discovered.

2. Reinspection: Should the Contractor not have completed the Work as required by the Contract Documents, not have completed the items identified on the list of discrepancies, or should the Architect reject portions of the Work, all further inspections, time expended, and reimbursable expenses incurred by the Architect, his representatives, or consultants for final acceptance will be considered additional services and will be charged at the following rates:
   a. Project Architect: $175/hr or $350.00 per inspection minimum.
   b. Architect's Representative: $135/hr or $270.00 per inspection minimum.
   c. Consultants: The direct cost to the Architect plus 10% or $300.00 per inspection minimum.
3. The Architect will bill Owner for additional services required by the Architect and/or consulting engineers for such additional inspections, time expended, and reimbursable expenses incurred, and Owner shall be reimbursed by deducting the same amount from the final payment.

4. Determination of necessity for such reinspections will be made by consultation between the Owner and the Architect.

END OF SECTION 01 7700

MANGINI | ARCHITECTURE INGENUITY
McLAIN BARENG MORRELLI

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Visalia, California 93291

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(559) 627-0530 *Office*
(559) 627-1926 *Fax*

Specification Section No._____

IN-SERVICE CERTIFICATION

PROJECT:	**NEW MODULAR FOOD SERVICE BUILDING AT KINGS LAKE EDUCATION CENTER** 1128 S. Dairy Avenue, Corcoran, CA 93212	**DATE:**	
OWNER:	Corcoran Joint Unified School District	**PROJECT NO.:**	2143
ARCHITECT:	Mangini Associates Inc.		
CONTRACTOR:			
INSPECTOR:			

IN-SERVICE CONDUCTED BY:_____

MATERIALS REVIEWED (Check applicable boxes)

☐ **RECORD DRAWINGS**	☐ **SAFETY PROCEDURES**	☐ **SHUT DOWN**
☐ **WARRANTIES**	☐ **CLEANING PROCEDURES**	☐ **CONTROLS MANIPULATION**
☐ **MAINTENANCE AGREEMENT**	☐ **IDENTIFICATION SYSTEMS**	☐ **EMERGENCY PROCEDURES**
☐ **OPERATION & MAINTENANCE MANUALS**	☐ **START-UP**	☐ **NOISE/VIBRATION ADJUSTMENT**
☐ **SPECIAL TOOLS AND PARTS**	☐ **CONTROL SEQUENCES**	☐ **EFFECTIVE ENERGY UTILIZATION**

ATTENDEES (Please print name and sign below)

1. DISTRICT FACILITIES REPRESENTATIVE _____

2. SITE REPRESENTATIVE _____

3. DISTRICT MAINTENANCE REPRESENTATIVES _____ (Plumbing) _____ (Mechanical)

_____ (Electrical) _____ (Grounds)

4. OTHERS PRESENT (FOR GENERAL CONTRACTOR, ETC.) _____ _____

_____ _____

MEETING DATE: _____ **TIME OF START:** _____ **TIME OF COMPLETION:** _____

I CERTIFY THAT THE ABOVE NAMED IN-SERVICE COVERED ALL ASPECTS OF THE SPECIALTY FOR WHICH IT WAS CONVENED.

Signature _____ **Date** _____

MANGINI | ARCHITECTURE INGENUITY
McLAIN BARENG MORRELLI

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(559) 627-1926 *Fax*

PROJECT ASBESTOS CERTIFICATION

PROJECT:	**NEW MODULAR FOOD SERVICE BUILDING AT KINGS LAKE EDUCATION CENTER** 1128 S. Dairy Avenue, Corcoran, CA 93212	**DATE:**	
OWNER:	Corcoran Joint Unified School District	**PROJECT NO.:**	2143
ARCHITECT:	Mangini Associates Inc.		
CONTRACTOR:			
INSPECTOR:			

TO: _____

FROM: _____

SUBJECT: **Asbestos Containing Building Materials Letter**

I hereby certify that, to the best of my knowledge, the materials furnished and/or installed by

(General Contractor)_____

or its subcontractors on the (Name of Project) _____

located at (Street Address, City, State) _____

do not contain Asbestos Containing Building Materials.

_____
Date

_____
Contractor

_____
Address

_____

_____

_____
Telephone

_____
Signature of Contractor

_____
Title

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PROJECT WARRANTY

PROJECT:	**NEW MODULAR FOOD SERVICE BUILDING AT KINGS LAKE EDUCATION CENTER** 1128 S. Dairy Avenue, Corcoran, CA 93212	**DATE:**	
OWNER:	Corcoran Joint Unified School District	**PROJECT NO.:**	2143
ARCHITECT:	Mangini Associates Inc.		
CONTRACTOR:			
INSPECTOR:			

_____ (Contractor) hereby warrants to the Owner that materials and equipment furnished under the Contract in the (Name of Project) _____
_____
are of good quality and new unless otherwise required or permitted by the Contract Documents, that the Work is free from defects not inherent in the quality required or permitted, and that the Work conforms with the requirements of the Contract Documents. Work not conforming to these requirements, including substitutions not properly approved and authorized, may be considered defective. This warranty excludes remedy for damage or defect caused by abuse, modifications not executed by the Contractor, improper or insufficient maintenance, improper operation, or normal wear and tear under normal usage.

If, within 1 year after the date of Substantial Completion of the Work or designated portion thereof, or by terms of an applicable special warranty required by the Contract Documents extending this time period, any of the Work is found to be not in accordance with the requirements of the Contract Documents or proves to be defective in materials or workmanship, the Contractor expressly agrees to correct it, without expense to the Owner, promptly after receipt of written notice from the Owner or his agent to do so unless the Owner has previously given the Contractor written acceptance of the condition. This period of 1 year shall be extended with respect to portions of the Work first performed after Substantial Completion by the period of time between Substantial Completion and the actual performance of the Work. This obligation of the Contractor to correct the Work shall survive acceptance of the Work under the Contract and termination of the Contract. The Owner shall give such notice promptly after discovery of the condition.

Nothing contained in this warranty shall be construed to establish a period of limitation with respect to other obligations which the Contractor might have under the Contract Documents. Establishment of the time period of 1 year, or special extended time periods required by the Contract Documents, for correction of the Work as described above relates only to the specific obligation of the Contractor to correct the Work, and has no relationship to the time within which the obligation to comply with the Contract Documents may be sought to be enforced, nor to the time within which proceedings may be commenced to establish the Contractor's liability with respect to the Contractor's obligations other than specifically to correct the Work.

In the event of the Contractor's failure to comply with the conditions of this warranty within 10 days after being notified in writing by the Owner or his agent, the Contractor hereby authorizes the Owner to proceed to have said defects repaired and made good at the Contractor's expense and the Contractor will honor and pay the costs and charges therefor upon demand.

The term "Work" means the construction and services required by the Contract Documents and includes all other labor, materials, equipment and services provided by the Contractor to fulfill the Contractor's obligations. The Work may constitute the whole or part of the total construction performed under the Contract Documents.

_____ _____
Date Telephone

_____ _____
Contractor Signature of Contractor

_____ _____
Address Title

_____

SECTION 01 7820 - OPERATION AND MAINTENANCE DATA

PART 1 - GENERAL

1.1 SUMMARY

A. To aid the continued instruction of operating and maintenance personnel, and to provide a positive source of information regarding products incorporated into the Work, furnish and deliver the data described in this Section and in pertinent other Sections of these Specifications.

B. Related Sections:
1. Documents affecting work of this Section include, but are not necessarily limited to, General Conditions, Supplementary Conditions, and Sections in Division l of these Specifications.
2. Required contents of submittals also may be amplified in pertinent other Sections of these Specifications.

1.2 SUBMITTALS

A. Comply with pertinent provisions of Section 01 3300.

B. Submit an Electronic Submittal preliminary draft of the proposed Manual or Manuals to the Architect for review and comments.

C. Unless otherwise directed in other Sections, or in writing by the Architect, submit one original set of binders of the final Manual to the Architect prior to indoctrination of operation and maintenance personnel.

1.3 QUALITY ASSURANCE

A. In preparing data required by this Section, use only personnel who are thoroughly trained and experienced in operation and maintenance of the described items, completely familiar with the requirements of this Section, and skilled in technical writing to the extent needed for communicating the essential data.

PART 2 - PRODUCTS

2.1 OPERATION AND MAINTENANCE MANUALS

A. Where instruction Manuals are required to be submitted under other Sections of these Specifications, prepare in accordance with the provisions of this Section.

B. Format (Preliminary Electronic Submittal):
1. Comply with pertinent provisions of Section 01 3300.
2. Minimum components:
    a. Neatly typewritten index near the front of the Manual, giving immediate information as to location within the Manual of all emergency information regarding the installation.
        i. Bookmark all .pdf files to match the table of contents.
    b. Complete instructions regarding operation and maintenance of all equipment involved including lubrication, disassembly, and reassembly.
    c. Complete nomenclature of all parts of the equipment.
    d. Complete nomenclature and part number of all replaceable parts, name and address of nearest vendor, and all other data pertinent to procurement procedures.
    e. All guarantees and warranties issued.

f. Manufacturers' bulletins, cuts, and descriptive data, where pertinent, clearly indicating the precise items included in this installation and deleting, or otherwise clearly indicating, all manufacturers' data with which this installation is not concerned.
g. Such other data as required in pertinent other Sections of these Specifications.

C. Format (Final Hard Copy):
1. Size: 8-1/2" x 11"
2. Paper: White bond, at least 20 lb weight
3. Text: Neatly written or printed
4. Drawings: 11" in height preferable; bind in with text; foldout acceptable; larger drawings acceptable but fold to fit within the Manual and provide a drawing pocket inside rear cover or bind in with text.
5. Flysheets: Separate each portion of the Manual with neatly prepared flysheets briefly describing contents of the ensuing portion; flysheets may be in color.
6. Binding: Use heavy-duty plastic or fiberboard covers with binding mechanism concealed inside the Manual; 3-ring binders will be acceptable; all binding is subject to the Architect's approval.
7. Measurements: Provide all measurements in U.S. standard units such as feet-and-inches, lbs, and cfm; where items may be expected to be measured within ten years in accordance with metric formulae, provide additional measurements in the "International System of Units" (SI).

D. Provide front and back covers for each Manual, using durable material approved by the Architect, and clearly identified on or through the cover with at least the following information:

OPERATING AND MAINTENANCE INSTRUCTIONS

(___name and address of Work___)

(____name of Contractor____)

(_general subject of this Manual_)

(space for signature of)
(_the Architect, and approval date_)

PART 3 - EXECUTION

3.1 OPERATION AND MAINTENANCE MANUALS

A. Preliminary:
1. Prepare a preliminary electronic submittal of each proposed Manual.
2. Show general arrangement, nature of contents in each portion, probable number of drawings and their size, and proposed method of binding and covering.
3. Secure the Architect's approval prior to proceeding.

B. Final: Complete the Manuals in strict accordance with the approved preliminary drafts and the Architect's review comments.

C. Revisions:
1. Following the indoctrination and instruction of operation and maintenance personnel, review all proposed revisions of the Manual with the Architect.
2. Following the indoctrination meeting, complete the "In-Service Certification" form and include it as part of the Operation and Maintenance Manual.

3. If the Contractor is required by the Architect to revise previously approved Manuals, compensation will be made as provided for under "Changes" in the General Conditions.

END OF SECTION 01 7820

SECTION 01 7840 - PROJECT RECORD DOCUMENTS

PART 1 - GENERAL

1.1 SUMMARY

A. Throughout progress of the Work, maintain an accurate record of changes in the Contract Documents, as described in Article 3.1 below and, upon completion of the Work, transfer the recorded changes to a set of Record Documents, as described in Article 3.2 below.

B. Related Sections:
1. Documents affecting work of this Section include, but are not necessarily limited to, General Conditions, Supplementary Conditions, and Sections in Division l of these Specifications.
2. Other requirements affecting Project Record Documents may appear in pertinent other Sections of these Specifications.

1.2 SUBMITTALS

A. Comply with pertinent provisions of Section 01 3300.

B. The Architect's approval of the current status of Project Record Documents may be a prerequisite to the Architect's approval of requests for progress payment and request for final payment under the Contract.

C. Prior to submitting each request for progress payment, secure the Architect's approval of the current status of the Project Record Documents.

D. Prior to submitting request for final payment, submit the final Project Record Documents to the Architect and secure his approval.

1.3 QUALITY ASSURANCE

A. Delegate the responsibility for maintenance of Record Documents to one person on the Contractor's staff as approved by the Architect.

B. Accuracy of Records:
1. Thoroughly coordinate changes within the Record Documents, making adequate and proper entries on each page of Specifications and each sheet of Drawings and other Documents where such entry is required to show the change properly.
2. Accuracy of records shall be such that future searches for items shown in the Contract Documents may rely reasonably on information obtained from the approved Project Record Documents.

C. Make entries within 24 hours after receipt of information that the change has occurred.

1.4 DELIVERY, STORAGE, AND HANDLING

A. Maintain the job set of Record Documents completely protected from deterioration and from loss and damage until completion of the Work and transfer of all recorded data to the final Project Record Documents.

B. In the event of loss of recorded data, use means necessary to secure data to the Architect's approval.
1. Such means shall include, if necessary in the opinion of the Architect, removal and replacement of concealing materials.
2. In such case, provide replacements to the standards originally required by the Contract Documents.

PART 2 - PRODUCTS

2.1 RECORD DOCUMENTS

A. Record Documents:
1. Job Set: Promptly following receipt of the Owner's Notice to Proceed, secure from Architect, at no charge to Contractor, one complete set of all Documents comprising the Contract, and post all addenda.
2. Post all requests for information, notice of clarifications, and change orders as they occur.
3. Show all underground utility locations and routings by horizontal and vertical dimension.
   a. Record width of trenches in cases were multiple pipes or conduits are installed.
   b. Record the number and sizes of pipes and conduit where trench combines power, fire alarm, and communications.
4. Show all overhead utility locations and routings by horizontal and vertical dimension.
5. At a time nearing completion of the Work, submit the Job Set to the Architect for review.

B. Preliminary Record Documents Submittal:
1. Make an electronic PDF format color copy of the Job Set and submit to the Architect for review.
   a. Bookmark each sheet with sheet number and title to match the sheet index on the cover sheet of the drawings.

C. Final Record Documents:
1. Upon the Architect’s acceptance of the Job Set, make one complete copy of all sheets, including copies of the backs of sheets used to post record information, and including added sheets used to post record information. This copy shall be submitted to the Architect for distribution to the Owner.
2. Include an electronic PDF format color copy of the accepted Job Set.

PART 3 - EXECUTION

3.1 MAINTENANCE OF JOB SET

A. Immediately upon receipt of the job set described in Paragraph 2.1.A above, identify each of the Documents with the title, "RECORD DOCUMENTS - JOB SET", and post all addenda.

B. Preservation:
1. Considering the Contract completion time, the probable number of occasions upon which the job set must be taken out for new entries and for examination, and the conditions under which these activities will be performed, devise a suitable method for protecting the Job Set to the approval of the Architect.
2. Do not use the Job Set for any purpose except entry of new data and for review by the Architect.
3. Maintain the Job Set at the site of Work as designated by the Architect.

C. Making Entries on Drawings:
1. Using an erasable colored pencil (not ink or indelible pencil), clearly describe the change by graphic line and note as required.
2. Date all entries.
3. Call attention to the entry by a "cloud" drawn around the area or areas affected.
4. In the event of overlapping changes, use different colors for the overlapping changes.

D. Make entries in the pertinent other Documents as approved by the Architect.

E. Conversion of Schematic Layouts:
1. In some cases on the Drawings, arrangements of conduits, circuits, piping, ducts, and similar items, is shown schematically and is not intended to portray precise physical layout.
   a. Final physical arrangement is determined by the Contractor, subject to Architect's approval.

b. However, design of future modifications of the facility may require accurate information as to the final physical layout of items which are shown only schematically on the Drawings.

2. Show on the Job Set, by dimension accurate to within one inch, the centerline of each run of items such as are described in subparagraph 3.1.E.1 above.
   a. Clearly identify the item by accurate note such as "cast iron drain", "galv. water", and the like.
   b. Show, by symbol or note, the vertical location of the item ("under slab", "in ceiling plenum", "exposed", and the like).
   c. Make all identification so descriptive that it may be related reliably to the Specifications.
3. The Architect may waive the requirements for conversion of schematic layouts where, in the Architect's judgment, conversion serves no useful purpose. However, do not rely upon waivers being issued except as specifically issued in writing by the Architect.

3.2 FINAL PROJECT RECORD DOCUMENTS

A. The purpose of the final Project Record Documents is to provide factual information regarding all aspects of the Work, both concealed and visible, to enable future modification of the Work to proceed without lengthy and expensive site measurement, investigation, and examination.

B. Method of Showing Changes:
   1. Carefully record change data, coordinating the changes as required.
   2. Clearly indicate at each affected detail and other Drawings a full description of changes made during construction, and actual location of underground and overhead utility locations and routes.
   3. Call attention to each entry by drawing a "cloud" around the area or areas affected.
   4. Make changes neatly, consistently, and with the proper media to assure longevity and clear reproduction.

3.3 CHANGES SUBSEQUENT TO ACCEPTANCE

A. The Contractor has no responsibility for recording changes in the Work subsequent to Final Completion, except for changes resulting from work performed under Warranty.

END OF SECTION 01 7840

SECTION 02 3100 - SUBSURFACE UTILITY INVESTIGATION

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes investigation and identification of location of overhead, surface, and underground utilities by the Contractor using firm specializing in underground utility verification.

B. Related Sections:
1. Documents affecting work of this Section include, but are not necessarily limited to, General Conditions, Supplementary Conditions, and Divisions 1 through 16 of these Specifications.
2. Section 02 4100: Demolition.
3. Section 31 2000: Earthwork.

PART 2 - PRODUCTS

2.1 UTILITY VERIFICATION COMPANIES

A. Use utility verification firm specializing in underground utility location.
1. Off-site utility verification: Underground Service Alert (USA), 800/642-2444.
2. On-site utility verification:
   a. MDR Utility, (559) 827-3713.
3. Verify and stake all on-site utilities with Owner and on-site investigation prior to excavation.

PART 3 - EXECUTION

3.1 INVESTIGATION

A. Prior to demolition, trenching, and earthwork operations, identify location, routing, and elevation of underground utilities in the construction area and along utility trench routings with the Owner.

B. Verify existing utilities with the service providers (i.e., power, telephone, water, sewer, cable TV, etc.) to the point of connection on site (meter, transformer, etc.)

C. Locate underground utilities using electronic detection when available, utility map analysis, and on-site survey.

D. Underground utilities include but are not limited to gas, water, sewer, storm drain, electrical power and signals (fire alarm, telephone, computer, intercom, data), and sprinkler irrigation and controls.

E. Where non-metallic utilities such as storm drain lines are in the work site, snake metallic trace lines through the line prior to electronic detection.

3.2 IDENTIFICATION

A. Identify underground utilities by stakes, flags, and painted lines.

B. Document the invert elevation of all cleanouts, manholes, and drainage structures.

C. Maintain staking and marking of such utilities throughout the duration of the Work.

3.3 COORDINATION

A. Coordinate the proposed routing and elevation of pipes, conduits, and trenches that are part of the Work with existing utilities.

B. Coordinate the routing and elevation of new underground utilities with existing underground utilities. Notify the Architect immediately of any conflicts, prior to proceeding with demolition, trenching, or earthwork operations.

3.4 SITE CONDITIONS

A. Where existing utilities are indicated on the drawings, extreme care shall be exercised in excavating near these utilities to avoid damage, and the Contractor will be held responsible for any damage caused by construction operations.

B. Should utilities not indicated on the drawings be found during construction, the Contractor shall promptly notify the Architect for instructions as to further action. Failure to do so will make the Contractor liable for any damage arising from construction operations after discovery of these utilities.

3.5 UNFORSEEN CONDITIONS

A. Utilities and obstructions not traceable or noted on the Drawings will be considered unforeseen. Should such lines be encountered and damaged, the Contractor shall repair such condition immediately. The cost of repairs will be compensated to the Contractor on a time-and-materials basis by change order.

END OF SECTION 02 3100

SECTION 02 4100 - BUILDING DEMOLITION

PART 1 - GENERAL

1.1 SUMMARY

A. In accordance with pertinent provisions of this Section, carefully demolish and remove from the site those items scheduled to be so demolished and removed. Section includes:
   1. Building demolition excluding removal of hazardous materials and toxic substances.
   2. Removal of designated construction.
   3. Disposal of materials.

B. Related Sections: Documents affecting work of this Section include, but are not necessarily limited to, General Conditions, Supplementary Conditions, and Sections in Division l of these Specifications.
   1. Section 00 3100: Information about known hazardous materials.
   2. Section 01 1110: Work sequence, continued occupancy of the building, limitations on Contractor's use of site and premises, description of items to be removed by Owner, description of items to be salvaged or removed for re-use by Contractor.
   3. Section 01 5000: Temporary enclosures, dust control barricades, security at occupied areas, waste removal, and cleanup during construction.
   4. Section 01 5720: Temporary erosion and sedimentation control.
   5. Section 01 6600: Handling and storage of items removed for salvage and relocation.
   6. Section 01 7300: Project conditions; protection of bench marks, survey control points, and existing construction to remain; reinstallation of removed products.
   7. Section 01 7330: Cutting and patching.
   8. Section 02 0160: Relocation of existing trees, shrubs, and other plants, pruning of existing trees to remain.
   9. Section 07 0150: Removal of existing roofing, roof insulation, flashing, trim, and accessories.
   10 Section 31 2000: Fill material for filling holes, pits, and excavations generated as a result of removal operations.

1.2 REFERENCES

A. 29 CFR 1926 - U.S. Occupational Safety and Health Standards; current edition.

B. NFPA 241 - Standard for Safeguarding Construction, Alteration, and Demolition Operations; 2019.

1.3 SUBMITTALS

A. General: Submit in accordance with Section 01 3300.

B. Demolition Plan: Submit demolition plan as specified by OSHA and local authorities.
   1. Indicate extent of demolition, removal sequence, bracing and shoring, and location and construction of barricades and fences.
   2. Identify demolition firm and submit qualifications.
   3. Include a summary of safety procedures.

C. Project Record Documents: Accurately record actual locations of capped and active utilities and subsurface construction.

1.4 QUALITY ASSURANCE

A. Demolition Firm: Company specializing in the type of work required.
   1. Minimum of 5 years of documented experience.

B. Applicable Codes: Conform to applicable code for demolition work, dust control, products requiring electrical disconnection and re-connection. Perform demolition work in accordance with Chapter 33, 2019 California Fire Code.

C. Obtain required permits from authorities. and comply with the requirements of the governing jurisdictions.

D. Do not close or obstruct egress from any building exit or site exit.

E. Do not disable or disrupt building fire or life safety systems without 3 days' prior written notice to Owner.

F. Conform to applicable regulatory procedures when hazardous or contaminated materials are discovered.

1.5 SEQUENCING

A. Sequence work under the provisions of Section 01 1110.

1.6 PROJECT CONDITIONS

A. Minimize production of dust due to demolition operations; do not use water if that will result in ice, flooding, sedimentation of public waterways or storm sewers, or other pollution.

B. Comply with other requirements specified in Section 01 7300.

C. Conduct demolition to minimize interference with adjacent and occupied building areas.

D. Cease operations immediately if structure appears to be in danger and notify Architect. Do not resume operations until directed.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Fill Material: As specified in Section 31 2000 - Earthwork.

PART 3 - EXECUTION

3.1 SCOPE

A. Remove the entire building indicated.

B. Within area of new construction, remove foundation walls and footings to a minimum of 2 feet below finished grade.

C. Outside area of new construction, remove foundation walls and footings to a minimum of 2 feet below finished grade.

D. Fill excavations, open pits, and holes in ground areas generated as result of removals, using specified fill; compact fill as required so that required rough grade elevations do not subside within one year after completion.

3.2 GENERAL PROCEDURES AND PROJECT CONDITIONS

A. Comply with applicable codes and regulations for demolition operations and safety of adjacent structures and the public.
   1. Obtain required permits.
   2. Comply with applicable requirements of NFPA 241.
   3. Use of explosives is not permitted.
   4. Provide, erect, and maintain temporary barriers and security devices.
   5. Use physical barriers to prevent access to areas that could be hazardous to workers or the public.
   6. Conduct operations to minimize effects on and interference with adjacent structures and occupants.
   7. Do not close or obstruct roadways or sidewalks without permit.
   8. Conduct operations to minimize obstruction of public and private entrances and exits; do not obstruct required exits at any time; protect persons using entrances and exits from removal operations.
   9. Obtain written permission from owners of adjacent properties when demolition equipment will traverse, infringe upon or limit access to their property.

B. Demolished material shall be considered property of the Contractor and shall be completely removed from the job site except where specifically noted otherwise. Do not burn or bury materials on site.

C. Use means necessary to prevent dust becoming a nuisance to the public, to neighbors, and to other work being performed on or near the site.

D. Do not begin removal until receipt of notification to proceed from Owner.

E. Do not begin removal until built elements to be salvaged or relocated have been removed.

F. Do not begin removal until vegetation to be relocated has been removed and specified measures have been taken to protect vegetation to remain.

G. Remove materials as demolition progresses. Upon completion of demolition, leave areas in clean condition.

H. Protect existing structures and other elements that are not to be removed.
   1. Provide bracing and shoring.
   2. Prevent movement or settlement of adjacent structures.
   3. Stop work immediately if adjacent structures appear to be in danger.

I. If hazardous materials are discovered during removal operations, stop work and notify Architect and Owner; hazardous materials include regulated asbestos containing materials, lead, PCB's, and mercury.

3.3 EXISTING UTILITIES

A. Coordinate work with utility companies; notify before starting work and comply with their requirements; obtain required permits.

B. Protect existing utilities to remain from damage.

C. Do not disrupt public utilities without permit from authority having jurisdiction.

D. Do not close, shut off, or disrupt existing life safety systems that are in use without at least 7 days prior written notification to Owner.

E. Do not close, shut off, or disrupt existing utility branches or take-offs that are in use without at least 3 days prior written notification to Owner.

F. Locate and mark utilities to remain; mark using highly visible tags or flags, with identification of utility type; protect from damage due to subsequent construction, using substantial barricades if necessary.

G. Remove exposed piping, valves, meters, equipment, supports, and foundations of disconnected and abandoned utilities.

H. Prepare building demolition areas by disconnecting and capping utilities outside the demolition zone; identify and mark utilities to be subsequently reconnected, in same manner as other utilities to remain.

3.4 DEBRIS AND WASTE REMOVAL

A. Remove debris, junk, and trash from site.

B. Remove from site all materials not to be reused on site.

C. Leave site in clean condition, ready for subsequent work.

D. Clean up spillage and wind-blown debris from public and private lands.

END OF SECTION 02 4100

SECTION 03 1510 - POST-INSTALLED ANCHORS

PART 1 - GENERAL

1.1 SUMMARY

A. Provide post-installed anchors where shown on the Drawings, as specified herein, and as needed for a complete and proper installation.
   1. Definition: Post-installed anchors are concrete anchors installed in drilled holes after concrete has hardened and includes expansion anchors, screw anchors, and epoxy-type (adhesive) anchors.

B. Related Sections:
   1. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division - 1 Specification Sections, apply to work of this section.
   2. Section 03 3000: Cast-in-place concrete.
   3. Section 05 5000: Metal fabrications.

1.2 SUBMITTALS

A. General: Submit in accordance with Section 01 3300.

B. Product Data:
   1. Submit manufacturer's descriptive literature and product specifications for each product.
   2. Include data to indicate compliance with the specified requirements.
   3. Submit manufacturer's recommended installation procedures.
   4. Submit current ICC research or evaluation reports evidencing maximum allowable shear and withdrawal load data.

1.3 QUALITY ASSURANCE

A. Single Source Responsibility: To ensure consistent quality of anchorage, obtain concrete expansion anchors from a single manufacturer.

B. Manufacturer Qualifications: Provide concrete expansion anchors with current International Code Council Evaluation Service Reports acceptable to the Division of the State Architect, and in conformance with the 2019 California Building Code.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Subject to compliance with requirements, manufacturers offering products which may be incorporated in the work include, but are not limited to, the following:
   1. Hilti KB-TZ2 (ESR 4266).
   2. Simpson Strong-Bolt (ESR-1771).
   3. Hilti HUS-EZ (ESR-3027).
   4. SimpsonTiten HD (ESR-2713).
   5. Products specified are for establishing the type, design, and quality required. Products of equal or better type, design, and quality produced by other manufacturers will be considered provided the request for substitution is submitted in accordance with Section 01 2500.

B. Finish: Type 316 stainless steel at exterior applications; zinc-plated at interior applications; mechanically galvanized or type 316 stainless steel when in contact with preservative treated lumber.

PART 3 - EXECUTION

3.1 PREPARATION

A. Coordinate and furnish anchorages and directions for installation from manufacturer for items to be embedded in concrete construction.

3.2 INSTALLATION

A. Fastening to In-Place Construction (New or Existing Concrete): Provide anchorage devices where necessary for securing designated items indicated on the drawings, or as necessary for a complete and proper job to in-place construction.

B. Install post-installed anchors in strict accordance with the manufacturer's written instructions.

C. Cutting, Fitting and Placement: Perform cutting, drilling and fitting required for designated items of construction. Set work accurately in location, alignment and elevation, level true and free of rack, measured from established lines and levels.

D. Concrete shall attain the specified design strength per the contract documents (2,500 psi minimum) prior to installation of post-installed anchors. Adhesive anchors shall be installed into concrete having a minimum age of 21 days at the time of installation. No anchors shall be installed into concrete that is less than 7 days old.

3.3 TESTING AND INSPECTION REQUIREMENTS

A. General Testing Requirements:
   1. For verifying satisfactory installation workmanship, an independent testing laboratory shall proof load tests for concrete expansion anchors acting in tension in the presence of the project inspector.
   2. If any anchor fails testing, test all anchors of the same type, not previously tested until 20 consecutive anchors pass, then resume the initial test frequency.
      a. If anchors are used for the support and bracing of non-structural components such as pipe, duct or conduit, the 20 consecutive anchors shall be only those anchors installed by the same trade.
   3. Continuous Inspection: Continuous inspection shall be provided during installation by project inspector.

B. Testing Frequency:
   1. Sill Plate Bolting: Test 10% of anchors.
   2. Other Structural Applications: Test all anchors.
   3. Non-structural Applications and Equipment Anchorage: Test 50% or alternate bolts in a group, including at least 1/2 of the anchors in each group.
   4. Exceptions:
      a. Undercut anchors that allow visual confirmation of full set shall not require testing.
      b. Where the factored design tension on anchors is less than 100 pounds and the anchor is clearly noted on the approved construction documents, only 10% of those anchors shall be tested.
      c. Where adhesive anchor systems are used to install reinforcing dowel bars in hardened concrete, only 25% of the dowels shall be tested if all of the following conditions are met:
         1) The dowels are used exclusively to transmit shear forces across joints between existing and new concrete.
         2) The number of dowels in any one member equal or exceeds 12.
         3) The dowels are uniformly distributed across a seismic force resisting members (such as shear walls, collectors, and diaphragms).

4) Anchors to be tested shall be selected at random by the special inspector.

d. Testing of shear dowels across cold joints in slabs on grade, where the slab is not part of the lateral force-resisting systems shall not be required.

e. Testing is not required for power actuated fasteners used to attach metal tracks of interior non-shear wall partitions for shear only, where there are at least three fasteners per segment of track.

C. Test Loads: Test loads shall be listed in the contract drawings and shall be determined by one of the following methods:

1. Twice the maximum allowable tension load or 1-1/4 times the maximum design strength of anchors as provided in the anchor's ICC-ESR or in accordance with Appendix D of ACI 318.
   a. Tension test load need not exceed 80% of nominal yield strength of anchor element ($0.8A_bF_y$).
2. Tension or torque test values from the table within the contract drawings.

D. Test Acceptance Criteria: Use the ICC-ESR for the anchor installed or the manufacturer's written instructions, acceptable to DSA. Field tests shall satisfy the following minimum requirements:

1. Hydraulic Ram Method: Anchors tested with a hydraulic jack or spring loaded devices shall maintain the test load for a minimum of 15 seconds and shall exhibit no discernible movement during the tension test, e.g. as evidence of loosening of the washer under the nut. For adhesive anchors, where other than bond is being tested, the testing devices shall not restrict the concrete shear cone type failure mechanism from occurring.
2. Torque Wrenched Method: Anchors tested with a calibrated torque wrench must attain the specified torque within 1/2 turn of the nut.
   a. Exceptions:
      1). Wedge or Sleeve type: 1/4 turn of the nut for a 3/8" sleeve anchor only.
      2). Screw Type: 1/4 turn of screw after initial seating of the screw head.

E. Testing Procedure:

1. Testing procedure shall be as required by the manufacturer’s ICC-ESR.
2. Manufacturer’s recommendation for testing may be approved by the enforcing agency, when ICC-ESR does not provide testing procedure.

END OF SECTION 03 1510

SECTION 03 3000 - CAST-IN-PLACE CONCRETE

PART 1 - GENERAL

1.1 SUMMARY

A. Provide cast-in-place concrete, including form work and reinforcement, where shown on the Drawings, as specified herein, and as needed for a complete and proper installation.
   1. The work of this Section includes special precautions to reduce cracking in concrete slabs.

B. Related Sections:
   1. Documents affecting work of this Section include, but are not necessarily limited to, General Conditions, Supplementary Conditions, and Sections in Division 1 of these Specifications.
   2. Section 03 1510: Post-installed Anchors.
   3. Section 31 2000: Earthwork.

C. Special Coordination Requirements: Coordinate with the work of the following sections to identify the finish flooring manufacturer's concrete slab requirements. Such requirements may be over and above the requirements of the Contract Documents and may require additional materials, means, or methods, which shall be included as part of the Work.

1.2 SUBMITTALS

A. General: Submit in accordance with Section 01 3300.
   1. Mix Designs: Secure concrete mix designs from the concrete supplier or the testing laboratory in accordance with provisions of Section 01 4520, and submit to the Architect for review and approval. Distribute approved mix designs to testing laboratory, batch plant, job site, and governmental agencies having jurisdiction.
      a. Include a statement clearly indicating the concrete supplier's proposed basis of concrete mix proportions based on ACI 301-16, Section 4.2.3.
      b. When ACI 301-16, Section 4.2.3 is used, strength records used for establishing and documenting concrete mixture proportions shall not be more than 24 months old.
   2. Product Data: Submit manufacturer's descriptive literature and product specifications for each product. Include data to indicate compliance with the specified requirements for the following:
      a. Curing materials.
      b. Admixtures.
      c. Slip dowel system.
   3. Shop Drawings: Submit shop drawings for the reinforcing steel.
   4. Submit cementitious materials certification to DSA complying with CBC Section 1910A.1.
   5. Submit batch tickets of each load to the Inspector of Record.

1.3 QUALITY ASSURANCE

A. Codes and Standards: Comply with 2019 California Building Code except where more stringent requirements are shown or specified.

B. In accordance with CBC Section 1705A.3.5, do not place concrete until forms and reinforcement have been inspected, all preparations for placement have been completed, and preparations have been checked by the Inspector of Record, all subject to observation of the Architect, Structural Engineer and DSA.

C. Placing Record: In accordance with CBC Section 1705A.3.6, keep a concrete placing record on site recording the time and date of placing the concrete in each portion of the structure. Keep placing record until completion of the structure and make available to the inspection of the Owner, Architect, Structural Engineer, Inspector of Record, and DSA.

D. Field Mock-up: Before performing work of this Section, provide following field mock-up to verify selections made under submittals and to demonstrate aesthetic finish and texture of site concrete, parking lot concrete and fire lane concrete. Approval does not constitute approval of deviations from Contract Documents, unless Architect specifically approves deviations in writing.
   1. Form, reinforce, and cast concrete slab for 3 foot square field mock-up. One mock-up for each finish and texture specified.
   2. Concrete shall be same mix design as scheduled for Project.
   3. Perform placement and finishing work using same personnel as will place and finish concrete for Project.
   4. Mock-up shall be representative of work to be expected.
   5. Approval is for following aesthetic qualities:
      a. Compliance with approved submittals.
      b. Compliance with specified finish and texture.
      d. Compliance with specified color.
   6. Obtain mock-up approval by the Owner, Architect and Project Inspector before starting work on Project.
   7. Unacceptable mock-ups shall be removed from the site and reinstalled until the mock-up is deemed to be in compliance with the project requirements and is acceptable by the Owner, Architect and Project Inspector.
   8. Protect and maintain approved field mock-ups during construction in an undisturbed condition as a standard for judging completed work. Remove mock-up and dispose of materials when no longer required and when directed by the Architect at the end of the project.

1.4 NOTICE CONCERNING SLAB CURLING AND SHRINKAGE CRACKING

A. The Contractor is hereby notified that concrete construction practices and concrete materials can significantly increase the potential for cracking and slab curling, which include the following:
   1. Placement of slabs over high-moisture content subgrade.
   2. Increased mix temperature.
   3. Excessive haul in transit mixture, too long a waiting period at the project site, or too many revolutions at mixing speed.
   4. Use of smaller size aggregate under conditions where larger could have been used.
   5. Use of mixture having high shrinkage characteristics.
   6. Excessive coatings on aggregate due to insufficient washing or contamination during handling.
   7. Use of aggregates of poor inherent quality with respect to shrinkage.
   8. Exceeding the maximum water/cement ratio.

B. The Contractor is responsible for choosing concrete materials and for implementing concrete construction practices which minimize slab curling and shrinkage cracking.

1.5 SPECIAL WARRANTY

A. Manufacturer's Warranty: In addition to the warranty requirements of the Contract Documents, submit 2 copies of a warranty from the interior slab curing product manufacturer with an extended correction period of **15-years** covering labor and materials to replace or repair floor covering that fails due to moisture migration or moisture-born alkalinity contaminates originating from the concrete.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Products specified are for establishing the type, design, and quality required. Products of equal or better type, design, and quality produced by other manufacturers will be considered provided the request for substitution is submitted in accordance with Section 01 2500.

2.2 FORMS

A. Design, erect, support, brace, and maintain formwork so it will safely support vertical and lateral loads which might be applied until such loads can be supported safely by the concrete structure.

B. Except for metal forms, use new materials. Materials may be re-used during progress of the Work, provided they are completely cleaned and reconditioned, recoated for each use, and capable of producing formwork of the required quality.
   1. Form Facing for Exposed to View Finish Concrete: Contractor's choice of materials that will provide smooth, stain-free final appearance.
   2. Chamfer or radius outside corners of beams, joists, columns, and walls.

C. Slip Dowel System: Speed Dowel by Westec Barrier Technologies; #4 rebar dowels x 24" long at 18" on center, minimum of 12" sleeve.

D. Snap Ties: Snap Ties by Dayton/Richmond Concrete Accessories (Constar Supply 559-564-5012), with A-8 Waterseal Washer.

E. Form Release Agent: Capable of releasing forms from hardened concrete without staining or discoloring concrete or forming bugholes and other surface defects, compatible with concrete and form materials, and not requiring removal for satisfactory bonding of coatings to be applied.

2.3 MOISTURE BARRIER

A. Compactable Slab Base: 3" of granular fill that is compactable, will remain stable, and support construction traffic.
   1. Granular fill is defined as a clean, fine grained uniformly-graded material with at least 10% to 30% of particles passing a No. 100 sieve, but not contaminated with clay, silt, or organic material.
   2. Expansion Index: < 15
   3. The use of clean concrete sand will not be permitted.

2.4 REINFORCEMENT

A. Comply with the following as minimums:
   1. Bars: ASTM A615, Grade 40 for #3 bars and smaller, Grade 60 for #4 bars and larger, using deformed bars for #3 and larger.
   2. Bending: ACI 318-14, Section 26.6.3.
      a Bars shall be limited to one shop or field bend at any location on the bar.
      b. Partially embedded bars shall not be field bent, except as indicated on the Drawings or permitted by the Architect.
      c. A bar bent in the incorrect location shall not be straightened; such bars shall be discarded.

B. Fabricate reinforcement to the required shapes and dimensions, within fabrication tolerances stated in ACI 318-14.

C. Do not use reinforcement having any of the following defects:
   1. Bar lengths, depths, or bends exceeding the specified fabricating tolerances;
   2. Bends or kinks not indicated on the Drawings or required for this Work;
   3. Bars with cross-section reduced due to excessive rust or other causes.

D. Shop fusion welded stirrup/tie cages shall be permitted provided they are in conformance with CBC 1903A.8.

2.5 CONCRETE

A. Portland Cement: ASTM C150, Type II.

B. Fly Ash: May be used as a partial substitute for Portland cement as follows:
   1. Fly ash: ASTM C618, Class N or F (Class C is not permitted).
   2. Fly ash used may be included in the water/cement ratio calculation.
   3. Not more than 20% by weight of fly ash shall be substituted for Portland cement.

C. Normal Weight Aggregate: ACI 318 Section 26.4.1.2.1(a).(1) and ASTM C 33, except as modified in CBC Section 1903A.5. Provide aggregates from a single source for exposed concrete.

D. Water: ACI 318-14, Section 26.4.1.3.

E. Admixtures:
   1. Do not use calcium chloride admixtures.
   2. Admixtures are not permitted without approval from Architect and DSA.

2.6 NORMAL WEIGHT CONCRETE DESIGN MIX

A. Proportions: Concrete mix shall be proportioned based on field experience or trial mixtures in accordance with ACI 318-14, Section 26.4.3, and ACI 301-16, Section 4.2.3.
   1. Mix design submittals shall include a statement clearly indicating the concrete supplier's proposed basis of concrete mix proportions through the use of one of the following:
      a. Field experience under ACI 301-16 paragraph 4.2.3.4a, or
      b. Trial mixtures under ACI 301-16 paragraph 4.2.3.4b.
   2. When ACI 301-16, Section 4.2.3 is used as the concrete supplier's proposed basis of concrete mix proportions, strength records used for establishing and documenting concrete mixture proportions shall not be more than 24 months old.

B. Design Professional: A registered civil or structural engineer, licensed in California, with experience in concrete mix design shall select the relative amounts of ingredients to be used as basic proportions of the concrete mixes proposed for use (per DSA IR 17-13).
   1. Mix design submittals shall include the engineer’s stamp and signature.

C. Cement Content: Minimum of 5.5 sacks of cement per cubic yard.
   1. Minimum of 5.0 sacks of cement per cubic yard for site concrete (flat work and rat slabs). Off-site concrete shall conform to governing agency standards.

D. Type A Water Reducer (interior slab on grade only): 28.20 oz/cy, plus or minus 20%.

E. Water/Cementitious Material Ratio:
   1. Footings: Maximum of 0.56.
   2. Site Concrete: Maximum of 0.67.
   3. Interior Slabs/Parking Lots/Fire Lanes: Maximum of 0.50.

F. Minimum Compressive Strength:
   1. Footings, interior slabs, parking lots, fire lanes and retaining walls: 3,000 psi at 28 days.
   2. Site Concrete and rat slabs: 2,500 psi at 28 days.

G. Aggregate Gradation Optimization:
   1. Workability Factor: 32-42%; **target 35%.**
   2. Coarseness Factor: 52-72%; **target 60%.**
   3. Fineness Modulus: 2.80 to 3.10.
   4. Paste Fraction: 27% plus or minus.
   5. Mortar Fraction: Passing the No. 8 sieve.
      a. ¾" to 1" aggregate: 55-57%.
      b. 1-1/2" aggregate: 53-54%.

H. Aggregate Gradation Limits of Combined Mixture:

Sieve Size	% Passing	
	Interior Slabs Parking Lots Fire Lanes 1-1/2"	**Footings Site Concrete Rat Slab Retaining Walls 1"**
2"	100	--
1-1/2"	95-100	100
1"	80-96	94-100
3/4"	65-80	87-99
1/2"	55-65	65-78
3/8"	45-60	55-64
#4	35-50	40-55
#8	25-38	33-43
#16	20-30	19-32
#30	10-20	9-24
#50	2-12	4-12
#100	1-6	1-8
#200	0-4	0-4

I. Slump Limits: Proportion and design mixes for slump at point of placement of 4" plus or minus 1".

J. Concrete Temperature: 90 deg F maximum at time of placement.

K. Ready-Mix Concrete: Comply with ASTM C94, and as herein specified.

2.7 LIGHTWEIGHT CONCRETE DESIGN MIX

A. Proportions: Concrete mix shall be proportioned based on field experience or trial mixtures in accordance with ACI 318-14, Section 26.4.3, and ACI 301-16, Section 4.2.3.
   1. Mix design submittals shall include a statement clearly indicating the concrete supplier's proposed basis of concrete mix proportions through the use of one of the following:
      a. Field experience under ACI 301-16 paragraph 4.2.3.4a, or
      b. Trial mixtures under ACI 301-16 paragraph 4.2.3.4b.
   2. When ACI 301-16, Section 4.2.3 is used as the concrete supplier's proposed basis of concrete mix proportions, strength records used for establishing and documenting concrete mixture proportions shall not be more than 24 months old.

B. Aggregate: Expanded shale, vacuum saturated or thermal quenched; ASTM C330.
   1. Maximum Lightweight Aggregate Size: 3/4".

C. Shrinkage Control: Aggregate shall be prepared within 72 hours of being used or be re-wetted for 1/2 hour, twice a day if longer storage is required at the plant.

D. Compressive Strength: 3,000 psi at 28 days. Polished concrete: 3,500 to 4,000 psi at 28 days.

E. Slump Limits: 3" plus or minus 1", measured at the end of the discharge line.

F. Cement Content: Minimum 6.0 sacks of cement per cubic yard.

G. Water/Cement Ratio: 0.50 maximum, measured on free water only.

H. Maximum Lightweight Aggregate Size: 3/4".

I. Entrained Air: 4% to 7%.

J. Weight: 110 pounds per cubic foot, plus or minus 3 pounds.

2.8 CURING MATERIALS

A. Exterior Flatwork on Grade: Clear, Curing compound, colorless, non-yellowing material containing 30% solids content minimum; ASTM C309.
   1. Shall not discolor concrete or other materials, shall not leave an oily residue upon evaporation of solvent.
   2. Shall afford moisture loss not greater than 0.055 grams/cm^2 at minimum average of 300 square feet.
   3. Meet State of California Air Regulation Board Solvent Emission Standards.
   4. Curing compounds may not be used on areas to receive traffic coatings unless specifically accepted by the traffic coating manufacturer.
   5. Solvent borne acrylic cure and seal products are not acceptable; ASTM C1315.

2.9 OTHER MATERIALS

A. Provide other materials, not specifically described but required for a complete and proper installation, as selected by the Contractor subject to the approval of the Architect.

B. Expansion Joint Filler: Comply with ASTM D1751 or provide resin-impregnated fiberboard conforming to ASTM D1752.

C. Non-shrink Grout:
   1. Factory premixed grout; ASTM C1107.
   2. Compressive strength: 7,000 psi at 28 days.

D. Dry Pack Grout: One part Portland Cement to two parts fine sand.

PART 3 - EXECUTION

3.1 SURFACE CONDITIONS

A. Examine the areas and conditions under which work of this Section will be performed. Correct conditions detrimental to timely and proper completion of the Work. Do not proceed until unsatisfactory conditions are corrected.

B. Coordinate with Section 31 2000 – Earthwork prior to placing any concrete.

3.3 FORMWORK INSTALLATION

A. Construct forms to the exact sizes, shapes, lines, and dimensions shown, and as required to obtain accurate alignment, location, grades, and level and plumb work in the finished structure.
   1. **Non-Exposed Surfaces:** Where concrete surfaces are not exposed to view, construct formwork conforming to a Class B Surface, Paragraph 4.8.3 of ACI PRC-117.1-14.
   2. **Exposed Surfaces:** Where concrete surfaces are exposed to view, construct forms so that concrete surfaces will have a tolerance of 1/2 of the tolerance limits of a Class A Surface, Paragraph 4.8.3 of ACI PRC-117.1-14.

B. Forms shall be substantial and sufficiently tight to prevent leakage of mortar. They shall be properly braced or tied together to maintain position and shape. Forms and their supports shall be designed so as not to damage previously placed structure.
   1. Slab Forming Techniques: Do not puncture the vapor barrier.

3.4 SOIL TREATMENT OF SIDEWALK AND PAVEMENT AREAS WITH HERBICIDES

A. Just prior to placing concrete for pavements and sidewalks, apply herbicide soil treatment at recommended rates for application. Protect desirable vegetation from herbicide treatment.

B. Herbicide shall bear evidence of registration under Federal Insecticide, Fungicide, and Rodenticide Act for weed control application.

3.5 REINFORCING

A. Comply with the following, as well as the specified standards, for details and methods of reinforcing placement and supports.
   1. Clean reinforcement and remove loose dust and mill scale, earth, oil, and other materials which reduce bond or destroy bond with concrete.
   2. Position, support, and secure reinforcement against displacement by forms, construction, and the concrete placement operations. Provide metal chairs, dobies, or other aids manufactured for this purpose.
   3. Place reinforcement to obtain the required coverages for concrete protection.
   4. Reinforcement of site concrete and fire lane paving shall be placed at 2” below the concrete surface unless otherwise shown.
   5. Unless otherwise shown or noted on the Drawings, lap bars as noted on Lap Schedule in structural drawings.
   6. Partially embedded reinforcing shall not be bent without the approval of the DSA.

3.6 EMBEDDED ITEMS

A. Do not embed piping, other than electrical conduit, in structural concrete. See structural drawings for provisions for pipes, sleeves, conduits or other penetrations into or through the footings.

B. Set bolts, inserts, and other required items in the concrete, accurately secured so they will not be displaced, and in the precise locations needed. **IN NO CASE SHALL ANY BOLT OR ANCHOR BE STABBED IN PLACE WHILE OR AFTER THE CONCRETE IS POURED.** Evidence of stabbing will necessitate testing at the expense of the contractor.

C. **Slip Dowel System:** Install in accordance with manufacturer's written recommendations.

3.7 MIXING CONCRETE

A. Transit mix the concrete in accordance with provisions of ASTM C94.
   1. Water shall only be added at the beginning of discharge and shall be a one-time addition of water. At a minimum, the drum shall be turned an additional 30 revolutions after addition of water. After discharge has begun the addition of water is prohibited.
   2. Discharge of the concrete shall be completed within 90 minutes, or before the drum has revolved 300 times after the cement has been exposed to the mixing water or aggregates.

B. Cold Weather Requirements:
   1. Adequate equipment shall be provided for heating concrete materials and protecting concrete during freezing or near-freezing weather. All concrete materials and all reinforcement, forms, fillers, and ground with which concrete is to come in contact shall be free from frost. Frozen materials or materials containing ice shall not be used.
   2. When mixing concrete during freezing or near-freezing weather, the mix shall have a temperature of at least 55 deg F., but not more than 90 deg F. When necessary, concrete materials shall be heated before mixing. Special precautions shall be taken for the protection of transit-mixed concrete.
   3. The concrete shall be maintained at a temperature of at least 55 deg F. for not less than 72 hours after placing. After the initial curing period allow the concrete surface to dry prior to exposure. Do not permit the concrete to cool faster than the rate of 5 deg F per hour or more for the first 24 hours.

C. Hot Weather Requirements:
   1. During hot weather, proper attention shall be given to ingredients, production methods, handling, placing, protection and curing to prevent excessive concrete temperatures or water evaporation that may impair required strength or serviceability of the member or structure.
   2. When air temperature is between 85 deg F and 90 deg F, reduce mixing and delivery time from 1-1/2 hours to 75 minutes, and when air temperature is above 90 deg F, reduce mixing and delivery time to 60 minutes.

3.8 PLACING CONCRETE

A. Concrete shall not be placed until the forms and reinforcement have been inspected, all preparations for the placement have been completed, and the preparations have been checked by the Inspector of Record, all subject to the observation of the structural engineer or Architect.

B. Preparation:
   1. Remove foreign matter accumulated in the forms.
   2. Rigidly close openings left in the formwork.
   3. Wet wood forms sufficiently to tighten up cracks; wet other material sufficiently to maintain workability of the concrete.
   4. Use only clean forms and tools.

C. Conveying: ACI 318-14, Section 26.5.2.1.
   1. Concrete shall be conveyed from mixer to place of final deposit by methods that will prevent separation or loss of materials.
   2. Conveying equipment shall be capable of providing a supply of concrete at site of placement without separation of ingredients and without interruptions sufficient to permit loss of plasticity between successive increments.
   3. Remove rejected concrete from the job site.

D. Placing Concrete in Forms: ACI 318-14, Section 26.5.2.1.
   1. Concrete shall be deposited as nearly as practicable in its final position to avoid segregation due to rehandling or flowing. Concreting shall be carried on at such a rate that concrete is at all times plastic and flows readily into spaces between reinforcement.
   2. Where concrete is placed in lifts, each lift shall be thoroughly consolidated before the next layer is placed. The rate of placement shall be rapid enough so that previously placed concrete has not yet set when the next lift of concrete is placed upon it. Do not allow flow lines, seams, and planes of weakness (cold joints) to form as a result of placement means and methods.

E. Placing Concrete Slabs:
   1. Deposit and consolidate concrete slabs in a continuous operation, within limits of construction joints, until the placing of a panel or section is completed.
   2. Bring slab surfaces to the correct level with a straightedge, and then strike off.
   3. Use wood bullfloats or darbies to smooth the surface, leaving the surface free from bumps and hollows.
   4. Do not sprinkle water on the plastic surface. Do not disturb the slab surface prior to start of finishing operations.

3.9 CONSOLIDATION

A. All concrete shall be thoroughly consolidated by suitable means during placement and shall be thoroughly worked around reinforcement and embedded fixtures and into corners of forms.
   1. Where conditions make consolidation difficult, or where reinforcement is congested, batches of concrete adjusted to use smaller size aggregates shall be used as approved by the structural engineer and the enforcement agency.
   2. Do not vibrate forms or reinforcement.
   3. Do not use vibrators to transport concrete inside the forms.
   4. Perform consolidation by experienced personnel.

3.10 JOINTS

A. Construction Joints (CJ):
   1. Do not use horizontal construction joints except as may be shown on the Drawings.
   2. If additional construction joints are found to be required, secure the Architect's approval of joint design and location prior to start of concrete placement.
   3. Joints shall be constructed in accordance with ACI 318-14, Section 26.5.6.

B. Isolation Joints (IJ):
   1. Do not permit reinforcement or other embedded metal items that are being bonded with concrete (except dowels in floors bonded on only one side of the joints) to extend continuously through any isolation joint, unless specifically noted.
   2. Fill isolation joints full depth with joint material approved by the Architect.
   3. Provide isolation joints as shown on plans.

C. Crack Control Joint (CCJ):
   1. Provide template or guide as required for straight sawcut.

2. Joints shall be spaced as indicated on the Drawings, but not more than 10'-0" on center.
   a. Joints shall be placed to produce panels that are as square as possible and never exceed a length to width ratio of 1 ½ to 1 – in which case additional joints shall be installed.
3. Saw cut joints before concrete begins to cool, within 2 to 12 hours after placing.
4. Use 1/8" thick blade and cut at least 1" deep but not less than one third (1/3) the depth of the slab.

3.11 CONCRETE SLAB FINISHING

A. Finish work shall be performed in accordance with ACI 302.1R-15, Chapter 10.

B. Finished Slab Surfaces: Except as may be shown otherwise on the Drawings, provide the following finishes at the indicated locations:
   1. Scratch Finish: Apply to monolithic slab surfaces that are to receive concrete floor topping or mortar setting bed.
   2. Float Finish: Apply to monolithic slab surfaces that are to receive trowel finish and other finishes specified hereinafter, and to slab surfaces which are to be covered with tile on a setting bed.
   3. Trowel Finish: Apply to interior monolithic slab surfaces that are to be exposed to view, unless otherwise shown, and to slab surfaces that are to be covered with resilient flooring, carpeting, thin-set tile, paint, or other thin-film finish coating system.
   4. Non-slip Broom Finish: Apply to exterior walks, stairs, drives, ramps, and similar pedestrian and vehicular areas. Coordinate required final finish with Architect before application.
      a. Medium broom finish for slopes < 5%.
      b. Heavy broom finish for slopes ≥5%.

C. Finish Concrete Slab Tolerances:
   1. Slabs shall be level unless slope is otherwise specified.
   2. Tolerances of finished slab surfaces shall comply with ACI 117.1R-14 "Class A Surface Finish Tolerance". Depressions in floor between high spots shall not be greater than 1/8" between a 10' long straight edge.
   3. Depressed surfaces shall be leveled with an approved filler and sanded smooth.
   4. High spots shall be ground down until level. Remove dislodged aggregate and patch floor.
   5. Grind or fill surface defects which would telegraph through applied floor covering systems.
   6. Owner reserves the right to test floors and concrete members for conformance to ACI 117.1R-14 Tolerance Specifications by Use of the "Dipstick Floor Profiler". Should tolerances not be within the limits specified, the Contractor shall be required to pay for all testing costs and repairs required to bring materials into compliance.

D. Exterior Flatwork Edge and Joint Finishing:
   1. Finish slab edges, including those at formed joints, with an edger having a radius of 1/8".
   2. Edge transverse joints prior to brooming. Brooming shall eliminate the flat surface left by the surface face of the edger.
   3. Corners and edges which have crumbled and areas which lack sufficient mortar for proper finishing shall be cleaned and filled solidly with the properly proportioned mortar mixture and then finished.

E. Required Grinding of Interior Slab:
   1. The Contractor shall anticipate that grinding will be required as a result of curling or other slab defects. Grinding required to bring the slab surface into acceptable tolerances for finished flooring installation shall be included as part of the Work.
   2. Provide a slip resistant surface after grinding and filling with a 0.6 coefficient of friction at exposed slabs and exterior flatwork.

3.12 CURING

A. ACI 318, Section 26.5.3: Protect freshly placed concrete from premature drying and excessive cold or hot temperatures.

B. Curing Methods with Surface Applied Curing Products: Apply curing products immediately after concrete finishing in strict accordance with the manufacturer's written installation instructions.

C. Start initial curing as soon as free water has disappeared from concrete surface after placing and finishing. Avoid rapid drying at end of final curing period.

D. Protection of Slabs After Curing: After curing is completed, do not allow water to stand on completed slabs. Remove standing water as soon as possible.

3.13 REMOVAL OF FORMS

A. ACI 318, Section 6.2.
   1. Forms shall be removed in such manner as not to impair safety and serviceability of the structure. All concrete to be exposed by form removal shall have sufficient strength not to be damaged thereby.

B. No portion of the forming and shoring system may be removed less than 12 hours after placing concrete. When stripping time is less than the specified curing time, measures shall be taken to provide adequate curing and thermal protection of the stripped concrete.
   1. Do not remove shoring until the member has acquired sufficient strength to support its own weight, the load upon it, and the added load of construction.
   2. Do not strip vertical concrete in less than 7 days.

C. Finished Surfaces:
   1. Exercise care in removing forms from finished concrete surfaces so that surfaces are not marred or gouged.
   2. Release sleeve nuts or clamps, and pull the form ties neatly.
   3. Do not permit steel spreaders, form ties, or other metal to project from, or be visible on, any concrete surface except where so shown on the Drawings.

D. Repair of Surface Defects: Repair or replace deficient work at no additional cost to the Owner.
   1. Repair tie holes and other surface defects immediately after formwork removal.
   2. Where the concrete surface will be textured by sandblasting or bush-hammering, repair surface defects before texturing.
   3. Repair tie holes and surface defects to match surrounding concrete color and surface texture.
   4. Repair tie holes and surface defects in conformance with ACI 301-16, Paragraph 5.3.7.

3.14 SURFACE FINISH OF VERTICAL CONCRETE SURFACES

A. Unexposed Form Finish: Rub down or chip off fins or other raised areas.

B. Exposed (to view) Form Finish: Rub down or chip off and smooth fins or other raised areas.
   1. As-Cast Finish: Provide surface finish 3.0 in accordance with ACI 301-16, Paragraph 5.3.3.3.
   2. Rubbed Finish:
      a. Smooth Rubbed Finish: Wet concrete and rub with carborundum brick or other abrasive, not more than 24 hours after form removal.
      b. Grout Cleaned Finish: Wet areas to be cleaned and apply grout mixture by brush or spray; scrub immediately to remove excess grout. After drying, rub vigorously with clean burlap, and keep moist for 36 hours.
      c. Cork Floated Finish: Immediately after form removal, apply grout with trowel or firm rubber float; compress grout with low-speed grinder, and apply final texture with cork float.

3.15 FINISH OF CURBS AND GUTTERS

A. Finish of Curbs and Gutters:
   1. Tool edges of gutter and top of curb with an edging tool to a radius of 1/2"
   2. Float and finish surfaces with a smooth wood float until true to grade, section and uniform in texture.
   3. Brush floated surfaces with a fine-hair brush using longitudinal strokes.
   4. Immediately after removing the front curb form, rub face of curb with wood or concrete rubbing block and water until blemishes, form marks, and tool marks have been removed. While still wet, brush surface in the same manner as the gutter and curb top.
   5. Finish the top surface of gutter and entrance drives to grade with a wood float.

3.16 MISCELLANEOUS CONCRETE ITEMS

A. Curbs: Provide monolithic finish to interior curbs by stripping forms while concrete is still green and steel-troweling surfaces to a hard, dense finish with corners, intersections and terminations slightly rounded.

B. Grout base plates and foundations as indicated, using specified non-shrink grout. Use non-metallic grout for exposed conditions, unless otherwise indicated.

C. Dry Pack Grout:
   1. Pack solid under sill plates where indicated to provide continuous bearing.
   2. Provide dry pack prior to installation of roof framing.

3.17 QUALITY CONTROL TESTING DURING CONSTRUCTION

A. Testing of concrete materials shall comply with Section 01 4520, CBC Chapter 17A, and CBC Section 1910A.

B. The Owner will employ a testing laboratory to perform tests and to submit test reports. Sampling and testing for quality control during placement of concrete may include the following, as directed by the Architect.

C. Compaction and Moisture Testing sub-grade.
   1. Test sub-grade immediately prior to placing any concrete or placing a vapor barrier as described in Section 31 2000 – Earthwork.

D. Sampling Fresh Concrete: Comply with requirements of ASTM C172.
   1. Slump: ASTM C143; one test at point of discharge for each day's pour of each type of concrete; additional tests when concrete consistency seems to have changed.
   2. Concrete Temperature: Test hourly when air temperature is 40 degrees F and below, and when 80 degrees F and above; and each time a set of compression test specimens are made.
   3. Compression Test Specimen: ASTM C31; one set of 4 standard cylinders for each compressive strength test, unless otherwise directed. Mold and store cylinders for laboratory cured test specimens except when field-cure test specimens are required.
   4. Compressive Strength Tests: ASTM C39; one set for each day's pour, but not less than one set for each 50 cubic yards or each 2,000 square feet of surface area of slabs or walls for each concrete class placed in any one day; one specimen tested at 7 days, two specimens tested at 28 days; and one specimen retained in reserve for later testing if required.
   5. When frequency of testing will provide less than 5 strength tests for a given class of concrete, conduct testing from at least 5 randomly selected batches or from each batch if fewer than 5 are used.

E. Batch Plant Inspection:
   1. Continuous batch plant inspection during mixing will be required on this project for structural concrete, including but not limited to footings, foundation walls, retaining walls, columns, and floor slabs in compliance with CBC Section 1705A.3.3.
   2. Batch plant inspection may be waived in accordance with CBC Section 1705A.3.3.1.

F. Reinforcing Steel Testing **will be required on this project**, except for non-structural concrete work. Comply with CBC Section 1910A.2; testing will be waived if mill certificates are provided.

G. Slab Finish Tolerance Testing: Where requested by the Architect, test slabs for finish tolerance in accordance with ACI 117 Tolerance Specifications by Use of the "Dipstick Floor Profiler".

H. Test Results will be reported in writing to Architect and Contractor within 24 hours that tests are made. Reports of compressive strength tests shall contain the project identification name and number, date of concrete placement, name of concrete testing service, concrete type and class, location of concrete batch in structure, design compressive strength at 28 days, concrete mix proportions and materials; compressive breaking strength and type of break for both 7-day tests and 28-day tests.

I. Non-Destructive Testing: Rebound hammer, sonoscope, or other non-destructive device may be permitted but shall not be used as the sole basis for acceptance or rejection.

J. Additional Tests:
   1. The testing service will make additional tests of in-place concrete when test results indicate specified concrete strengths and other characteristics have not been attained in the structure, as directed by Architect.
   2. Testing service may conduct tests to determine adequacy of concrete by cored cylinders complying with ASTM C 42, or by other methods as directed.
   3. The Owner shall pay for such tests conducted, and any other additional testing as may be required, when unacceptable concrete is verified.
   4. The Owner shall be compensated for such additional testing by deducting the additional costs from the General Contractor’s final payment.

END OF SECTION 03 3000

SECTION 09 2400 - CEMENT PLASTER

PART 1 - GENERAL

1.1 SUMMARY

A. Provide lath and plaster where indicated on the Drawings, as specified herein, and as needed for a complete and proper installation.

B. Related Sections:
1. Documents affecting work of this Section include, but are not necessarily limited to, General Conditions, Supplementary Conditions, and Sections in Division 1 of these Specifications.
8. Section 07 6200: Flashing and sheet metal.
9. Section 07 9210: Elastomeric joint sealants.

1.2 SUBMITTALS

A. General: Submit in accordance with Section 01 3300.
1. Product Data: Submit manufacturer's descriptive literature and product specifications for each product. Include data to indicate compliance with the specified requirements.
2. Installation Procedures: Submit manufacturer's recommended installation procedures which, when approved by the Architect, will become the basis for accepting or rejecting actual installation procedures used on the Work.
3. Samples:
a. Submit samples of the proposed accessories.
b. Provide 24" x 24" finish coat samples (on 1" foam board) of each plaster texture for approval by Architect 14 days prior to commencing work.

1.3 QUALITY ASSURANCE

A. In addition to complying with pertinent codes and regulations of governmental agencies having jurisdiction, comply with materials handling and workmanship provisions of the "Reference Specifications" of the California Lathing and Plastering Contractors Association. Interior and exterior lath and plaster shall comply with CBC Chapter 25.

B. Colors: Provide finish selections indicated in the Finish Schedule.
1. Acceptable Manufacturers: The products and manufacturers specified in the Finish Schedule are for purposes of establishing color and quality. Refer to each Specification Section for additional manufacturers and Section 01 2500 for substitution requirements.
2. Manufacturer’s Standard Colors and Finishes: Where Finish Schedule specifies a manufacturer’s standard color or finish, Architect makes no guarantee that matching colors or finishes are available as other manufacturer’s “standard colors” from the listing of acceptable manufacturers. Contractor shall be responsible for providing colors matching those indicated on the Drawings.
3. Custom Colors: Where Finish Schedule indicates a specific manufacturer’s colors, other acceptable manufacturers shall provide matching custom colors where a standard color is not acceptable.

1.4 SPECIAL WARRANTY

A. In addition to the warranty requirements of the Contract Documents, submit 2 original copies of a warranty from the acrylic finish coat manufacturer for fading, delamination, and defective materials with an extended correction period of **3-years.**

PART 2 - PRODUCTS

2.1 MATERIALS, GENERAL

A. Products specified are for establishing the type, design, and quality required. Products of equal or better type, design, and quality produced by other manufacturers will be considered provided the request for substitution is submitted in accordance with Section 01 2500.

2.2 LATH

A. Provide corrosion resistant lath and lath accessories.

B. Welded Wire Metal Lath: ASTM C933; galvanized, self-furring.
   1. Wood and Metal Vertical Supports:
      a. 16" On-center: 1.00 lb/sq yd, 1-1/2" square openings; Structalath III by Structa Wire Corp., IAPMO ER 2017.
      b. 24" On-center: 2.2 lb/sq yd, 2" square openings; V-Truss Wall & Ceilings by Structa Wire Corp., IAPMO ER 2017.
   2. Wood and Metal Horizontal Supports:
      a. Maximum 24" On-center: 2.2 lb/sq yd, 2" square openings; V-Truss Wall & Ceilings by Structa Wire Corp., IAPMO ER 2017.

C. Paper Backing (Water Resistive Barrier): Asphalt-impregnated Type "D" paper; CBC Section 2510.6.

D. Self-Furring Lath:
   1. Use of self-furring lath is permitted subject to satisfactory job-site demonstration of installation.
   2. Lath shall be furred out 1/4" when installed over solid surfaces such as plywood; DSA IR 25-4.

E. Lath Fasteners:
   1. Staples:
      a. At vertical wood supports: Minimum 16 gauge, minimum 3/4" crown, of sufficient length to penetrate sheathing and framing members minimum of 1" into wood structural members.
      b. At horizontal wood supports: Minimum 9 gauge, barbed, minimum 3/4" crown, of sufficient length to penetrate sheathing and framing members minimum of 1-1/2" into wood structural members.
   2. Nails: 6d common or roofing nail with 7/16" head, 3/4" minimum embedment into stud exclusive of sheathing; ASTM C1063.
   3. Screws: 7/16" pan wafer head, Type S, 0.120" shank; ASTM C1002 and/or C 954.
      a. Into Wood: #12 zinc pan head; 5/8" minimum penetration into wood.
         1) 1-1/4" minimum penetration into stud where applying lath over insulation board.
      b. Into Metal: Self-drilling and tapping; penetrate steel thickness plus 3 threads.
   4. Powder Actuated Fasteners: Use fastener recommended for the specific use intended.
      a. For concrete and masonry substrates only.
      b. Factory washer (disc).
      c. Demonstrate a minimum 50 pound pull out value.
      d. 1-1/4" minimum embedment.

2.3 METAL ACCESSORIES

A. Metal Corner Beads: Prefabricated, No. 1A expanded metal corner bead, small nose corner beads fabricated from zinc alloy, with expanded flanges of large mesh diamond lath to allow full encasement by plaster.
B. Casing Beads: Prefabricated, No. 66 short flange casing bead, square-edged style, with short flange, zinc-coated galvanized steel.

C. Control Joints - One Piece Type: Prefabricated, No. 15 expansion joint; Folded pair of non-perforated screeds in M-shaped configuration, with expanded flanges, zinc-coated galvanized steel.
D. Weep Screed: Prefabricated, No. 7 foundation sill screed o J-weep; zinc-coated galvanized steel with nailing flange.
E. Inside Corner Control Joint: Prefabricated No. 30, folded pair of non-perforated screeds in W-shaped configuration, with expanded flanges.

2.4 PLASTER

A. Comply with ASTM C926 for Portland cement plaster base and finish coat mixes as applicable bases, materials and other requirements indicated.
1. Portland Cement, ASTM C150, Type II or IV.
2. Plastic Cement: ASTM C1328; no additional lime or plasticizer shall be added.
3. Sand Aggregate for Base Coat: ASTM C897.

B. Portland Cement Plaster Base Coat Mixes and Compositions: Proportion materials for respective base coats in parts by volume for cementitious material and in parts by volume per sum of cementitious materials for aggregates to comply with the following requirements for each method of application and plaster base indicated. Adjust mix proportions below within limits specified to attain workability.
1. Three coat work over metal lath.
2. Scratch Coat: 1 part Portland cement plaster, 2-1/2 to 4 parts sand.
3. Brown Coat: 1 part Portland cement plaster, 3 to 5 parts sand.

C. Polymer-Based Exterior Finish Coat: 100% acrylic polymer finish coat with integral color as indicated on the Finish Schedule, applied over stucco brown coat; Standard Finish by Dryvit Systems, Inc., Senerflex Finish by Senergy, or Sto Powerwall Finish by Sto Corp.

2.5 OTHER MATERIALS

A. Water for Mixing and Finishing Plaster: Drinkable, free of substances capable of affecting plaster set or of damaging plaster, lath or accessories.

B. Bonding Agent for Portland Cement Plaster: ASTM C932.

PART 3 - EXECUTION

3.1 SURFACE CONDITIONS

A. Examine the areas and conditions under which work of this Section will be performed. Correct conditions detrimental to timely and proper completion of the Work. Do not proceed until unsatisfactory conditions are corrected.

3.2 WATER-RESISTIVE BARRIER INSTALLATION

A. General: Install 2 layers water resistive barrier over all sheathing.
1. Install 1 layer over air barrier specified in Section 07 2710.
2. Install with minimum 2" horizontal laps and 6" vertical laps.
3. Water resistive barrier is not required on ceilings or soffits.

B. Integrate water resistive barrier with flashings such that water resistive barrier always laps over flashing.

C. Install water resistive barrier taut with a minimum of wrinkles and with care to eliminate punctures, tears or rips during application and the application of metal lath.

D. Repair holes, tears or rips.

3.3 LATH INSTALLATION

A. Lath: CBC Section 2507.3 and 2510.
   1. Welded Wire Lath: Fasteners shall engage vertical cross wires at the furring crimps, at the intersection of longitudinal wire and cross wire, or at any point along the longitudinal wire.

B. Fastener Spacing:
   1. Space fasteners at 6" on center along supports.
   2. Bend common nails over to engage not less than 3 strands of lath.

C. Soffit Earthquake Nailing: At horizontal soffits, provide additional fasteners along each support and within 3" of the edge of each sheet; 9 gage ring-shank hook staple, 3/4" wide hook, 1-1/2" long.

3.4 INSTALLATION OF PLASTERING ACCESSORIES

A. Comply with referenced lathing and furring installation standards for provision and location of plaster accessories of type indicated.
   1. Miter or cope accessories at corners; install with tight joints and in alignment.
   2. Attach accessories securely to plaster bases to hold accessories in place and alignment during plastering.

B. Corner Bead: Install at external corners.

C. Casing Beads: Install at termination of plaster work unless otherwise indicated.

D. Control Joints: Install control joints at locations indicated, or if not indicated, at locations complying with the following criteria and approved by the Architect.
   1. Where expansion or control joint occurs in construction directly behind plaster membrane.
   2. Where distance between control joints in plastered surface exceeds 144" in either direction.
   3. Where area within Portland Cement panels exceed 100 sq. ft.
   4. Where Portland Cement plaster panel sizes or dimensions change. Extend joints full width or height of plaster membrane.
   5. At corners of door and window frames.
   6. Directly over changes in substrate materials.

E. Install accessories flush with metal frames and other built-in items unless otherwise indicated.

3.5 PLASTER APPLICATION

A. Comply with all provisions of CBC Section 2512.

B. Portland Cement Plaster Application Standard: Apply Portland Cement plaster materials, compositions, and mixes to comply with ASTM C926. In addition to specified standards, apply plaster as follows:
   1. Scratch coat: Score scratch coat horizontally only to achieve a mechanical bond with the brown coat.
   2. Cold Joints: Cold joints in plaster will not be permitted within a panel, or between screeds, joints, or reveals.

C. Tolerances: Do not deviate more than 1/8" in 10'-0" from a true plane in finished plaster surfaces, as measured by a 10'-0" straightedge placed at any location on surface.

D. Plaster flush with metal frames and other built-in metal items or accessories which act as a plaster ground, unless otherwise indicated. Where plaster is not terminated at metal by casing beads, cut base coat free from metal before plaster sets and groove finish coat at the junctures with metal.

E. Walls: Provide 7/8" thick three 3-coat plastering method on walls (3/4" base + 1/8" finish).

F. Ceilings and Soffits: Provide 3/4" thick three 3-coat plastering method on ceilings and soffits.

G. Concealed Plaster: Where plaster application will be concealed by wood paneling, above suspended ceilings and similar locations, finish-coat may be omitted; where concealed behind cabinets and similar furnishings and equipment, apply finish-coat; where used as a base for adhesive application of tile and similar finishes, omit finish-coat and coordinate thickness with overall dimension as shown, and comply with tolerance specified.

H. Number of Coats: Apply Portland Cement plaster, of composition indicated, using 3-coat work over the following plaster bases: Metal lath, scratch coat, brown coat, finish coat.

3.6 CURING

A. Moist cure Portland Cement plaster base and finish coats to comply with ASTM C926, including recommendations for time between coats and during in "Annex A2 Design Considerations".

B. Keep cement basecoat hydrated and allow the cement to chemically cure and harden. Moist cure as needed, morning and evening as required to produce a hard basecoat.

C. Basecoat shall be allowed to cure a minimum of 7 days before applying a finish coat. If feasible allow the basecoat to cure 14 days prior to applying the finish coat.

D. Plastered walls with excessive shrinkage cracks in the basecoat due to a failure to water cure shall be skim coated with a polymer-based cement coat prior to applying a finish coat.

3.7 FINISH COAT

A. Finish Coat Application:
   1. Apply finish coat to match mock-ups in color and texture.
   2. Acrylic Finish Coat: Apply a primer coat for light colored finishes or provide full prime coverage for all "putz" or "swirl" textures.
   3. Provide sufficient crew size to maintain a wet edge; scaffold lines shall be kept to a minimum.
   4. Maintain consistency and uniformity in application procedures and techniques.
   5. Leave adjacent surfaces clean and free of plaster materials.
   6. Leave protection of the plaster in place until finish coat is set.
   7. Repair scaffold tie-is to maintain water-resistance of plaster assembly and blend with finish coat.

B. Texture:
   1. Acrylic Finish Coat and Texture: "Sandblast" as illustrated by Dryvit Systems, Inc.
   2. Existing Construction: Finish texture to match existing cement plaster surface.

C. Protect finish coat in compliance with manufacturer's recommendations.

3.8 CLEANING UP

A. Promptly wipe metal accessories, and other surfaces which are not to be plastered, clean after application of each coat.

B. In addition to other protection, protect and clean adjacent surfaces from the accidental application of plaster.
C. In addition to other requirements for cleaning, immediately upon completion of this portion of the Work visually inspect adjacent surfaces and remove all traces of spilled and splashed plaster.

3.9 FIELD QUALITY CONTROL

A. Lath Inspection: No lath or lath attachments shall be covered or finished until it has been inspected and approved by the Project Inspector or special inspector.

END OF SECTION 09 2400

SECTION 09 9100 - PAINTING

PART 1 - GENERAL

1.1 SUMMARY

A. General: Paint and finish all exposed surfaces using the combination of materials listed on Painting Schedule in Part 3 of this Section, as specified herein, and as needed for a complete and proper installation.
1. Surface preparation, priming, and painting specified in this Section are in addition to shop priming and surface treatment specified in other sections.
2. Paint exposed surfaces whether or not colors are designated in schedules. Paint exposed surfaces to match adjacent materials or areas, in the color selected by the Architect.

B. Work Included: The following list is not totally inclusive and does not exclude work not stated herein but required to be painted in the specifications, Finish Schedule, and drawings. Unless otherwise specified, work to be painted under this Section includes, but is not limited to:
1. Work specifically noted as requiring a paint finish in the drawings and specifications, and on the Finish Schedule.
2. Interior and exterior metal fabrications, both galvanized and shop primed.
3. Cement plaster.

C. Work Not Included:
1. Unless otherwise indicated, painting is not required on surfaces in concealed areas and inaccessible areas such as furred spaces, foundation spaces, utility tunnels, pipe spaces, and duct shafts.
2. Surfaces of prefinished metals, anodized aluminum, stainless steel, chromium plate, copper, bronze, and similar finished materials will not require painting under this Section unless indicated on the Drawings.
3. Do not paint moving parts of operating units; mechanical or electrical parts such as valve operators; linkages; sensing devices; and motor shafts, unless otherwise indicated.
4. Do not paint over required labels or equipment identification, performance rating, name, or nomenclature plates.
5. Do not paint concrete which has been sandblasted unless specifically noted for painting.
6. Do not paint galvanized gratings.

D. Related Sections:
1. Documents affecting work of this Section include, but are not necessarily limited to, General Conditions, Supplementary Conditions, and Sections in Division l of these Specifications.
2. Priming or priming and finishing of certain surfaces may be specified to be factory-performed or installer-performed under pertinent other Sections.
10. Section 32 1720: Painting for pavement markings.

E. Definitions: "Paint," as used herein, means coating systems materials including primers, emulsions, epoxy, enamels, sealers, fillers, and other applied materials whether used as prime, intermediate, or finish coats.

1.2 SUBMITTALS

A. General: Submit in accordance with Section 01 3300.
1. Product Data: Submit manufacturer's descriptive literature and product specifications for each product. Include data to indicate compliance with the specified requirements.
2. Installation Procedures: Submit manufacturer's recommended installation procedures.
3. Samples: Following the selection of colors and glosses by the Architect, submit Samples for the Architect's review.

a. Provide four Samples of each color and each gloss for each material on which the finish is specified to be applied, approximately 8" x 10" in size.
b. Provide wood stain samples on specified wood for color selection or approval.
c. If so directed by Architect, submit Samples during progress of the Work in the form of actual application of the approved materials on actual surfaces to be painted.
d. Revise and resubmit each Sample as requested until the required gloss, color, and texture are achieved. Such Samples, when approved, will become standards of color and finish for accepting or rejecting the work of this Section.
e. Do not commence finish painting until approved Samples are on file at the job site.

B. Contract Closeout Submittals: Manufacturer's recommended cleaning procedures.

1.3 QUALITY ASSURANCE

A. 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.

B. Paint Coordination:
1. Provide finish coats which are compatible with the prime coats actually used and specified.
2. Review other Sections of these Specifications as required, verifying the prime coats to be used and assuring compatibility of the total coating system for the various substrata.
3. Upon request, furnish information on the characteristics of the specific finish materials to assure that compatible prime coats are used.
4. Provide barrier coats over noncompatible primers, or remove the primer and reprime as required.
5. Notify the Architect in writing of anticipated problems in using the specified coating systems over prime-coatings supplied under other Sections.

1.4 DELIVERY, STORAGE, AND HANDLING

A. General:
1. Do not store flammable materials inside buildings.
2. Mix paint in a location and manner that will protect the environment and facilities.
3. Provide ventilation needed to comply with OSHA requirements.

1.5 SITE CONDITIONS

A. Do not apply exterior materials during fog, rain, or mist, or when inclement weather is expected within the dry time specified by the manufacturer. No exterior or interior painting shall be performed until the surfaces are thoroughly dry and cured. Do not apply paint when temperature is below 50 deg F. Avoid painting surfaces when exposed to direct sunlight.

1.6 EXTRA MATERIALS

A. Upon completion of the work of this Section, deliver to the Owner an extra stock equaling 5% of each color, type, and gloss of paint used in the Work, tightly sealing each container, and clearly labeling with contents and location where used.

B. Deliver materials to the Inspector of Record along with an inventory list of items provided. Obtain and forward to the Architect, a signed receipt from the Inspector accepting delivery.

PART 2 - PRODUCTS

2.1 PAINT MATERIALS

A. Products specified are for establishing the type, design, and quality required and are based on products of **Dunn-Edwards.** Other product systems approved for use are by Pittsburg Paints**,** Sherwin-Williams, and Frazee. Products of equal or better type, design, and quality produced by other manufacturers will be considered provided the request for substitution is submitted in accordance with Section 01 2500.
   1. Where products are proposed other than Dunn-Edwards, submit a new painting schedule compiled in the same format used for the Painting Schedule included in this Section.
   2. Approved specifications of materials for the other referenced manufacturers may be obtained from the Architect.

B. Undercoats and Thinners:
   1. Provide undercoat paint produced by the same manufacturer as the finish coat, unless specified otherwise.
   2. Use only the thinners recommended by the paint manufacturer, and use only to the recommended limits.
   3. Provide undercoat, finish coat, and thinner material as parts of a unified system of paint finish.

C. Paint Systems: The specified standard is 100% acrylic premium top-of-the line paint, except where surfaces are specified to receive industrial coatings.

2.2 COLOR SCHEDULES

A. Refer to the Finish Schedule on the Drawings.

2.3 APPLICATION EQUIPMENT

A. For application of the approved paint, use only such equipment as is recommended for application of the particular paint by the manufacturer of the particular paint, and in accordance with all current Environmental Protection Agency standards and regulations.

2.4 OTHER MATERIALS

A. Provide other materials, not specifically described but required for a complete and proper installation, as selected by the Contractor subject to the approval of the Architect.

PART 3 - EXECUTION

3.1 SURFACE CONDITIONS

A. Examine the areas and conditions under which work of this Section will be performed. Correct conditions detrimental to timely and proper completion of the Work. Do not proceed until unsatisfactory conditions are corrected.

3.2 MATERIALS PREPARATION

A. Mix, prepare, and store painting and finishing materials in accordance with the manufacturer’s written recommendations.

3.3 SURFACE PREPARATION

A. General:
1. Perform preparation and cleaning procedures in strict accordance with the paint manufacturers' recommendations.
2. Remove removable items which are in place and are not scheduled to receive paint finish.
3. Following completion of painting in each space or area, reinstall the removed items by using workmen who are skilled in the necessary trades.
4. Clean each surface to be painted prior to applying paint or surface treatment.
5. Remove dirt and other foreign substances. Remove oil and grease with clean cloths and cleaning solvent of low toxicity and flash point in excess of 200 degrees F, prior to start of mechanical cleaning.
6. Schedule the cleaning and painting so that dust and other contaminants from the cleaning process will not fall onto wet newly painted surfaces.

B. Metal:
1. Thoroughly clean surfaces until free from dirt, oil, and grease per SSPC-SP 1. Remove all mill scale, rust formation, etc.
2. On galvanized surfaces, use solvent for the initial cleaning, and then treat the surface thoroughly with etching solution. Remove etching solution completely before proceeding. **Prime etched metals the same day cleaning was performed.** If any oxidation (white rust) has formed, sand and remove all forms of contamination. If the galvanized has been passivated or stabilized, the surface must be abraded, i.e. Brush-Off Blast Clean per SSPC-SP7 or chemically treated.
3. Allow to dry thoroughly before application of paint.
4. Primers specified for structural steel and metal fabrications are standalone systems. Apply full paint system as specified in this Section even if metal comes preprimed or shop primed.

C. Prefinished Metal:
1. Solvent clean per SSPC-SP 1. Abrade substrate to remove gloss and obtain minimum surface profile of 1.0 mil. Solvent wipe to remove dust.

D. Concrete:
1. Thoroughly clean surfaces.
2. Prior to painting, the material shall be dry to the extent that a proper, long lasting, and non-blistering bond will be assured. Should the dryness of the substrate be in question, test the substrate in the presence of the paint manufacturer's representative. Do not paint substrate in question until dryness condition improves to meet the paint manufacturer's requirements.
3. Where floors are to be sealed, provide surface preparation per SSPC-SP13/NACE 6.

E. Masonry and Cement Plaster:
1. Allow to dry at least 30 days prior to cleaning in preparation for painting.
2. Remove glaze, efflorescence, laitance, surface deposits, and other foreign matter.

F. Gypsum Board: Remove all sanding dust.

G. Wood, Painted Finish:
1. Remove surface deposits of sap and pitch by scraping and cleaning with mineral spirits.
2. Seal all knots and pitch pockets with the paint manufacturer's recommended materials prior to prime coat.
3. Sand smooth all wood surfaces exposed to view, using the proper sandpaper and remove dust. Where so required, use varying degrees of coarseness in sandpaper to produce a uniformly smooth and unmarred wood surface.
4. After prime coat is dry, fill cracks, holes, and scratches with suitable wood filler or spackling compound. When dry, sand flush with surface.

5. Do not proceed with painting of wood surfaces until the moisture content of the wood is 12% or less as measured by a moisture meter.

H. Wood, Stained Finish:
1. Apply paste wood filler to open grained wood prior to sanding.
2. Sand smooth all wood surfaces exposed to view, using the proper sandpaper and remove dust. Where so required, use varying degrees of coarseness in sandpaper to produce a uniformly smooth and unmarred wood surface.
3. Apply wash coat of sealer, sand and remove dust.
4. Lightly sand and clean between finish coats as recommended by the paint manufacturer.
5. Seal tops, bottoms, and edges of cutouts on wood doors.

3.4 PAINT APPLICATION

A. General:
1. Touchup or reprime shop-applied prime coats which have been damaged, and touchup bare areas prior to start of finish coats application.
2. Slightly vary the color of succeeding coats.
   a. Do not apply additional coats until the completed coat has been inspected and approved.
   b. Only the inspected and approved coats of paint will be considered in determining the number of coats applied.
3. Sand and dust between coats to remove defects visible to the unaided eye from a distance of five feet.
4. On removable panels and hinged panels, paint the back sides to match the exposed sides.
5. Finish to be smooth.

B. Priming: Primers specified for structural steel and metal fabrications are standalone systems. Apply full paint system as specified in this Section even if metal comes preprimed or shop primed.

C. Drying: Allow sufficient drying time between coats, modifying the period as recommended by the material manufacturer to suit adverse weather conditions.

D. Brush Applications:
1. Brush out and work the brush coats onto the surface in an even film.
2. Cloudiness, spotting, holidays, laps, brush marks, runs, sags, ropiness, and other surface imperfections will not be acceptable.
3. Ferrous and non-ferrous metals may be sprayed on first coat(s) but final coat shall be applied with brush or roller.

E. Spray Application:
1. Except as specifically otherwise approved by the Architect, confine spray application to wall surfaces, large expanse areas and similar surfaces where hand brush work would be inferior.
2. Where spray application is used, apply each coat to provide the hiding equivalent of brush coats.
3. Do not double back with spray equipment to build up film thickness of two coats in one pass.
4. Ferrous and non-ferrous metals may be sprayed on first coat(s) but final coat shall be applied with brush or roller.

F. Roller Application:
1. Apply paint with short nap roller on all metal doors. Color as specified (same interior and exterior).
2. Remove all surface applied door trim prior to painting.
3. Roller marks, lap marks, runs, sags, fuzz, lint or other surface imperfections will not be acceptable.
4. Ferrous and non-ferrous metals may be sprayed on first coat(s) but final coat shall be applied with brush or roller.

G. For completed work, match the approved Samples as to texture, color, and coverage. Remove, refinish, or repaint work not in compliance with the specified requirements.

H. Exposed Mechanical and Electrical Items:
1. Finish electric panels, access doors, conduits, pipes, ducts, grilles, registers, vents, exposed plumbing vents and flues, and items of similar nature to match the adjacent wall and ceiling surfaces, or as directed.
2. Paint visible duct surfaces behind vents, registers, and grilles flat black.
3. Exposed vents and flues: Apply two coats of heat-resistant paint approved by the Architect.
4. Factory finished items that match color scheme may be approved for leaving unpainted by Architect.

I. Exposed Pipe and Duct Insulation:
1. Apply one coat of latex paint on insulation which has been sized or primed under other Sections; apply two coats on such surfaces when unprepared.
2. Match color of adjacent surfaces unless otherwise noted.
3. Remove band before painting, and replace after painting.

J. Hardware: Paint prime coated hardware to match adjacent surfaces, unless otherwise noted. Paint metal portions of head seals, jamb seals, and astragal seals to match the color of the door frame unless otherwise directed by the Architect.

K. Wet Areas:
1. In toilet rooms and contiguous areas, add an approved fungicide to paints.
2. For oil base paints, use 1% phenolmercuric or 4% tetrachlorophenol.
3. For water emulsion and glue size surfaces, use 4% sodium tetrachlorophenate.

L Miscellaneous:
1. Use "stipple" finish where enamel is specified.
2. Ferrous Metal: When metal comes shop primed or preprimed, always reprime with a solvent primer or Direct-to-Metal (DTM) primer. Sand or remove all visible rust.
3. Wood Trim: Backprime exterior wood trim prior to installation with the paint manufacturer's recommended exterior wood primer.
4. Touch-up shall be performed using the same application method as the original final coat application.

3.5 PROTECTION

A. Protect floors, furnishings, equipment, finish hardware, name or information plates, dials, gauges, tile, or other such surfaces not requiring painting from spotting, spillage, or damage of any kind. Clean, repair, or replace any damaged surfaces as directed by the Architect.

B. Remove, loosen, or mask hardware, fixture canopies, outlet covers, switch plates, and other similar items as required for painting work and then replace.

C. Using workmen skilled in these trades, move equipment adjacent to walls to permit wall surfaces to be painted, and following completion of painting, replace and reconnect.

3.6 CLEANING

A. Upon completion of all paint work, clean paint from all glass surfaces leaving a sharp clean line.

B. Remove paint spots, oil, or stains.

3.7 PAINTING SCHEDULE

A. General: Provide paint systems as specified below.
1. Products specified in this schedule are based upon products of **DUNN-EDWARDS** and are specified for establishing the type and quality of products required. Refer to Paragraph 2.1.A of this Section.
2. See Finish Schedule for colors and gloss.
3. Abbreviations: (F) = Flat, (LL) = Low Luster, (SGE) = Semi-Gloss Enamel; (ESE) = Eggshell Enamel; (GE) = Gloss Enamel; (SL) = Stain/Lacquer

B. Exterior Metal, Ferrous (SGE):
1. First coat: 43-5 Corrobar, White anti-corrosion primer
2. Second coat: Syn-Lustro W9, 100% acrylic gloss enamel
3. Third coat: Syn-Lustro W9, 100% acrylic gloss enamel
4. **Note:** No clear, tint, or deep base. Only blending bases or factory ground colors will be allowed.

C. Exterior Metal, Galvanized and Aluminum (SGE):
1. Pretreatment: Solvent clean, then acid etch with Galva-Etch GE123
2. First coat: QD 43-7 Galv-Alum, white anti-corrosion primer
3. Second coat: Syn-Lustro W9, 100% acrylic gloss enamel
3. Third coat: Syn-Lustro W9, 100% acrylic gloss enamel
5. **Note:** No clear, tint, or deep base. Only blending bases or factory ground colors will be allowed.

D. Exterior Metal, Prefinished Aluminum (SGE):
1. First coat: RustGrip 2300
2. Second coat: UreGrip 3300 VOC
3. Third coat: UreGrip 3300 VOC

E. Exterior Metal, Prefinished Ferrous (SGE):
1. First coat: RustGrip 2300
2. Second coat: UreGrip 3300 VOC
3. Third coat: UreGrip 3300 VOC

F. Exterior Cement Plaster and Concrete (LL):
1. First coat: W709 Eff-Stop, concrete sealer
2. Second coat: W701 Evershield, 100% acrylic paint
3. Third coat: W701 Evershield, 100% acrylic paint

G. Exterior Concrete Block (F):
1. First coat: W305 Blocfil, prepared latex block filler
2. Second Coat: W701 Evershield, 100% acrylic paint
3. Third coat: W701 Evershield, 100% acrylic paint

H. Exterior Wood (SGE):
1. First coat: W708 E-Z Prime
2. Second coat: W901E Permasheen, 100% acrylic semi-gloss enamel
3. Third coat: W901E Permasheen, 100% acrylic semi-gloss enamel

I. Exterior Wood - Solid Color Stain (F):
1. First coat: W703 Acri-Hues, acrylic latex stain
2. Second coat: W703 Acri-Hues, acrylic latex stain

J. Interior Primer Only behind FRP or VWC:
   1. Gypsum Drywall: W500 Sierra sealer/undercoater
   2. Concrete Block: W305 Blocfil, prepared latex block filler

K. Interior Flat Wall Paint (F):
   1. Gypsum Drywall:
      a. First coat: W101 Vinylastic, Pigmented wall sealer
      b. Second coat: W401 Decovel, flat wall finish
      c. Third coat: W401 Decovel, flat wall finish
   2. Concrete Block:
      a. First coat: W305 Blocfil, prepared latex block filler
      b. Second coat: W401 Decovel, flat wall finish
      c. Third coat: W401 Decovel, flat wall finish
   3. Acoustic Surfaces:
      a. First Coat: W615 Acoustikote, latex ceiling paint
      b. Second Coat: W615 Acoustikote, latex ceiling paint (If required for complete coverage)

L. Interior Egg-Shell Enamel (ESE):
   1. Gypsum Drywall:
      a. First coat: W500 Sierra sealer/undercoater
      b. Second coat: W540 Sierra 100% acrylic eggshell enamel
      c. Third coat: W540 Sierra 100% acrylic eggshell enamel
   2. Concrete Block:
      a. First coat: W305 Blocfil, prepared latex block filler
      b. Second coat: W440 Decosheen, eggshell latex enamel
      c. Third coat: W440 Decosheen, eggshell latex enamel
   3. Cement Plaster:
      a. First coat: W101 Vinylastic, Pigmented wall sealer
      b. Second coat: W440 Decosheen, eggshell latex enamel
      c. Third coat: W440 Decosheen, eggshell latex enamel
   4. Ferrous Metal:
      a. First coat: 43-5 Corrobar, White anti-corrosion primer
      b. Second coat: W540 Sierra 100% acrylic eggshell enamel
      c. Third coat: W540 Sierra 100% acrylic eggshell enamel
   5. Galvanized Metal:
      a. Pretreatment: Solvent clean, then acid etch with Galva-Etch GE123
      b. First coat: W713 multi-purpose primer
      c. Second coat: W540 Sierra 100% acrylic egghshell enamel
      d. Third coat: W540 Sierra 100% acrylic egghshell enamel

M. Interior Semi-Gloss Enamel (SGE):
   1. Ferrous Metal:
      a. First coat: 43-5 Corrobar, White anti-corrosion primer
      b. Second coat: W550 Sierra 100% acrylic semi-gloss enamel
      c. Third coat: W550 Sierra 100% acrylic semi-gloss enamel
      d. Note: Where trim paint is an extension of or same as exterior color, use the same paint specified under “Exterior Metals”.
   2. Galvanized Metal:
      a. Pretreatment: Solvent clean, then acid etch with Galva-Etch GE123
      b. First coat: W713 multi-purpose primer
      c. Second coat: W550 Sierra 100% acrylic semi-gloss enamel
      d. Third coat: W550 Sierra 100% acrylic semi-gloss enamel

e. Note: Where trim paint is an extension of or same as exterior color, use the same paint specified under “Exterior Metals”.

3. Wood Doors and Trim:
   a. First coat: W707 Unikote, latex enamel undercoat
   b. Second coat: W450 Decoglo, latex semi-gloss enamel
   c. Third coat: W450 Decoglo, latex semi-gloss enamel
4. Concrete Block:
   a. First coat: W305 Blocfil, prepared latex block filler
   b. Second coat: W450 Decoglo, latex semi-gloss enamel
   c. Third coat: W450 Decoglo, latex semi-gloss enamel
5. Gypsum Drywall:
   a. First coat: W500 Sierra sealer/undercoater
   b. Second coat: W550 Sierra 100% acrylic semi-gloss enamel
   c. Third coat: W550 Sierra 100% acrylic semi-gloss enamel

N. Interior Gloss Enamel (GE):
1. Ferrous Metal:
   a. First coat: 43-5 Corrobar, white anti-corrosion primer
   b. Second coat: W960 Permagloss, 100% acrylic gloss enamel
   c. Third coat: W960 Permagloss, 100% acrylic gloss enamel
2. Galvanized Metal:
   a. Pretreatment: Solvent clean, then acid etch with Galva-Etch GE123
   b. First coat: W713 multi-purpose primer
   c. Second coat: W960 Permagloss, 100% acrylic gloss enamel
   d. Third coat: W960 Permagloss, 100% acrylic gloss enamel
   e. Note: Where trim paint is an extension of or same as exterior color, use the same paint specified under “Exterior Metals”.
3. Wood Doors and Trim:
   a. First coat: W707 Unikote, latex enamel undercoat
   b. Second coat: W960 Permagloss, 100% acrylic gloss enamel
   c. Third coat: W960 Permagloss, 100% acrylic gloss enamel
4. Concrete Block:
   a. First coat: W305 Blocfil, prepared latex block filler
   b. Second coat: W960 Permagloss, 100% acrylic gloss enamel
   c. Third coat: W960 Permagloss, 100% acrylic gloss enamel
5. Gypsum Drywall:
   a. First coat: W101 Vinylastic, pigmented wall sealer
   b. Second coat: W960 Permagloss, 100% acrylic gloss enamel
   c. Third coat: W960 Permagloss, 100% acrylic gloss enamel

O. Stain and Lacquer (SL):
1. Wood Doors and Trim (transparent):
   a. Stain: LQ120 Decolac, lacquer stain (tint as selected by Architect)
   b. First coat: LQ101 Decolac, high solids sanding sealer
   c. Second coat: LQ104 Decolac, high solids semi-gloss lacquer
   d. Third coat: LQ104 Decolac, high solids semi-gloss lacquer
2. Wood Trim (opaque):
   a. First coat: W703 Acri-Hues, acrylic latex stain
   b. Second coat: W703 Acri-Hues, acrylic latex stain

P. Acoustic Surfaces:
1. First coat: W615 Acoustikote
2. Second coat: W615 Acoustikote as required for complete coverage

Q. Exposed (Sealed) Concrete Floors:
1. "Rainguard Regular": Coatings as required to seal the floor.

END OF SECTION 09 9100

SECTION 10 1400 - SIGNAGE

PART 1 - GENERAL

1.1 SUMMARY

A. Provide identifying devices where shown on the Drawings, as specified herein, and as needed for a complete and proper installation including, but not necessarily limited to:
   1. Restroom signage.
   2. Room identification signage (room name, room number).
   3. Tactile exit signage.
   4. Accessibility signage.

B. Related Sections:
   1. Documents affecting work of this Section include, but are not necessarily limited to, General Conditions, Supplementary Conditions, and Sections in Division l of these Specifications.

1.2 SUBMITTALS

A. General: Submit in accordance with Section 01 3300.
   1. Product Data: Submit manufacturer's descriptive literature and product specifications for each product. Include data to indicate compliance with the specified requirements.
   2. Installation Procedures: Submit manufacturer's recommended installation procedures.
   3. Shop Drawings: Submit shop drawings showing details of installation and anchorage sufficient to enable proper interface with the work of other trades.
   4. Samples:
      a. Provide color chip samples to match colors specified.
      b. Provide sample of sign for example of quality and design characteristics.

1.3 QUALITY CONTROL

A. Code References:
   1. Raised Characters: 11B-703.2.
   2. Braille: Section 11B-703.3.
   3. Visual Characters: Section 11B-703.5.
   4. Pictograms: Section 11B-703.6.
   5. Symbols of Accessibility: Section 11B-703.7.
   6. International Symbol of Accessibility: Section 11B-703.7.2.1.

PART 2 - PRODUCTS

2.1 APPROVED MANUFACTURERS

A. Products specified are for establishing the type, design, and quality required. Products of equal or better type, design, and quality produced by other manufacturers will be considered provided the request for substitution is submitted in accordance with Section 01 2500.

B. Acceptable Products: Design of plexiglass signs is based on the use of manufacturer’s standard products: Subject to compliance with requirements, manufacturers offering products which may be incorporated in the work include, but are not limited to, the following:

1. ASI Sign Systems.
2. Inland Pacific.
3. Innerface Architectural Signage, Inc.
4. Mohawk Sign Systems.
5. Vomar Products, Inc.
6. Best Signs, Inc.

2.2 SIGNS

A. **Type "A" - Restroom Signs**:
1. Type A1: MEN - 12" equilateral triangle.
2. Type A2: WOMEN - 12" diameter circle.
3. Type A3: UNISEX - 12" diameter circle with equilateral triangle inscribed. Triangle color shall contrast with circle color. Circle color shall contrast with door color.
4. Type A4: Restroom, with raised wheelchair logo, 3/4" high raised text and braille.
   a. Braille: Contracted (Grade 2) braille symbols on sign A4 per CBC Section 11B-703.3.
5. Material:
   a. Types A1, A2, and A3: 1/4" thick acrylic plastic, 1/4" radius corners.
   b. Type A4: 1/8" acrylic plastic base plaque, integral color (single piece, not laminated), 1/4" radius corners, 1/32" raised letters and numbers.
6. Color: Black with white silk screened lettering and graphic, see detail.
7. Attachment: Epoxy and vandal resistant screws.
8. Text: See graphics/text detail on the drawings.
9. Letter Style: Calibri, all capital letters.

B. **Type "B" - Room Name, Room Number, or Tactile Exit Signs:**
1. Type B1: 4"H x Length as Required (LAR).
2. Type B2: 4"H x LAR.
3. Type B3: 5-1/2"H x LAR.
4. Type B4: 4"H x LAR, text: “EXIT”
5. Material: 1/8" acrylic plastic base plaque, integral color (single piece, not laminated), 1/4" radius corners, 1/32" raised letters and numbers.
6. Color: Black with white lettering.
7. Attachment:
   a. Exterior: Epoxy and minimum of 2 vandal resistant screws
   b. Interior: Epoxy
8. Letter style: Calibri, all capital letters.
9. Text: Refer to the Door Schedule and related details on the Drawings.
10. Numeral height: 2".
11. Letter height: 1". Except at access doors for automatic sprinkler riser rooms and fire pump rooms which require 2” minimum height with a minimum stroke of 3/8”.
12. Braille: Contracted (Grade 2) braille symbols on all room name and number signs per Section 11B-703.3.

C. **Type "C" - Building Access Sign:**
1. Material: 1/8" acrylic plastic base plaque, integral color (single piece, not laminated), 1/4" radius corners, 1/32" raised letters and numbers.
2. Color: International Blue with white International Symbol of Accessibility logo.
3. Attachment: Epoxy with vandal resistant screws.
4. Size: 8" x 8"
5. Braille: Contracted (Grade 2) braille notation per CBC Section 11B-703.3.

2.3 BRAILLE REQUIREMENTS

A. Braille Symbols:
1. Contracted (Grade 2) braille.
2. Braille Dots:
a. Base diameter: 0.059” to 0.063”.
b. Distance between two dots in the same cell: 0.100”.
c. Distance between corresponding dots in adjacent cells: 0.300”.
d. Raise dots 0.025” to 0.037” above the background.
e. Distance between corresponding dots from one cell directly below: 0.395” to 0.400”.
f. Dots shall have domed or rounded tops.

2.4 TACTILE CHARACTER REQUIREMENTS

A. Raised Character Proportions per CBC Section 11B-703.2.4 and 11B-703.2.6:
1. Width of upper-case letter "O" shall be a minimum of 60% and a maximum of 110% of the height of the upper-case letter "I".
2. Stroke thickness of upper-case letter "I" shall be 15% maximum of the height of the character.

B. Visual Character Proportions per CBC Section 11B-703.5.4 and 11B-703.5.7:
1. Width of upper-case letter "O" shall be a minimum of 60% and a maximum of 110% of the height of the upper-case letter "I".
2. Stroke thickness of upper-case letter "I" shall be a minimum of 10% and a maximum of 20% maximum of the height of the character.

PART 3 - EXECUTION

3.1 SURFACE CONDITIONS

A. Examine the areas and conditions under which work of this Section will be performed. Correct conditions detrimental to timely and proper completion of the Work. Do not proceed until unsatisfactory conditions are corrected.

3.2 INSTALLATION

A. Install the work of this Section in strict accordance with the manufacturers' recommendations as approved by the Architect, using only the approved mounting materials, and locating all components firmly into position, level and plumb.

B. Mounting Location and Height. Install signs on the nearest wall adjacent to the latch side of the door. Where there is no wall or space on the latch side, including at double doors, place signs on the nearest adjacent wall, preferably on the right.
1. Mount signs 48" minimum above the finish floor or ground surface, measured from the baseline of the lowest line of Braille and 60" maximum above the finish floor or ground surface measured from the baseline of the highest line of raised characters.
2. Determine mounting location such that a person may approach within 3" of signage without encountering protruding objects or standing within the swing of the door.

C. At locations where an exit sign and a room identification sign are back to back on glass, align both signs and make signs the same size.

D. At locations where a sign is mounted on glass with no opposing sign, provide blank sign of the same size to conceal mounting adhesive.

E. Where signs are mounted on split-faced masonry, grind masonry to provide smooth surface to mount signs.

END OF SECTION 10 1400

SECTION 10 7500 - FLAGPOLES

PART 1 - GENERAL

1.1 SUMMARY

A. Provide internal halyard flagpoles and foundations where shown on the Drawings, as specified herein, and as needed for a complete and proper installation.

B. Related Sections: Documents affecting work of this Section include, but are not necessarily limited to, General Conditions, Supplementary Conditions, and Sections in Division l of these Specifications.

1.2 SUBMITTALS

A. General: Submit in accordance with Section 01 3300.
   1. Product Data: Submit manufacturer's descriptive literature and product specifications for each product. Include data to indicate compliance with the specified requirements.
   2. Installation Procedures: Submit manufacturer's recommended installation procedures.
   3. Shop Drawings: Indicate typical layout including dimensions, base design, and base connection to foundation, anchoring and support system, and electrical grounding system. Submit detailed drawings of special accessory components not included in manufacturer's product data.

B. Contract Closeout Submittals: Operation and Maintenance manuals in accordance with requirements of Section 01 7820.

PART 2 - PRODUCTS

2.1 FLAGPOLES

A. Approved Manufacturers:
   1. American Flagpole Division of Kearney-National, Inc.
   2. Acme Flagpoles Company Division of Lingo, Inc.
   3. Babcock-Davis Associates, Inc.
   4. The Morgan-Francis Co., Inc.
   5. Pacific Coast Flagpole Co.
   6. Pole-Tech Co. Inc.
   7. Interstate Pole Industries.
   8. Products specified are for establishing the type, design, and quality required. Products of equal or better type, design, and quality produced by other manufacturers will be considered provided the request for substitution is submitted in accordance with Section 01 2500.

B. Provide flagpoles, accessories, bases, and anchorage devices as complete units furnished by one manufacturer, and with the following attributes:
   1. Overall dimensions: 34'-0" high, with 7" butt and 3-1/2" top diameter, wall thickness of 0.188", and 42" ground set; brushed satin aluminum finish.
   2. Design:
      a. Cone tapered sections above cylindrical butt sections, manufactured from seamless aluminum tube of 6063-T6 alloy, heat treated and age hardened.
      b. Clear anodized aluminum 5" dia. ball with flush seam. Cast aluminum single stationary truck.
      c. Internal Halyard: 5/16" diameter braided polypropolene rope with 2 chrome plated bronze swivel snaphooks, plastic covered counterweight, and beaded sling.

d. Cam Cleat: Manually operated cam cleat includes a flush access door with cylinder lock and continuous piano hinge mounted at a maximum of +48" above finish grade. Operable mechanism shall not require tight grasping, pinching, or twisting to operate.
e. Collar: Spun aluminum flash collar finished to match pole.

3. Foundation Sleeve: 16 gage galvanized corrugated steel tube with 3/16" thick steel base and support plate, steel centering wedges, and lightning spike. Provide shop coat of asphaltic paint inside and outside.

C. Provide lightning protection system as standard with the approved manufacturer and as approved by governmental agencies having jurisdiction.

2.3 FOUNDATIONS

A. Provide the services of an engineer properly licensed to perform such work at the location of the Work, and design a ground set foundation for each flagpole to comply with pertinent requirements of governmental agencies having jurisdiction.

B. Provide such drawings and calculations as are required, make necessary arrangements and pay such costs as are involved, and secure approvals of governmental agencies having jurisdiction.

PART 3 - EXECUTION

3.1 SURFACE CONDITIONS

A. Examine the areas and conditions under which work of this Section will be performed. Correct conditions detrimental to timely and proper completion of the Work. Do not proceed until unsatisfactory conditions are corrected.

3.2 INSTALLATION

A. Install the flagpoles and accessories in strict accordance with the manufacturers' recommendations as approved by the Architect, aligning plumb to a vertical tolerance of one in 1000, and adjusting operating components for optimum smoothness of operation.

END OF SECTION 10 7500

SECTION 11 4000 - FOOD SERVICE EQUIPMENT

PART 1 - GENERAL

1.1 SUMMARY

A. Provide food service equipment, including stainless steel items, where shown on the Drawings, as specified herein, and as needed for a complete and proper installation.

B. Related Sections:
1. Documents affecting work of this Section include, but are not necessarily limited to, General Conditions, Supplementary Conditions, and Sections in Division l of these Specifications.
2. Section 06 4000: Rough openings for equipment and accessories in cabinets.
3. Section 22 0000: Final plumbing connections of equipment and accessories.
4. Section 26 7000: Final electrical connections of equipment and accessories.

1.2 SUBMITTALS

A. Submit in accordance with Section 01 3300.
1. Product Data: Submit manufacturer's descriptive literature and product specifications for each product. Include data to indicate compliance with the specified requirements.
2. Installation Procedures: Submit manufacturer's recommended installation procedures.
3. Shop Drawings: Submit shop drawings showing details of layout, installation, anchorage, and interface with the work of other trades.
4. **Utility Service Connections:** Deviations from utility requirements indicated on the Drawings shall be clearly noted and coordinated with the trades involved.

B. Contract Closeout Submittals: Submit in accordance with Section 01 7700.
1. Operation and Maintenance manuals in accordance with requirements of Section 01 7820.
2. Manufacturer's recommended cleaning procedures.

1.3 QUALITY ASSURANCE

A. Except as otherwise specifically approved in writing by the Architect, manufacture and install all materials of this Section in strict compliance with at least the minimum requirements of:
1. Underwriters' Laboratories, Inc.(UL);
2. American Gas Association (AGA);
3. American Society for Testing and Materials (ASTM);
4. American Society of Mechanical Engineers (ASME);
5. National Sanitation Foundation (NSF);
6. National Fire Protection Association (NFPA);
7. All governmental agencies having jurisdiction.

B. Provide refrigeration systems with materials in compliance with EPA and Federal Air Emissions Controls Laws governing and prohibiting the use of Ozone Depleting Refrigerants.

1.4 SPECIAL WARRANTY

A. In addition to the warranty requirements of the Contract Documents, submit 2 original copies of the manufacturer's **5-year** factory warranty on all refrigeration equipment.

PART 2 - PRODUCTS

2.1 GENERAL

A. Products specified are for establishing the type, design, and quality required. Products of equal or better type, design, and quality produced by other manufacturers will be considered provided the request for substitution is submitted in accordance with Section 01 2500.

B. Provide only new materials, of the highest grade available, free from defects and imperfections, of recent manufacture, and with the following attributes except as may be otherwise approved by the Architect.
   1. Where two or more identical articles or pieces of equipment are required, provide of identical manufacture.
   2. Where model numbers are indicated and the specified models are no longer manufactured, provide the manufacturer's updated model if approved by the Architect.

C. Bolts, Screws, and Rivets:
   1. Wherever possible, provide equipment and connections with exposed surfaces free from bolt heads, screw heads, and rivets.
   2. Wherever bolts are used to fasten trim to paneling of counters, cabinets, and similar equipment, and to fasten tops of counters to their framing, use corrosion-resisting metal of the same alloy composition as the metal to which they are fastened.
   3. When iron bolts or screws are authorized to be used, provide a suitable metallic coating for protection against corrosion.
   4. Wherever threads of bolts or screws might come into contact with a wiping cloth, cap the threads with a suitable lock washer and chromium plated or bronze acorn nut.

D. Provide all items of equipment complete with starters, controls, and similar items as needed for proper and recommended operation.

E. Provide drawer pulls complying with CBC Section 11B-309.4.

2.2 MATERIALS

A. Stainless steel:
   1. Provide US Standard Gage 18-8, type 302, maximum carbon .012%, with No. 4 finish;
   2. Where spans exceed 30" in the least direction, provide 16 gage material;
   3. Where spans exceed 60" in the least direction, provide 14 gage material;
   4. Finish welds to match the No. 4 finish.

B. Welding and Soldering:
   1. Shop weld or solder all seams and joints as the nature of the material used may require;
   2. Weld all materials 18 gage and heavier.

C. Metal Tops:
   1. Provide metal tops of one piece welded construction, reinforced on the underside with galvanized steel channels welded in place so tops can support heavy weights without deflection;
   2. Provide cross braces at not closer than 30" on centers.

D. Except as otherwise detailed or specified, make rolled edges approximately 1-3/8" in diameter, with corners bullnosed, ground, and polished.

E. Corners:
   1. At dish tables, drain tables, backsplashes, and turned-up edges, provide radius bends in all horizontal and vertical corners, coved at intersections, unless otherwise detailed or specified;
   2. Make rounded and coved corners, and radius bends, 1/2" radius or more.

F. Legs and Cross Rails:
   1. Fabricate from 16 gage 1-5/8" diameter stainless steel tubing unless otherwise detailed or specified;
   2. At cross rails, make all welds continuous and grind smooth; tack welds are not acceptable;
   3. Fit the bottoms of legs at the floor with a stainless steel bullet-type foot having not less than 2" adjustment;
   4. Fasten legs to equipment:
      a. To sinks by means of completely enclosed sanitary stainless steel gussets welded into place and reinforced with bushings having set screws for securing the legs;
      b. To metal tops and dish tables with the same type enclosed gussets as specified above, but welded to stainless steel channels 14 gage or heavier.
   5. Stainless steel adjustable feet:
      a. Provide 302 or 304 stainless steel exterior on not less than 1-1/2" diameter threaded cold rolled steel rod;
      b. Provide not less than 2" adjustment;
      c. Weld the assembly, and provide seismic anchorage approved by the Architect and Division of the State Architect.

G. Shelves:
   1. At fixtures with enclosed bases, turn up shelves at back and sides, and feather slightly to assure a tight fit to enclosure panels;
   2. At fixtures with open bases, notch shelves a full 90̊ and weld tightly to leg with tight joints at all intersections of shelf and leg.

H. Closures: Fill the ends of all fixtures, backsplashes, shelves, and similar items, by forming the metal or welded sections, if necessary, to finish the entire rear of the fixture or similar item flush to walls and adjoining fixtures.

2.3 OTHER MATERIALS

A. Provide other materials, not specifically described but required for a complete and proper installation, as selected by the Contractor subject to the approval of the Architect.

B. Kitchen equipment supplier to provide equipment anchorage details and devices for seismic connections at no additional cost.

PART 3 - EXECUTION

3.1 SURFACE CONDITIONS

A. Examine areas and conditions under which the work of this Section will be performed. Correct conditions detrimental to timely and proper completion of the Work. Do not proceed until unsatisfactory conditions are corrected.

3.2 INSTALLATION, GENERAL

A. Except as modified by requirements of governmental agencies having jurisdiction, install in accordance with recommendations of the manufacturer as approved by the Architect and the pertinent UL design requirements.

B. Coordinate with adjacent trades to assure proper and adequate provision in the work of those trades for interface with the work of this Section.

C. Put all items of equipment through at least five complete cycles of operation, adjusting as needed to assure proper operation.

3.3 SEISMIC RESTRAINT

A. All “hardwire and gas” kitchen equipment shall be installed with seismic restraints per *Guidelines for Seismic Restraints of Kitchen Equipment* as published by SMACNA and approved by DSA.

B. Where anchorage details are not shown on the drawings or in the guidelines, the field installation shall be subject to the approval of the Architect and the DSA Field Engineer.

C. A copy of the *Guidelines for Seismic Restraints of Kitchen Equipment* shall be provided by the Contractor and kept on the job site at all times.

3.4 CLEANING UP

A. In addition to other stipulated requirements for cleaning, completely remove finger prints and traces of soil from the surfaces of all work of this Section, using only those cleaning materials recommended for the purpose by the manufacturer of the material being cleaned.

3.5 DEMONSTRATION

A. Upon completion and prior to the acceptance of the work of this Section, schedule and conduct a meeting with the Owner and his personnel to train and thoroughly familiarize them with information necessary to operate and maintain the work. Include, but do not limit the training to:
   1. Warranty coverage and requirements;
   2. Operation and maintenance manuals;
   3. Special tools and spare parts;
   4. Safety procedures and requirements;
   5. Manufacturer's recommended cleaning procedures;
   6. Identification systems;
   7. System operation and features including, but not limited to:
      a. Start-up;
      b. Control sequences;
      c. Shut down;
      d. Controls manipulation;
      e. Emergency procedures;
      f. Noise/vibration adjustment;
      g. Effective energy utilization.
   8. System maintenance.

B. Demonstration Meeting:
   1. Minimum of 4 hours.
   2. Demonstrate system through a minimum of 3 cycles.
   3. Prepare and execute In-Service Certification form and submit with closeout documentation.

END OF SECTION 11 4000

JOB:	CUSD-CORCORAN-KINGS LAKE ED CENTER-NEW RELO FOOD SERVICE BLDG
SPEC:	26 0573 - SHORT CIRCUIT & PROTECTIVE DEVICES COORDINATION STUDY
DATE:	08-09-2022
JOB CAPT:	JEFF JACKSON
FILE NAME:	SPECS/PS/JEFF/MANGINI/CUSD/KINGS LAKE/26 0573
RSAI NO:	21-183

SECTION 26 0573 - SHORT CIRCUIT & PROTECTIVE DEVICES COORDINATION STUDY

PART 1 - GENERAL

1.1 **RELATED DOCUMENTS**

Drawings and general provisions of Contract, including General and Supplementary Conditions, Divisions 0 and 1 and Sections 26 6000 and 26 7000 Specifications apply to work of this section.

1.2 DESCRIPTION

A. Provide a short-circuit and protective device coordination study for the electrical distribution system. The intent of these studies are to verify that the specified and supplied equipment are properly rated, correctly applied, and within industry and manufacturer's tolerances.

B. The short circuit study shall include all portions of the electrical distribution system from the normal and alternate sources of power throughout the distribution system down to the smallest protective device. The short circuit study shall consider operation during normal conditions, alternate operations, emergency power conditions, and any other operations which could result in maximum fault conditions.

C. The coordination study will determine the correct settings for the protective devices which will minimize the damage caused by an electrical fault and allow for selective coordination between the devices. The coordination study shall include the closest upstream utility protective device down to the panelboard main, branch, or feeder circuit breakers. The coordination study shall consider operation during normal conditions, alternate operation, and during emergency power conditions.

1.3 DATA COLLECTION FOR THE STUDIES

A. The contractor shall provide the required data for preparation of the study. This includes obtaining all required short circuit, X/R and impedance data from the serving utility company. The Engineer performing the system studies shall furnish the contractor with a listing of the required data immediately after the award of the contract.

B. The contractor shall expedite collection of the data to assure completion of the studies as required for final approval of the distribution equipment shop drawings and/or prior to release of the equipment for manufacturing.

1.4 QUALIFICATIONS

A. The Contractor shall have the coordination study prepared by qualified consultant. The consultant shall be a Registered Professional Electrical Engineer (licensed in California) who has at least ten (10) years of experience in performing power system studies.

B. The short circuit and coordination study shall be performed using the EasyPower or ETAP for Windows computer software package.

1.5 SUBMITTALS

A. The contractor shall submit the system studies within 30 days after the electrical equipment submittals have been received for review by the engineer. The electrical submittals will be

reviewed but will not be approved until the power system studies have been received and reviewed.

B. Submit six (6) bond copies of the power system studies.

PART 2 - EXECUTION

2.1 IMPEDANCE ONE LINE DIAGRAM

A. Create an impedance One Line Diagram. All electrical equipment and wiring to be protected by the overcurrent devices installed under this project and each location where the fault current will be calculated shall be shown. Clearly show, on the One Line Diagram, the schematic wiring of the electrical distribution system.

B. Show reference nodes on the One Line Diagram referring to a formal report which shall include the following specific information:

1. X/R ratios, utility contribution, and short circuit values (asymmetrical and symmetrical) at the bus of the main service, and all downstream equipment containing overcurrent devices.

2. Transformer kVA and voltage ratings, percent impedance, X/R ratios, and wiring connections.

3. Voltage at each bus.

4. Identifications of each bus.

5. Conduit material, feeder sizes, and length.

2.2 SHORT CIRCUIT STUDY

A. Pertinent data, rationale employed, and assumptions in developing the calculations shall be incorporated in the introductory remarks of the study.

B. The study shall be in accordance with applicable ANSI and IEEE Standards.

C. Determine the available 3 phase short circuit and ground fault currents at each bus. Incorporate the motor contribution in determining the momentary and interrupting ratings of the protective devices.

D. Present the data determined by the short circuit study in a table format which shall include:

1. Node & Device identification.

2. Operating voltage.

3. Type of Protective device. (i.e. fuse, molded case circuit breaker...)

4. Device short circuit rating.

5. Calculated maximum short circuit current, 3 phase or ground fault, asymmetrical and symmetrical, and X/R ratio.

6. De-rate the devices where the tested X/R ratio is less than the calculated X/R ratio. (maximum fault current multiplied by MF.)

7. Comments section indicating any equipment found to be underrated.

2.3 PROTECTIVE DEVICE COORDINATION STUDY

E. All requirements of the current California Electrical Code shall be adhered to.

F. The coordination study shall include the closest upstream utility protective device down to the panelboard main, branch, or feeder circuit breakers. Prepare the coordination curves to determine the required settings of protective devices to assure selective coordination.

G. The phase and ground overcurrent protection shall be included, as well as settings for all other adjustable protective devices.

H. Graphically illustrate on log-log paper that adequate time separation exists between devices. Sufficient curves shall be used to clearly indicate the coordination achieved between devices. Reasonable coordination intervals and separation of characteristic curves shall be maintained. Plot the specific time-current characteristics of each protective device in such a manner that the upstream devices will be clearly depicted on the sheet.

I. The plots shall include complete titles, representative One Line Diagram and legends, associated power company's relays or fuse characteristics, and complete parameters of transformers. There shall be a maximum of eight protective devices per sheet.

J. The following specific information shall also be shown on the coordination curves:

1. Device identifications.

2. Time and current ratio for curves.

3. Fuse, circuit breaker, and relay curves, showing complete operating bands of low-voltage circuit breaker trip curves.

4. Cable damage curves.

5. ANSI transformer magnetizing inrush and withstand curves per ANSI C37.91 and transformer damage curves.

6. Motor starting curves

7. Significant maximum symmetrical or asymmetrical short circuit cutoff point.

8. Electric utility's relays and/or fuses including manufacturer's minimum melt, total clearing, tolerance.

9. Medium voltage equipment relays.

10. Medium and low voltage fuses including manufacturer's minimum melt, total clearing, tolerance, and damage bands.

11. Low voltage equipment circuit breaker trip devices, including manufacturers tolerance bands.

12. Pertinent transformer full-load currents at 100 and 600 percent.

13. Ground fault protective device settings.

14. Other system load protective devices for largest branch circuit and feeder circuit breaker in each motor control center and panelboard.

K. Develop a table to summarize the settings selected for the protective devices. Include in the table the following:

1. Device identification.

2. Current transformer ratio, relay tap, time delay, and instantaneous pickup.

3. Circuit breaker sensor rating, long-time, short-time, and instantaneous settings, and time bands.

4. Fuse rating and type.

5. Ground fault pickup and time delay

PART 3 - ANALYSIS

Analyze the short circuit calculations and highlight any equipment that is determined to be underrated as specified or not coordinated. Propose approaches to effectively protect any equipment found to be underrated

After developing the coordination curves, highlight areas lacking coordination. For each sheet, present a technical evaluation with a discussion of any recommended compromises for best coordination.

PART 4 - REPORT

The results of the power system study shall be summarized in a final report. The report shall include the following sections:

A. Introduction, executive summary and recommendations, assumptions, impedance One Line Diagram and copies of the project One Line Diagram.

B. Tabulations of equipment ratings versus calculated short circuit values and X/R ratios, and commentary regarding same.

C. Protective device time versus current coordination curves, tabulations of relay and circuit breaker trip settings, fuse selection, and commentary regarding same.

D. Copies of the manufacturers time current curves for the devices studied and plotted on the time current curves.

E. CD with system model/data base files from the software used in the study.

PART 5 - FIELD SETTINGS

A. This contractor shall perform field adjustments of the protective devices as required to place the equipment in final operating condition. The setting shall be in accordance with the approved Short Circuit and Protective Device Coordination Study.

B. Necessary field setting of devices and adjustments and minor modifications to equipment to accomplish conformance with the approved Short Circuit and Protective Device Coordination Study shall be carried out by the contractor at no additional cost to the owner.

END OF SECTION 26 0573

JOB:	CUSD-CORCORAN-KINGS LAKE ED CENTER-NEW RELO FOOD SERVICE BLDG
SPEC:	26 0574 - ARC FLASH HAZARD STUDY
DATE:	08-09-2022
JOB CAPT:	JEFF JACKSON
FILE NAME:	SPECS/PS/JEFF/MANGINI/CUSD/KINGS LAKE/26 0574
RSAI NO:	21-183

SECTION 26 0574 - ARC FLASH HAZARD STUDY

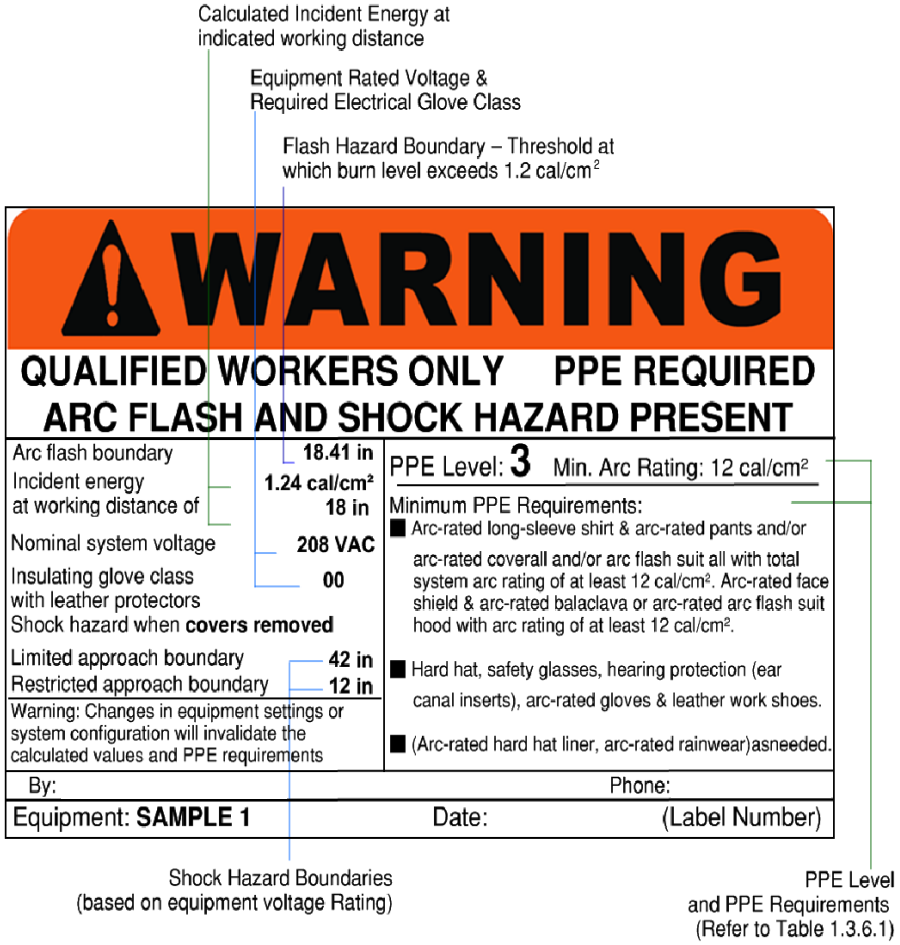
PART 1 - GENERAL

1.1 RELATED DOCUMENTS

Drawings and general provisions of Contract, including General and Supplementary Conditions, Divisions 0 and 1 and Sections 26 6000 and 26 7000 Specifications apply to work of this section.

1.2 DESCRIPTION

A. Provide an Arc Flash Hazard Study for the electrical distribution system shown on the One Line Diagram. The intent of the Arc Flash Hazard Study is to determine hazards that exist at each major piece of electrical equipment shown on the One Line drawing. This includes switchgear, switchboards, panelboards, motor control centers, PDUs, UPS, ATSs, and transformers. The study shall include creation of Arc Flash Hazard Warning Labels. The labels shall be printed on self-adhesive color nylon or vinyl die cut stock. The electrical contractor shall provide and install the labels.



Example of Arc Flash Warning Label

B. The Arc Flash Hazard Study shall include the electrical distribution system equipment shown on the One Line Diagram. Use the data from the Fault/Coordination Study from Specification Section 26 0573 to perform the Arc Flash Hazard Study. The Arc Flash Hazard Study shall consider operation during normal conditions alternate operations, emergency power conditions, and any other operations, which could result in maximum arc flash hazard.

1.3 QUALIFICATIONS

A. The Contractor shall have the study prepared by a Registered Professional Electrical Engineer (licensed in the State of California) who has at least ten (10) years of experience in performing power system studies.

B. The arc flash hazard study shall be performed using EasyPower or ETAP for Windows computer software packages.

1.4 SUBMITTALS

A. The contractor shall submit the Arc Flash Hazard Study and arc flash warning labels at least 30 days prior to energizing the electrical equipment.

B. Submit three (3) copies of the power systems study and (1) set of warning labels.

PART 2 - EXECUTION

2.1 SHORT CIRCUIT STUDY

A. Perform a Short Circuit Study as specified in Section 26 0573.

2.2 PROTECTIVE DEVICE COORDINATION STUDY

A. Perform a Protective Device Coordination Study as specified in Section 26 0573.

2.3 ARC FLASH HAZARD STUDY

A. Perform an Arc Flash Hazard Study using data from the completed Short Circuit and Protective Device Coordination Studies.

B. Pertinent data, rationale employed, and assumptions in developing the calculations shall be incorporated in the introductory remarks of the study.

C. The study shall be in accordance with applicable NFPA 70E, OSHA 29-CFR, Part 1910 Sub part S and IEEE 1584 Standards.

D. Determine the following

1. Flash Hazard Protection Boundary

2. Limited Approach Boundary

3. Restricted Boundary

4. Prohibited Boundary

5. Incident Energy Level

6. Required Personal Protective Equipment Class

7. Type of Fire Rated Clothing

E. Produce an Arc Flash Warning label listing items 1 – 7 above. Also, include the bus name and voltage. The labels shall be printed on self-adhesive color nylon or vinyl die cut stock.

F. Produce Arc Flash Evaluation Summary Sheet listing the following additional items:

1. Bus Name

2. Upstream Protective Device Name, Type, and Settings

3. Bus Line to Line Voltage

4. Bus Bolted Fault

5. Protective Device Bolted Fault Current

6. Arcing Fault Current

7. Protective Device Trip / Delay Time

8. Breaker Opening Time

9. Solidly Grounded Column

10. Equipment Type

11. Gap

12. Arc Flash Boundary

13. Working Distance

14. Incident Energy

15. Required Protective Fire Rated Clothing Type and Class

PART 3 - ANALYSIS

Analyze the Short Circuit and Protective Device Coordination, and Arc Flash Hazard calculations and highlight any equipment, which is determined to be underrated or causes an abnormally high incident energy calculation. Propose approaches to reduce the energy levels. The proposed major corrective modifications shall be taken, under the advisement of the Engineer and the Contractor will be given further instructions.

PART 4 - REPORT

The results of the power system study shall be summarized in a final report. The report shall include the following sections:

A. Introduction, executive summary and recommendations, assumptions and a reduced copy of the One Line Diagram.

B. Arc Flash Evaluations Summary Spreadsheet.

C. Bus Detail Sheets.

D. Arc Flash Hazard Warning Labels printed on self-adhesive color nylon or vinyl die cut stock.

E. CD with system model and database file from the software used in the study.

END OF SECTION 26 0574

JOB:	CUSD-CORCORAN-KINGS LAKE ED CENTER-NEW RELO FOOD SERVICE BLDG
SPEC:	26 6000 - GENERAL CONDITIONS FOR ELECTRICAL WORK
DATE:	08-09-2022
JOB CAPT:	JEFF JACKSON
FILE NAME:	SPECS/PS/JEFF/MANGINI/CUSD/KINGS LAKE/26 6000
RSAI NO:	21-183

SECTION 26 6000 - GENERAL CONDITIONS FOR ELECTRICAL WORK

PART 1 - ORDINANCES, REGULATIONS AND CODES

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of Contract, including General and Supplementary conditions, Divisions 0 and 1, specifications apply to work of this section.

1.2 All work must conform to the requirements which fall within the scope of the regulations in the Codes or under the jurisdiction of any of the governing bodies listed.

A. The California Code of Regulations, Titles 19 thru 24.

B. The California Electrical Code as applicable under current state and local regulations (latest edition and supplements).

C. State Board of Health.

D. CAL-OSHA Regulations.

E. Nothing in these Specifications or shown on the plans, shall relieve the Contractor from full compliance with applicable portions of any of the above regulations pertaining to work which he is installing under this Contract.

1.3 PERMITS AND FEES

Pay for and obtain all permits, inspection fees, etc., as required for the completion of all work included in this Contract. Any inspection Certificates required shall be obtained and delivered to the Owner.

1.4 EXAMINATION OF DRAWINGS AND SITE

Before submitting his bid, the Contractor shall carefully examine the Architectural, Structural, Mechanical and Plumbing Drawings for this work, along with the Specifications for same in addition to the drawings and specifications governing the work of this trade. He shall also visit the site of the proposed construction and familiarize himself with all the site conditions. No subsequent allowances will be made to the Contractor because of his negligence in complying with the above or his alleged inability to understand the requirements.

1.5 CONDUCT OF THE WORK

The Contractor shall maintain on the job a competent foreman or a superintendent at all times to superintend the work.

1.6 CONTRACTOR'S RESPONSIBILITY

The Contractor shall be responsible for the safety and good condition of all materials and equipment until final acceptance by the Owner. He shall erect and maintain suitable barriers, protective devices, lights and warning signs where required for the protection of the public and employees about the buildings. He shall be fully responsible for any loss or injury to persons or property resulting from his neglect or the carelessness and neglect of his employees.

1.7 SUBMITTALS

A. Shop drawings of power and signal service and distribution equipment and lighting fixture catalog cuts shall be submitted for approval in seven (7) bound copies.

B. All shop drawings shall be submitted at one time in a neat and orderly fashion in a suitable binder with title sheet including Project, Engineer and Contractor, table of contents and indexed tabs dividing each group of materials or item of equipment. All items shall be identified by the specification paragraph number for which they are proposed. All equipment shall also be identical by the mark number as indicated on drawings.

C. Equipment or material furnished or incorporated in construction without prior approval of the Architect may be rejected and if rejected shall be removed from the structure and replaced with approved equipment or material at the Contractor's expense.

1.8 RECORD DRAWINGS

See General Conditions.

1.9 CATALOG DATA AND OPERATING INSTRUCTIONS

Upon completion of the work in this Contract, the Architect shall be furnished with a complete set of catalog data which describes each piece of equipment installed under this Contract. The catalog shall be bound in a set and shall be clearly labeled as to each item of equipment used.

PART 2 - LOCATIONS

2.1 The work as laid out is to some extent diagrammatic, and the location thereon indicated may be approximate only. The Contractor, therefore, shall install all the equipment, apparatus, conduit runs and the like as follows:

A. Adhere to the location indicated as far as possible.

B. Maintain ample head room in all rooms and passageways, clearance around all apparatus and equipment and under pipe lines for unrestricted passage and for easy servicing of all apparatus, equipment, devices and the like.

C. Verify the exact locations of all fixtures and other apparatus or devices as indicted on the drawings. In the event these drawings do not sufficiently indicate the locations for all such fixtures, apparatus or devices, the Contractor shall obtain the exact locations from the Architect.

2.2 VERIFICATION OF DIMENSIONS

A. The Contractor shall, as work progresses, verify the dimensions of the spaces available for the installation of the work and he shall assume full responsibility for the proper locations and grading of each portion thereof.

B. Where the work requires connections to be made to equipment that is furnished and set in place by others, the Contractor shall obtain exact locations and rough-in dimensions from the manufacturer of such equipment and he shall install the

connections in a neat and workmanlike manner.

2.3 CUTTING AND PATCHING

This Contractor shall do all cutting and patching of the work for the installation of the equipment and materials as approved by the Architect and/or Engineer. All patching shall accurately match the adjoining work.

2.4 BORING

A. Provide mechanical boring equipment to bore under existing asphalt, concrete, or other surfaces or objects as noted on the drawings. All borings shall be a minimum of 24" under the substrate material unless otherwise authorized by the Architect.

B. Holes shall be bored not to exceed 1" larger diameter than the largest component remaining in the excavation.

C. Water or air pressure jetting are not permitted, unless they comply with the following requirements:

1) All surfaces of the hole can be visually inspected with 6' maximum length.

2) All objects shall be supported continuously to prevent sagging.

3) The hole shall be filled with compacted damp sand and inspected by the Project Inspector or Materials Testing Lab technician.

2.5 FOUNDATIONS AND SUPPORTS

This Contractor shall provide all foundations, supports and hangers, etc., as required to install the equipment as specified or shown on the drawings. All equipment shall be supported, braced and cross-braced in such manner as to prevent sway and/or lateral movement.

2.6 EXCAVATION AND BACKFILLING

A. Excavating required for the installation of the work shall be done by this Contractor. Underground lines outside the buildings shall be installed with a minimum cover of 24" except depth of utility services shall comply with respective utility company requirements.

B. The conduit shall be laid on material described below to afford bearing for the full length of the conduit. Any part of the trench excavated below grade shall be corrected with thoroughly compacted material approved by the Architect.

C. When the bottom uncovered at subgrade is soft and, in the opinion of the Architect, cannot support the conduit, a further depth shall be excavated and refilled to conduit foundation grade as required by the Architect.

D. Backfill:

1) 6" Below, Around, and to 6" Above Conduit: Material shall be sand. Place carefully around and on top of conduit, taking care not to disturb conduit. Consolidate with vibrator.

2) 6" Above Conduit to Grade: Material shall be sandy or silty loam, free of lumps, laid in 6" layers, uniformly mixed to proper moisture and compacted to required density. If backfill is determined to be suitable and required compaction is demonstrated by laboratory test, water compaction in 6" layers may be used, subject to review by Engineer.

E. No excavation below the level of, or adjacent to, foundations of footings shall be made except in a manner approved by the Architect.

F. A red or yellow tracer tape stating "CAUTION ELECTRIC LINE BURIED BELOW" shall be installed 12" above conduit, full length of trench.

G. Electrical conduit shall not be run in excavations provided for plumbing or heating pipes, unless separated by a minimum of 12 inches.

H. Verify location of all underground lines with Owner and utility companies before starting excavation. If any utility company facilities are identified and located within the perimeter of the building, the Contractor shall stop work, promptly notify the Architect and secure his instructions.

I. Ten (10) days before doing any excavation or trenching, contact "Underground Service Alert," 1-800-642-2444, advise them of work schedule and comply with their recommendations.

2.7 CLEANING UP

A. The Contractor shall keep the premises free from accumulations of his waste material or rubbish. At the completion of the work, he shall remove all his rubbish, tools, scaffolding and surplus materials from and about the buildings, leaving the premises in a clean condition.

B. All exterior surfaces of exposed equipment and material shall be thoroughly cleaned of all dirt, cement, plaster and other debris, including the exterior surfaces of all conduit, conduit fittings, conduit hangers, insulation and the like.

C. All surfaces to be painted shall be carefully wiped or otherwise cleaned; cracks and corners scraped out clean, grease and oil spots removed so that surfaces may receive paint without further preparation.

D. All fixtures and plated materials shall be thoroughly cleaned and polished.

2.8 DAMAGE BY BREAKS

The Contractor shall be responsible for all damage to any part of the premises caused by breaks in conduit or fixtures furnished and/or installed by him under this specification for a period of one (1) year from date of acceptance of the project by the Owner.

2.9 SITE CONDITIONS

A. Where existing utilities are shown on the plans, extreme care shall be exercised in

excavating near these utilities to avoid any damage thereto, and the Contractor shall be held responsible for any such damage caused by this operation.

B. The general location and arrangement of conduit, equipment apparatus, etc., as shown in the drawings or herein specified and all installations shall be made in accordance therewith. Information on the drawings relative to existing services is approximate only. Minor deviations required to conform to actual locations shall be made without additional cost to Owner.

C. Should existing utilities, not shown on the plans, be found during excavations, or identified, the Contractor shall promptly notify the Architect for instructions as to further action. Failure to do so will make the Contractor liable for any damage there arising from his operations after discovery of such utilities not shown on the plans. These utilities shall be removed or relocated as directed by the Architect. An equitable adjustment in the Contract will be made for the additional work involved.

D. The Contractor shall use special precautions where excavations are made in the areas near electrical ducts since they may be high voltage ducts. All such ducts shall be exposed by careful hand excavation so as not to damage the ducts or cause injury to personnel and shall be suitable marked with warning signs, barricades, etc. as required.

2.10 STANDARD PRACTICE

All work not shown in complete details shall be installed in conformance with the best standard practice for the trade.

2.11 INTENT

It is the intention to provide systems that are complete in every respect without further cost to the Owner. Anything not shown in drawings, or indicated in the specifications, but required for complete operating systems shall be included as part of this Contract. This shall include all connections to existing services.

2.12 SPECIAL NOTE

Attention of Contractor is hereby called to all work covered by notes on the drawings. Work covered by notes must be furnished and installed whether it is specifically mentioned in these specifications or not.

2.13 GUARANTEE

Except as otherwise specified, all materials, apparatus equipment furnished and installed under the Electrical Section of this specification shall be new and free from all defects. Should any trouble develop within a period of one (1) year from date of acceptance of the work, due to inferior or faulty material and/or workmanship, the trouble shall be corrected and material and equipment replaced by the Contractor without expense to the Owner.

2.14 SERVICES

The location of any existing utility services shown on the drawings is approximate and shall be checked by this Contractor for exact location. Refer to “EXCAVATION AND BACKFILLING” for additional requirements.

2.15 LIST OF MATERIALS

Within thirty (30) calendar days after the award of the Contract, the Contractor shall submit seven (7) copies of a complete list of materials to be installed under this Contract, giving, in the case of each item of material to be used, the name of the article. All substitutes must be approved by the Architect as stipulated in Section 01620.

2.16 ACCESS OPENINGS

It shall be the responsibility of the Contractor to provide sufficient and convenient access openings, panels, etc., in the building construction where required for the maintenance of, installation and/or removal of all equipment, or other items of the various systems and equipment.

2.17 PURCHASE ORDERS AND ACCEPTANCE

A. The Contractor shall file with the Architect two (2) certified copies of all purchase orders, for materials, equipment, appliances and rentals thereof within two (2) weeks from date of Notice to Proceed with the Contract if requested by the Architect.

B. The Contractor shall file with the Architect two (2) certified copies of acceptance of purchase orders for materials, equipment, and appliances by the manufacturer, distributor or wholesale house within six (6) weeks from the date of Notice to Proceed with the Contract if requested by the Architect.

C. Failure to provide same within the stipulated time shall be deemed sufficient cause for the Architect to withhold certificates of payment for work completed or materials and equipment provided by the Contractor or his subcontractors toward the completion of their Contracts.

END OF SECTION 26 6000

JOB:	CUSD-CORCORAN-KINGS LAKE ED CENTER-NEW RELO FOOD SERVICE BLDG
SPEC:	26 7000 - BASIC ELECTRICAL MATERIALS AND METHODS
DATE:	08-09-2022
JOB CAPT:	JEFF JACKSON
FILE NAME:	SPECS/PS/JEFF/MANGINI/CUSD/KINGS LAKE/26 7000
RSAI NO:	21-183

SECTION 26 7000 – BASIC ELECTRICAL MATERIALS AND METHODS

PART 1 – GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of Contract, including General and Supplementary conditions, Divisions 0 and 1 and Section 26 6000 specifications apply to work of this section.

1.2 SCOPE OF WORK

This portion of the work includes the furnishing of all labor and materials necessary for the complete wiring system to outlets and all equipment shown on the drawings or covered by this Section of the Specifications and other Division 26 and Division 28 sections of the Specifications. In general, the work includes the following:

A. Complete system of conduits, substructures and equipment for power service. The Electrical Contractor shall inform the respective utility companies that the project has been started and confirm that all forms, which are required for the Application for Service, have been completed and submitted to the Utility Company. The Electrical Contractor shall obtain a copy of the approved engineering drawings prior to construction.

B. Complete system of branch circuit wiring, conduit and distribution equipment for lights, receptacles and power.

C. Furnish and install lighting panelboards, lamps, lighting fixtures, wall switches, convenience outlets, etc. as shown on drawings.

D. All hangers, anchors, sleeves, chases and supports for fixtures, all electrical equipment and materials.

E. Furnish, install and connect wire, conduit and switches, etc. required for other equipment covered by other sections of these Specifications.

F. All excavating and backfill as required for electrical work.

G. The patching and repair of all work modified or damaged by the installation of work under this Contract.

H. Outlet boxes and conduit system for telecommunications (voice and data).

I. Demolition work.

J. Terminal cabinets and backboards.

K. The Contractor shall furnish and install all work necessary to make complete systems, whether or not such details are mentioned in these Specifications or shown on the drawings, but which are necessary in order to make complete working systems, excepting only those portions that are specifically mentioned therein or plainly marked on the accompanying drawings as being installed by other Contractors.

L. Electrical Contractor must coordinate his work with the work of other trades so as to provide raceways, conductors and outlets in the correct location for the equipment served, including all built-in appliances, mechanical, and signal equipment and connect same. Electrical Contractor must provide power of the correct voltage and phase to each item of equipment.

M. Before construction starts, the Electrical Contractor shall arrange a coordination meeting with the General Contractor and all other subcontractors supplying equipment that requires electrical connections. All electrical requirements shall be verified and any problems shall be immediately reported to the Architect. Equipment items to verify shall include, but not be limited to: Voltage, amps, phase, location, orientation, space requirements, type of connection, starter and disconnect location and provision, control system operation and requirements, etc.

N. The above list is given for the convenience of the Contractor and is not considered all-inclusive.

1.3 TEMPORARY CONSTRUCTION POWER

A. Provide a temporary construction power system that is adequate for this project. Coordinate requirements and details with the General Contractor. All 120V, 15A and 20A receptacles shall have ground fault circuit interrupter protection.

PART 2 - WORK NOT INCLUDED

2.1 The furnishing and installation of motors.

2.2 Access panels.

PART 3 - MATERIALS

3.1 All materials, appliances and equipment except that furnished by the Owner shall be new, bear U.L. Label and of the make, brand or quality specified or as accepted by the Architect as herein provided. This shall also apply to all parts of the work whether or not this particular paragraph is referred to by number.

3.2 All apparatus, conduit systems, etc., shall be installed and interconnected so as to form complete systems as herein specified and/or shown on all the accompanying drawings. This Contractor shall furnish and install all work necessary to make complete working systems, excepting only those portions that are specifically mentioned herein or plainly marked on accompanying drawings as being furnished by other contractors.

3.3 MAIN SWITCHBOARD

A. Dead front, dead rear, floor standing, consisting of underground pull section, main section with main circuit breaker and equipment to accommodate power company's current transformer and meter, distribution section and sub-feed circuit breakers as shown on drawings. Main switchboard shall be as manufactured by Square D, General Electric, Eaton, Siemens or approved equal.

B. Circuit breakers shall be molded case type, quick-make, quickbreak, with thermal magnetic trip. Size and rating shall be as shown on the drawings. All circuit breakers shall be bolt-on type. Two and three pole breakers shall have integral internal common

trip. All circuit breakers, rated 100 amps and larger, shall be equipped with adjustable instantaneous trip settings.

C. Finish shall be one coat of rust-inhibiting primer and two coats of gray enamel.

D. Full-size buses shall extend the full height of the distribution section. A copper ground bus shall be provided firmly secured to each vertical section structure and shall extend the entire length of the switchboard.

E. Section or sections shall be fully bussed with either copper or tin-plated aluminum bussing with all hardware in place for future devices. The bussing shall be braced to withstand the fault current of 50,000A symmetrical minimum. Filler plates as required shall be supplied with two handles on each plate. Sub-feed devices shall be of the types indicated on the drawings and shall be lockable in the "Open" position. A nameplate shall be supplied for each device in each section of each switchboard affixed to the switchboard trim adjacent to device and indicating name of device as shown one line diagram. Black letters shall be minimum ¾" high on white background.

F. All circuit breakers in main switchboard shall have short circuit current interrupting capacity exceeding the maximum available at service transformer. Contractor shall be responsible for obtaining fault current information from serving Utility Company prior to fabrication of main switchboard. The main switchboard shall have an integrated short circuit current interrupting rating of minimum of 30,000A symmetrical, or greater if indicated on drawings.

G. Underground pull sections shall be manufactured by the same manufacturer of the switchboard and per the serving Utility Company's requirements.

H. The Electrical Contractor shall submit three (3) copies of the main switchboard shop drawings to the Serving Utility Company for their approval prior to fabrication of the main switchboard.

3.4 TERMINAL CABINETS

A. Terminal cabinets shall be flush or surface mounted as indicated with hinged doors and lock. The exterior finish to be same as for panelboards. Provide ¾" plywood backing inside of cabinet. Provide proper number of terminals in cabinets as required.

B. Provide a Bakelite nameplate fastened with screws or rivets to the face of each terminal cabinet, which will identify it.

C. Provide circuit directory and holder on inside of door with one line for each conductor entering and each conductor leaving cabinet.

3.5 RACEWAYS AND FITTINGS

A. Shall be as manufactured by Allied Tube and Conduit Corporation, AFC Cable Systems, Inc., Carlon, Cantex, PW Pipe or approved equal.

B. Galvanized rigid steel conduits (RSC) may be used in all above ground locations.

C. For underground runs in direct contact with earth, conduit shall be PVC.

D. Galvanized intermediate metallic conduit (IMC) may be used in indoor locations not in direct contact with earth.

E. Galvanized electrical metallic tubing (EMT) may be used in indoor dry locations in which it is:

1) Not subject to physical damage.
2) Not in direct contact with earth.
3) Not in concrete slabs.
4) Not in hazardous areas.
5) On roof or walk cover when specifically shown on drawings.
6) In masonry walls, not in same cells as rebars.

F. Non-metallic rigid conduit shall be PVC Schedule 40 and may be used:

1) Underground.
2) Below concrete slab on grade.
3) In concrete slab on floors above grade.
4) In masonry walls, not in same cells as rebars.

G. Flexible steel conduit may be used in dry locations for final connections to:

1) Motors, transformers and other mechanical equipment, not to exceed 18 inches.
2) Lighting fixtures, not to exceed 72 inches.
3) Facilitate wiring in tight locations, when approved by Engineer.

H. Flexible aluminum conduit may be used in walls or in attics to facilitate wiring in tight locations, when approved by the Engineer.

I. Liquidtight flexible steel conduit shall be used in outdoor or wet locations for final connection to motors or other mechanical equipment, not to exceed 18 inches.

J. Fittings:

1) For rigid and intermediate steel conduits, fittings shall be:

- Galvanized rigid steel threaded type.
- Provide insulated grounding bushings at switchboard enclosures and panel enclosures for feeders.

2) For electrical metallic tubing (EMT), fittings shall be:

- Zinc plated steel set screw type in dry locations.
- Zinc plated steel compression type for conduits larger than 1”, in wet locations and in masonry walls.
- All connectors shall have an insulated throat.

3) For non-metallic conduits, fittings shall be PVC Schedule 40 type. Use PVC schedule 40 adapters at all boxes and panelboards

4) Brush or dauber apply PVC cement.

5) For flexible metallic conduits, fittings shall be zinc plated steel/malleable iron squeeze type.

6) For liquidtight flexible metallic conduits, fittings shall be zinc plated steel/malleable iron compression type.

7) Use of the following is prohibited:

- Crimp-on, tap-on or indenter type fittings.
- Spray (aerosol) PVC cement.

3.6 PULL BOXES

A. Pull Boxes shall meet all code requirements as to size for conduits terminating therein and to thickness of material used in fabrication.

B. Fabricated sheet steel pull boxes shall be installed only in dry, protected locations and shall be furnished with knockouts and removable screw cover. Box shall be finished with one coat of zinc chromate and a coat of primer sealer and where exposed to public view shall be painted to match the surrounding surface.

C. Weatherproof sheet steel pull boxes shall be fabricated of code gauge galvanized sheet steel with two coats of rust resistant finish and shall be furnished with gasket and made completely weathertight.

D. Approved manufacturers for metal boxes are Cooper B-Line, Milbank, Hoffman or approved equal.

E. Weatherproof concrete pull boxes, junction boxes and telephone boxes shall be manufactured by Christy Concrete Products, Utility Vault or approved equal. All pull boxes shall be H/20 rated and be equipped with H/20 rated galvanized steel checker plate cover with the inscription “Electric, Lighting, Fire Alarm or Signal”.

3.7 OUTLET BOXES

A. All outlet boxes shall be standard one or two piece galvanized knockout outlet boxes. Raco, Appleton, Thomas and Betts or approved equal.

B. All outlet box covers, rings or other fittings shall be standard galvanized. Raco, Appleton, Thomas and Betts or approved equal.

C. No outlet box shall be smaller than four inches (4”) square and 1 ½” in depth, except in concrete block construction where Thomas and Betts concrete masonry boxes are approved.

D. All special outlets shall be as hereinafter specified or as shown on drawings.

E. Thru boxes are not permitted.

F. Any unused boxes shall be equipped with a blank cover plate.

3.8 RECEPTACLES

A. Furnish and install an industrial specification grade 20A, 125 volt, 3 wire grounding type duplex receptacle with one piece brass mounting strap at all receptacle outlets as indicated on drawings. Leviton #5362-W or equal as manufactured by Hubbell, Pass and Seymour, Cooper or other approved manufacturers.

B. Device color shall be white.

C. Isolated ground duplex receptacles shall also provide TVSS (Transient Voltage Surge Suppression) as follows: Surge protection 320 Joules hot-neutral, ground-neutral, hot-ground, RFI and EMI noise filtration of 7:1 reduction. A LED shall indicate surge protection unit is in operation. Receptacle shall be 20A, 125V NEMA 5-20R, Leviton #8380-IG-O or approved equal.

D. G.F.C.I. duplex receptacles shall be provided for 15 and 20 amp 125 volt circuits where required by the C.E.C. #210.8 and #590.6. At indoor locations, provide a Leviton #G5362-00W or equal. At exterior locations, provide weather-resistant type G.F.C.I. duplex receptacles, Leviton #G5362-WTW or equal. At damp locations, provide a diecast weatherproof lockable cover, RACO # 5028-0 or equal. At wet locations, provide a diecast weatherproof “while-in-use” lockable cover, Red Dot #CKSUV or equal.

[Designer’s Note: Be sure to use the following for pre-schools and/or elementary schools]

3.9 CONDUCTORS (Wire)

A. All wire installed in this contract shall be of a standard manufacturer as approved by the National Board of Fire Underwriters and be of the size as indicated on the drawings. All wire shall bear the Underwriters’ label and shall be brought to the job in unbroken packages and approved by the Job Inspector before it is installed.

B. All power conductors #10 AWG and smaller shall be type THWN copper, unless otherwise noted. All conductors #8 AWG and larger shall be type THWN-2 copper, unless otherwise noted.

C. All underground conductors in a 480V or 480/277 volt power system shall be type XHHW-2 copper, unless otherwise noted.

D. Number 12 AWG wire shall be the smallest gauge wire used, except for signal circuits, which shall be as shown on plans or as specified under other sections of these specifications.

E. All wire #8 AWG gauge or larger shall be stranded.

F. The neutral conductor of all lighting feeders shall be of the same size as the phase conductors.

G. Splices on all wire less than #8 gauge shall be with insulated spring connectors Ideal “Wing Nuts”, 3M “Scotchlok”, or equal.

H. Splices in wires #8 gauge and larger shall be made with crimp on solderless connector, 3M Scotch, Burndy or equal. Connectors to switches or bus bar shall be made with one piece lugs for all wires, sized for conductors as shown on plans.

I. Each branch circuit shall be marked with the circuit number at the panel and at the first outlet nearest the panel. E-Z Code Markers (Thomas and Betts) or equal shall be used to label the circuits.

3.10 TELEPHONE CABLES

A. When telephone cables are indicated on drawings, they shall be Category 3, 24 AWG, unshielded twisted pairs with 4 pairs minimum, COMMSCOPE #3504 or equal. If in a plenum, use plenum rated cable, COMMSCOPE #35N4 or equal.

PART 4 - EXECUTION AND INSTALLATION

4.1 CONDUIT SYSTEMS

A. A concealed conduit system shall be installed for all interior wiring including controls. Conduit shall be run continuous between outlets, etc., and with the minimum number of bends.

B. PVC 40 shall be used for underground runs.

C. Where underground conduit cannot be run below building footings and the Contractor shall provide PVC-80 sleeves through the footings (Contractor shall obtain approval for all sleeve sizes and locations with the Structural Engineer before installation).

D. All conduit shall be delivered to the site of construction in their original bundles. Each length of conduit shall bear the label of the National Board of Fire Underwriters. All conduit subjected to rough usage while on the job before installation and not acceptable to the Architect shall be removed from the premises upon notice.

E. The joints in all conduits installed under concrete slabs on the ground, or underground, or exposed to the weather, shall be made liquid and gas-tight. All underground conduit outside of the buildings shall be buried to a depth of not
less than 24” below finish grade. Utility services shall comply with utility company requirements. Two or more conduit runs installed in a common trench shall be separated horizontally by at least four inches (4”). Electrical conduit runs installed in a common trench with other utility lines shall be separated horizontally from such lines by at least twelve inches (12”). Provide a detectable warning tape, 12” above the top of the conduit and the full length of trench.

F. Changes in direction shall be made with conduit elbows or long radius bends made on the job. Where two or more conduits are grouped in exposed locations, the sweeps shall be struck from the same center forming concentric arcs.

G. All joints in conduit shall be made with standard coupling. In making joints, conduits must be truly and accurately cut and threaded (where applicable) with straight thread, smoothly reamed and squarely butted. All conduit shall be kept corded and dry during construction, using plastic caps or conduit pennies held in place with conduit bushings. Should dirt or moisture collect in any conduit, the Contractor shall swab them out to the satisfaction of the Architect.

H. Conduits ending at the motors shall be carried as close as possible to the terminal blocks making allowance for the movement of the motors when they are equipped with slide rails. The connection between the conduit terminals on the motor and the conduit shall be made with liquid-tight flexible conduit using the proper fittings.

I. All conduits where they enter panel enclosures, pull boxes, or outlet boxes shall be secured in place by galvanized locknut inside of box.

J. Where conduits are run exposed, they shall be installed straight and true with reference to the adjacent construction.

K. Any conduit installed under building shall be under the slab. The top of any conduit below floor slab shall be a minimum of 4" below the bottom of the concrete slab.

L. All boxes for bracket outlets shall be equipped with a 3/8" "No-Bolt" fixture stud. These boxes shall be so set that when in place the fixture shall be at right angles to the ceiling or walls.

M. All empty conduit shall be equipped with a nylon pull rope continuous from outlet-to-outlet or end-to-end.

N. Flexible conduit will be permitted for connecting lighting fixtures to junction boxes.

O. Flexible connections in outdoor and damp locations shall be flexible liquid-tight metal conduit or non-corrosive seamless metallic tubing with watertight connections.

P. Install roof jacks for this construction in accordance with other sections of this Specification.

Q. The maximum allowed length of flex conduit at equipment connections is 18".

R. Expansion joints for conduit shall be provided where required to compensate for thermal expansion and contraction.

S. Any conduit entering underground pull boxes shall be sealed to prohibit water from entering the conduit. Conduits with conductors shall be sealed with a sealing compound after all conductors have been installed. All spare (empty) conduits shall be identified with either the "origination" or "destination" (example: to pull box 150' to the south, from Main Switchboard, etc.). The contractor shall use a scrap piece of ¾" PVC conduit, approximately 5" in length and tie the nylon pull string thru it. Write the description on the conduit using an indelible/permanent marker.

4.2 OUTLETS

A. In general, the locations of electrical outlets shall be as shown on the drawings; however, the Contractor shall make any changes necessary to suit conditions on the job or rearrangement of built-in fixtures and equipment as directed by the Architect or his representative.

B. The Contractor shall study the general building plans with relation to spaces surrounding each outlet in order that his work may fit the work of others and that when fixtures or other equipment are installed they will be symmetrically located according to room layout. Refer all conflicts and discrepancies promptly to the Architect.

4.3 OUTLET BOXES

A. Outlets for concealed wiring shall be flush with the finished wall or ceiling surfaces. Pull boxes, junction boxes and all others to which no fixture or device is to be attached, shall be fitted with blank cover plates and painted to match surroundings. In order to reduce noise transmission between rooms, outlet boxes shall not be installed back to back. Where outlets are side by side and faced into opposite rooms, the boxes shall be at least 6" apart, except in fire rated walls space boxes at least 24" apart. If the boxes are connected together, the connection shall be flexible and shall have openings packed with fiberglass.

B. The Electrical Contractor shall inform himself of wall thickness throughout the building and shall provide outlet boxes of suitable depth that can be flush mounted and yet will be deep enough to contain the particular apparatus involved. Location of exposed pull or junction boxes will be subject to the Architect's approval.

4.4 LOCATIONS OF OUTLETS

A. The Architect reserves the right to make reasonable changes in the indicated locations before work is roughed in without additional charge to the Owner.

B. Where wainscot occurs at the 4'-6" level, the switch shall be mounted lower in the wainscot as near the 4'-0" level as possible, but in no case, shall the switch be partially in the wainscot and partially in the wall. It shall be the Electrical Contractor's responsibility to verify all door swings. Switches, unless specifically noted, shall be on the strike side of the door. If switch is indicated on hinged side of door, verify location with Architect.

4.5 CONDUCTOR IDENTIFICATION AND INSTALLATION

A. The drawings indicate the arrangement of outlets on each branch circuit and the circuit tags show the number of the circuit, and the board to which it will be connected.

B. Circuits indicated with the same numbers shall be connected to the same breaker on the panelboard.

C. All feeders and branch circuits shall be tagged in all pull boxes and in the gutters of all panels to which they connect.

D. All wiring shall be done in identified neutrals.

E. No wire shall be installed until all work of other contractors that might cause injury to the said wire has been completed. Care shall be used to pull wires to insure that no damage occurs to the insulation. A wire lubricant shall be used for pulling in wires.

F. In making the connection of all branch circuits to the terminals of switches, base plugs, etc., the wires shall be looped around the binding screws or be fitted with connecting lugs. At the ceiling outlets, this Contractor shall leave not less than 6" of free ends on each wire for connections to the fixtures.

G. No splices shall be permitted except in outlet boxes, and in panelboard gutters.

H. Switches and receptacles shall be securely fastened to the outlet box. Where the outlet box covers are back of the finished walls the switch or receptacle shall be built out from the same with washers so that it is rigidly held in place to the box. The floating of any switch or receptacle will not be permitted.

I. All signal and communications conductors shall be identified in terminal cabinets as to type of system e.g.: clock, bell, fire alarm, etc. and location of other end of conductor by room number or name as directed by Owner. Identification shall be by numbers at terminal strips and a numbered directory in cardholder inside terminal cabinet.

J. Fire alarm system cabling and wiring shall be color-coded as follows:

Initiating Devices:	-	Addressable cable, red jacket.
Signaling Devices:	-	Black and Red wires for horns, strobes or horn strobes.
	-	Speaker cable, blue jacket for speakers.

K. All power wiring size #6 AWG and smaller, shall be factory color-coded. For larger than #6, mark conductors on each end and at all junction and/or pull boxes with a 1" bank of colored pressure-sensitive plastic tape. For isolated ground wires, mark with a 1" band of green tape, followed by a 1" band of yellow tape, followed by a 1" band of green tape. Colors for each phase and the neutral shall be consistent throughout the system. Color code shall be as follows:

WIRE	120/208V
Phase A	Black
Phase B	Red
Phase C	Blue
Neutral	White
Equip. Ground	Green

The white or gray conductor shall be the neutral at each outlet. All switches shall be installed in "hot" leg. On all lighting circuits the switch leg shall be purple from switch to fixture. All travelers from switch to switch on 3 and 4-way switches shall be pink. This color code shall be followed by Contractor for all fixture whips except for factory-manufactured whips. When factory manufactured whips are used, color code shall apply to all wiring except the factory whip.

L. Conductors having white, gray or green covering shall not be used to indicate other than neutral or grounding. This limitation applies to all power, lighting, and control circuits.

M. Installation of conductors shall be made in a neat and workmanlike manner to meet Code requirements and shall be run continuous without weld, splice or joint between boxes. Do not install wires in conduit unless the entire system of conduit and outlet boxes is permanently in place. All conductors shall be pulled using a UL approved wire lubricant.

N. Make all terminations at motors using 3M Series 5300 Motor Lead/Cable Splicing Kits. Make connections per 3M written installation procedures.

O. On all bolted electrical connections, the Contractor shall use Belleville washers.

P. All wiring to be neatly bundled and tied with nylon cord or plastic straps.

Q. When approved by the Electrical Engineer, splices in underground pull boxes shall be made with crimp on compression connectors and insulated with heat shrink sleeves or with splice kits listed by the manufacturer for wet locations. Wire nuts are not permitted. Cables and/or conductors for fire alarm and signals systems shall not be spliced.

4.6 GROUNDING

A. The conduit system supports, cabinets, switchboards, etc., and neutral conductors must be permanently and effectively grounded, accordance with Title 24 of the California Code of Regulations. The neutral shall only be grounded at the main service location unless specifically noted otherwise on the drawings or required by the California Electrical Code.

B. This Contractor shall exercise every precaution to obtain good contacts at all panel boxes, pull boxes, etc.: where it is not possible to obtain good contacts, the conduits shall be bonded around the boxes with a #6 AWG gauge conductor with ground clamps.

C. All equipment cases, motor frames, etc. shall be completely grounded to satisfy applicable code requirements.

D. At each new building, the interior hot and cold water piping and the interior aboveground gas piping shall be bonded to the building service equipment per C.E.C. #250.104.

E. Do not use underground gas piping as a grounding electrode.

F. Pull a green equipment ground conductor in all power conduits, both metallic and non-metallic.

G. Each disconnect switch shall have a ground connector (lay in wire type) which shall be used for grounding the disconnect enclosure. The ground wire shall continue and be connected to the enclosure of the equipment served.

H. Where there is more than one building supplied from a common service, provide a grounding electrode at each building per C.E.C. #250.32.

I. At each telephone backboard and/or data backboard, provide a power distribution block (one pole with two primary openings and six secondary openings) and mount at + 18" A.F.F. unless otherwise noted. Run ¾"C - 1 #6 AWG to the ground bar of the nearest panel or the ground bus of the main switchboard. Power distribution block shall be Square D #LBA 163206 or equal.

4.7 MOUNTING HEIGHTS OF EQUIPMENT

Unless otherwise specified elsewhere or shown on the plans, the following mounting shall apply:

A. Disconnect Switches: 4'-0" to center line

4.8 IDENTIFICATION OF SWITCHES AND APPARATUS

All switchboard circuits, externally operated switches and apparatus used for the operation of or control of circuits, appliances, or equipment shall be properly identified with an engraved Bakelite nameplates, 1" x 3", black letters on white background. All such nameplates shall be of the self-adhesive type and attached onto the apparatus by screws or rivets. Card holders in any form are not acceptable.

4.9 FIRE RATED AREAS

A. Where light fixtures, conduit, cabinets, or boxes penetrate fire rated ceilings, walls or floors provide a fire rated enclosure or fire stop. Rating of enclosure or fire stop shall match or exceed rating of area penetrated. Verify location of fire rated areas with architectural drawings and with General Contractor.

B. Where outlet boxes are recessed on opposite sides of a fire rated wall, boxes shall be separated by a horizontal distance of at least 24 inches. Where the wall opening for a steel electrical outlet box exceeds 16 sq. inches in area, or an aggregate of more than 100 sq. inches for any 100 sq. feet of wall or partition area, fire stopping is required.

C. Penetrations in walls, floors or ceilings requiring protected openings shall be fire-stopped.

D. Fire-stopped shall be of an approved material, securely installed and be in conformance with the 2019 C.B.C., Section 714.3.1 and 714.3.2.

E. All required fire-stopping and joint sealants as a result of the work in Divisions 26, 27 and 28 is the responsibility of each individual trade. Refer to Sections 07 8400 and 07 9210, respectively.

PART 5 - MISCELLANEOUS

5.1 MISCELLANEOUS EQUIPMENT

A. Contractor shall be responsible for electrical hook up and connections to all electrical equipment whether furnished by this Contractor or others, including wiring, conduit, disconnects, circuit breakers etc., even if not shown on drawings. Verify all locations and requirements with equipment supplier before rough-in.

B. When there are fire sprinklers, the Electrical Contractor shall connect bell, flow and tamper switches and other electrical devices as required by Sprinkler Contractor and local and state fire marshal. Verify requirements with General Contractor before bid.

5.2 INTERRUPTION OF SERVICE

A. Interruption of service in existing buildings shall not be made at a time which will inconvenience the Owner. Before making any final connections to the existing buildings or doing any other work that will interrupt the service, the Contractor shall consult with the Owner and schedule the work at Owner's convenience even if it is necessary to make such connections after regular working hours.

B. This Contractor shall do all rerouting and reconnecting of existing electrical facilities made necessary by this construction. Care shall be taken not to disrupt existing

facilities. If any facilities are disrupted, this Contractor shall replace or repair them at his expense and to the satisfaction of the Architect.

5.3 CHANGES

A. Electrical Contractor shall consider the number of outlets for electric equipment shown on plans as final, but the Architect reserves the right to shift same, within reason, to a location and position which will meet more completely final requirements.

5.4 GUARANTEE AND TESTS

A. All electrical equipment testing and related costs shall be included in the Contractor's bid.

B. Contractor shall obtain approval from the Architect of proposed independent testing agencies before any testing is started.

C. Equipment of all kinds installed by this Contractor shall be tested to determine whether it fulfills the requirements of these specifications. The Contractor shall furnish all labor necessary to adjust the operation of the apparatus and make the connections for the tests. After the tests have been completed, the Contractor shall restore all connections, apparatus, etc., to their original condition.

D. Should any piece of apparatus or any material or work fail in any of these tests, it shall be immediately removed and be replaced with new material by this Contractor at his expense and the portion of the work replaced be again tested by the Contractor.

E. All circuit breakers, 100 amps or more, shall be tested by an independent testing agency in accordance with NETA specifications and a report submitted to the Architect. Any circuit breaker that does not pass the test shall be replaced.

F. The entire installation shall be free from short circuits and improper grounds. Panels and circuits shall be tested for grounds and shorts. Each individual circuit shall be tested at the panel with the equipment connected for proper operation. Ground tests shall meet the requirements of the California Electrical Code. Upon completion of the work, a final inspection by the Architect and other interested authorities shall be conducted. This Contractor shall guarantee to repair or replace at his expense any material or equipment that develops defects or is determined not to be in conformance with the plans and specifications, during a period of one year after work is accepted by the Owner.

G. The grounding electrode system at the main electrical service equipment shall be tested by an independent testing agency in accordance with the three point fall of potential method as specified in IEEE Standard 81-1983. Maximum ground resistance shall be 25 OHMS. A copy of the test report shall be submitted to the Architect and Engineer of record.

H. All feeder cables #2 and larger shall be tested for insulation resistance. Test report must include number of cable per phase & type of cable insulation.

I. Three copies of test report shall be submitted to Electrical Engineer prior to the final job walk.

J. The independent testing agency performing the above mentioned tests shall be NETA or NICET certified or approved by the electrical engineer.

5.5 ELECTRICAL TESTS

A. Measure system neutral insulation resistance to ensure no shunt ground paths exist. Remove neutral-ground disconnect link. Measure neutral insulation resistance and replace link.

B. Determine the relay pickup current by primary injection at the sensor and operate the circuit-interrupting device.

C. Test the relay timing by injecting one hundred fifty percent (150%) and three hundred percent (300%) of pickup current, or as specified by manufacturer.

D. Test the system operation at fifty-seven percent (57%) rated voltage.

E. Test zone interlock systems by simultaneous sensor current injection and monitoring zone blocking function.

5.6 TEST PARAMETERS

A. System neutral insulation shall be a minimum of one hundred (100) ohms.

B. Relay pickup current shall be set to a value between 20% and 25% the rating of the main circuit breaker. The setting shall be the in-service setting unless otherwise specified.

C. Relay time delay shall be the closest possible calibrated setting to .1 seconds. This shall be the in-service setting unless otherwise specified.

5.7 DEMOLITION

A. Remove and/or relocate electrical facilities as required to clear areas for new construction.

5.8 UTILITY COMPANY SERVICE CHARGES

All service charges shall be paid by the Owner. Monthly energy charges shall be paid by the Electrical Contractor.

END OF SECTION 26 7000

SECTION 31 1000 - SITE CLEARING

PART 1 - GENERAL

1.1 SUMMARY

A. Clear and grub the site as shown on the Drawings and specified in this Section.

B. Related Sections:
   1. Documents affecting work of this Section include, but are not necessarily limited to, General Conditions, Supplementary Conditions, and Sections in Division 1 of these Specifications.
   2. Section 31 2000: Earthwork.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Provide materials, not specifically described but required for proper completion of the work of this Section, as selected by the Contractor subject to the approval of the Architect.

PART 3 - EXECUTION

3.1 SURFACE CONDITIONS

A. Examine the areas and conditions under which work of this Section will be performed. Correct conditions detrimental to timely and proper completion of the Work. Do not proceed until unsatisfactory conditions are corrected.

3.2 PROTECTION

A. Protect existing utilities indicated or made known.

B. Protect trees and shrubs, where indicated to remain, by providing a fence around the tree or shrub of sufficient distance away and of sufficient height so trees and shrubs will not be damaged in any way as part of this Work.

C. Protection of persons and property:
   1. Barricade open depressions and holes occurring as part of this Work, and post warning lights on property adjacent to or with public access.
   2. Operate warning lights during hours from dusk to dawn each day and as otherwise required.
   3. Protect structures, utilities, sidewalks, pavements, and other facilities from damage caused by settlement, lateral movement, undermining, washout, and other hazards created by operations under this Section.
   4. Barricade and post or backfill all open trenches outside of fenced areas when not on job site.

D. Use means necessary to prevent dust becoming a nuisance to the public, to neighbors, and to other work being performed on or near the site.

E. Maintain access to the site at all times.

3.3 CLEARING

A. Prior to earthwork operations, strip entire site of vegetation, organic topsoil. Clear surface and subsurface obstructions and miscellaneous debris from the proposed building, exterior concrete, and paving areas.
   1. Stripping: Approximately 4" deep. The actual depth of stripping will be reviewed by the responsible inspecting Geotechnical Engineer.

B. Clear organic matter, vegetation, rubbish, debris, and loose soil deposits from the banks and bottoms of the irrigation canal and ditch.

3.4 CONSERVATION OF TOPSOIL

A. Stockpile the stripped organic topsoil in an area clear of new construction in order to provide topsoil for areas shown on the Drawings to be turfed or planted, and to fill planters, without contamination with subsoils.

B. Maintain the stockpile in a manner which will not obstruct the natural flow of drainage.
   1. Maintain stockpile free from debris and trash.
   2. Keep the topsoil damp to prevent dust and drying out.

3.5 DISPOSAL

A. Remove brush, grass, roots, trash, and other material from clearing operations. Dispose of away from the site in a legal manner.

B. Do not store or permit debris to accumulate on the job site.

C. Dispose of any excess topsoil after fine grading has been accepted by the Architect.

D. Do not burn debris at the site.

E. Excavated Soils and Land Clearing Debris: 100% of trees, stumps, rocks, and associated vegetation and soils resulting primarily from land clearing shall be reused or recycled, except for reuse, either on site or off site of vegetation or soil contaminated by disease or pest infestation.
   1. Refer to Section 01 7420.

3.6 UTILITIES

A. Coordinate with utility companies and agencies as required. See Section 02 3100.

B. Where utility cutting, capping, or plugging is required, perform such work in accordance with requirements of the utility company or governmental agency having jurisdiction.

END OF SECTION 31 1000

SECTION 31 2000 - EARTHWORK

PART 1 - GENERAL

1.1 SUMMARY

A. In accordance with pertinent provisions of this Section, trench, excavate, fill, backfill, compact, and grade the site to the elevations shown on the Drawings and as needed to meet the requirements of the construction shown in the Contract Documents.

B. The work of this Section includes, but is not limited to, the following:
   1. Preparation of sub-grade for buildings, walks, pavements, and landscaping.
   2. Site grading, cut, fill, and finish, off-haul or import of soil necessary to meet finish grades indicated on the Drawings.
   3. Excavation, backfill and compaction for filling construction and trenches.

C. Related Sections:
   1. Documents affecting work of this Section include, but are not necessarily limited to, General Conditions, Supplementary Conditions, and Sections in Division 1 of these Specifications.
   2. Section 00 3100: Geotechnical data.
   3. Section 01 4520: Testing and inspection requirements.
   4. Section 01 5725: Storm Water Pollution Protection Plan.
   5. Section 01 7120: Field engineering.
   6. Section 22 0000: Excavation and backfill for plumbing work.
   7. Section 26 6000: Excavation and backfill for electrical work.
   8. Section 31 1000: Site clearing, removal and storage of top soil.
   9. Section 31 3115: Termite control.

1.2 QUALITY ASSURANCE

A. Use equipment adequate in size, capacity, and numbers to accomplish the work in a timely manner.

B. In addition to complying with requirements of governmental agencies having jurisdiction, comply with the directions of the geotechnical engineer.

C. Verify all grade and trench elevations as specified in Section 01 7120.

D. All improvements within property owned by a City, County or State Entity shall be in accordance with the Standard Specifications of the authority having jurisdiction.

1.3 TRENCHING AND EXCAVATION SAFETY

A. All trenches and excavation in excess of 4'-0" in depth and areas of visibly unstable soils shall be shored or otherwise stabilized in conformance with current local or state codes, ordinances and requirements. In addition, the Contractor shall notify the Owner of suspected hazardous waste or other unusual physical conditions as provided by law.

B. All open trenches and excavations outside the fenced construction area shall be properly barricaded for public and worker safety. Trenches shall be adequately covered or backfilled prior to ceasing work or leaving the work site.

C. Slope height, slope inclination, and excavation depths (including utility trench excavations) must in no case exceed those specified in local, state, or federal safety regulations, (e.g., OSHA Health and Safety Standards for Excavations, 29 CFR Part 1926, or successor regulations).

1.4 EXISTING UTILITIES

A. Field verify the location of all existing underground utilities prior to beginning any earthwork. Work around and protect all existing utilities during the course of the Work. Raise or lower each existing utility box flush with new finish surface.

B. Where existing utilities are indicated on the drawings, extreme care shall be exercised in excavating near these utilities to avoid damage, and the Contractor will be held responsible for any damage caused by construction operations.

C. Should utilities not indicated on the drawings be found during construction, the Contractor shall promptly notify the Architect for instructions as to further action. Failure to do so will make the Contractor liable for any damage arising from construction operations after discovery of these utilities.

PART 2 - PRODUCTS

2.1 MATERIALS, GENERAL

A. Products specified are for establishing the type, design, and quality required. Products of equal or better type, design, and quality produced by other manufacturers will be considered provided the request for substitution is submitted in accordance with Section 01 2500.

2.2 SOIL MATERIALS

A. Fill and Backfill Materials: Fill shall consist of select material. Native soil, free from organic matter and rocks or cobbles larger than 3", may be used as fill at the site as follows:
   1. Satisfactory Soil Materials: Are defined as those complying with ASTM D2487 Soil Classification Groups GW, GP, GM, SM, SW, and SP.
   2. Unsatisfactory Soil Materials: are defined as those complying with ASTM D2487 Soil Classification Groups GC, SC, MH, ML, CL, CH, OL, OH, and PT.

B. Import Material: Import material, if required, shall consist of homogenous, non-corrosive, non-expansive, inorganic granular soils free of toxic materials and conforming to the following criteria:
   1. Gradation:
      a. 3" Sieve: 100% passing
      b. 3/4" Sieve: 80-100% passing
      c. No. 4 Sieve: 60-100% passing
      d. No. 200 Sieve: 20-70% passing
   2. Plasticity Index, ASTM D4318:
      a. Liquid limit: < 25
      b. Plasticity index: < 12
   3. Expansion Index: < 15
   4. Organic Content: < 3% by dry weight.
   5. Minimum "R" Value (pavement area): 40
   6. Corrosivity:
      a. pH: 6 to 8
      b. Minimum resistivity (ohm-cm): > 2,000

c. Soluble sulfate (ppm): < 2,000
d. Soluble chloride (ppm): < 500

7. Import fill material shall be approved by the geotechnical engineer prior to transport to the site and provided at no additional cost to the Owner.

C. Engineered Fill Materials:
1. Satisfactory Soil Materials as defined in paragraph 2.2.A.1 above, or
2. Import Material defined in 2.2.B above.

D. Sand for Utility Bedding: Natural river or bank sand; washed; free of silt, clay, loam, friable or soluble materials, and organic matter.

E. Toxic Testing of Import Fill Material:
1. The Contractor shall notify the Owner, Architect, and Testing Laboratory for the project, of the location and origin of all fill material intended for this project. Such notification shall be not less than 21 days prior to transport of the material.
2. Both native and stockpile soils shall be subject to testing to determine suitability of the soil as related to toxic substances on school sites.
3. The Owner will pay for only one passing test from one import source. Additional tests, and retests of failed material shall be paid by the Contractor.
4. Should testing indicate toxic substances at levels above those acceptable on school sites by the State of California, Department of Toxic Substance Control (DTSC), the subject soil will not be permitted on the proposed school site.
5. Any delay caused by materials found not to be compliant, shall not be accepted as justification for contract time extension or related claims.

2.3 TOPSOIL

A. Topsoil:
1. Friable, fertile soil of loamy character, containing an amount of organic matter normal to the region, capable of sustaining healthy plant life, and reasonably free from subsoils, roots, heavy or stiff clay, stones and gravel, noxious weeds, sticks, brush, litter, and other deleterious matter.
2. Provide from stockpile developed on site as specified in Section 31 1000.

2.4 ACCESSORY MATERIALS

A. Utility Identification Tape: 2" wide metallic plastic material inscribed with caution message related to the buried utility below (i.e., **ELECTRICAL LINE BURIED BELOW, SEWER LINE BURIED BELOW**, etc.) by McMaster-Carr or approved equal.

B. Provide a dry, free-flowing, dust-free chemical compound, soluble in water, capable of inhibiting growth of vegetation, and approved for use on this Work by governmental agencies having jurisdiction.

PART 3 – EXECUTION

3.1 SURFACE CONDITIONS

A. Examine the areas and conditions under which work of this Section will be performed. Correct conditions detrimental to timely and proper completion of the Work. Do not proceed until unsatisfactory conditions are corrected.

3.2 FINISH ELEVATIONS AND LINES

A. Comply with pertinent provisions of this Section, Section 01 7120, and the Grading Plan.

3.3 DEWATERING AND WATER CONTROL

A. Water Control:
1. Establish and construct storm drainage features at the earliest stages of site development, and throughout construction grade the construction area to provide positive surface water runoff away from the construction activity and/or provide temporary ditches, swales, and other drainage features and equipment as required to maintain dry soils.
2 Completely drain construction site during periods of construction to keep soil materials sufficiently dry.
3. Temporary excavations for the project construction should be left open only for as short a time as possible and should be protected from water runoff.

B. Dewatering:
1. Remove all water, including rain water, encountered during trench and substructure work to an approved location by pumps, drains, and other approved methods.
2. Keep excavations and site construction area free from water.
3. Prevent surface water and subsurface or ground water from flowing into excavations and from flooding project site and surrounding area.
4. Do not allow water to accumulate in excavations. Remove water to prevent softening of foundation bottoms, undercutting footings, and soil changes detrimental to stability of subgrades and foundations.
5. Provide and maintain pumps, well points, sumps, suction and discharge lines, and other dewatering system components necessary to convey water away from open excavations, unfinished fills, or other low areas to prevent softening of exposed surfaces.
6. Dispose of water away from the work in a suitable manner without damage to adjacent property or menace to public health.
7. Protect existing storm drain system from silt and debris resulting from construction activities. If contamination occurs, remove contamination at no cost to the Owner.

C. Unsuitable Soil Support: When unsuitable working platforms for equipment operation and unsuitable soil support for subsequent construction features develop, remove unsuitable material and provide new soil material as specified.

3.4 DUST CONTROL

A. The San Joaquin Valley Air Pollution Control District regulates all dust control and emission standards throughout the Central Valley. Regulation VIII – Fugitive PM10 Prohibitions requires that a Dust Control Plan be completed for a large majority of construction projects.

B. The Contractor shall implement all measures listed in the Dust Control Plan as required for the project.

C. Construction work shall not commence until the Dust Control plan is completed and approved by the District.

D. Whether a Dust Control Plan is required for the project or not, the Contractor shall be responsible for complying with the requirements of Rule 8021.

3.5 PROCEDURES

A. Utilities:
1. Unless shown to be removed, protect active utility lines shown on the Drawings or otherwise made known to the Contractor prior to excavating. If damaged, repair or replace at no additional cost to the Owner.

2. If active utility lines are encountered, and are not shown on the Drawings or otherwise made known to the Contractor, promptly take necessary steps to assure that service is not interrupted.
3. If service is interrupted as a result of work under this Section, immediately restore service by repairing the damaged utility at no additional cost to the Owner.
4. If existing utilities are found to interfere with the permanent facilities being constructed under this Section, immediately notify the Architect and secure his instructions.
5. Do not proceed with permanent relocation of utilities until written instructions are received from the Utility Company.

B. Protection of Persons and Property:
1. Barricade open holes and depressions occurring as part of this Work, and post warning lights on property adjacent to or with public access.
2. Operate warning lights during hours from dusk to dawn each day and as otherwise required.
3. Protect structures, utilities, sidewalks, pavements, and other facilities from damage caused by settlement, lateral movement, washout, and other hazards created by operations under this Section.

C. Use means necessary to prevent dust becoming a nuisance to the public, to neighbors, and to other work being performed on or near the site.

D. Maintain access to adjacent areas at all times.

3.6 BORING

A. Provide mechanical boring equipment to bore under existing asphalt, concrete, or other surfaces or objects as noted on the drawings. All borings shall be a minimum of 24" under the substrate material unless otherwise authorized by the Architect.

B. Holes shall be bored not to exceed 1" larger diameter than the largest component remaining in the excavation.

C. **Water or air pressure jetting** are not permitted, unless they comply with the following requirements.
1. All surfaces of the hole can be visually inspected with 6' maximum length and,
2. All objects shall be supported continuously to prevent sagging and,
3. The hole shall be filled with compacted damp sand and inspected by the Project Inspector or Materials Testing Lab technician.

D. Comply with requirements of Section 01 7330.

3.7 SITE PREPARATION

A. Preparation at Buildings with Slab on Grade Construction:
1. After clearing, scarify the top 8" of subgrade at building pad recompact at a moisture content that will permit proper compaction to 95 percent of maximum density; ASTM D1557.
2. Extend compaction 5'-0" beyond the exterior footing line, including 5'-0" beyond exterior column footings.

B. Preparation at Asphalt Pavement:
1. After clearing, scarify the top 8" of subgrade at asphalt pavement areas and recompact at a moisture content that will permit proper compaction to 95 percent of maximum density; ASTM D1557.
2. Extend compaction 2'-0" beyond the outer limits of pavement areas.

C. Preparation at Site Concrete:
1. After clearing, scarify the top 8" of subgrade at site concrete areas and recompact at a moisture content that will permit proper compaction to 90 percent of maximum density; ASTM D1557.

2. Extend compaction 2'-0" beyond the outer limits of site concrete at new construction. No extension is required at areas of site concrete removal and replacement.

3.8 EXCAVATION

A. Perform excavation of every type of material encountered within the limits of the Work to the lines, grades, and elevations indicated and specified herein.

B. Earth excavation includes excavation of pavements and other obstructions visible on ground surface; underground structures, utilities and other items indicated to be demolished and removed; together with earth and other materials encountered that are not classified as rock or unauthorized excavation.

C. Rock excavation in trenches and pits includes removal and disposal of materials and obstructions encountered which cannot be excavated with a 1.0 cubic yard (heaped) capacity, 42" wide bucket on a track-mounted power excavator equivalent to Caterpillar Model 215, rated at not less than 90 HP flywheel power and 30,000 lb. drawbar pull. Trenches in excess of 10'-0" in width and pits in excess of 30'-0" in either length or width are classified as open excavation.

D. Surplus Materials: Dispose of unsatisfactory excavated materials, and surplus satisfactory excavated material, away from the site at disposal areas arranged and paid for by the Contractor.

E. Additional Excavation: When excavation has reached required subgrade elevations, notify Architect who will make an inspection of conditions. If unsuitable bearing materials are encountered at required subgrade elevations, carry excavations deeper and replace excavated material as directed by Architect/Engineer. Removal of unsuitable material and its replacement as directed will be paid on basis of contract conditions relative to changes in work.

F. Excavate and backfill in a manner and sequence that will provide proper drainage at all times.

G. Unauthorized Excavation:
   1. Unauthorized excavation consists of removal of materials beyond indicated subgrade elevations or dimensions without specific instruction from the Architect or the geotechnical engineer.
   2. Under footings, foundations, or retaining walls:
      a. Fill unauthorized excavation by extending the indicated bottom elevation of the footing or base to the excavation bottom, without altering the required top elevation.
      b. When acceptable to the geotechnical engineer, lean concrete (minimum 2000 psi) may be used to bring bottom elevations to proper position.
   3. Elsewhere, backfill and compact unauthorized excavations as specified for authorized excavations, unless otherwise directed by the geotechnical engineer.

H. Benching Slopes: Horizontally bench existing slopes greater than 1:4 to key fill material to slope for firm bearing.

I. Stability of Excavations:
   1. Slope sides of excavation to comply with local codes and ordinances having jurisdiction.
   2. Shore and brace where sloping is not possible because of space restrictions or stability of the materials being excavated.
   3. Maintain sides and slopes of excavations in a safe condition until completion of backfilling.

J. Shoring and Bracing:
   1. Provide materials for shoring and bracing as may be necessary for safety of personnel, protection of work, and compliance with requirements of governmental agencies having jurisdiction.
   2. Maintain shoring and bracing in excavations regardless of the time period excavations will be open.
   3. Carry shoring and bracing down as excavation progresses.

K. Use of Explosives: **NOT PERMITTED**.

3.9 FILLING AND BACKFILLING

A. Backfill excavations as promptly as progress of the Work permits, but not until:
1. Acceptance of construction below finish grade:
2. Inspecting, testing, approving, and recording locations of underground utilities;
3. Concrete formwork is removed;
4. Shoring and bracing are removed, and voids have been backfilled with satisfactory materials;
5. Trash and debris have been removed; and
6. Horizontal bracing is in place on horizontally supported walls.

B. Placing and Compaction:
1. Place backfill and fill materials in layers not more than 8" in loose depth.
2. Before compacting, moisten or aerate each layer as necessary to provide the optimum moisture content.
3. Compact each layer to required percentage of maximum density for the area.

C. Moisture Content:
1. When the moisture content of fill material is below the lower limit specified by the Geotechnical Engineer, add water until the moisture content is as specified.
2. When the moisture content of fill material is above the upper limit specified, the material shall be aerated by blading or other satisfactory methods until the moisture content is as specified.
3. Do not place, spread, or compact fill while it is frozen or thawing or during unfavorable weather conditions. When work is interrupted by weather conditions, do not resume fill operations until moisture content and density of previously placed fill are satisfactory.
4. Where soil has been softened or eroded by flooding, by placement during unfavorable weather, remove damaged areas and recompact as described for fill and compaction.
5. Do not fill over porous, wet, frozen or spongy subgrade surfaces.
6. Where subgrade is spongy or pumping due to conditions beyond the Contractor's control, and aeration or other methods do not bring moisture content within specified levels, stop work and contact the Architect and Geotechnical Engineer for further direction.

3.10 TOPSOIL

A. Place topsoil to the following compacted thicknesses:
1. Areas to be seeded: 6"
2. Areas to be sodded: 4"
3. Shrub beds: 18"
4. Flower beds: 12"

B. Topsoil Placement:
1. Where topsoil is to be placed, scarify surface to depth of 6".
2. Place topsoil during dry weather.
3. Remove roots, weeds, rocks, and foreign material while spreading.
4. Fine grade topsoil to eliminate uneven areas and low spots. Maintain profiles and contour of subgrade.
5. Roll placed topsoil.

3.11 TRENCHING

A. Trenching:
1. Notify Architect of unexpected subsurface conditions and discontinue affected Work in area until notified to resume work.

2. Slope banks of excavations deeper than 4 feet to angle of repose or less until shored.
3. Do not interfere with 45 degree bearing splay of foundations.
4. Cut trenches wide enough to allow inspection of installed utilities.
5. Hand trim excavations. Remove loose matter.
6. Remove large stones and other hard matter that could damage piping or impede consistent backfilling or compaction.
7. Remove lumped subsoil, boulders, and rock up to 1.0 cu yd measured by volume.
8. Remove excavated material that is unsuitable for re-use from site.
9. Stockpile excavated material to be re-used in area designated on site in accordance with this Section 31 2000.
10. Remove excess excavated material from site.

B. Preparation for Utility Placement:
1. Cut out soft areas of subgrade not capable of compaction in place. Backfill with engineered fill.
2. Compact subgrade to density equal to or greater than requirements for subsequent fill material.
3. Until ready to backfill, maintain excavations and prevent loose soil from falling into excavation.

C. Backfilling:
1. Backfill to contours and elevations indicated using unfrozen materials.
2. Employ a placement method that does not disturb or damage other work.
3. Systematically fill to allow maximum time for natural settlement. Do not fill over porous, wet, frozen or spongy subgrade surfaces.
4. Maintain optimum moisture content of fill materials to attain required compaction density.
5. Slope grade away from building. Make gradual grade changes. Blend slope into level areas.
6. Correct areas that are over-excavated.
7. Reshape and re-compact fills subjected to vehicular traffic.

D. Utility Installation: Install underground utilities according to the manufacturer's written recommendations. In addition to the manufacturer's recommendations, install underground utilities as follows:
1. Underground Utility Line Cover: No less than 12".
2. Bedding: Minimum of 6" compacted sand bedding under the pipe or conduit.
3. Envelope: Compacted sand extending 6" above and around the pipe or conduit.
4. Backfill Material: Remaining backfill material may consist of native soil or engineered fill material as described above.
5. Place and compact utility trench backfill in accordance with the requirements for engineered fill.

E. Utility Identification:
1. Utility Identification Tape: 2" wide metallic plastic material inscribed with a CAUTION message related to the buried utility.
2. Identify each utility pipe or conduit by the use of a continuous underground warning tape.
3. Locate tape 12" directly above the pipe or conduit, but not more than 12" below or not less than 6" below the finished grade.
    a. Where the top of the pipe or conduit exceeds 4'-0" below finish surface, locate one tape 12" directly above the pipe or conduit and one tape not less than 6" below the finished grade.
4. Provide one strip of identification tape for each 18" of trench width, horizontally.

3.13 GRADING

A. General: Uniformly grade the areas within limits of grading under this Section, including adjacent transition areas. Smooth the finished surfaces within specified tolerance.

B. Finish Grading Outside Building Lines:
1. Grade areas adjacent to buildings to achieve drainage away from the structures, and to prevent ponding.

2. Finish the surfaces to be free from irregular surface changes, and:
   a. Shape the surface of areas scheduled to be under walks to line, grade, and cross-section, with finished surface not more than 0.10 foot above or below the required subgrade elevation.
   b. Shape the surface of areas scheduled to be under pavement to line, grade, and cross-section, with finished surface not more than 0.10 feet above or below the required subgrade elevation.
   c. Shape finish grade adjacent to building to slope a minimum of 2% away from the exterior footings and wall, for a distance of 5'-0".

3.14 COMPACTION

A. Control soil compaction during construction to provide the minimum percentage of density specified for each area as determined according to ASTM D1557.

B. Moisture Control: Where subgrade or layer of soil material must be moisture-conditioned before compacting, uniformly apply water to surface of subgrade or layer of soil material to prevent free water appearing on surface during or subsequent to compacting operations.

C. Densities: Provide not less than the following maximum density of soil material compacted at each layer of soil material in place, and as approved by the geotechnical engineer.
   1. **Buildings, Asphalt Paving and Site Concrete:** As specified in paragraph 3.7.
   2. **Lawn and unpaved areas:** Compact the top 6" of subgrade and each layer of fill material or backfill material at 85% of maximum density;
   3. **Trenches:** Provide a minimum of 3" of compacted sand bedding under pipe or conduit, and provide envelope extending 12" above pipe or conduit. Compact remaining backfill to 90% of maximum density except the upper 24" of those trenches located within structures, walks, and pavement areas which shall be compacted as specified in section 3.7.

3.15 FIELD QUALITY CONTROL

A. Secure the Geotechnical Engineer's inspection and approval of subgrades and fill layers before subsequent construction is permitted thereon.

B. The Owner's testing laboratory will provide at least the following tests:
   1. At paved areas, at least 1 field density/moisture test for every 10,000 sq. ft. of paved area, but not less than 3 tests.
   2. In each compacted underlying fill layer, 1 field density/moisture test for every 7,500 sq. ft. of overlaying paved area, but not less than 3 tests.
   3. In building areas, at least 1 field density/moisture test for every 2,000 sq. ft. of building coverage.
   4. At least 1 field density/moisture test per every 200 lineal foot of trench over 3'-0" of trench depth.

C. If, in the Geotechnical Engineer's opinion based on reports of the testing laboratory, subgrade or fills which have been placed are below specified density, provide additional compacting and testing under the provisions of Section 01 4520 of these Specifications.

END OF SECTION 31 2000

SECTION 31 3115 - TERMITE CONTROL

PART 1 - GENERAL

1.1 SUMMARY

A. Provide soil poisoning to control subterranean termites as specified herein and needed for a complete and proper treatment.

B. Related Sections:
1. Documents affecting work of this Section include, but are not necessarily limited to, General Conditions, Supplementary Conditions, and Sections in Division l of these Specifications.
2. Section 31 2000: Earthwork.

1.2 SUBMITTALS

A. Submit in accordance with Section 01 3300.
1. Product Data: Submit manufacturer's descriptive literature and product specifications for each product. Include data to indicate compliance with the specified requirements.
2. Installation Procedures: Submit manufacturer's recommended installation procedures. **Provide additional copy of manufacturer's application recommendations and rates, to Architect and Inspector of Record, not less than 72 hours prior to application of termite treatment.**

1.3 QUALITY ASSURANCE

A. Qualifications of Applicator:
1. Properly licensed to provide such services by governmental agencies having jurisdiction.
2. Not less than five years' successful experience in soil treatment for subterranean termites.

1.4 SPECIAL WARRANTY

A. Upon completion of the Work, and as a condition of its acceptance, deliver to the Architect two copies of a special warranty and maintenance agreement signed by an authorized representative of the installing subcontractor, and co-signed by the Contractor, agreeing:
1. To make an inspection of the Work once each year for a total period of five years following Date of Substantial Completion for the purpose of detecting termite infestation;
2. If termite infestation is found during that five year period, to retreat in accordance with prevailing practices of the trade and within ten calendar days after such infestation is discovered;
3. To repair damage to the Work caused by termites during that five year period, to a maximum cost of $5,000;
4. To make such inspections, retreatment, and repairs at no additional cost to the Owner.
5. This Warranty and Maintenance Agreement shall be in addition to the warranty requirements of the Contract Documents, and the enforcement of its provisions, shall not deprive the Owner of any action, right, or remedy otherwise available to him.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Comply with pertinent provisions and requirements of State of California, and EPA.

PART 2 - PRODUCTS

2.1 TERMITE CONTROL MATERIALS

A. Acceptable Products:
1. Wisdom TC Flowable by AMVAC.
2. Products of equal or better type, design, and quality produced by other manufacturers will be considered provided the request for substitution is submitted in accordance with Section 01 2500.

B. Product Characteristics:
1. Approved by governmental agencies having jurisdiction.
2. Active ingredients: Minimum of 7.9% Bifenthrin.

C. If combinations of toxicants are approved by governmental agencies having jurisdiction, provide toxicants having such approval and in the maximum strength so approved, at no additional cost to the Owner.

PART 3 - EXECUTION

3.1 SURFACE CONDITIONS

A. Examine the areas and conditions under which work of this Section will be performed. Correct conditions detrimental to timely and proper completion of the Work. Do not proceed until unsatisfactory conditions are corrected.

3.2 APPLICATION

A. Apply toxicant at following locations:
1. Under slabs-on-grade.
2. At both sides of foundation surface.

B. Place all termite control materials in strict accordance with the manufacturer’s requirements and recommendations. Follow printed labels and instructions in a manner as to provide complete coverage without jeopardizing public safety.

END OF SECTION 31 3115

SECTION 32 1720 - PAVEMENT MARKING

PART 1 - GENERAL

1.1 SUMMARY

A. Provide pavement marking in the types and arrangements shown on the Drawings, as specified herein, and as needed for a complete and proper installation.
   1. Crosswalk, striping and graphics.
   2. Parking lot striping and graphics.
   3. Other lines and graphics as indicated.

B. Related Sections:
   1. Documents affecting work of this Section include, but are not necessarily limited to, General Conditions, Supplementary Conditions, and Sections in Division l of these Specifications.

1.2 SUBMITTALS

A. General: Submit in accordance with Section 01 3300.
   1. Product Data: Submit manufacturer's descriptive literature and product specifications for each product. Include data to indicate compliance with the specified requirements.
   2. Installation Procedures: Submit manufacturer's recommended installation procedures.
   3. Shop Drawings: Photographs, scale drawings, or other data acceptable to the Architect, showing types of graphics proposed to be used.

PART 2 - PRODUCTS

2.1 MATERIALS GENERAL

A. Products specified are for establishing the type, design, and quality required. Products of equal or better type, design, and quality produced by other manufacturers will be considered provided the request for substitution is submitted in accordance with Section 01 2500.

2.1 PAVEMENT MARKING PAINT

A. Provide paint specifically formulated for use as pavement marking in automobile traffic areas, and in the colors selected by the Architect from standard no lead colors of the approved manufacturer.
   1. Slip-resistant coefficient of friction ≥ 0.6; ADA Standard A4.5.1, for all paint.
   2. Blue at accessible parking to be color #15090; Federal Standard 595B or equal.

B. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products which may be incorporated in the work include, but are not limited to, the following
   1. Zoneline by PPG Architectural Coatings; 100% acrylic.
   2. SetFast Acrylic Waterborne Traffic Marking Paint by Sherwin-Williams.
   3. Vin-L-Stripe W801 Series by Dunn-Edwards.
   4. 506 Traffic Paint by Frazee; 100% acrylic.

2.2 OTHER MATERIALS

A. Provide other materials, not specifically described but required for a complete and proper installation, as selected by the Contractor subject to the approval of the Architect.

PART 3 - EXECUTION

3.1 SURFACE CONDITIONS

A. Examine the areas and conditions under which work of this Section will be performed. Correct conditions detrimental to timely and proper completion of the Work. Do not proceed until unsatisfactory conditions are corrected.

B. Allow a minimum of 24 hours before applying striping over asphalt paving fog seal.

3.2 APPLICATION

A. Secure the Architect's approval of graphics design and layout prior to start of application.

B. Using proper masking, stencils, and application equipment recommended for the purpose by the manufacturer of the approved paint, apply the approved paint in strict accordance with its manufacturer's recommendations.

C. **Provide 2 coats** of paint material at all markings.

3.3 PROTECTION

A. Provide traffic cones, barricades, and other devices needed to protect workmen and the paint until it is sufficiently dry to with-stand traffic.

3.4 CLEANUP

A. When paint is thoroughly dry, visually inspect the entire application, touchup as required to provide clean, straight lines and surfaces throughout.

B. Using a permanently opaque paint identical in color to the surface on which the paint was applied, block out and eliminate all traces of splashed, tracked, and/or spilled pavement marking paint from the background surfaces.

END OF SECTION32 1720

SECTION 32 1725 - TACTILE WARNING SURFACES

PART 1 - GENERAL

1.1 SUMMARY

A. Provide tactile warning surface mats and accessories in the types and arrangements shown on the Drawings, as specified herein, and as needed for a complete and proper installation.

B. Related Sections: Documents affecting work of this Section include, but are not necessarily limited to, General Conditions, Supplementary Conditions, and Sections in Division l of these Specifications.

1.2 SUBMITTALS

A. General: Submit in accordance with Section 01 3300.
1. Product Data: Submit manufacturer's descriptive literature and product specifications for each product. Include data to indicate compliance with the specified requirements.
2. Installation Procedures: Submit manufacturer's recommended installation procedures.
3. Samples: Submit 3 samples of each kind or type of tile.

1.3 QUALITY ASSURANCE

A. Americans with Disabilities Act (ADA): Provide tactile warning surfaces which comply with the detectable warnings on walking surfaces section of the ADA (Title 49, CFR Transportation, Part 37.9 Standards for Accessible Transportation Facilities, Appendix A, Section 4.29.2 Detectable Warnings on Walking Surfaces.

B. Applicable provisions of California Building Code.

PART 2 - PRODUCTS

2.1 TACTILE WARNING TILE

A. Acceptable Manufacturers: "In-line" pattern, ADA/CBC compliant detectable warning mat and accessories from one manufacturer. Subject to compliance with requirements, manufacturers offering products which may be incorporated in the work include, but are not limited to, the following;
1. Ada Solutions, Inc., (800) 372-0519.
2. Engineered Plastics Inc., (800) 682-2525.
3. Advantage Tactile Systems Inc., (800) 679-4022.
4. Products specified are for establishing the type, design, and quality required. Products of equal or better type, design, and quality produced by other manufacturers will be considered provided the request for substitution is submitted in accordance with Section 01 2500.

B. Color: Yellow conforming to Federal Color No. l 33538.

C. Accessories:
1. Adhesive: Manufacturer’s recommended adhesive.
2. Anchors: Color matched, corrosion-resistant, flat-head drive anchor; 1/4" diameter by 1-1/2" long provided by manufacturer.
3. Sealant: Manufacturer’s recommended sealant.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Install tactile warning surfaces, adhesive, anchors, and sealant in accordance with the manufacturer's written installation instructions.

B. Set tactile warning surfaces true and square to the curb ramp area.

END OF SECTION 32 1725

SECTION 32 3115 - CHAIN LINK FENCES

PART 1 - GENERAL

1.1 SUMMARY

A. Provide chain link fence system where shown on the Drawings, as specified herein, and as needed for a complete and proper installation.

B. Related Sections:
1. Documents affecting work of this Section include, but are not necessarily limited to, General Conditions, Supplementary Conditions, and Sections in Division l of these Specifications.
2. Section 03 3000: Cast-In-Place Concrete
3. Section 08 7000: Accessible Gate Hardware

1.2 SUBMITTALS

A. General: Submit in accordance with Section 01 3300.
1. Product Data: Submit manufacturer's descriptive literature and product specifications for each product. Include data to indicate compliance with the specified requirements.
2. Installation Procedures: Submit manufacturer's recommended installation procedures.
3. Shop Drawings: Submit shop drawings of manufacturer's fence system.

PART 2 - PRODUCTS

2.1 GENERAL

A. Manufacturers: Shall be an active member of the Chain Link Fence Manufacturers Institute.

B. Products specified are for establishing the type, design, and quality required. Products of equal or better type, design, and quality produced by other manufacturers will be considered provided the request for substitution is submitted in accordance with Section 01 2500.

2.2 MATERIALS

A. Posts, Rails, and Frames: ASTM F1083 Schedule 40 hot-dipped galvanized steel pipe, welded construction, minimum yield strength of 30 ksi.

B. Wire Fabric: ASTM A 392 zinc coated steel chain link fabric.

C. Barbed Wire: Zinc-coated steel, complying with ASTM A121 Type Z Coating Class 1; 2 strands of 0.099 inch diameter wire, with 2-pointed barbs at 4 inches on center.

2.3 COATINGS

A. Hardware: Hot-dip galvanized to weight required by ASTM A153.

B. Accessories: Same finish as framing.

2.4 FABRIC

A. Fabric: 2 inch diamond mesh interwoven wire, 9 gauge thick, top and bottom selvage knuckle end closed.

B. Provide fabric in one piece widths.

2.5 POSTS, RAILS, AND ASSOCIATED ITEMS

A. End, Corner, Slope, and Pull Posts: Provide at least the following minimum sizes and weights:
1. 6'-0" high and under: Pipe, 2.5" nominal, 2.875" outside diameter, 5.79 lbs. per lineal foot.
2. 8'-0" high and under: Pipe, 3" nominal, 3.500" outside diameter, 7.58 lbs. per lineal foot.
3. 12'-0" high and under: Pipe, 4" nominal, 4.500" outside diameter, 10.79 lbs. per lineal foot.

B. Line Posts: Provide minimum sizes and weights as follows:
1. 6'-0" high and under: Pipe, 2" nominal, 2.375" outside diameter, 3.65 lbs. per lineal foot.
2. 8'-0" high and under: Pipe, 3" nominal, 3.500" outside diameter, 7.58 lbs. per lineal foot.
2. 12'-0" high and under: Pipe, 4" nominal, 4.500" outside diameter, 10.79 lbs. per lineal foot.
4. For fencing taller than 12'-0" refer to the plans for post sizes.

C. Gate Posts: Provide gate posts for supporting single gate leaf, or one leaf of a double gate installation, for nominal gate widths as follows:
1. 13'-0" wide and under: Pipe, 4" nominal, 4.500" outside diameter, 10.79 lbs. per lineal foot.
2. Over 13 feet wide, and up to 18 feet wide: Pipe, 6" nominal, 6.625" outside diameter pipe, 18.97 lbs. per lineal foot.
3. Over 18 feet wide: Pipe, 8" nominal, 8.625" outside diameter pipe, 28.55 lbs per lineal foot.

D. Top Rails:
1. Pipe, 1.25" nominal, 1.660" outside diameter pipe weighing 2.27 lbs per lin ft; or
2. Provide in manufacturer's longest lengths, with expansion type couplings approximately 6" long for each joint.
3. Provide means for attaching top rail securely to each gate, corner, pull, slope, and end post.

E. Post Brace Assemblies:
1. Provide at end and gate posts, and at both sides of corner, slope, and pull posts, with the horizontal brace located at mid-height of the fabric.
2. Pipe, 1.25" nominal, 1.660" outside diameter pipe weighing 2.27 lbs per lin ft for horizontal brace.
3. 3/8" diameter rod with turnbuckle for diagonal truss.

F. Tension Wire: Provide number 7 gauge galvanized coiled spring wire at bottom of fabric.

G. Post Tops:
1. Provide steel, designed as weathertight closure cap.
2. Provide one cap for each post.
3. Provide caps with openings to permit through passage of top rail.

H. Stretcher Bars:
1. Provide one-piece lengths equal to full height of fabric, with a minimum cross-section of 3/16" x 3/4".
2. Provide one stretcher bar for each gate and end post, and two for each corner, slope, and pull post, except where fabric is woven integrally into the post.

I. Stretcher Bar Bands:
1. Provide steel, spaced not over 15" on centers, to secure stretcher bars to end, corner, pull, slope, and gate posts.
2. Bands may be used also with special fittings for securing rails to end, corner, pull, slope, and gate posts

2.6 MISCELLANEOUS MATERIALS AND ACCESSORIES

A. Wire Ties:
   1. Fabric to Line Posts: 9 gauge wire ties spaced 12" on centers.
   2. Fabric to Rails and Braces: 9 gauge wire ties spaced 24" on centers.
   3. Fabric to Tension Wire: 11 gauge hog rings spaced 24" on centers.
   4. Manufacturer's standard wire ties will be acceptable if of equal strength and durability.
B. Concrete: Comply with provisions of Section 03 3000 for 2500 psi concrete.

PART 3 - EXECUTION

3.1 SURFACE CONDITIONS

A. Examine the areas and conditions under which work of this Section will be performed. Correct conditions detrimental to timely and proper completion of the Work. Do not proceed until unsatisfactory conditions are corrected.

3.2 INSTALLATION

A. General:
   1. Install posts at a maximum spacing of 10 feet on centers.
   2. Install corner or slope posts where changes in line or grade exceed a 30 degree deflection.
   3. Provide and install fencing, posts, fabric and accessories in accordance with industry standards.
   4. Do not, in any case, install fabric or accessories in less than 7 days after placement of concrete.
   5. **Chain link fabric shall not exceed the top rail by more than ½".**
   6. Adjust accessible gates to open with not more than 5.0 lbs. pressure, as allowed per California Building Code, Section 11B-404.2.9.

B. Excavation:
   1. Drill holes for post footings in firm, undisturbed or compacted soil, strictly adhering to the dimensions and spacing shown.
   2. Post hole dimensions:
      a. Provide as indicated in the plans. Provide 36" deep by 12" diameter foundations for all other posts.
   3. Spread soil from excavations uniformly adjacent to the fence line, or on adjacent areas of the site if so directed.
   4. When solid rock is encountered near the surface, drill into rock at least 12" for line posts and at least 18" for end, pull, gate, and corner posts. Drill hole at least 1" greater diameter than the largest dimension of the post to be placed.
   5. If solid rock is below soil overburden, drill to full depth required, except penetration into rock need not exceed minimum depths specified above.

C. Miscellaneous:
   1. Use U-shaped tie wires, conforming to diameter of pipe to which attached, clasping pipe and fabric firmly with ends twisted at least two full turns.
   2. Bend ends of wire to minimize hazards to persons and clothing.
   3. Fasteners:
      a. Install nuts for tension band and hardware bolts on side of fence opposite fabric side.
      b. Peen the ends of bolts to prevent removal of nuts.
   4. Repair coatings damaged in the shop or field erection, using a hot-applied repair compound applied in accordance with its manufacturer's recommendations as approved by the Architect.

END OF SECTION 32 3115

SECTION 32 3125 - DECORATIVE METAL FENCES AND GATES (BOLTED)

PART 1 - GENERAL

1.1 SUMMARY

A. Provide bolted decorative fencing system where shown on the Drawings, as specified herein, and as needed for a complete and proper installation.

B. Related Sections:
1. Documents affecting work of this Section include, but are not necessarily limited to, General Conditions, Supplementary Conditions, and Sections in Division l of these Specifications.
2. Section 08 7000: Accessible Gate Hardware

1.2 SUBMITTALS

A. Submit in accordance with Section 01 3300.
1. Product Data: Submit manufacturer's descriptive literature and product specifications for each product. Include data to indicate compliance with the specified requirements.
2. Installation Instructions: Submit manufacturer's recommended installation procedures.
3. Shop Drawings: Submit shop drawings indicating plan layout, spacing of components, post foundation dimensions, hardware anchorage, gates, and schedule of components.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Basis of Design: Aegis Plus - Majestic design, by Ameristar Fence Products, (800) 321-8724, 3-rail with no pickets above top rail.
1. Products specified are for establishing the type, design, and quality required. Products of equal or better type, design, and quality produced by other manufacturers will be considered provided the request for substitution is submitted in accordance with Section 01 2500.

2.2 FENCES

A. Fence System: Complete factory-fabricated system of posts and panels, accessories, fittings, and fasteners; finished with electrodeposition coating, and cable of resisting vertical load, horizontal load and infill performance requirements for fence categories defined in ASTM F2408.

B. Steel Materials: ASTM A653; tensile strength 45,000 psi, minimum; hot-dip galvanized; A 653, G60.

C. Fasteners: ASTM A276, Type 302 stainless steel; finished to match fence components.
1. Tamper-proof security bolts.
2. Self-drilling hex-head screws.

2.3 MECHANICALLY FASTENED STEEL FENCE

A. Provide fence meeting requirements for Industrial class as defined by ASTM F2408.

B. Fence Panels: Mechanically fastened with internal reinforcement and tamperproof fasteners; 7'-0" high by nominal 8'-0" long.

1. Panel Style: Three rail.
2. Panel Strength: Capable of supporting 400 pound load applied at midspan without deflection.
3. Attach panels to posts with manufacturer's standard panel brackets.

C. Posts: Steel tube; size as indicated on the Drawings, with manufacturer’s standard cap.

D. Rails: Manufacturer's standard, double-wall steel channel; 1-1/2" square by 14 gauge with pre-punched picket holes.
1. Picket Retaining Rods: 0.125" galvanized steel.
2. Picket-to-Rail Intersection Seals: PVC grommets.

E. Pickets: Steel tube; 3/4" square by 17gauge.
1. Spacing: 4.175" on center.
2. Style: Flush top rail.

F. Flexibility: Capable of following variable slope of up to 1:4.

G. Perforated Metal: McNichols, item number 1431141841 or approved equal. Round Hole, Galvanized G90, 18 Gauge, Mill Finish, 3/16" Holes on 1/4" Centers, Staggered Pattern, 51% Open Area.

2.4 STEEL GATES

A. Swing Gates:
1. Gate shall be same cross section as the fence rails and pickets.
2. Gate frames shall be welded with stainless steel rods and capable of proper operation as related to the operable span.
3. All rail and upright intersections shall be joined by welding.
4. All picket and rail intersections shall also be joined by welding.

B. Sliding Gates:
1. Gate shall be same cross section as the fence rails and pickets.
2. Sliding gates shall be cantilevered aluminum construction capable of proper operation as related to the operable span.
3. All rail and upright intersections shall be joined by welding.
4. All picket and rail intersections shall also be joined by welding.

C. Gate Hardware:
1. Hinges: Heavy duty ball-bearing square-body hinges with stainless steel pins and grease fitting for welded connection to gate posts; BHSQ-4 for gate leafs up to 6'-0" wide, BHSQ-6 for gate leafs up to 12'-0" wide, by Jansen Ornamental Supply Co., 800-423-4494.
2. Latches:
   a. At single leaf gates provide 13 gauge welded lock box with integral strike to accept a double keyed deadbolt (2-3/4" backset), LH275 by Jansen Ornamental Supply Co., 800-423-4494. Finish lock box to match fencing. Weld lock box to gate leaf; provide fabricated hole in gate post for dead bolt strike plate.
   b. At double leaf gates provide 48" long heavy-duty drop rods on each gate leaf, with strong arm gate latch (pad lockable) on one leaf.

3. Accessible Gates: Comply with CBC 11B-404.2.10.
   a. Kick Plates: 10" high x 3/16” thick steel plate x full width kick plate, secure to the gate panel on both sides of accessible gates.
   b. Lever Hardware (lever both sides) Comply with CBC Section 11B-309.4. Provide keying to match the site keying scheme:

1	EA	STORE LOCK	L9466T 06A	626	Schlage
2	EA	CORE ONLY	23-030	626	Schlage
1	EA	LOCK BOX	K-BXMOR1-10G		Keedex
1	EA	STRIKE BOX	K-BXSTR		Keedex

c. Lever Hardware (lever both sides) Comply with CBC Section 11B-309.4. Provide keying to match the site keying scheme:

1	EA	CLSRM SEC LOCK	LV9071T 06A	626	Schlage
2	EA	CORE ONLY	23-030	626	Schlage
1	EA	LOCK BOX	K-BXMOR1-10G		Keedex
1	EA	STRIKE BOX	K-BXSTR		Keedex

4. Required Exit Gates: Comply with CBC 1010.1 and 11B-404.2.10.
   a. Panic Hardware and Trim. Provide keying to match the site keying scheme:

1	EA	PANIC HARDWARE	AX98L-2 996L x 1609	626	Von Duprin
2	EA	RIM CYLINDER	20-057-ICX (SPECIFY A, B OR C)	626	Schlage
2	EA	CORE ONLY	23-030	626	Schlage

Drill 3 ea 3/16" weep holes in bottom of exit device mechanism case
Note: Device length shall be determined by gate size.

2.5 FABRICATION

A. Except as otherwise shown on the Drawings or the approved Shop Drawings, use materials of size, thickness, and type required to produce reasonable strength and durability in the work of this Section.

B. Fabricate with accurate angles and surfaces which are true to the required lines and levels, forming exposed connections with hairline joints, and using concealed fasteners wherever possible.

C. Pickets, rails and posts shall be pre-cut to specified lengths. Rails shall be pre-punched to accept pickets.

D. Insert retaining rods into each rail so that they pass through the pre-drilled holes in each picket, thus completing the panel assembly.

E. All corner joints shall be miter cut, welded and ground smooth. Where two dissimilar sizes join, all exposed ends of tube or pipe steel shall have caps provided of same thickness steel plate, weld and grind smooth.

F. Gates:
   1. Provide frames of sufficient size and thickness to provide adequate support without sag.
   2. Frames larger than 8'-0" in length shall include an additional bottom rail support at mid-span capable of accepting a wall support mounted as a foot and bolted to a concrete mowstrip similar to pilaster anchorage.
   3. Pickets shall be of the same size and style as those in the fence panels.

2.6 FINISHES

A. Electro-Deposition Coating: Multi-stage pretreatment/wash with zinc phosphate, followed by epoxy primer and acrylic topcoat.
   1. Total Coating Thickness: 2 mils, minimum.
   2. Color: As selected by Architect from manufacturer's standard range.

3. Coating Performance: Comply with general requirements of ASTM F2408.
    a. Adhesion: ASTM D3359 (Method B); Class 3B with 90 percent or more of coating remaining in tested area.
    b. Corrosion Resistance: ASTM B117, D714 and D1654; 1/8 inch coating loss or medium No.8 blisters after 1,500 hours.
    c. Impact Resistance: ASTM D2794; 60 inch pounds.
    d. Weathering Resistance: ASTM D523, D822/D822M and D2244; less than 60 percent loss of gloss.

PART 3 - EXECUTION

3.1 SURFACE CONDITIONS

A. Examine the areas and conditions under which work of this Section will be performed. Correct conditions detrimental to timely and proper completion of the Work. Do not proceed until unsatisfactory conditions are corrected.

3.2 COORDINATION

A. Coordinate as required with other trades to assure proper and adequate provision in the work of those trades for interface with the work of this Section.

3.3 INSTALLATION

A. General:
    1. Set work accurately into position, plumb, level, true, and free from rack.
    2. Anchor firmly into position.

B. Gates:
    1. Install plumb and level.
    2. Lubricate all hinges, rollers, and other gate hardware after installation.
    3. Adjust accessible gates to open with not more than 5.0 lbs. pressure, as allowed per California Building Code, Section 11B-404.2.9.

C. Touch up scratched surfaces using materials recommended by manufacturer. Match touchup paint color to fence finish.

END OF SECTION 32 3125