TECHNICAL SPECIFICATIONS

AUTO TECH BUILDING
NEW VEHICLE LIFT

AT

OXNARD COLLEGE

4000 S. Rose Avenue
Oxnard, CA 93033

VENTURA COMMUNITY COLLEGE DISTRICT
761 East Daily Drive
Camarillo, CA 93010
(805) 678-5023

westbergwhite
architecture

WW Project No. 22052.01

DSA Submittal April 17, 2023

Contact: Jon Gomer, Sr. Project Manager
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Irvine, CA 92618
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IDENTIFICATION STAMP
DIV. OF THE STATE ARCHITECT
APP: 03-123200 INC:
REVIEWED FOR
SS ☑ FLS ☑ ACS ☑
DATE: 07/25/2023

DSA Application No. 03-123200

WW Project No. 22052.01

April 17, 2023

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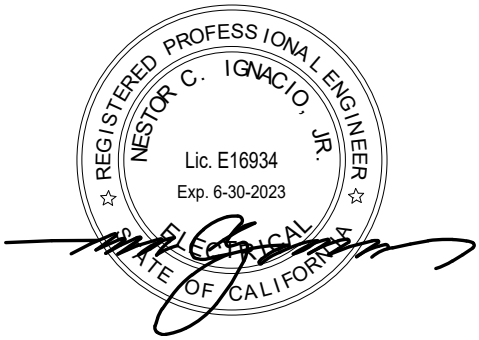

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SECTION 01 1100

SUMMARY OF WORK

PART 1 GENERAL

1.01 PROJECT DESCRIPTION

A. Project consists of construction of new vehicle lift within an existing automotive building. The single new vehicle lift is within a 4,606 square foot, 1-story space at Oxnard College, Oxnard, CA, for Ventura Community College District, Camarillo, California, as shown on Contract Documents prepared by Westberg+White Architects Inc.

B. Work includes:
   1. Demolition Work Consisting of:
      a. Removal of guardrails surrounding a depressed automotive service pit within the existing building.
   2. New Construction Consisting of:
      a. Structural system comprised of clean sand infill of existing pit and doweled connection to a new slab on grade.
      b. Addition of a new electrical service panel capable of operating the new vehicle lift.
   3. Site Improvement Work Consisting of:
      a. New parking striping and signage for parking stalls.

1.02 PROCUREMENT AND CONTRACTING DOCUMENTS

A. Use Division 00 Procurement and Contracting Requirements provided by Ventura Community College District.

1.03 RELATED DOCUMENTS

A. Refer to District's Division 00 Documents, including General Conditions, and other Division 01 Sections, for additional requirements.

B. Comply with requirements of these specifications and District's Division 00 documents.
   1. Where differences may occur between specifications and District 00 documents, requirements of District's 00 documents govern, unless otherwise directed.
   2. Changes to approved documents will be made by addenda or change order approved by Owner/Architect.

C. Contract Documents are complementary and what is required by one is as binding as when required by all.
   1. Report errors, inconsistencies, or omissions discovered by Contractor promptly to Owner/Architect as request for information.

D. Related Sections:
   1. Section 01 4100: Regulatory Requirements; current Code edition.

1.04 CONSTRUCTION REQUIREMENTS

A. Construct Work conforming to requirements of California Code of Regulations (CCR), Tile 24, Part 2, California Building Code (CBC), Volumes 1 and 2.
   1. Refer to Section 01 4100 for current Code edition.
   2. Refer to Section 01 4200 for additional references.

1.05 CONTRACTS

A. Construct Work under single fixed-price contract.

1.06 WORK SEQUENCE

A. General:
   1. Conform to construction schedule as specified.
   2. Construction Time:
      a. Starts as of date specified in initial "Notice to Proceed" from Architect to Contractor and ends with date of acceptance of Work by Owner.

B. Construction Schedule:
   1. Work will be conducted in single phase and provide least possible interference with activities of Owner's personnel and to permit orderly transfer of personnel and equipment to new facilities.

C. Liquidated Damages:
   1. Liquidated damages will be assessed under conditions provided in Agreement.

1.07 CONTRACTOR'S USE OF PREMISES

A. General:
   1. During construction period, limit use of premises to immediate area required for construction operations.
   2. Use of premises is also limited by Owner's right to perform construction operations with its own forces or to employ separate contractors on portions of Project.

B. Limit use of premises for Work and for storage as directed, to allow for:
   1. Work by other Contractors.
   2. Owner occupancy.
   3. Use by Public.

C. Coordinate use of premises under direction of Architect and Owner.

D. Assume full responsibility for protection and safekeeping of products under this contract, stored on Project Site.

E. Move stored products under Contractor's control, which interfere with operations of Owner or separate contractor.

F. Obtain and pay for use of additional storage or work areas needed for operations.

1.08 WORK DURING COLLEGE SESSIONS

A. Work under this contract will be executed in part during regular sessions of School.
   1. Cooperate with College authorities in every way to minimize disturbance.

B. In entrance and exit of workers, and in bringing in, storing, and removal of equipment, cooperate with those in authority and prevent interference with functioning of College.
   1. Observe rules and regulations in force and avoid unnecessary dust, mud or accumulated debris, or undue interference with convenience, sanitation or routine of departmental activities.

C. In connecting new utilities to existing, and similar operations, time and coordinate such operations so that there will be no interference with College activities.

1.09 HAZARDOUS MATERIALS

A. Asbestos or Hazardous Waste:
   1. It is understood and agreed that this contract does not contemplate handling of asbestos or other hazardous waste material.
   2. Should asbestos or other hazardous waste material be encountered, notify Owner immediately and await direction.
   3. Do not disturb, handle or attempt to remove hazardous waste materials.

PART 2 PRODUCTS *(Not Applicable)*

PART 3 EXECUTION *(Not Applicable)*

END OF SECTION 01 1100

SECTION 01 2610

CONSTRUCTION DOCUMENT MODIFICATION PROCEDURES

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes:
   1. Administrative and procedural requirements for handling and processing Construction Document Modifications to Contract.

1.02 MINOR CHANGES IN WORK

A. Supplemental instructions authorizing minor changes in Work, not involving adjustment to Contract Sum or Contract Time, will be issued by Architect on *AIA form G710 - Architect's Supplemental Instructions*.

1.03 CONSTRUCTION CHANGE DOCUMENT APPROVAL REQUESTS

A. Construction Change Documents will not be allowed without Division of the State Architect (DSA) approval.

B. Owner-Initiated Change Requests:
   1. Proposed changes in Work that will require adjustment to Contract Sum or Contract Time will be issued by Architect, with detailed description of proposed change and supplemental or revised Drawings and Specifications, when necessary.
   2. Change requests issued by Architect are for information only.
      a. Do not consider them an instruction either to stop Work in progress, or to execute proposed change.
   3. Unless otherwise indicated in change request, within ten days of receipt of change request, submit to Architect for Owner's review, estimate of cost necessary to execute proposed change.
      a. When no estimate of cost is submitted within 10 days it will be assumed to be “no cost change”.
      b. Include list of quantities of products to be purchased and unit costs, along with total amount of purchases to be made.
      c. Provide breakdown of labor cost involved with the proposed change.
         1) Where requested, furnish survey data to substantiate quantities.
      d. Indicate applicable taxes, delivery charges, equipment rental, and amounts of trade discounts.
      e. Include statement indicating effect proposed change in Work will have on Contract Time.

C. Contractor-Initiated Change Requests:
   1. When latent or other unforeseen conditions require modifications to Contract, Contractor may propose changes by submitting request for change to Architect.
      a. Notify Owner within ten days of occurrence leading to such request or request will be denied and Contractor will not be entitled to additional compensation.

2. Include statement outlining reasons for change and effect of change on Work.
   a. Provide complete description of proposed change.
   b. Indicate effect of the proposed change on Contract Sum and Contract Time.
3. Include list of quantities of products to be purchased and unit costs along with total amount of purchases to be made. .
   a. Provide breakdown of labor cost involved with proposed change.
   b. Where requested, furnish survey data to substantiate quantities.
4. Indicate applicable taxes, delivery charges, equipment rental, and amounts of trade discounts.
5. Comply with requirements in Section 01 6000, when proposed change in Work requires substitution of one product or system for product or system specified.

D. Construction Change Document:
1. *DSA Form 140 – Application for Approval of Construction Change Document – CCD Category A*.
2. Form will be prepared by Architect for approval by DSA.
3. Form must be signed by each of following:
   a. A/E of Record.
   b. Structural Engineer, when applicable.
   c. Delegated professional engineer, when applicable.
   d. DSA

1.04 CONSTRUCTION CHANGE DIRECTIVE

A. Construction Change Directive:
1. When Owner and Contractor are not in total agreement on terms of Change Order Proposal Request, Architect may issue Construction Change Directive on *AIA Form G714*, instructing Contractor to proceed with change in Work, for subsequent inclusion in Contract.
2. Construction Change Directive will contain complete Construction Change Document and designate method to be followed to determine change in Contract Sum or Contract Time.

B. Documentation:
1. Maintain detailed records on time and material basis of work required by Construction Change Directive.
2. After completion of change, submit itemized account and supporting data necessary to substantiate cost and time adjustments to Contract.

1.05 CONTRACT CHANGE ORDER PROCEDURES

A. Upon DSA approval of Construction Change Document DSA Form 140, Architect will issue Construction Change Documents for signatures of Owner and Contractor on proper approved form, as provided in General Conditions of the Contract.

PART 2 PRODUCTS *(Not Applicable)*

PART 3 EXECUTION *(Not Applicable)*

END OF SECTION 01 2610

SECTION 01 2976

PROGRESS PAYMENT PROCEDURES

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes:
   1. Administrative and procedural requirements governing Contractor's applications for payment.

B. Related Sections:
   1. Section 01 2610: Construction Document Modification Procedures
   2. Section 01 7700: Closeout Procedures
   3. Section 01 7839: Project Record Documents

C. Related Requirements:
   1. Refer to District’s Division 00 Documents, including General Conditions, for requirements related to Contractor's Construction Schedule, Submittal Schedule, and Progress Payments Procedures.

1.02 SCHEDULE OF VALUES

A. Coordinate preparation of Schedule of Values with preparation of Contractor's construction schedule.
   1. Correlate line items in Schedule of Values with other required administrative schedules and forms, including:
      a. Contractor's Construction Schedule.
      b. Application for Payment form.
      c. List of Subcontractors.
      d. Schedule of Alternates.
      e. List of products.
      f. List of principal suppliers and fabricators.
      g. Schedule of Submittals.
   2. Submit Schedule of Values to Architect at earliest feasible date, but in no case later than fourteen days before date scheduled for submittal of initial application for payment.
   3. Sub-Schedules: Where Work is separated into phases that require separately phased payments, provide sub-schedules showing values correlated with each phase of payment.

B. Format and Content:
   1. Include following project identification on Schedule of Values:
      a. Project name and location.
      b. Name of Architect.
      c. Project number.
      d. Contractor's name and address.
      e. Date of submittal.

2. Arrange Schedule of Values in tabular form with separate columns to indicate following for each item listed:
   a. Generic name.
   b. Related specification section.
   c. Name of subcontractor.
   d. Name of manufacturer or fabricator.
   e. Name of supplier.
   f. Change Orders (numbers) that have affected value.
   g. Dollar value.
   h. Percentage of Contract sum to nearest one-hundredth percent, adjusted to total 100 percent.
3. Provide breakdown of Contract Sum in sufficient detail to facilitate continued evaluation of applications for payment and progress reports.
   a. Break principal subcontract amounts down into several line items.
4. Round amounts off to nearest whole dollar, with total equal to Contract Sum.
5. For each part of Work where application for payment may include materials or equipment, purchased or fabricated and stored, but not yet installed, provide separate line items on Schedule of Values for initial cost of materials, for each subsequent stage of completion, and for total installed value of that part of Work.
6. Margins of Cost:
   a. Show line items for indirect costs, and margins on actual costs, only to extent that such items will be listed individually in applications for payment.
   b. Complete each item in Schedule of Values and applications for payment including its total cost and proportionate share of general overhead and profit margin.
   c. At Contractor's option, temporary facilities and other major cost items that are not direct cost of actual work-in-place may be shown as separate line items in Schedule of Values or distributed as general overhead expense.
7. Schedule Updating:
   a. Update and resubmit Schedule of Values when Change Orders or Construction Change Directives result in change in Contract Sum.
   b. Submit along with updated construction schedule prior to monthly progress payment submittal

1.03 APPLICATIONS FOR PAYMENT

A. Ensure that each application for payment is consistent with previous applications and payments as certified by Architect and paid for by Owner.
   1. Initial application for payment, application for payment at time of Substantial Completion, and final application for payment involve additional requirements.

B. Payment Application Times:
   1. Date for each progress payment is 5th day of each month,
   2. Period of construction Work covered by each application for payment is period ending fifteen days prior to date for each progress payment and starting day following end of preceding period.

C. Payment Application Forms:
   1. Use *AIA Document G702 –Application and Certification For Payment* as form for application for payment or approved equal.

D. Application Preparation:
   1. Complete every entry on form, including notarization and execution by person authorized to sign legal documents on behalf of Owner.
      a. Incomplete applications will be returned without action.
   2. Ensure entries match data on Schedule of Values and Contractor's construction schedule.
      a. Use updated schedules when revisions have been made.
   3. Include amounts of approved Change Orders issued prior to last day of construction period covered by application.

E. Transmittal:
   1. Submit five executed copies of each application for payment to Architect by means ensuring receipt within twenty-four hours.
      a. Transmit one completed copy, including waivers of lien and similar attachments, when required.
      b. Transmit each copy with transmittal form listing attachments, and recording appropriate information related to application in manner acceptable to Architect.

F. Waivers of Mechanics Lien:
   1. When requested by Architect or Owner, with each application for payment, submit waivers of mechanics lien from every entity who may lawfully be entitled to file mechanics lien arising out of Contract, and related to Work covered by payment.

G. Initial Application for Payment:
   1. Administrative actions and submittals that must precede or coincide with submittal of first application for payment include following:
      a. List of subcontractors.
      b. List of principal suppliers and fabricators.
      c. Schedule of Values.
      d. Contractor's Construction Schedule (preliminary if not final).
      e. Submittal Schedule (preliminary if not final).
      f. Certificates of insurance and insurance policies.
      g. Performance and Payment Bonds

H. Application for Payment at Substantial Completion:
   1. Following issuance of Certificate of Substantial Completion, submit application for payment.
   2. Submit Application reflecting Certificates of Partial Substantial Completion issued previously for Owner occupancy of designated portions of Work.

I. Administrative actions and submittals that precede or coincide with application include:
   1. Occupancy permits and similar approvals.
   2. Warranties/guarantees and maintenance agreements.
   3. Test/adjust/balance records.
   4. Maintenance instructions.
   5. Meter readings.

6. Start-up performance reports.
7. Changeover information related to Owner's occupancy, use, operation and maintenance.
8. Final cleaning.
9. Application for reduction of retainage, and consent of surety.
10. Advice on shifting insurance coverage.
11. Record Drawings and Specifications.
12. Final progress photographs.
13. List of incomplete Work, recognized as exceptions to Architect’s Certificate of Substantial Completion.

J. Final Payment Application:
   1. Administrative actions and submittals that must precede or coincide with submittal of final payment application for payment include following:
      a. Completion of project closeout requirements.
      b. Completion of items specified for completion after Substantial Completion.
      c. Assurance that unsettled claims will be settled.
      d. Assurance that Work not complete and accepted will be completed without undue delay.
      e. Transmittal of required project construction records to Owner.
      f. Proof that taxes, fees and similar obligations have been paid.
      g. Removal of temporary facilities, controls, and services.
      h. Removal of surplus materials, rubbish and similar elements.
      i. Change of door locks to Owner's access.

PART 2 PRODUCTS *(Not Applicable)*

PART 3 EXECUTION *(Not Applicable)*

END OF SECTION 01 2976

SECTION 01 3113

PROJECT COORDINATION

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes:
   1. Administrative and supervisory requirements necessary for Project coordination including, but not necessarily limited to:
      a. Coordination.
      b. Administrative and supervisory personnel.
      c. General installation provisions.
      d. Cleaning and protection.

B. Related Sections:
   1. Section 01 3300: Submittal Procedures; product and material submittals.
   2. Section 01 7423: Cleaning; general project cleaning

C. Related Requirements:
   1. Refer to District's Division 00 Documents, including General Conditions, for requirements related to Contractor's Construction Schedule and Submittal Schedule.

1.02 COORDINATION

A. Coordination:
   1. Coordinate construction activities included under various Sections of these Specifications to assure efficient and orderly installation of each part of Work.

B. Coordinate construction operations included under different Sections of Specifications that are dependent upon each other for proper installation, connection, and operation.
   1. Where installation of one part of Work is dependent on installation of other components, either before or after its own installation, schedule construction activities in sequence required to obtain best results.
   2. Where availability of space is limited, coordinate installation of different components to assure maximum accessibility for required maintenance, service and repair.
   3. Make adequate provisions to accommodate items scheduled for later installation.

C. Where necessary, prepare memoranda for distribution to each party involved outlining special procedures required for coordination.
   1. Include such items as required notices, reports, and attendance at meetings.
   2. Prepare similar memoranda for Owner and separate Contractors where coordination of their Work is required.

D. Administrative Procedures:
   1. Coordinate scheduling and timing of required administrative procedures with other construction activities to avoid conflicts and ensure orderly progress of Work.
   2. Such administrative activities include, but are not necessarily limited to, following:
      a. Preparation of schedules.
      b. Installation and removal of temporary facilities.
      c. Delivery and processing of submittals.
      d. Progress meetings.
      e. Project Close-out activities.

E. Conservation:
   1. Coordinate construction activities to ensure that operations are carried out with consideration given to conservation of energy, water and materials.
   2. Salvage materials and equipment involved in performance of, but not actually incorporated in, Work.
   3. Refer to other sections for disposition of salvaged materials that are designated as Owner's property.

1.03 SUBMITTALS

A. Staff Names:
   1. Within fifteen days of Notice to Proceed, submit list of Contractor's principal staff assignments, including Superintendent and other personnel in attendance at Project Site
   2. Identify individuals, their duties and responsibilities
      a. List their addresses and telephone numbers.
   3. Post copies of list in Project meeting room, temporary field office and each temporary telephone.

PART 2 PRODUCTS *(Not Applicable)*

PART 3 EXECUTION

3.01 GENERAL INSTALLATION PROVISIONS

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

B. Manufacturer's Instructions:
   1. Comply with manufacturer's installation instructions and recommendations, to extent that those instructions and recommendations are more explicit or stringent than requirements contained in Contract Documents.

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

D. Provide attachment and connection devices and methods necessary for securing Work.
   1. Secure Work true to line and level.
   2. Allow for expansion and building movement.

E. Visual Effects:
   1. Provide uniform joint widths in exposed Work.
   2. Arrange joints in exposed Work to obtain best visual effect.
   3. Refer questionable choices to Architect for final decision.

F. Recheck measurements and dimensions before starting each installation.

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

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

I. Mounting Heights:
   1. Where mounting heights are not indicated, install individual components at standard mounting heights recognized within industry for particular application indicated.
   2. Comply with requirements of Chapter 11B of CBC for accessible mounting heights of toilet accessories and like items.
   3. Refer questionable mounting height decisions to Architect for final decision.

3.02 CLEANING AND PROTECTION

A. Comply with requirements of Section 01 7423.

B. During handling and installation, clean and protect construction in progress and adjoining materials in place.
   1. Apply protective covering where required to ensure protection from damage or deterioration at Substantial Completion.

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

D. Limiting Exposures:

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

END OF SECTION 01 3113

SECTION 01 3119

PROJECT MEETINGS

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes:
   1. Administrative and procedural requirements for project meetings including but not limited to:
      a. Pre-Construction Conference
      b. Progress Meetings
      c. Scheduling Conference

B. Related Sections:
   1. Section 01 3113: Project Coordination
   2. Section 01 3300: Submittals

C. Related Requirements:
   1. Refer to various Sections for pre-construction and pre-installation meeting requirements
   2. Refer to District's Division 00 Documents, including General Conditions, for requirements related to Contractor's Construction Schedule.
   3. Requirements for Contractor's Construction Schedule are included in Section 01 3300.

1.02 PRE-CONSTRUCTION CONFERENCE

A. Schedule pre-construction conference and organizational meeting at Project Site or other convenient location no later than 15 days after execution of Agreement and prior to commencement of construction activities.
   1. Conduct meeting to review responsibilities and personnel assignments.

B. Attendees:
   1. Owner, Architect and their consultants.
   2. Contractor and his superintendent.
   3. Major subcontractors, manufacturers, suppliers.
   4. Other concerned parties.
   5. Persons representing each party in attendance must be familiar with and authorized to conclude matters relating to Work.

C. Agenda:
   1. Discuss items of significance that could affect progress including such topics as:
      a. Tentative construction schedule.
      b. Critical Work sequencing.
      c. Designation of responsible personnel.
      d. Procedures for processing field decisions and Change Orders.
      e. Procedures for processing Applications for Payment.
      f. Procedures for processing Requests for Information (RFI).
      g. Distribution of Contract Documents.

h. Submittal of Shop Drawings, Product Data and Samples.
i. Preparation of Record Documents.
j. Access to Project Site and use of premises.
k. Office, Work and storage areas.
l. Equipment deliveries and priorities.
m. Safety procedures.
n. First aid.
o. Security.
p. Working hours.

1.03 PROGRESS MEETINGS

A. Conduct weekly progress meetings at Project Site.
1. Coordinate dates of meetings with preparation of payment request.

B. Attendees:
1. Representatives of
a. Owner and Architect,
b. Representatives of each subcontractor, supplier, or other entity concerned with current progress or involved in planning, coordination, or performance of future activities.
c. Persons representing each party in attendance at these meetings must be familiar with and authorized to conclude matters relating to progress.

C. Agenda:
1. Review and correct or approve minutes of previous progress meeting.
2. Review other items of significance that could affect progress.
3. Include topics for discussion as appropriate to current status of Project.
4. Contractor's Construction Schedule:
a. Review progress since last meeting.
b. Determine where each activity is in relation to Contractor's Construction Schedule, whether on time or ahead or behind schedule.
c. Determine how construction behind schedule will be expedited
1) Secure commitments from parties involved to do so.
d. Discuss whether schedule revisions are required to ensure that current and subsequent activities will be completed within Contract Time.
5. Review present and future needs of each entity present, including such items as:
a. Interface requirements.
b. Time.
c. Sequences
d. Cordination of Work.
e. Deliveries.
f. Off-site fabrication problems.
g. Access.
h. Site utilization.
i. Temporary facilities and services.
j. Hours of Work.
k. Hazards and risks.
l. Housekeeping.
m. Quality and Work standards.
n. Construction progress
o. Progress Schedule and Submittals.

p. Change Orders.
q. Documentation of information for payment requests.

D. Meeting Records:
1. Recording of minutes of each meeting will be by Contractor.
a. Furnish copies within reasonable time to Owner, Architect, and other attendees.
b. Unless written objections to contents of meeting minutes are received by Contractor within five days of distribution of meeting minutes, it is understood and agreed upon that minutes are true and complete record of meeting.
c. Schedule Updating:
1) Revise construction schedule after each progress meeting where revisions to schedule have been made or recognized.
2) Issue revised schedule within seven calendar days of meeting.

PART 2 PRODUCTS *(Not Applicable)*

PART 3 EXECUTION *(Not Applicable)*

END OF SECTION 01 3119

SECTION 01 3300

SUBMITTAL PROCEDURES

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes:
   1. Procedural requirements for non-administrative submittals for work-related submittals required for performance of Work and by Contract Documents, including, but not necessarily limited to:
      a. Submittal Schedule.
      b. Product Data.
      c. Shop Drawings.
      d. Samples
      e. Verified Reports
      f. Deferred Approvals

B. Related Sections:
   1. Section 01 3113: Project Coordination.
   2. Section 01 4100: Regulatory Requirements; submittals to regulatory agencies.
   3. Section 01 4200: References; submittals to regulatory agencies.
   4. Section 01 4500: Quality Control: inspection and testing submittals
   5. Section 01 6000: Products Requirements; request for substitution submittals.

C. Related Requirements:
   1. Refer to District's Division 00 Documents, including General Conditions, and other Division 01 Sections, for specifications for administrative submittals and additional requirements.
      a. Administrative Submittals include, but are not necessarily limited to:
         1) Permits.
         2) Applications for Payment.
         3) Performance and Payment Bonds.
         4) Insurance Certificates.
         5) Inspection and Test Reports.
         6) Schedule of Values.
         7) Progress Schedule.
         8) Listing or designation of subcontractors.
         9) Record Drawings.
         10) Commissioning Requirements
   2. Refer to Division 02 through 33 Sections where more specific Submittal Requirements are indicated

D. Substitutions:
   1. Contractor's submittal and Architect's acceptance of Product Data, Shop Drawings, or Samples that relate to construction activities not complying with Contract Documents does not constitute acceptable or valid request for substitution, nor does it constitute approval.

2. Product Data, Shop Drawing and Sample Submittals containing substitutions for specified items will be rejected and returned as not in compliance with Contract Documents.
3. Refer to Section 01 6000 for required procedures for submitting substitution requests.

E. Commissioning Milestone Reports:
1. Reports by parties that participate in design review, product submittal review, installation, start-up, test and balance, training, and closeout phases.
2. Coordinate submittals of documentation pertaining to these functions and communicate with Commissioning Authority via Contractor.

1.02 SUBMITTAL PROCEDURES AND REQUIREMENTS

A. Coordination:
1. Coordinate preparation and processing of submittals with performance of construction activities.
2. Designate in Progress Schedule, or in separate coordinated schedule, dates for submission and dates reviewed shop drawings, product data and samples will be needed for each product.
    a. Identify items requiring long lead times.
        1) Make submittals for such items as soon as possible, but not later than fifteen days after Notice of Award of Contract.

B. Timing of Submittals:
1. Make submittals promptly in accordance with approved schedule, sufficiently in advance of performance of related construction activities, and in such sequence as to not cause delay in Work or in Work of other contractors.
2. Schedule submissions at least 21 working days before dates reviewed submittals will be needed.

C. Number of Submittals Required:
1. Number stated in each specification section, or as follows:
    a. Product Data and Shop Drawings:
        1) One electronic copy as specified under “Electronic Submittals”.
    b. Samples:
        1) Number stated in each specification section or, when not stated, minimum of four.
    c. Warranties, Maintenance Agreements, Industry Standards, and Operation/Maintenance Manuals:
        1) Two copies.

D. Submittal Preparation:
1. Place permanent label or title block on each submittal for identification.
2. Indicate name of entity that prepared each submittal on label or title block.
3. Include following information on label for processing and recording action taken:
    a. Project name.
    b. Date.
    c. Submittal reference number assigned by Contractor; this number should not be specification section number.
    d. Specification section number to which submittal applies.

1) Do not reference drawing/detail numbers unless accompanied by specification section number.

4. Accompany submittals with transmittal form containing:
   a. Date.
   b. Project title and number.
   c. Name and addresss of:
      1) Architect.
      2) Contractor.
      3) Subcontractor.
      4) Supplier
      5) Manufacturer.
      6) Separate detailer, when pertinent.
   d. Number of each shop drawing, product data and sample submitted.
   e. Notification of deviations from Contract Documents.
   f. Other pertinent data.
      1) Interactive Submittal Transmittal Form will be provided to Contractor at Pre-Construction Meeting.

E. Include following on Submittals:
   1. Data and revision dates:
   2. Project title and number.
   3. Identification of product or material.
   4. Relation to adjacent structure or materials.
   5. Field dimensions, clearly identified as such.
   6. Specification section number.
   7. Applicable standards, such as ASTM number or Federal Specification.
   8. Blank space, 8 inches x 3 inches, for Contractor and Architect stamps.
   9. Identification of deviations from Contract Documents.
   10. Contractor’s stamp, initialed or signed, certifying review of submittal, verification of field measurements, and compliance with Contract Documents.
      a. Submittals without Contractor’s stamp and signature will be returned by Architect without review.

F. Processing:
   1. Allow sufficient review time so that installation will not be delayed as result of time required to process submittals, including time for resubmittals.
   2. Allow minimum of 21 days from date of receipt of complete submittal for Architect’s initial review and return of submittals.
   3. Allow additional time if processing must be delayed to permit coordination with subsequent submittals.
   4. Architect reserves right to withhold action on submittal requiring coordination with other submittals until related submittals are received.
   5. Architect will promptly advise Contractor when submittal being processed must be delayed for coordination.
   6. No extension of Contract Time will be authorized because of failure to transmit submittals to Architect sufficiently in advance of Work to permit processing.

G. Electronic Submittals:
   1. Make electronic submittals consisting of one color PDF of each document, Product Data Sheet, or Shop Drawing.
   2. Should full size hard copies of Submittals be required by District, Contractor, or Consultant, Architect will provide one marked-up color copy of PDF to Owner, Contractor, or Consultant for their use in printing additional copies.

3. Architect will review and return marked-up PDFs to Contractor.
4. Mark-up one copy of each PDF and maintain as “Record Document".

H. Material Safety Data Sheets/Safety Data Sheets (MSDS/SDS):
1. **DO NOT** include MSDS/SDS in submittals to Architect.
a. MSDS/SDS sheets will not be reviewed by Architect and will not be returned.

1.03 PRODUCT DATA

A. Collect Product Data into single submittal for each element of construction or system.

B. Product Data includes standard printed information on manufactured products that has not been specially prepared for this Project, including, but not necessarily limited to following items:
1. Manufacturer’s product specifications and installation instructions.
2. Catalog cuts.
3. Standard color charts.
4. Roughing-in diagrams and templates.
5. Standard wiring diagrams.
6. Printed performance curves.
7. Operational range diagrams.
8. Mill reports.
9. Standard product operating and maintenance manuals.

C. Modify standard data sheets and drawings to delete information which is not applicable to Project.
1. Where Product Data must be specially prepared because standard printed data is not suitable for use, submit as shop drawings.
a. Mark each copy to show applicable choices and options.
b. Where printed Product Data includes information on several products, some of which are not required, mark copies to indicate applicable information.
c. Include following information:
1) Manufacturer's printed recommendations.
2) Compliance with recognized trade association standards.
3) Compliance with recognized testing agency standards.
4) Application of testing agency labels and seals.
5) Notation of dimensions and clearances required and as verified by Field measurement.
6) Notation of coordination requirements.

D. Supplement standard information to provide additional information specifically applicable to Project:
1. Clearly mark each copy to show applicable choices and options and identify pertinent materials, products, or models.
2. Show dimensions and clearances required.
3. Show performance characteristics and capacities.
4. Show wiring or piping diagrams and controls.

E. Do not submit Product Data until compliance with requirements of Contract Documents has been confirmed.

1. Unless noncompliance with Contract Document provisions is observed, submittal may serve as final submittal.

F. Submittals:
1. Make electronic submittals as specified in “General Submittal Procedures and Requirements” Article.

G. Distribution:
1. Furnish copies of final submittal to installers, subcontractors, suppliers, manufacturers, fabricators, and others required for performance of construction activities.
a. Show distribution on transmittal forms.
2. Do not proceed with installation until applicable copy of Product Data is in installer’s possession.

H. Do not permit use of unmarked copies of Product Data in connection with construction.

1.04 SHOP DRAWINGS

A. Shop drawings are technical drawings and data that have been specially prepared for Project, including but not necessarily limited to following items:
1. Prepared information, drawn to accurate scale.
2. Fabrication and installation drawings.
3. Shopwork manufacturing instructions.
4. Setting diagrams.
5. Templates.
6. Patterns.
7. Coordination drawings (for use on Project Site).
8. Schedules.
9. Design mix formulas.
10. Contractor's engineering calculations.

B. Include following information:
1. Dimensions.
2. Identification of products and materials included.
3. Compliance with specified standards.
4. Notation of coordination requirements.
5. Notation of dimensions established by field measurement.

C. Highlight, encircle, or otherwise indicate deviations from Contract Documents.

D. Standard information prepared without specific reference to Project is not considered Shop Drawings.

E. Submittals:
1. Make electronic submittals as specified in “General Submittal Procedures” Article.

F. Do not use Shop Drawings without appropriate final stamp indicating action taken in connection with construction.

G. Do not reproduce Contract Documents or copy standard information as basis of Shop Drawings.

1.05 SAMPLES

A. Samples are physical examples of Work, including, but not limited to, following items:
   1. Partial sections of manufactured or fabricated work
   2. Small cuts or containers of materials.
   3. Complete units of repetitively- used materials.
   4. Swatches showing color, texture and pattern.
   5. Color Range Sets.
   6. Units of Work to be used for independent inspection and testing.

B. Office Samples:
   1. Sufficient size and quantity to clearly illustrate:
      a. Functional characteristics of product or material, with integrally related parts and attachment devices.
      b. Full range of color, texture and pattern.
   2. Where size and quantity are not specified, provide minimum of four samples, 12 inches by 12 inches, minimum size, where samples are required

C. Field Samples and Mock-Ups:
   1. Erect at Project Site in location acceptable to Architect.
   2. Construct each sample or mock-up complete, including Work of trades required in finished Work.
   3. Size of area as specified in respective specification section.
   4. Remove mock-ups at conclusion of Work or when acceptable to Architect.

1.06 VERIFIED REPORTS

A. Submit Verified Reports to Division of State Architect (DSA). Comply with California Code of Regulations,Title 24, Part 1, Sections 4-336 and 4-343.

1.07 DEFERRED APPROVALS

A. Submit detailed plans, specifications, and engineering calculations for Deferred Approval items.
   1. Items requiring Deferred Approval are listed on Drawings.

B. Submit calculations and drawings of structural nature prepared and signed by registered Structural Engineer licensed in State of California.
   1. Provide cover sheet for calculations indicating following:
      a. WestbergWhite Project Number
      b. DSA Project Number
      c. Project Name, with address and Date.
      d. Provide 7 by 9 inch clear space on 8-1/2 by 11 inch calculation cover sheet.
   2. Provide 7 by 9 inch clear space on upper right hand side and to left of title block on full size Drawings.

C. Submit full size PDF set of plans and calculations with digital or wet signatures in blue.
   1. Prior to DSA review, Architect review.may be returned for corrections

a. Resubmit PDF sets of plans with corrections – no clouds
b. A PDF set of plans and calculations will be sent to DSA by Architect for approval.

2. Should corrections be required by DSA, make corrections in DSA Bluebeam Session and resubmit a V2 PDF set of plans and calculations to the Architect for DSA upload.
3. After DSA approval, a PDF electronic set will be sent to the District and Contractor.

D. Do not start fabrication and installation of Deferred Approval items until detailed Contractor's drawings, specifications, and engineering calculations for actual systems to be installed have been accepted and signed by Architect or Structural Engineer and approved by Division of the State Architect (DSA).

1.08 MISCELLANEOUS SUBMITTALS – WORK RELATED

A. Including, but not necessarily limited to, following types of submittals:
1. Specially prepared warranties/guarantees.
2. Standard printed warranties.
3. Maintenance agreements.
4. Printed industry standards.
5. Collected and bound operating/maintenance manuals.
6. Keying schedule, keys, and other security protection safety devices.
7. Maintenance tools and spare parts.

1.09 CONTRACTOR RESPONSIBILITIES

A. As defined in Division 00 General Conditions and following:.
1. Review shops drawings, product data and samples prior to submission to Architect.
2. Determine and Verify:
a. Field measurements.
b. Field construction criteria.
c. Catalog numbers and similar data.
d. Conformance with specifications.
3. Coordinate each submittal with requirements of Work and of Contract documents.
4. Notify Architect in writing, at time of submission, of deviations in submittals from requirements of Contract Documents
5. Do not begin fabrication of Work that requires submittals until return of submittals with Architect approval.

1.10 RESUBMITTAL REQUIREMENTS

A. Shop Drawings:
1. Revise initial drawings as required and resubmit as specified for initial submittal.
2. Indicate on drawings changes that have been made other than those requested by Architect.

B. Product Data and Samples:
1. New data and samples, same as required for initial submittal.

C. Multiple Resubmittals:
   1. Requirements cover initial submittal review and one resubmittal review when necessary.
   2. Architect's and/or Consultant's cost for evaluationg additional submittals requested by Contractor beyond first resubmittal will be paid by Owner with reimbursement from Contractor by deductive change order.

1.11 DISTRIBUTION OF SUBMITTALS AFTER REVIEW

A. Distribute reproductions of Shop Drawings and copies of Product Data which carry Architect/Engineer stamp to:
   1. Project Site file.
   2. Record Documents file.
   3. Other affected contractors.
   4. Subcontractors.
   5. Supplier or Fabricator.
   6. Owner's Project Inspector.

B. Distribute samples that carry Architect's review stamps as directed by Architect.

1.12 ARCHITECT'S ACTION

A. Except for submittals for record, information or similar purposes, where action and return is required or requested, Architect will review each submittal, mark to indicate action taken, and return promptly.
   1. Compliance with specified characteristics is Contractor's responsibility.

B. Action Stamp:
   1. Architect will stamp each submittal with uniform, self-explanatory action stamp.
   2. Stamp will be appropriately marked, as follows, to indicate action taken:
      a. Final Unrestricted Release:
         1) Where submittals are marked "No Exception Taken", that part of Work covered by submittal may proceed provided it complies with requirements of the Contract Documents; final acceptance will depend upon that compliance.
      b. Final-But-Restricted Release:
         1) When submittals are marked "Make Correction Noted", that part of Work covered by submittal may proceed provided it complies with notations or corrections on submittal and requirements of Contract Documents.
         2) Final acceptance will depend on that compliance.
      c. Returned for Re-submittal:
         1) When submittal is marked "Revise and Resubmit", do not proceed with that part of Work covered by submittal, including purchasing, fabrication, delivery, or other activity.
         2) Revise or prepare new submittal in accordance with notations.
         3) Resubmit without delay.
         4) Repeat if necessary to obtain different action mark.
         5) Do not permit submittals marked "Rejected" or "Revise and Resubmit" to be used at Project Site, or elsewhere where Work is in progress.

d. Other Action:
   1) Where submittal is primarily for information or record purposes, special processing or other activity, submittal will be returned, marked "Action Not Required".

PART 2 PRODUCTS *(Not Applicable)*

PART 3 EXECUTION *(Not Applicable)*

END OF SECTION 01 3300

SECTION 01 4100

REGULATORY REQUIREMENTS

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes:
   1. General regulatory requirements pertaining to Work supplementary to other regulatory requirements mentioned or referenced elsewhere in Contract Documents.

1.02 REQUIREMENTS OF REGULATORY AGENCIES

A. Pertaining statutes, ordinances, laws, rules, codes, regulations, standards, and lawful orders of public authorities having jurisdiction of Work are incorporated into these Contract Documents same as if repeated in full, and as such are intended where reference is made in either singular or plural to Code or Building Code unless otherwise specified including, without limitation, those in list below.
   1. Make available at Project Site such copies of listed documents applicable to Work as Architect or Owner may request including mentioned portions of California Code of Regulations (CCR).

B. Project is fully governed under State of California's Codes Section Group 1, Chapter 4, Part 1, CCR, Title 24, as it pertains to school construction:
   1. Inspector and Continuous Inspections of Work:
      a. Per Sections 4-333(b) and 4-342.
   2. Tests and Testing Laboratory:
      a. Per Section 4-335.
      b. Owner pays for testing laboratory.
   3. Special Inspections:
      a. Per Section 4-333(c).
   4. Verified Reports:
      a. Submit per Sections 4-336 and 4-343(c).
   5. Administration:
      a. Duties of Architect and Engineers:
         1) Per Sections 4-333(a) and 4-341.
      b. Duties of Contractor:
         1) Per Section 4-343.
      c. Verified Reports:
         1) Per Section 4-336.
   6. Arrange for copies of CCR, Title 24, Part 1, Part 2 Volumes 1 and 2, Part 3, and Part 9, to be made available during construction.

C. Public regulatory requirements: Statutes, ordinances, laws, rules, codes, regulations, and standards include, but are not necessarily limited to, following:
   1. California Code of Regulations (CCR):
      a. Title 19 - Public Safety, current edition.
      b. Title 24, Part 1 – 2022 California Administrative Code
      c. Title 24, Part 2 – 2022 California Building Code (CBC), Volumes 1 and 2.
      d. Title 24, Part 3 – 2022 California Electrical Code (CEC).

e. Title 24, Part 4 – 2022 California Mechanical Code (CMC)
f. Title 24, Part 5 – 2022 California Plumbing Code (CPC).
g. Title 24, Part 6 – 2022 California Energy Code
h. Title 24, Part 9 – 2022 California Fire Code (CFC).
i. Title 24, Part 10 – 2022 California Existing Building Code (CEBC):
    1) Includes Parts 8 and 12:
        a) Part 8 – California Historical Building Code (CHBC)
        b) Part 12 – California Referenced Standards Code (CRSC)
j. Title 24, Part 11 – 2022 California Green Building Standards Code (GBSC)

2. Other statutes, ordinances, laws, regulations, rules, orders, and codes specified in other Sections of Specifications or bearing on Work.

1.03 GOVERNING REGULATIONS/AUTHORITIES

A. Architect has contacted authorities having jurisdiction where necessary to obtain information necessary for preparation of Contract Documents
    1. Information may or may not be of significance to Contractor.
    2. Owner and Architect, at request of Contractor, are to contact authorities having jurisdiction directly for information and decisions having bearing on Work.

1.04 SUBMITTALS

A. Permits, Licenses, and Certificates:
    1. Submit for Owner's records, copies of following, including but not necessarily limited to:
    2. Permits
    3. Licenses
    4. Certifications
    5. Inspection reports
    6. Releases
    7. Jurisdictional settlements
    8. Notices
    9. Receipts for fee payments
    10. Judgments, and similar documents
    11. Correspondence, and records established in conjunction with compliance with standards and regulations bearing upon performance of Work.

PART 2 PRODUCTS *(Not Applicable)*

PART 3 EXECUTION *(Not Applicable)*

END OF SECTION 01 4100

SECTION 01 4200

REFERENCES

PART 1 GENERAL

1.01 DEFINITIONS

A. Basic contract definitions are included in Division 00 General Conditions.

B. Indicated:
   1. Refers to graphic representations, notes or schedules on Drawings, or other paragraphs or schedules in Specifications, and similar requirements in Contract Documents.
   2. Where terms such as "shown", "noted", "scheduled", and "specified" are used, it is to help locate the reference
      a. No limitation of location is intended except as specifically noted.

C. Directed:
   1. Terms such as "directed", "requested", "authorized," "selected", "approved", "required", and "permitted" mean "directed by Architect", "requested by Architect", and similar phrases.
   2. No implied meaning is to be interpreted to extend Architect's responsibility into Contractor's area of construction supervision.

D. Approved:
   1. Where used in conjunction with Architect's action on Contractor's submittals, applications, and requests, is limited to Architect's duties and responsibilities as stated in General Conditions.

E. Regulations:
   1. Includes laws, ordinances, statutes, and lawful orders issued by authorities having jurisdiction, as well as rules, conventions, and agreements within construction industry that control performance of Work.

F. Furnish:
   1. Means supply and deliver to Project Site, ready for unloading, unpacking, assembly, installation, and similar operations.

G. Install:
   1. Describes operations at Project Site including actual unloading, unpacking, assembly, erection, placing, anchoring, applying, working to dimensions, finishing, curing, protecting, cleaning, and similar operations.

H. Provide:
   1. Means furnish and install, complete and ready for intended use.

I. Installer:
   1. Contractor or entity engaged by Contractor, either as employee, subcontractor, or sub-subcontractor, for performance of particular construction activity, including installation, erection, application, and similar operations.
   2. Installers are required to be experienced in operations they are engaged to perform.

J. Project Site:
   1. Space available to Contractor for performance of construction activities, either exclusively or in conjunction with others performing other construction activities as part of Project.
   2. Extent of Project Site is shown on Drawings and may or may not be identical with description of land upon which Project is to be built.

K. Testing Laboratories:
   1. Independent entity engaged to perform specific inspections or tests, either at Project Site or elsewhere, and to report on and, when required, to interpret results of those inspections or tests.

1.02 INDUSTRY STANDARDS

A. Applicability of Standards:
   1. Except where Contract Documents include more stringent requirements, applicable construction industry standards have same force and effect as if bound or copied directly into Contract Documents.
      a. Such standards are made part of Contract Documents by reference.
   2. Individual Sections indicate which codes and standards Contractor must make available at Project Site for reference.

B. Publication Dates:
   1. Comply with standard in effect as of date of Contract Documents.

C. Copies of Standards:
   1. Each entity engaged in construction on Project is required to be familiar with industry standards.
   2. Applicable standards are not bound with Contract Documents.
   3. Where copies of standards are required by individual specification sections or are needed for performance of required construction activity, obtain copies directly from publication source.

D. Conflicting Requirements:
   1. Where compliance with two or more standards is specified, and standards establish different or conflicting requirements for minimum quantities or quality levels, refer requirements that are different, but apparently equal, and uncertainties to Architect for decision before proceeding.

1.03 GOVERNING REGULATIONS/AUTHORITIES

A. Architect has contacted authorities having jurisdiction where necessary to obtain information necessary for preparation of Contract Documents
   1. That information may or may not be of significance to Contractor.
   2. Owner and Architect, at request of Contractor, are to contact authorities having jurisdiction directly for information and decisions having bearing on Work.

PART 2 PRODUCTS *(Not Applicable)*

PART 3 EXECUTION *(Not Applicable)*

END OF SECTION 01 4200

SECTION 01 4500

QUALITY CONTROL

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes:
   1. Administrative and procedural requirements for quality control services.
   2. Quality control services include inspections, tests, and related actions, including reports performed by Contractor, by independent agencies, and by governing authorities.
      a. They do not include contract enforcement activities performed by Architect.
   3. Inspection and testing services are required to verify compliance with requirements specified or indicated.
      a. These services do not relieve Contractor of responsibility for compliance with Contract Document requirements.
   4. Requirements for Contractor to provide quality control services required by Architect, Owner, or authorities having jurisdiction are not limited by provisions of this Section.

B. Related Requirements Specified Elsewhere:
   1. Inspections and testing required by laws, ordinances, rules, regulations or orders of public authorities: General Conditions.
   2. Certification of Products:
      a. Respective specification sections.
   3. Test, Adjust and Balance of Equipment:
      a. Respective specification sections.
   4. Tests and Standards:
      a. Each specification section listed.

C. Related Sections:
   1. Section 01 4525: Concrete Moisture Testing
   2. Section 01 4100: Regulatory Requirements; current Code edition.

1.02 REFERENCES

A. California Code of Regulations (CCR), Title 24, Part 2, California Building Code (CBC), Volumes 1 and 2, current edition.

B. American Concrete Institute (ACI):
   1. ACI 318 – Building Code Requirements for Structural Concrete and Commentary, current edition.

1.03 SELECTION OF TESTING AGENCY

A. Owner will select and employ consultant, testing laboratory or inspection agency to perform specified services.

B. Employment of Testing Laboratory in no way relieves Contractor of his obligation to perform Work in accord with Contract.

1.04 PROJECT INSPECTOR

A. Owner will select and employ Project Inspector, approved by DSA.

1.05 PAYMENT

A. Costs of quality control services will be initially paid for by Owner. following quality control services, chargeable to Contractor, will be reimbursed to Owner by deductive change order:
   1. Batch Plant Inspection.
   2. Taking and testing cores from concrete.
   3. Testing of reinforcing steel test specimens.

1.06 DEFICIENCIES

A. Cost of tests or inspections due to following will be reimbursed to Owner by deductive change order.
   1. Retesting because of failure of initial samples.
   2. Additional costs due to overtime work or extra shifts work because of improper scheduling of Work or of delivery of materials by Contractor.
   3. Failure to properly notify laboratory.
   4. Changes in sources, lots or suppliers of materials after original tests.
   5. Changes in methods or materials of construction requested by Contractor that require testing, inspection, or other related services in excess of that required by original design.
   6. Concrete mix designs in excess of first successful design for each concrete type.
   7. Overtime or extra shift work requiring overtime work by Owner's Inspector.

1.07 TESTS AND INSPECTION

A. Testing laboratory or Owner's Project Inspector, and not Contractor, will make selection of material required to be tested.

B. Notify Owner's Project Inspector in sufficient time in advance of manufacture of material to be supplied by him under Contract Documents, which must, by terms of Contract be tested, in order that Owner may arrange for testing of same at source of supply.

C. Do not incorporate into Project, material shipped by Contractor from source of supply prior to having satisfactorily passed such testing and inspection or prior to receipt of notice from Project Inspector that such testing and inspection will not be required.

1.08 TESTING AGENCY SERVICES

A. Cooperate with Architect and Contractor
   1. Provide qualified personnel promptly on notice.

B. Perform specified inspections, sampling and testing of materials and methods of construction:

1. Comply with specified standards; ASTM, other recognized authorities, and as specified.
2. Ascertain compliance with requirements of Contract Documents.

C. Attend pre-construction conference and progress meetings when requested by Architect or Owner.

D. Perform additional services as required by Owner.

E. Submittals:
   1. Promptly submit copies of reports of inspections and tests, mill analysis, concrete mix designs and certifications per applicable sections of specification.
   2. Submit one copy of test reports to:
      a. Owner.
      b. Architect.
      c. Contractor.
      d. Project Inspector.
   3. Include tests made, regardless of whether such tests indicate that material is satisfactory or unsatisfactory.
   4. Report samples taken but not tested.
   5. Report records of special sampling operations as required.
   6. Show in report that material or materials were sampled and tested in accordance with requirements of Title 24 and with approved specifications.
   7. Show specified design strength in test reports.
      a. State definitely in test reports whether or not material or materials tested comply with requirements.

F. Report Data:
   1. Written reports of each inspection, test, or similar service include, but are not limited to, following:
      a. Date of issue.
      b. Project title and number.
      c. Name, address, and telephone number of testing agency.
      d. Dates and locations of samples and tests or inspections.
      e. Names of individuals making inspection or test.
      f. Designation of Work and test method.
      g. Identification of product and Specification Section.
      h. Complete inspection or test data.
      i. Test results and interpretation of test results.
      j. Ambient conditions at time of sample taking and testing.
      k. Comments or professional opinion on whether inspected or tested Work complies with Contract Document requirements.
      l. Name and signature of laboratory inspector.
      m. Recommendations on retesting.

G. Testing Agency is not authorized to:
   1. Release, revoke, alter, or enlarge requirements of Contract Documents or approve or accept portions of Work.
   2. Perform duties of Contractor.

1.09 INSPECTION BY OWNER AND PROJECT INSPECTOR

A. Provide full access to Owner and his Project Inspector for purpose of inspection of parts of Work and to shops wherein Work is in preparation
   1. Maintain proper facilities and provide safe access for such inspection.

1.10 INSPECTION BY OWNER

A. Owner retains right to reject materials and workmanship which are defective, or to require their correction.
   1. Satisfactorily correct rejected workmanship and remove rejected materials from premises without charge to Owner.
   2. When Contractor does not correct such rejected work within reasonable time, fixed by written notice, Owner may correct same and charge expense to Contractor.

B. Should it be considered necessary or advisable by Owner at or before final acceptance of entire Work to make examination of Work already completed by removing or tearing out same, upon request, promptly furnish necessary facilities, labor, and materials.
   1. When such Work is found to be defective due to fault of Contractor or his subcontractor, defray expenses of such examinations and of satisfactory reconstruction.
   2. Should such Work be found to meet requirements of Contract, Contractor will be allowed additional cost of labor and material necessarily involved in examination and replacement.

1.11 WORK BY OWNER'S PROJECT INSPECTOR

A. Owner’s Project Inspector will perform following tests and inspections:
   1. Concrete slump tests.
   2. Concrete cylinder samples.
   3. Continuous inspection of masonry work.
   4. Mortar and grout prisms.
   5. Special Inspections for Welding.

1.12 CONTRACTOR'S RESPONSIBILITIES

A. Cooperate with agencies performing required inspections, tests, and similar services, and provide reasonable auxiliary services as requested.

B. Provide to agency, selected preliminary representative samples of materials to be tested, in required quantities or assist agency in taking samples.

C. Furnish incidental labor and facilities:
   1. To provide access to Work.
   2. To obtain and handle samples at Site.
   3. To facilitate inspections and tests.
   4. For agency's exclusive use for storage and curing of test samples.
   5. To provide security and protection of samples and test equipment at Project Site.

D. Notify testing agency sufficiently in advance of operations to permit assignment of personnel and scheduling of tests.

E. Coordination:
   1. Coordinate sequence of activities to accommodate required services with minimum of delay.
   2. Coordinate activities to avoid necessity of removing and replacing construction to accommodate inspections and tests.
   3. Contractor is responsible for scheduling times for inspections, tests, taking samples, and similar activities.

1.13 MISCELLANEOUS TESTS AND INSPECTIONS

A. Soil and Compaction Testing and Inspection:
   1. Performed by Project Geotechnical (Soils) Engineer employed and paid by Owner.

B. Special Tests:
   1. Special tests requested by Owner or Architect or DSA will be paid for by Owner, except that when such tests fail, deduct costs from Contract Price by Change Order.

PART 2 PRODUCTS *(Not Applicable)*

PART 3 EXECUTION

3.01 REPAIR AND PROTECTION

A. Upon completion of inspection, testing, sample taking and similar services, repair damaged construction and restore substrates and finishes.

B. Protect construction exposed by or for quality control service activities, and protect repaired construction.

C. Repair and protection is Contractor's responsibility, regardless of assignment of responsibility for inspection, testing, or similar services.

3.02 SCHEDULE OF TESTS, INSPECTIONS, AND METHODS

A. Required Tests and Inspections:
   1. Following Tests and Inspections are required, as set forth in California Building Code and ACI 318, as referenced.

B. Concrete (Chapters 17A and 19A):
   1. Materials:
      a. Portland Cement: 1705A.3.2; 1910A.1
      b. Concrete Aggregates: 1705A.3.2; 1903A.5
      c. Reinforcing Bars: 1705A.3.2; 1910A.2
   2. Quality:
      a. Proportions of Concrete: 1705A.3 – Table 1705A.3, Item 5; 1910A.1, and ACI 318 – Section 26.4.3
      b. Strength Tests of Concrete: 1705A.3 – Table 1705A.3, Item 6; 1905A.1.16; and ACI 318 – Section 26.12 as modified.

3. Inspection:
    a. Job Site: ACI 318 – Sections 26.5.1, 26.5.2.1 (A) and (B), 26.6.1.2 (D), 26.11.1.1 (A)
    b. Waiver of Batch Plant: 1705A.3.3.1
    c. Post Installed Anchors: 1705A.3 – Table 1705A.3, Items 4a and 4b; 1910A.5 b.
    d. Reinforcing Bar Welding: 1705A.3.1 – Table 1705A.3, Item 2, Table 1705A.2.1, Item 5b, 1903A.8.

END OF SECTION 01 4500

SECTION 01 4525

CONCRETE MOISTURE TESTING

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes:
   1. Calcium Chloride and Relative Humidity tests for determining moisture in concrete slabs:
      a. Calcium Chloride Test: Provide concrete moisture vapor emission and pH testing to concrete specified to be covered with floor coverings.
      b. Relative Humidity Test: Provide in-situ concrete relative humidity and surface pH testing to concrete specified to be covered with floor coverings
      c. Include concrete placed below, on and above grade.
      d. Perform testing after allowing concrete to dry for minimum of 90 days.
   2. Schedule testing not less than 1 week, nor more than 3 weeks prior to scheduled flooring installation.
   3. Always perform both tests, prior to application of moisture mitigation systems

B. Related Sections:
   1. Section 01 3300: Submittals; reports of test results.
   2. Section 03 3000: Cast-in-Place Concrete; under-slab vapor retarder and concrete floor sealers.

1.02 REFERENCES

A. ASTM International (ASTM):
   1. ASTM F 710 – Standard Practice for Preparing Concrete Floors to Receive Resilient Flooring.
   2. ASTM F 1869 – Standard Test Method for Measuring Vapor Emission Rate of Concrete Subfloor Using Anhydrous Calcium Chloride.
   3. ASTM F 2170 – Standard Test Method for Determining Relative Humidity in Concrete Floor Slabs Using in-situ Probes.

1.03 SUBMITTALS

A. Reports:
   1. Provide test results for concrete moisture vapor emission and pH testing of concrete in chart form listing test dates, start/stop times, start/stop weight, weight gain in grams, moisture vapor emission values, and pH levels
   2. Provide test results for concrete in-situ relative humidity and pH testing in chart form listing test dates, time, depth of test well, in-situ temperature, relative humidity, and pH levels
   3. List test locations on chart and show same on 8-1/2 by 11 inch site map
      a. Make such map available to testing agency
   4. Deliver results to Owner, Owner’s Project Inspector, Architect, Contractor, and flooring covering contractors.

1.04 QUALITY ASSURANCE

A. Pre-Installation Meeting:
   1. Schedule meeting with Owner, Architect, Independent Testing Agency, and Construction Manager
      a. Comply with requirements of Section 01 3119.
      b. Arrange for attendance by floor covering installers and floor covering manufacturers' technical representatives.
   2. Meeting to include, but not limited to, following:
      a. Review of calcium chloride, relative humidity, and pH test results on floor slabs.
      b. Adhesive application instruction.
      c. Scheduling and procedures for periodic field inspections by floor covering manufacturers' technical representatives.
   3. Record minutes of meeting and promptly distribute copies of minutes to attendees and other interested parties as may be necessary.
   4. Record issues resolved during meeting
      a. Include copies of Drawings and application instructions used in meeting
      b. Record changes on Drawings and application instructions made at meeting.

B. Independent Testing Agency:
   1. Calcium Chloride Testing: Certified by Test Kit Manufacturer for product use.
   2. Relative Humidity Testing: Certified by Test Apparatus Manufacturer for product use.
   3. Other agency with verifiable experience

C. Commercially Produced Moisture Vapor Emission Test Kits:
   1. Test dish including calcium chloride must be commercially packaged and delivered to test site in sealed factory wrapping
   2. Test dome from same source as dish.
   3. Test kit must comply with ASTM standards of size and weight.

D. Digital Meter and Calibrated Humidity Probes:
   1. Minimum 2-point probe calibration

E. Wide range pH paper, and distilled or de-ionized water.

PART 2 PRODUCTS

2.01 MOISTURE TESTING MATERIALS AND EQUIPMENT

A. Calcium Chloride Test as manufactured by Vaprecision, Full Spectrum Flooring, or approved equal.

B. Humidity and Temperature probe kit as manufactured by Vaisala, or approved equal.

C. Wide range pH test paper as manufactured by Micro Essential Laboratory or approved equal.

PART 3 EXECUTION

3.01 TESTING – GENERAL

A. Maintain test site at same temperature and humidity conditions as those anticipated during normal occupancy.
   1. Maintain these temperature and humidity levels for 48 hours prior and during test period.
   2. When meeting this criterion is not possible, then minimum conditions should be 75± 10 degrees F and 50± 10 percent relative humidity.
   3. When building is not under HVAC control, place recording hygrometer or data logger to record conditions during test period.
      a. Include transcript of this information with test report.

3.02 QUANTIFICATION OF CONCRETE MOISTURE VAPOR EMISSION

A. Number of vapor emission test sites is determined by square footage of facility.
   1. Minimum number of tests to be placed is equal to 3 in first 1,000 square feet and 1 per each additional 1,000 square feet.

B. Tests sites are to be cleaned of adhesive residue, curing compounds, paints, sealers, and floor coverings, 24 hours prior to placement of test kits.

C. Weigh test dish at Project Site prior to start of test.
   1. Scale must report weight to 0.1 grams.
   2. Record weight and start time.

D. Expose Calcium Chloride and set dish on concrete surface.

E. Install test containment dome and allow test to proceed for 60 - 72 hours.

F. Retrieve test dish by carefully cutting through containment dome.
   1. Close and reseal test dish.

G. Weigh test dish on Project Site recording weight and stop time.

H. Calculate and report results as "pounds of emission per 1,000 square feet per 24 hours"

3.03 QUANTIFICATION OF RELATIVE HUMIDITY AT 40 PERCENT OF CONCRETE THICKNESS

A. Number of in-situ relative humidity test sites is determined by square footage of facility.
   1. Minimum number of tests to be placed is equal to 3 in first 1,000 square feet and 1 per each additional 1,000 square feet.

B. Determine thickness of concrete slab, typically from construction documents

C. Utilizing roto-hammer, drill test holes to depth equal to 40 percent of concrete thickness.
   1. For example – 2 inches deep for 5 inch thick slab, or 1-1/2 inches deep for 4 inch thick slab.

2. Test elevated structural slab (not poured in pans) at depth equal to 20 percent of its thickness.
3. Hole Diameter: Do not exceed outside diameter of insertable test sleeve by more than 0.04 inch.
    a. Drilling operation must be dry.

D. Vacuum concrete dust from test hole.

E. Insert hole liner or sleeve to full depth of test hole, ensuring that liner is capped or plugged at end protruding from concrete surface.

F. Permit test site to acclimate, or equilibrate, for 72 hours prior to taking relative humidity readings.

G. Remove sleeve plug and place probe into sleeve ensurring that it reaches bottom of test hole.
    1. Test probe must be at temperature equilibration with concrete slab.

H. Read and record temperature and relative humidity at test site.

3.04 QUANTIFYING pH LEVEL

A. At each vapor emission test site, after removal of test containment dome, and at or near relative humidity test site, perform pH test.
    1. Place several drops of water onto concrete surface to form puddle approximately 1 inch in diameter.
    2. Allow water to set for approximately 60 seconds
    3. Dip pH paper into water and remove immediately
        a. Compare color to chart provided by paper supplier to determine pH reading

B. Record and report results.

3.05 ADDITIONAL TESTING

A. When more complete assessment of moisture content in concrete is necessary, perform relative humidity profiling.

B. In lieu of limiting testing to single depth within slab, profiling includes testing at depths of 20 percent 40% and 60% of concrete thickness.

C. This extended testing may be limited to groupings in each 2,000 or 5,000 square feet, with single depth testing at each 1,000 square feet increment as outlined above.

3.06 CLEANING

A. Upon completion of testing, remove dust, debris, surplus materials and tools of Work from Project Site.

B. Leave installation clean and ready for succeeding finishes.

END OF SECTION 01 4525

SECTION 01 5000

TEMPORARY FACILITIES AND CONTROLS

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes:
   1. Temporary facilities required for this Work include, but are not necessarily limited to:
      a. Temporary utilities such as heat, water, electricity, and telephone.
      b. Field offices and sheds
      c. Sanitary facilities.
      d. Construction aids.
      e. Barriers.
      f. Temporary controls.
      g. Temporary tree and plant protection
      h. Project identification sign.
      i. Temporary informational signs.

B. Related Sections:
   1. Section 02 4119: Selective Building Demolition

C. Related Requirements:
   1. Refer to District's Division 00 Documents, including General Conditions, and other Division 01 Sections, for additional requirements.
   2. Refer to Division 32 Sections for additional traffic control requirements.
   3. Permanent installation and hook-up of various utility lines are described in other pertinent sections.
   4. Comply with requirements of pertinent safety regulations for equipment furnished by subcontractors.

D. Work Not Part of This Section:
   1. Ladders, planks, hoists, and similar items normally furnished by individual trades in execution of their own portions of Work.

1.02 PROJECT CONDITIONS

A. Use means necessary to maintain temporary facilities in proper and safe condition throughout progress of Work.

PART 2 PRODUCTS

2.01 UTILITIES

A. Water:
   1. Provide necessary temporary water lines and water supply and upon completion of Work, remove such temporary facility.
   2. Provide and pay for water needed for construction.

B. Electricity:
   1. Provide necessary temporary wiring and upon completion of Work, remove such temporary facility.
   2. Provide area distribution boxes so located that individual trades may furnish and use 100 foot maximum length extension cords to obtain adequate power and artificial lighting at points where needed for work, inspection, and safety.
   3. Provide and pay for electricity needed for construction.

C. Heating:
   1. Provide and maintain heat necessary for proper conduct of operations needed in Work.

D. Telephone:
   1. Make necessary arrangements and pay costs for installation and operation of telephone service to Contractor's office on Project Site and Owner's Project Inspector's office on Project Site.
   2. Install telephone on separate line for each temporary office.
      a. Where office has more than one occupant, provide telephone for each additional occupant.
   3. Coin operated telephones are not acceptable.

2.02 FIELD OFFICES AND SHEDS

A. Contractor's Facilities:
   1. Provide field office building and sheds adequate in size and accommodation for Contractor's offices, supply, and storage.

B. Owner's Project Inspector's Office:
   1. Provide lockable office at least 10 feet by 12 feet in dimension with lockable operable window, serviceable finishes, lighting, heating, and air conditioning, for use by Owner's Project Inspector.
   2. Furnish with lockable desk, reference table, lockable 4 drawer file cabinet, plan rack, and two chairs.
   3. Subject to District approval, provide space in Contractor's Field Office for Owner's Project Inspector, in lieu of separate office.

C. Provide and maintain on premises, where directed, watertight storage sheds for materials which might be damaged by weather, including storage facilities for concrete test samples or other material samples required for Work.

2.03 SANITARY FACILITIES

A. Sanitary facilities include temporary toilets, wash facilities, and drinking water fixtures.
   1. Comply with regulations and health codes for type, number, location, operation, and maintenance of fixtures and facilities.
   2. Install where facilities will best serve Project's needs.
   3. Provide toilet tissue, paper towels, paper cups, and similar disposable materials for each facility.
   4. Provide covered waste containers for used material.

B. Temporary Toilet Units:
   1. Provide self-contained, single-occupant toilet units of chemical, aerated recirculation, or combustion type.
   2. Provide units properly vented and fully enclosed with a glass-fiber-reinforced polyester shell or similar nonabsorbent material.
   3. Provide separate facilities for male and female personnel.
   4. Maintain in sanitary condition.

C. Wash Facilities:
   1. Install wash facilities supplied with potable water at convenient locations for personnel involved in handling materials that require wash-up for healthy and sanitary condition.
   2. Dispose of drainage properly.
   3. Supply cleaning compounds appropriate for each condition.
   4. Provide safety showers, eyewash fountains , and similar facilities for convenience, safety, and sanitation of personnel.

D. Drinking-Water Facilities:
   1. Provide containerized, tap-dispenser, bottled water drinking water units, including paper supply.

E. Use of Owner’s toilet facilities is not permitted.

2.04 CONSTRUCTION AIDS

A. Provide construction aids and equipment required by personnel and to facilitate execution of Work
   1. Scaffolds, staging, ladders, stairs, ramps, runways, platforms, railings, hoists, cranes, chutes, and other such facilities and equipment.

B. Provide necessary facilities and means of access to structure so that Building Inspectors, Special Inspectors, Architect and Structural Engineer may inspect structure or portions of structure as necessary.
   1. Means of access includes, but is not necessarily limited to, ladders, scaffolds, and similar items.

2.05 BARRIERS

A. Temporary Fencing:
   1. Provide temporary fence around entire construction area as required for safety and protection.
   2. Construction:
      a. Provide chain link fencing not less than six feet in height, complete with metal or wood posts and required bracing, and with suitably locked truck and pedestrian gates as required.
   3. Provide opaque, fabric or plastic windscreen material, full height and run of fencing, including gates.

2.06 TEMPORARY CONTROLS

A. Contractor Responsiblility:
   1. Specific safety requirements by governmental authorities, including requirements of latest Occupational Safety and Health Act (OSHA) and Cal/OSHA.

B. Provide and maintain methods, equipment, and temporary construction, as necessary to provide controls over environmental conditions at construction site and related areas under Contractor's control.
   1. Remove physical evidence of temporary facilities at completion of Work.
   2. Comply with requirements of authorities having jurisdiction.

C. Dust Control:
   1. Provide positive methods and apply dust control materials to minimize raising dust from construction operations, and provide positive means to prevent airborne dust from dispersing into atmosphere.

D. Water Control:
   1. Provide methods to control surface water to prevent damage to Project, Site, or adjoining properties.
   2. Control fill, grading and ditching to direct surface drainage away from excavations, pits, tunnels and other construction areas and to direct drainage to proper runoff.
   3. Provide, operate and maintain hydraulic equipment of adequate capacity to control surface water.
   4. Dispose of drainage water in manner to prevent flooding, erosion, or other damage to Project Site or to adjoining areas.
   5. Comply with requirements specified in Section 01 5713.

E. Debris Control:
   1. Maintain areas under Contractor's control free of extraneous debris.
   2. Prevent accumulation of debris at construction site, storage and parking areas, or along access roads.
   3. Provide containers for deposit of debris as specified in Section 01 7419.

F. Pollution Control:
   1. Provide methods, means and facilities required to prevent contamination of soil, water and atmosphere by discharge of noxious substances from construction operations.
   2. Provide equipment and personnel to perform emergency measures required to contain spillage, and to remove contaminated soils and liquids.
   3. Take special measures to prevent harmful substances from entering public waters.
      a. Prevent disposal of wastes, effluents, chemicals, and other such substances in sanitary or storm sewers.

G. Temporary Fire Protection:
   1. Install and maintain temporary fire protection facilities of types needed to protect against reasonably predictable and controllable fire losses.
   2. Comply with NFPA 241 .
   3. Prohibit smoking in construction areas.

4. Supervise welding operations, combustion-type temporary heating units, and similar sources of fire ignition according to requirements of authorities having jurisdiction.
5. Develop and supervise overall fire prevention and protection program for personnel at Project Site.
    a. Review needs with local fire department and establish procedures to be followed.
    b. Instruct personnel in methods and procedures.
    c. Post warnings and information.

2.07 PROJECT IDENTIFICATION SIGN

A. Provide one painted sign, of not less than 32 sq. ft. area, with painted graphic content to include:
    1. Title of Project.
    2. Name of Owner.
    3. Names and Titles of:
    4. Architect.
    5. Professional Consultants.
    6. Prime Contractor.
    7. Graphic Design, Style of Lettering, and Colors:
        a. As designated by Architect.
    8. Erect on Project Site at lighted location of high public visibility, adjacent to main entrance to Project Site, as approved by Architect.
        a. Support on posts or framing of preservative treated wood or steel.

2.08 TEMPORARY INFORMATIONAL SIGNS

A. Provide temporary informational signs as follows:
    1. As required by codes, laws and regulatory agencies and to:
        a. Inform public and persons seeking entrance to Project.
        b. Identify key elements of construction facilities.
        c. Direct traffic.

B. Prepare temporary signs of sizes indicated.
    1. Erect on Project Site as approved by Architect.
    2. Support on posts or framing of preservative treated wood or steel.
    1. Do not permit installation of unauthorized signs..

2.09 OWNERSHIP OF TEMPORARY FACILITIES AND CONTROLS

C. Items provided by Contractor under this Section remain property of Contractor
    1. Remove such items from job site immediately upon completion of Work..

PART 3 EXECUTION

3.01 MAINTENANCE AND REMOVAL

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

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

END OF SECTION 01 5000

SECTION 01 6000

PRODUCT REQUIREMENTS

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes:

1. Following Administrative and Procedural Requirements:

a. Selection of products for use in Project

b. Product delivery, storage, and handling.

c. Manufacturers' standard warranties on products.

d. Special warranties.

e. Product substitutions.

B. Related Sections:

1. Section 01 4200: References; applicable industry standards for products specified.

2. Section 01 7700: Closeout Procedures; submittal of warranties for contract closeout.

C. Related Requirements:

1. Refer to District’s Division 00 Documents, including General Conditions, and other Division 01 Sections, for additional requirements.

2. Specific requirements for warranties on products and installations specified to be warranted are included in appropriate Divisions 02 through 33 Sections.

1.02 DEFINITIONS

A. Definitions used in this Article are not intended to change meaning of other terms used in Contract Documents, such as "specialties", "systems", "structure", "finishes", "accessories", and similar terms.

1. Such terms are self-explanatory and have well recognized meanings in construction industry.

B. Products:

1. Items purchased for incorporating into Work, whether purchased for Project or taken from previously purchased stock.

2. Term "product" includes terms "material," "equipment," and terms of similar intent.

3. Named Products:

   a. Items identified by manufacturer's product name, including make or model number or other designation, shown or listed in manufacturer's published product literature, that is current as of date of Contract Documents.

4. New Products:

   a. Items that have not previously been incorporated into another project or facility, except that products consisting of recycled-content materials are allowed, unless explicitly stated otherwise.

      1) Products salvaged or recycled from other projects are not considered new products.

C. Substitutions:

1. Changes in products, materials, equipment, and methods of construction required by Contract Documents and proposed by Contractor.

2. Following are not considered substitutions:

   a. Substitutions requested during bidding period, and accepted by written Addendum prior to opening of bids or award of Contract.

3. Revisions to Contract Documents requested by Owner or Architect.

4. Specified options of products and construction methods included in Contract Documents.

5. Compliance with governing regulations and orders issued by governing authorities.

D. Basis-of-Design Product Specification:

1. Where specific manufacturer's product is named and accompanied by words "Basis-of-Design", including make or model number or other designation, to establish significant qualities related to type, function, dimension, in-service performance, physical properties, appearance, and other characteristics for purposes of evaluating comparable products of other named manufacturers.

E. Manufacturer's Warranty:

1. Preprinted written warranty published by individual manufacturer for particular product and specifically endorsed by manufacturer to Owner.

F. Special Warranty:

1. Written warranty required by or incorporated into Contract Documents, either to extend time limit provided by manufacturer's warranty or to provide more rights for Owner.

1.03 SUBMITTALS

A. Product Listing Schedule:

1. Prepare schedule showing products specified in tabular form acceptable to Architect to include:

a. Generic names of products required.

b. Manufacturer's name and proprietary product names for each item listed.

2. Form:

a. Prepare Product Listing Schedule with information on each item tabulated under following column headings:

1) Related Specification Section number.

2) Generic name used in Contract Documents.

3) Proprietary name, model number and similar designations.

4) Manufacturer's name and address.

5) Supplier's name and address.

3. Completed Schedule:

a. Within fifteen days after date of commencement of Work submit four copies of completed Product Listing Schedule.

1) Furnish written explanation for omissions of data, and for known variations from Contract requirements.

1.04 QUALITY ASSURANCE

A. To fullest extent possible, provide products of same kind, from single source.

1.05 REQUESTS FOR SUBSTITUTIONS

A. Requests for Substitutions received after award of Contract will be considered only in case of substantiated product unavailability, or other conditions beyond control of Contractor.

B. Substitution Requests:

1. Submit one electronic copy (PDF) of each request for consideration.

2. Identify product or fabrication or installation method to be replaced.

3. Include Specification Section number and title and Drawing numbers and titles.

a. Refer to Article 2.02, in this Section.

4. Substitution Request Form:

a. Use form provided by Owner.

1) In absence of Owner furnished form, use form included at end of this Section.

b. Other forms will not be accepted.

c. Requests received without properly completed substitution request form will be rejected without further review.

5. Documentation:

a. Show compliance with specified requirements for substitutions and following, as applicable:

1) Statement indicating why specified material or product cannot be provided.

a) Submit statement on official letterhead of Contractor, supplier, or manufacturer, signed by an officer of the Company.

b) Statement will be subject to independent verification by Architect.

2) Product identification, including manufacturer's name and address.

3) Coordination information, including list of changes or modifications needed to other parts of Work and to construction performed by Owner and separate contractors, that will be necessary to accommodate proposed substitution.

4) Detailed, side-by-side comparison of significant qualities including attributes such as performance, weight, size, durability, visual effect, and specific features and requirements indicated.

5) Product Data, including drawings and descriptions of products and fabrication and installation procedures.

6) Structural calculations, where applicable or requested, prepared and signed by registered Structural Engineer licensed in California.

7) Samples, where applicable or requested.

8) List of similar installations for completed projects with project names and addresses and names and addresses of architects and owners.

9) Material test reports from qualified testing agency indicating and interpreting test results for compliance with requirements indicated.

10) Research/evaluation reports evidencing compliance with building code in effect for Project, from model code organization acceptable to authorities having jurisdiction.

11) Detailed comparison of Contractor's Construction Schedule using proposed substitution with products specified for Work, including effect on overall Contract Time.

    a) When specified product or method of construction cannot be provided within Contract Time, include letter from manufacturer, on manufacturer's letterhead, stating lack of availability or delays in delivery.

12) Cost information, including proposal of change, when occurring, in Contract Sum.

    a) When substitution request is made after award of Contract, for other than reasons stated, include in request, benefit to Owner, in form of cost reduction.

13) Designation of availability of maintenance services, sources of replacement materials.

14) Contractor's certification that proposed substitution complies with requirements in Contract Documents and is appropriate for applications indicated.

15) Contractor's waiver of rights to additional payment or time that may subsequently become necessary because of failure of proposed substitution to produce indicated results.

C. Basis-of-Design Product Specification Submittal:

1. Comply with requirements in Section 01 3300.

2. Show compliance with requirements.

D. Multiple Resubmittals:

1. Requests for Substitutions made after Award of Contract:

a. Requirements cover initial Request for Substitution review and one resubmittal review when necessary.

2. Architect’s and/or Consultant’s cost for evaluationg additional submittals requested by Contractor beyond first resubmittal will be paid by Owner with reimbursement from Contractor by deductive change order.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Deliver, store and handle products using means and methods that will prevent damage, deterioration and loss, including theft; comply with manufacturer's written instructions.

1. Schedule delivery to minimize long term storage at Project Site and to prevent overcrowding of construction spaces.

2. Coordinate delivery with installation time to ensure minimum holding time for items that are flammable, hazardous, easily damaged, or sensitive to deterioration, theft and other losses.

3. Deliver products to Project Site in undamaged condition in manufacturer's original sealed container, or other packaging system, complete with labels and instructions for handling, storing, unpacking, protecting and installing.

4. Inspect products on delivery to ensure compliance with Contract Documents, and to ensure products are undamaged and properly protected.

5. Store products in manner to facilitate inspection and measurement of quantity or counting of units.

6. Store materials in manner that will not endanger Project structure.

7. Store products subject to damage by elements under cover in weathertight enclosure above ground, with ventilation adequate to prevent condensation.

8. Comply with product manufacturer's written instructions for temperature, humidity, ventilation, and weather-protection requirements for storage.

9. Protect stored products from damage.

1.07 PRODUCT WARRANTIES

A. Warranties specified in other Sections are in addition to, and run concurrent with, other warranties required by Contract Documents.

1. Manufacturer's disclaimers and limitations on product warranties do not relieve Contractor of obligations under requirements of Contract Documents.

B. Special Warranties:

1. Prepare written document that contains appropriate terms and identification, ready for execution.

a. Submit draft for approval before final execution.

2. Manufacturer's Standard Form:

a. Modified to include Project-specific information and properly executed.

3. Refer to Division 26 through 32 Sections for specific content requirements and particular requirements for submitting special warranties.

C. Submittal Time:

1. Comply with requirements in Section 01 7700 and General Conditions.

PART 2 PRODUCTS

2.01 PRODUCT SELECTION

A. General Product Requirements:

1. Provide products that comply with Contract Documents, that are undamaged and, unless otherwise indicated, unused at time of installation.

2. Provide products complete with accessories, trim, finish, safety guards and other devices and details needed for complete installation and for intended use and effect.

3. Standard Products:

a. Where available, provide standard products of types that have been produced and used successfully in similar situations on other projects.

4. Owner reserves right to limit selection to products with warranties not in conflict with requirements of Contract Documents.

5. Where products are accompanied by term "as selected", Architect will make selection.

6. Where products are accompanied by term "match sample", sample to be matched is Architect's.

7. Descriptive, performance, and reference standard requirements in Specifications establish "salient characteristics" of products.

8. Where products are specified by name and accompanied by term "or equal", or "or approved equal", or "or approved", comply with provisions in "Product Substitutions" Article to obtain approval for use of an unnamed product.

B. Product Selection Procedures:

1. Procedures for product selection include following:

a. Product:

1) Where Specification paragraphs or subparagraphs titled "Product" name single product and manufacturer, provide product named.

2) Substitutions may be considered, unless otherwise indicated.

b. Products:

1) Where Specification paragraphs or subparagraphs titled "Products" introduce list of names of both products and manufacturers, provide one of products listed that complies with requirements.

2) Products and manufacturers are listed alphabetically and do not indicate order of preference, unless otherwise indicated.

c. Manufacturer/Source:

1) Where Specification paragraphs or subparagraphs titled "Manufacturer" or "Source" name single manufacturers or sources, provide product by manufacturer or from source named that complies with requirements.

2) Substitutions may be considered, unless otherwise indicated.

d. Manufacturers:

1) Where Specification paragraphs or subparagraphs titled "Manufacturers" introduce list of manufacturers' names, provide product by one of manufacturers listed that complies with requirements.

2) Where manufacturers are specified by name, accompanied by term "or equal", or "or approved equal" comply with provisions in "Product

Substitutions" Article to obtain approval for use of an unnamed product.

e. Product Options:

1) Where Specification paragraph titled "Product Options" indicate that size, profiles, and dimensional requirements on Drawings are based on specific product or system, provide either specific product or system indicated or comparable product or system by another manufacturer.

2) Comply with provisions in "Product Substitutions" Article to obtain approval for use of unnamed product.

C. Basis-of-Design Products:

1. Where Specification paragraphs or subparagraphs titled "Basis-of-Design Product" are included and also introduce or refer to list of manufacturers' names, provide either specified product or comparable product by one of other named manufacturers.

2. Drawings and Specifications indicate sizes, profiles, dimensions, and other characteristics that are based on product named.

3. Comply with provisions in "Product Substitutions" Article to obtain approval for use of unnamed product.

4. Substitutions may be considered.

D. Visual Matching Specification:

1. Where Specifications require matching established sample, select product and manufacturer that complies with requirements and matches Architect's sample.

2. Architect's decision will be final on whether proposed product matches satisfactorily.

3. Where no product is available within specified category that matches satisfactorily and complies with other specified requirements, comply with provisions of Contract Documents on "substitutions" for selection of matching product.

E. Visual Selection Specification:

1. Where Specifications include phrase "as selected from manufacturer's colors, patterns, textures" or similar phrase, select product and manufacturer that complies with other specified requirements.

2. Standard Range:

    a. Where Specifications include phrase "standard range of colors, patterns, textures" or similar phrase, Architect will select color, pattern, or texture from manufacturer's product line that does not include premium items.

3. Full Range:

    a. Where Specifications include phrase "full range of colors, patterns, textures" or similar phrase, Architect will select color, pattern, or texture from manufacturer's product line that includes both standard and premium items.

F. Performance Specification Requirements:

1. Where Specifications require compliance with performance requirements, provide products that comply with requirements, and are recommended by manufacturer for application indicated.

2. General overall performance of product is implied where product is specified for specific application.

3. Manufacturer's recommendations may be contained in product literature, or by manufacturer's certification of performance.

2.02 PRODUCT SUBSTITUTIONS

A. Timing:

1. Requests for Substitutions are restricted to before bid opening as stated in Instruction to Bidders.

2. Requests received after that time may be considered or rejected at discretion of Architect.

3. Architect will consider request for substitution after commencement of Work only when specified product or construction method cannot:

    a. Be provided within Contract Time.

    b. Receive necessary approvals.

    c. Be provided in manner compatible with or coordinate with other materials.

    d. Provide required warranty.

B. Conditions:

1. Contractor's substitution request will be received and considered by Architect when following conditions are satisfied, as determined by Architect; otherwise requests will be returned without action except to record noncompliance with these requirements

   a. Burden of proof of merit of proposed substitution is upon proposer.

   b. Extensive revisions to Contract Documents are not required.

   c. Requested substitution is consistent with Contract Documents and will produce indicated results.

   d. Request is timely, fully documented and properly submitted.

   e. Request is directly related to "or equal" clause or similar language in Contract Documents.

      1) Specified product or construction method cannot be provided within Contract Time.

      2) Request will not be considered when product or method cannot be provided as result of failure to pursue Work promptly, failure to identify items requiring long lead times, or failure to coordinate activities properly.

   f. Specified product or construction method cannot:

      1) Receive necessary approval by governing authority, and requested substitution can be approved.

      2) Be provided in manner that is compatible with other materials, and where Contractor certifies that requested substitution will overcome incompatibility.

      3) Be coordinated with other materials, and where Contractor certifies that requested substitution can be coordinated.

      4) Provide warranty required by Contract Documents and where Contractor certifies that requested substitution provide required warranty.

   g. Substantial advantage is offered Owner, in cost, time, energy conservation, or other considerations of merit, after deducting additional responsibilities Owner must assume.

1) Owner's additional responsibilities may include compensation to Architect for redesign and evaluation services, increased cost of other construction by Owner or separate Contractors, and similar considerations.

h. When requested substitution involves more than one contractor, requested substitution has been coordinated with other portions of Work, is uniform and consistent, is compatible with other products, and is acceptable to contractors involved.

C. Architects Action:

1. When necessary, within one week of receipt of request for substitution, Architect will request additional information or documentation for evaluation of request for substitution.

2. Within 2 weeks of receipt of request, or one week of receipt of additional information or documentation, whichever is later, Architect will notify Contractor of acceptance or rejection of requested substitution.

3. Form of Acceptance: Change Order.

4. Use product specified when Architect cannot make decision on use of proposed Substitution within time allocated.

5. Architect will not be responsible for locating or securing information which is not included in substantiating data.

6. Architect's decision of acceptance or rejection of requested substitution is final.

D. Architect's cost for evaluating substitutions requested by Contractor, including making subsequent revisions to Drawings, Specifications and other resulting documentation, will be paid by Owner with reimbursement from Contractor by deductive change order.

E. Contractor's submittal and Architect's acceptance of Shop Drawings, Product Data, or Samples that relate to construction activities not complying with Contract Documents does not constitute acceptable or valid request for substitution, nor does it constitute approval.

PART 3 EXECUTION

3.01 INSTALLATION OF PRODUCTS

A. Comply with manufacturer's instructions and recommendations for installation of products in applications indicated.

1. Anchor each product securely in place, accurately located and aligned with other Work.

2. Clean exposed surfaces and protect as necessary to ensure freedom from damage and deterioration at time of Substantial Completion.

END OF SECTION 01 6000

SECTION 01 7123

FIELD ENGINEERING

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes:
1. Furnishing services of registered Civil Engineer or licensed Land Surveyor for engineering services required for Project.
2. Survey work required in execution of Project.
3. Civil, structural or other professional engineering services specified, or required to execute Contractor's construction methods.
4. Coordination with testing laboratory and soils engineer.
5. Contractor furnished assistance.
6. Verification of conditions.

B. Related Sections:
1. Section 01 3300: Submittal Procedures
2. Section 01 7700: Closeout Procedures.

C. Related Requirements:
1. Refer to District’s Division 00 Documents, including General Conditions, for additional requirements.

1.02 SUBMITTALS

A. Comply with pertinent provisions of Section 01 3300 and following:
1. Name and address of Surveyor or professional engineer to Architect, including changes as they may occur.
2. Upon request of Architect, provide documentation to verify accuracy of field engineering work.
3. Include certificate signed by registered Civil Engineer or Land Surveyor certifying that elevations and locations of improvements are in conformance, or non-conformance, with Contract Documents.

B. Record Drawings:
1. At Project completion, obtain and pay for CD’s and Files of Project Plans.
   a. Clearly indicate differences between original drawings and completed Work within specified tolerances.
2. Show as-built locations by coordinates of utilities onsite with top of pipe elevations at major grade and alignment changes.
3. Date, sign and certify completed record drawing transparencies as correct, by Licensed Surveyor or Civil Engineer.
4. Comply with requirements of Section 01 7700.

1.03 QUALITY ASSURANCE

A. Qualifications of Surveyor or Engineer:
1. Engage registered Civil Engineer or licensed Land Surveyor acceptable to both Contractor and Owner who is qualified to perform land surveying.

2. Prior to start of Work, furnish to Owner, name and license (or registration number) issued by State of California, Board of Registration for Professional Engineers and Land Surveyors.
3. Provide notice to Owner during course of construction should identification of individual responsible for this Work change, and obtain approval of Owner for replacement.

B. Perform Field Engineering Services furnished during course of this Project under direct supervision and control of named individual civil engineer or land surveyor.

PART 2 PRODUCTS *(Not Applicable)*

PART 3 EXECUTION

3.01 SURVEY REFERENCE POINTS

A. Existing horizontal and vertical control points for Project are those designated on Drawings.

B. Locate and protect control points prior to starting site work, and preserve permanent reference points during construction.
1. Make no changes or relocations without prior written notice to Architect.
2. Report to Architect when reference point is lost or destroyed, or requires relocation because of necessary changes in grades or locations.
3. Identify and protect survey monuments on Project Site discovered during construction, which are not referenced on Project Drawings.
   a. Tie out such monuments and notify Architect prior to allowing them to be disturbed.
4. Replace permanent boundary markers disturbed during construction with new permanent monuments and file required Record of Survey or Corner Record in accordance with applicable State and County laws, at no additional cost to Owner.

3.02 PROJECT SURVEY REQUIREMENTS

A. Establish minimum of two permanent horizontal and vertical control points on Project Site, remote from building area referenced to data established by survey control points.
1. Record locations, with horizontal and vertical data, on Project Record Documents, including description of monuments in place.

B. Establish lines and levels, locations and dimensions, by instrumentation or similar technical appropriate means:
1. Site Improvements:
   a. Utility lines, including, but not necessarily limited to, storm drains, sewers, water mains, gas, electric and telephone lines.
   b. Provide adequate horizontal control to locate lines and provide vertical control in proportion to slope of line as required for accurate construction.
2. Building Lines and Levels:
   a. Furnish building corner offsets as required to adequately locate buildings.
3. Provide control lines and levels required for Mechanical and Electrical work.
4. Provide grade stakes and elevations as required to construct paved areas, landscaped areas, and other areas as required.

a. Calculate and layout subgrade elevations and intermediate controls as required to provide smooth transitions between the spot elevations indicated on plans.
b. From time to time, verify layout of Work by same methods.

5. Provide batter boards or other similar control for drainage, utility, and other onsite structures as required.

3.03 RECORDS

A. Maintain complete, accurate surveyor's log of control and survey work as it progresses.
1. Make this log available for reference.

END OF SECTION 01 7123

SECTION 01 7329

CUTTING AND PATCHING

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes
   1. Administrative and procedural requirements for cutting and patching.

B. Related Sections:
   1. Section 01 1100: Summary of Work
   2. Section 01 7419: Construction Waste Management and Disposal
   3. Section 01 7423: Cleaning

C. Related Requirements:
   1. Refer to Divisions 26, 27, and 28 Sections for cutting, patching, of electrical and related systems.

1.02 QUALITY ASSURANCE

A. Requirements for Structural Work:
   1. Do not cut and patch structural elements in manner that would reduce their load-carrying capacity or load-deflection ratio.

B. Operational and Safety Limitations:
   1. Do not cut and patch operating elements or safety related components in manner that would result in reducing their capacity to perform as intended or result in increased maintenance or decreased operational life or safety.
   2. Obtain approval before cutting and patching following operating elements or safety related systems:
      a. Shoring, bracing, and sheeting.
      b. Primary operational systems and equipment.
      c. Air or smoke barriers.
      d. Water, moisture, or vapor barriers.
      e. Membranes and flashings.
      f. Fire protection systems.
      g. Noise and vibration control elements and systems.
      h. Control systems.
      i. Communication systems.
      j. Conveying systems.
      k. Electrical wiring systems.

C. Visual Requirements:
   1. Do not cut and patch construction exposed on exterior or in occupied spaces, in manner that would, in Architect's opinion, reduce aesthetic qualities, or result in visual evidence of cutting and patching.
   2. Remove and replace Work that has been cut and patched in visually unsatisfactory manner.
   3. Engage recognized experienced and specialized fabricator to cut and patch following categories of exposed Work:
      a. Processed concrete finishes.

PART 2 PRODUCTS

2.01 MATERIALS

A. Use materials that are identical to existing materials.
   1. Where identical materials are not available or cannot be used where exposed surfaces are involved, use materials that match existing adjacent surfaces to fullest extent possible with regard to visual effect.
   2. Use materials whose installed performance will equal or surpass that of existing materials.

PART 3 EXECUTION

3.01 INSPECTION

A. Before cutting existing surfaces, examine surfaces to be cut and patched and conditions under which cutting and patching is to be performed.
   1. Take corrective action before proceeding if unsafe or unsatisfactory conditions are encountered.

3.02 PREPARATION

A. Comply with requirements for temporary protections specified in Section 01 5000.

B. Temporary Support:
   1. Provide temporary support of Work to be cut.
   2. Review with Structural Engineer when necessary.

C. Protection:
   1. Protect existing construction during cutting and patching to prevent damage.
   2. Provide protection from adverse weather conditions for portions of Project that might be exposed during cutting and patching operations.

D. Avoid interference with use of adjoining areas or interruption of free passage to adjoining areas.

E. Take precautions necessary to avoid cutting existing pipe, conduit, or ductwork serving building, but scheduled to be removed or relocated until provisions have been made to bypass them.

3.03 PERFORMANCE

A. General:
   1. Employ skilled workmen to perform cutting and patching.
   2. Proceed with cutting and patching at earliest feasible time and complete without delay.
   3. Cut existing construction to provide for installation of other components or performance of other construction activities and subsequent fitting and patching required to restore surfaces to their original condition.

B. Cutting:
   1. Cut existing construction using methods least likely to damage elements to be retained or adjoining construction.

2. In general, where cutting is required use hand or small power tools designed for sawing or grinding, not hammering and chopping.
3. Cut holes and slots neatly to size required with minimum disturbance of adjacent surfaces.
    a. Temporarily cover openings when not in use.
4. To avoid marring existing finished surfaces, cut or drill from exposed or finished side into concealed surfaces.
5. Cut through concrete and masonry using cutting machine such as carborundum saw or diamond core drill.
6. By-pass utility services such as pipe or conduit, before cutting, where services are shown or required to be removed, relocated or abandoned.
7. Cut-off pipe or conduit in walls or partitions to be removed.
    a. Cap, valve or plug and seal remaining portion of pipe or conduit to prevent entrance of moisture or other foreign matter after by-passing and cutting.

C. Patching:
1. Patch with durable seams that are as invisible as possible.
2. Comply with specified tolerances.
    a. Where feasible, inspect and test patched areas to demonstrate integrity of installation.
    b. Restore exposed finishes of patched areas and extend finish restoration into retained adjoining construction in manner that will eliminate evidence of patching and refinishing.

3.04 CLEANING

A. Thoroughly clean areas and spaces where cutting and patching is performed or used as access.
1. Comply with requirements of Section 01 7423.

END OF SECTION 01 7329

SECTION 01 7419

CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes:
   1. References.
   2. System description for construction and demolition waste management.
   3. Submittals.

B. Related Sections:
   1. Section 01 3300: Submittal Procedures.
   2. Section 01 4100: Regulatory Requirements.
   3. Section 01 5000: Temporary Facilities and Controls.
   4. Section 01 7423: Cleaning.
   5. Section 01 7700: Closeout Procedures.

1.02 REFERENCES

A. California Integrated Waste Management Act of 1989 (AB 75).

B. California Code of Regulations, Title 14 – Natural Resources
   1. Division 7 – Department of Resources Recycling and Recovery

1.03 SYSTEM DESCRIPTION

A. Collection and separation of construction and demolition waste materials generated on-site as follows:
   1. Re-use or recycling on-site.
   2. Transportation to approved recyclers or re-use organizations.
   3. Transportation to legally designated landfills for purpose of recycling, salvaging, or reusing minimum of 50 percent of construction and demolition waste generated.

1.04 SUBMITTALS

A. Construction and Demolition Waste Management Plan (Exhibit 1):
   1. Within 10 calendar days after Notice to Proceed and prior to waste removal, submit following to Owner for review and approval:
      a. Materials to be recycled, re-used, or salvaged, either on-site or off-site.
      b. Estimates of construction and demolition waste quantity (in tons) by type of material.
         1) When waste is measured by volume, give factors for conversion to weight in tons.
      c. Procedures for recycling/re-use program.
      d. Permit or license and location of Project waste disposal areas.
      e. Site Plan for placement of waste containers.

B. Construction and Demolition Waste Management Monthly Progress Report (Exhibit 2):
   1. Submit Summary of waste generated by Project, monthly with Application for Payment. Include following:
      a. Firms accepting recovered or waste materials.
      b. Type and location of accepting facilities (landfill, recovery facility, or used materials yard).
         1) When materials are to be re-used or recycled on Project Site, location should be designated as “On-site Re-use/Recycling”.
      c. Type of materials and net weight (tons) of each.
      d. Value of materials or disposal fee paid.
      e. Attach weigh bills and other documentation confirming amount and disposal location of waste materials.

C. Construction and Demolition Waste Management Final Compliance Report:
   1. Final update of Waste Management Plan to provide summary of total waste generated by Project.

D. Waste management Report for Contractors (Exhibit 3):
   1. Complete attached form and submit to Owner.

E. Solid Waste Management and Recycling Plan (Exhibit 4):
   1. Complete attached form and submit to Owner.

PART 2 PRODUCTS *(Not Applicable)*

PART 3 EXECUTION

3.01 IMPLEMENTATION

A. Implement approved Waste Management Plan including collecting, segregating, storing, transporting and documenting each type of waste material generated, recycled or re-used, or disposed in landfills.

B. Designate on-site person to be responsible for instruction workers and overseeing sorting and recording of waste/recyclable materials.

C. Include waste management and recycling in worker orientation and as agenda item for regular project meetings.

D. Limit recycle and waste bin areas to approved areas indicated on Waste Management Plan.
   1. Keep recycle and waste bins neat and clearly marked to avoid contamination of materials.

3.02 ATTACHMENTS

A. Exhibit 1: Construction and Demolition Waste Management Plan.

B. Exhibit 2: Construction and Demolition Waste Management Monthly Progress Report.

C. Exhibit 3: Waste Management Report for Contractors.

D. Exhibit 4: Solid Waste Management and Recycling Plan.

END OF SECTION 01 7419

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EXHIBIT 1

CONSTRUCTION AND DEMOLITION WASTE MANAGEMENT PLAN

CONSTRUCTION/MAINTENANCE/ALTERATION AND DEMOLITION PROJECTS

PROJECT NAME: _____

PROJECT NO: _____

NAME OF COMPANY:

_____

CONTACT PERSON: _____

TELEPHONE: _____

PROJECT SITE LOCATION: _____

PROJECT TYPE:

___New Construction ____Demolition ___Maintenance/Alteration Projects

PROJECT SIZE (SQ.FT.): _____

DATE AND ESTIMATED PERIOD _____

EXHIBIT 1 FORM

(1) Material Type	(2) Tons Estimated Recycle	(3) Tons Estimated Reuse	(4) Tons Estimated Salvage	(5) Tons Estimated Landfill	(6) Proposed Disposal or Recycling Facility
Total					
Diversion Rate: Columns[(2)+(3)+(4)] / [(2)+(3)+(4)+(5)				=	
Signature		Title		Date	

Column 1: “Material Type” – Enter type of materials targeted for recycling, reuse, or requiring disposal.

Columns 2 through 4: “Estimated Generation” – Enter estimated quantities (tons) of recyclable, reusable, or salvageable waste materials anticipated to be generated and state number of salvageable items.

Column 5: “Estimated Landfill” – Enter quantities (tons) of materials to be disposed in landfill.

Column 6: “Disposal Location” – Enter end-destination of recycled, salvaged, and disposed materials.

General: (1) Attach proposed Recycling and Waste Bin Location Plan.
(2) Attach name and contact data for each recycling or disposal destination to be used.

EXHIBIT 2

CONSTRUCTION AND DEMOLITION WASTE MANAGEMENT MONTHLY PROGRESS REPORT

CONSTRUCTION/MAINTENANCE/ALTERATION AND DEMOLITION PROJECTS

PROJECT NAME: _____

PROJECT NO: _____

NAME OF COMPANY:
_____

CONTACT PERSON: _____

TELEPHONE: _____

PROJECT SITE LOCATION: _____

PROJECT TYPE:

___New Construction ____Demolition ___Maintenance/Alteration Projects

PROJECT SIZE (SQ.FT.): _____

DATE AND ESTIMATED PERIOD: _____

EXHIBIT 2 FORM

(1) Material Type	(2) Tons Actual Recycle	(3) Tons Actual Reuse	(4) Tons Actual Salvage	(5) Tons Actual Landfill Name	(6) Disposal or Recycling Facility (e.g. Onsite, of Facility)
Total					
Diversion Rate: Columns[(2)+(3)+(4)] / [(2)+(3)+(4)+(5)				=	
Signature		Title		Date	

Column 1: “Material Type” – Enter type of materials targeted for recycling, reuse, or requiring disposal.

Columns 2 through 4: “Estimated Generation” – Enter estimated quantities (tons) of recyclable, reusable, or salvageable waste materials anticipated to be generated and state number of salvageable items.

Column 5: “Estimated Landfill” – Enter quantities (tons) of materials to be disposed in landfill.

Column 6: “Disposal Location” – Enter end-destination of recycled, salvaged, and disposed materials.

General: (1) Attach proposed Recycling and Waste Bin Location Plan.
(2) Attach name and contact data for each recycling or disposal destination to be used.

EXHIBIT 3

WASTE MANAGEMENT REPORT FOR CONTRACTORS

Complete this form each time materials are removed from

Project Site or reused onsite.
Submit to Owner's Project Manager.

PROJECT SITE LOCATION:_____DATE:_____

COMPANY:_____
_

MATERIAL:_____

_____

_____

WAS THE MATERIAL RECYCLED: YES_____NO_____

VOLUME/WEIGHT:_____

RECYCLING COMPANY OR DISPOSAL
SITE:_____

SUBMITTED
BY:_____

PHONE NUMBER:_____

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EXHIBIT 4

SOLID WASTE MANAGEMENT AND RECYCLING PLAN

Prepare Waste Management and Recycling Plan by completing the following form for Construction and Demolition materials produced because of Work performed at Citrus Community College District. Owner requires that Contractors recycle materials when there is viable recycling company available.

Owner's Environmental Health and Safety Supervisor will assist applicants in developing and implementing Waste Management and Recycling Plan.

COMPANY NAME:_____ CONTACT:_____

ADDRESS:_____ PHONE:_____

PROJECT SITE:_____

Please fill out following form for submittal.
Form will help to identify types of materials, estimated quantities of materials, and how material will be transported and recycled or disposed.

Should you have questions regarding this form or recycling and disposal, please call Jacob M. Norris, Director of Facilities, Maintenance & Operations, at 805.678.5023

EXHIBIT 4 FORM

Circle the material that will be generated at the construction site, estimate the quantity, list how the materials will be transported and write in where the materials will be taken.

MATERIALS	**ESTIMATED QUANTITY** (in yards and tons)	**HAULER** (List hauler's name if not self–haul)	**RECYCLING COMPANY OR DISPOSAL SITE**
Salvage and used building			
Wood			
Plant Debris			
Wallboard			
Glass			
Soil			
Corrugated cardboard			
Metals			
Masonry/Tile			
Concrete/Asphalt			
Toilets (porcelain)			
Carpet Padding (foam)			
Other			
Mixed Loads (i.e. trash)			

FOR DISTRICT USE ONLY:

Approval Status:

_____ Approved

_____ Further explanation needed, see attached

_____ Denied

Reviewed by:_____Date:_____

SECTION 01 7423

CLEANING

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes:
   1. Performance of cleaning, during progress of Work, and at completion of Work, as required by General Conditions.

B. Related Sections:
   1. Section 01 5000: Temporary Facilities and Controls; additional requirements for dust and debris control.
   2. Section 01 7419: Construction Waste Management and Disposal.

C. Related Requirements:
   1. Refer to District's Division 00 Documents, including General Conditions, for additional requirements.
   2. Cleaning for specific products of Work:
      a. Specification Section for that Work.

1.02 REFERENCES

A. South Coast Air Quality Management District (SCAQMD):
   1. Rule 403 – Fugitive Dust.

1.03 QUALITY ASSURANCE

A. Verify that requirements of cleanliness are being met.

1.04 DISPOSAL REQUIREMENTS

A. Conduct cleaning and disposal operations in compliance with applicable codes, ordinances, regulations, and anti-pollution laws.
   1. Comply with requirements of Section 01 7419.

B. In addition to specified requirements, comply with applicable requirements of fire and governing authorities having jurisdiction.

1.05 PAYMENT WITHHELD

A. Architect reserves right to withhold certification of payment requests for failure on part of Contractor to regularly clean Project in conformance with requirements of this Section.

PART 2 PRODUCTS

2.01 CLEANING MATERIALS AND EQUIPMENT

A. Use only those cleaning materials which will not create hazards to health or property and which will not damage surfaces.

B. Use only those cleaning materials and methods recommended by manufacturer of surface material to be cleaned.

C. Use cleaning materials only on surfaces recommended by cleaning products manufacturer.

PART 3 EXECUTION

3.01 PROGRESS CLEANING DURING CONSTRUCTION

A. Execute periodic cleaning to keep Work, Project Site and adjacent properties free from accumulations of waste materials, rubbish and windblown debris, resulting from construction operations.
   1. Maintain stored items in orderly arrangement allowing maximum access and providing required protection of materials.
      a. Provide on-site containers for collection of waste materials, debris and rubbish.
   2. Provide adequate storage for waste materials awaiting removal from Project Site, observing requirements for fire protection and protection of environment.
   3. Handle hazardous, dangerous or unsanitary waste materials separately from other waste material by placing it in proper containers.
   4. Burying or burning of waste materials is not permitted.
   5. Remove waste materials, debris and rubbish from Project Site periodically and dispose of at legal disposal areas away from Project Site.

B. Project Site:
   1. Inspect Project Site daily and pick up scrap, debris, and waste material.
      a. Place waste material in designated containers.
   2. Keep flammable waste in sealed metal containers until removed from Project Site.
   3. Maintain Project Site clear of debris so as not to impede construction and fire department access

C. Structures:
   1. Weekly, and more often if necessary, inspect structures and pick up scrap, debris, and waste material.
      a. Remove items and place in designated container.
   2. Weekly, sweep interior spaces clean.
      a. Keep space free from dust and other material capable of being removed by handheld broom, (i.e.: “broom clean”).
   3. Preparatory to installation of succeeding material, clean structures or pertinent portions as required to degree of cleanliness recommended by manufacturer of succeeding material.
   4. Following installation of finish floor materials, clean finish floor daily, and more often if necessary.

a. Provide adequate protection of finish where Work is being performed in space in which finish materials have been installed.
b. For purpose of this subparagraph, term “Clean”, is to be interpreted as meaning free from foreign materials that, in opinion of Architect, may be injurious to finish floor material, (i.e.: “vacuum clean”).

3.02 DUST CONTROL

A. Schedule operations so that dust and other contaminants resulting from cleaning process will not fall on wet or newly-coated surfaces.

3.03 FINAL CLEANING

B. Prior to completion of Work, remove from Project Site, tools, surplus materials, equipment, scrap, debris, and waste.

C. Employ experienced workers for final cleaning.

D. Complete following cleaning operations before requesting inspection for Certification of Substantial Completion:
1. Site:
   a. Clean Site, including landscape development areas, of rubbish, litter and other foreign substances.
   b. Sweep paved areas broom clean, including public paved areas directly adjacent to Project Site.
      1) Remove stains, spills and other foreign deposits.
   c. Rake grounds that are neither paved nor planted, to smooth even-textured surface and remove resultant debris.
2. Exterior and Interior:
   a. Clean exposed exterior and interior hard-surfaced finishes to dust-free condition
   b. Remove traces of soils, waste material, smudges and other foreign matter.
   c. Remove traces of splashed material from adjacent surfaces.
   d. Remove materials using equipment as instructed by manufacturer of surface materials to be cleaned.
   e. Leave concrete floors broom clean.
3. Carpeted Surfaces:
   a. Use only dry-chemical method of cleaning.
   b. Do not use steam cleaning or water based cleaning on carpet.
   c. Use materials and methods fully approved by carpet manufacturer, as instructed in manufacturer’s published literature.
   d. Vacuum carpet.
4. Labels:
   a. Remove labels that are not permanent labels.
5. Transparent Materials:
   a. Clean transparent material, including mirrors and glass in doors and windows.
   b. Remove glazing compound and other substances that are noticeable vision obscuring materials.
   c. Replace chipped or broken glass and other damaged transparent materials.
   d. Restore reflective surfaces to their original reflective condition.

e. Clean glass inside and outside.
f. Polished Surfaces:
1) Apply polish recommended by manufacturer of material being polished to surfaces requiring routine application of buffed polish.

E. Ventilating Systems:
1. Clean permanent filters and replace disposable filters when units were operated during construction.
2. Clean ducts, blowers and coils when units were operated without filters during construction.

F. Wipe surfaces of electrical equipment.
1. Remove excess lubrication and other substances.
2. Clean plumbing fixtures to sanitary condition.
3. Clean light fixtures and lamps.

G. Comply with regulations of authorities having jurisdiction and safety standards for cleaning.
1. Do not burn waste materials.
2. Do not bury debris or excess materials on Owner's property.
3. Do not discharge volatile, harmful or dangerous materials into drainage systems.
4. Remove waste materials from Project Site and dispose of in lawful manner.
5. Where extra materials of value remaining after completion of associated Work have become Owner's property, arrange for disposition of these materials as directed.

H. Prior to final completion, or Owner occupancy, conduct inspection of sight-exposed exterior surfaces, and Work areas, to verify that entire Work is clean.

3.04 CLEANING DURING OWNER'S OCCUPANCY

A. Should Owner occupy portion of Project prior to its final completion by Contractor, comply with acceptance of partial occupancy by Owner/Architect in accordance with General Conditions of the Contract.

END OF SECTION 01 7423

SECTION 01 7700

CLOSEOUT PROCEDURES

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes:
   1. Administrative and procedural requirements for Project Closeout, including but not necessarily limited to:
      a. Inspection procedures.
      b. Substantial Completion
      c. Final Acceptance

B. Related Sections:
   1. Section 01 7423: Cleaning
   2. Section 01 7839: Project Record Documents

C. Related Requirements:
   1. Closeout requirements for specific construction activities are included in appropriate Sections in Divisions 02 through 33.

1.02 BENEFICIAL OCCUPANCY AND ACCEPTANCE OF SUBSTANTIAL COMPLETION

A. Comply with CCR, Title 24, Part 1 – Administrative Code, Section 4-336 CCR (Schools) Requirements for Closeout Procedures.
   1. Comply with additional requirements in District's Division 00 Sections and General Conditions of the Contract.

B. Preliminary Procedures:
   1. Before requesting inspection for certification of Substantial Completion, complete following.
      a. List exceptions in request.
   2. In application for payment that coincides with, or first follows, date Substantial Completion is claimed, show one hundred percent completion for portion of Work claimed as substantially complete.
      a. Include supporting documents for completion as indicated in Contract documents and statement showing accounting of changes to Contract Sum.
      b. When one hundred percent completion cannot be shown, include list of incomplete items, value of incomplete construction, and reasons Work is not complete.
   3. Make required submittals of specific warranties, workmanship bonds, maintenance agreements, final certifications and similar documents, along with record drawings and similar final record information in accordance with requirements in Section 01 7839.
   4. Complete final clean up requirements in accordance with Section 01 7423, including touch-up painting.
      a. Touch-up and otherwise repair and restore marred exposed finishes.

C. Inspection Procedures:
   1. Upon receipt of request for inspection, Architect will either proceed with inspection or advise Contractor of unfilled requirements.
   2. Should Architect and Owner determine that Work is not substantially complete:
      a. Architect will promptly notify Contractor in writing, giving reason(s) for his determination.
      b. In conjunction with Inspector of Record and Construction Manager, Architect will prepare list of items (Punch List) to be completed or corrected.
         1) Punch List may be developed for less than entire project, when approved by Architect and Owner.
      c. Remedy deficiencies and notify Architect when Work is ready for reinspection.
      d. Architect will prepare Certificate of Substantial Completion, accompanied by Punch List, following inspection, or advise Contractor of construction that must be completed or corrected before certificate will be issued
   3. Architect will repeat inspection when requested and if assured that Work has been substantially completed in each phase, will submit Certificate of Substantial Completion to Contractor and Owner for their written acceptance of responsibilities assigned them in Certificate.
      a. The Owner reserves the right to occupy each completed phase upon issuance of Certificate of Substantial Completion.
   4. Results of completed inspection will form basis of requirements for final acceptance.

D. Mandatory Substantial Completion Submittals:
   1. To include, but are not necessarily limited to:
      a. Redlined As-Built Set (marked up drawings).
      b. On As-Built Set and Specifications manual record revisions to original contract document with contrasting color.
      c. Operation and Maintenance Manuals for items specified in pertinent Sections and for other items approved by Architect.
      d. Warranties and Guarantees.
      e. Training.
      f. Spare parts, materials, and extra stock.
      g. Evidence of payment and release of liens, when requested by Owner.
      h. List of Subcontractors, service organizations and principal vendors, including current names, addresses and telephone numbers, where they may be contacted for emergency service, including nights, weekends, and holidays.

1.03 FINAL ACCEPTANCE

A. Preliminary Procedures:
   1. Before requesting final inspection for certification of final acceptance and final payment, complete following.
      a. List exceptions in request.
   2. Prepare and submit Project Closeout Request notice that Work is ready for final inspection and acceptance.
   3. Architect, and Owner's Project Inspector will verify that Punch List items are complete.
   4. Should Architect or Owner's Project Inspector determine Work is incomplete or defective:

a. Architect or Owner's Project Inspector will promptly notify Contractor in writing, listing incomplete or defective work.
b. Remedy deficiencies promptly and notify Owner's Project Inspector when ready for re-inspection.

B. Reinspection Procedure:
1. Architect will reinspect Work upon receipt of notice that Work, including inspection list items from earlier inspections, has been completed, except items whose completion has been delayed because of circumstances acceptable to Architect.
2. Upon completion of reinspection, the Architect will prepare certificate of final acceptance, or advise Contractor of Work that is incomplete, or of obligations that have not been fulfilled but are required for final acceptance.
3. When necessary, reinspection will be repeated.
4. When Architect determines Work is acceptable under Contract Documents, he will notify Owner's Project Inspector that Project is complete per Contract Drawings and Specifications.
5. Upon acceptance, Contractor must certify that Project has been completed in compliance with Contract Documents.
   a. Submit copies of this report to following:
      1) Architect.
      2) Owner's Project Inspector.

C. Final Payment Procedure.
1. Submit following in accordance with requirements of Section 01 7839:
   a. Final payment request with releases and supporting documentation not previously submitted and accepted.
   b. Include certificates of insurance for products and completed operations where required.
2. Updated final statement, accounting for final additional changes to Contract Sum.
3. Certified copy of Architect's final inspection list of items to be completed or corrected, stating that each item has been completed or otherwise resolved for acceptance, and list has been endorsed and dated by Architect.
4. Consent of surety to final payment.
5. Comply with additional requirements in District's Division 00 Sections and General Conditions of the Contract.

PART 2 PRODUCTS *(Not Applicable)*

PART 3 EXECUTION *(Not Applicable)*

END OF SECTION 01 7700

SECTION 01 7839

PROJECT RECORD DOCUMENTS

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes:
   1. Administrative and procedural requirements for preparing, maintaining, and submitting following:
      a. Project Record Documents.
      b. Operating and Maintenance Data and Manuals.
      c. Warranties, Guarantees, and Bonds.
      d. Spare parts and Maintenance Materials.
      e. Instructions to Owner's Personnel.

B. Related Sections:
   1. Section 01 7700:Closeout Procedures

C. Related Requirements:
   1. Refer to District's Division 00 Documents, including General Conditions, for additional requirements.
   2. Separate Specification Sections requiring Record Documents.

1.02 PROJECT RECORD DOCUMENTS

A. Dedicated Record Set:
   1. Maintain one set of Contract Drawings and one copy of Project Specifications for use during construction to record changes made during construction..
      a. Record revisions with contrasting color.
      b. Do not use record documents for construction purposes.

B. Record Documents and Shop Drawings:
   1. Record in concise and neat manner and on continual basis actual revisions to Work.
   2. Include reference to appropriate document with date revision/change was approved or directed.
   3. Changes/Revisions to Drawings and Specifications include, but are not necessarily limited to:
      a. Changes made by RFI, CCD and CO.
      b. Changes made to shop drawings.
   4. Mark set to show actual installation where installation varies substantially from Work as originally shown.
      a. Mark whichever drawing is most capable of showing conditions fully and accurately.
      b. Where shop drawings are used, record cross-reference at corresponding location on Contract drawings.
      c. Give particular attention to concealed elements that would be difficult to measure and record at later date.
   5. Mark record sets with red erasable pencil; use other colors to distinguish between variations in separate categories of Work.

6. Mark new information that is important to Owner, but was not shown on Contract Drawings or shop drawings.
7. Note related Change Order numbers where applicable.
8. Label each document "**PROJECT RECORD**" in neat large printed letters.
9. Record information concurrently with construction progress.
    a. Do not conceal Work until required information is recorded.
10. Legibly mark each item to record actual construction including:
    a. Measured depths of foundations in relation to finish first floor datum.
    b. Measured horizontal and vertical locations of underground utilities and appurtenances, referenced to permanent surface improvements.
        1) Identify drains and sewers by invert elevation.
    c. Measured locations of internal utilities and appurtenances concealed in construction, referenced to visible and accessible features of Work.
    d. Identify ducts, dampers, valves, access doors and control equipment wiring.
    e. Field changes of dimension and detail.
    f. Details not on original Drawings.

C. Store Record Documents and Samples in Contractor's Field Office, separate from documents used for construction.
1. Protect record documents from deterioration and loss in secure, fire-resistive location.
2. Provide access to record documents for Architect's reference during normal working hours.
3. Provide files and racks for storage of Documents
4. Provide secure storage space for storage of samples.
5. Maintain documents in clean, dry, legible condition and in good order.
    a. Replace soiled or illegible documents.

D. Record Specifications:
1. Maintain one complete copy of Project Manual, including addenda, and one copy of other written construction documents such as Change Orders and modifications issued in printed form during construction.
2. Legibly mark these documents and record at each product section description of actual products installed to show substantial variations in actual Work performed in comparison with text of specifications and modifications including following:
    a. Manufacturer's name, trade name, product model and number and supplier.
    b. Give particular attention to substitutions, selection of options and similar information on elements that are concealed or cannot otherwise be readily discerned later by direct observation, including following:
        1) Authorized product substitutions or alternates utilized.
        2) Changes made by Addenda and Modifications.
3. Note related record drawing information and product data.
4. Upon completion of Work, submit record specifications to Architect for Owner's records.

E. Owner's Project Inspector will verify that Project Record Documents are fully updated prior to approving Payment Applications.
1. Obtain Owner's Inspector's signature on record set verifying information.

F. Record drawings will be reviewed by Architect for completeness and acceptance.

G. As-Built Drawings:
   1. Turn over to Owner in following manner:
      a. Separate each discipline (i.e. Civil, Architectural, Mechanical, Electrical, Pluming, and so on)
      b. Identify disciplines of Drawings by adding white tag.
      c. Tag each discipline.
      d. Tag Size: No. 8, 8-11/16 by 2-3/4 inches.
      e. Legibly write on tag name of Project, and discipline inside tube.
      f. Separately tube each discipline by using U-Line tube or equal.
      g. Size of Tube: 4 inches minimum and 6 inches maximum.

H. Record of Electronic (Digital) Files:
   1. Immediately before inspection of Substantial Completion, review marked-up Record Set with Architect and Owner's Inspector.
   2. When authorized, prepare full set of corrected digital files of Record Documents.
   3. Submit following documents:
      a. Scan sheets in As-Built Set, furnish annotated PDF electronic files.
      b. CD or CD's of PDF files and file labeling is to include following information:
         1) Project name.
         2) Date.
         3) Name of Architect.
         4) Name of Contractor
         5) Disciplines included in CD (i.e. Title sheet, Civil, Architectural, Structural, Mechanical, and so on)
         6) Label and index files contained in CD in sequential order to match Title Sheet of Contract Documents.

I. RFI's:
   1. Furnish one copy of RFI's questions and answers submitted on Project.
   2. Submit RFI binder in following manner:
      a. Provide binders as specified in "Record Document Storage" Article.
      b. Label binder on cover and spine: RFI's.
         1) Identify Project Name/Building Name, and Project Number on cover.
      c. Furnish tab for each individual RFI.
      d. Submit RFI Binders inside storage boxes as specified in "Record Document Storage" Article.
         1) Include two labels on face and side of box or boxes.

1.03 MAINTENANCE AND OPERATING (M&O) DATA AND MANUALS

A. Submit two sets prior to Substantial Completion inspection for Architect's review and approval.

B. Manual Format:
   1. Prepare data in form of instructional manual for use by Owner's personnel.
      a. Provide binders as specified in "Record Document Storage" Article.
      b. Identify Project Name/Building Name and Project Number on cover of manual.
   2. Table of Contents: Include in each volume, neatly typewritten.
      a. Identify Contractor, name of responsible principal, address, and phone number.

b. List each product included, indexed to content of volume.
c. List, with each product, name, address, and telephone number of subcontractor or installer and maintenance contractor, as appropriate and nearest source of supply for parts and replacement.
d. Identify location of installed equipment.
e. Submit M&O Manuals inside storage boxes as specified in “Record Document Storage” Article.

3. Product Data:
   a. Include only those sheets which are pertinent to specific product.
   b. Annotate each sheet to clearly identify specific product or part installed.
   c. Include CD with Product Data information.
      1) Maintenance schedules and equipment list must be in editable Word or Excel spreadsheet format.
4. Drawings:
   a. Supplement product date with Drawings as necessary to clearly illustrate relations of component parts of equipment and systems.
   b. Coordinate Drawings with information in Project Record Documents to ensure correct illustration of completed installation.
   c. Do not use Project Record Documents as maintenance drawings.
   d. Full size and half size hard copies of Drawings are required.
5. Copy of each warranty and service contract as specified.

1.04 RECORD DOCUMENT STORAGE

A. Binders:
   1. Commercial quality, heavy-duty, three-ring D binders with durable and cleanable vinyl-covers at front and spine, with internal pockets to hold CD.
   2. Size: 8-1/2 by 11 inches with ring size as required.
   3. Provide new white binders.

B. Storage Boxes:
   1. “Bankers Box” or equal quality.
      a. Size: 11 by 15 inches or equal size.
   2. Include two labels on face and side of box.
   3. Label boxes as follows:
      a. Use Avery Label 6573 or equal size.
      b. Type information on label, including Bid No., Project Name, and Number of boxes (i.e. Box 1 of 5).
         1) Refer to attached sample label at end of this Section.
         2) Font for Labels:
            a) Vernada, 48 point for Bid No.
            b) Vernada, 16 point for remainder of content on label.

1.05 WARRANTIES, GUARANTEES, AND BONDS

A. Disclaimers and Limitations:
   1. Manufacturer's disclaimers and limitations on product warranties do not relieve Contractor of warranty on Work that incorporates products, nor does it relieve suppliers, manufacturers, and subcontractors required to countersign special warranties with Contractor.

B. Manufacturer's warranties and guarantees not withstanding, warrant entire Work against defects in materials and workmanship for twelve months from Date of Acceptance of Substantial Completion.
   1. Warranties and guarantees between Contractor and Owner are not affected by warranties and guarantees between Contractor and manufacturers and Contractor and suppliers.

1.06 WARRANTY REQUIREMENTS

A. Related Damages and Losses:
   1. When correcting warranted Work that has failed, remove and replace other Work that has been damaged as result of such failure or that must be removed and replaced to provide access for correction of warranted Work.

B. Reinstatement of Warranty:
   1. When Work covered by warranty has failed and been corrected by replacement or rebuilding, reinstate warranty by written endorsement.
   2. Provide Reinstated Warranty equal to original warranty with equitable adjustment for depreciation.

C. Replacement Cost:
   1. Upon determination that Work covered by warranty has failed, replace or rebuild Work to acceptable condition complying with requirements of Contract Documents.
   2. Contractor is responsible for cost of replacing or rebuilding defective Work regardless of whether Owner has benefited from use of Work through portion of its anticipated useful service life.

D. Owner's Recourse:
   1. Written warranties made to Owner are in addition to implied warranties, and do not limit duties, obligations, right and remedies otherwise available under law, nor are warranty periods be interpreted as limitations on time in which Owner can enforce such other duties, obligations, rights, or remedies.
   2. Rejection of Warranties:
      a. Owner reserves right to reject warranties and to limit selections to products with warranties not in conflict with requirements of Contract Documents.

E. Owner reserves right to refuse to accept Work for Project where special warranty, certification, or similar commitment is required on such Work or part of Work, until evidence is presented that entities required to countersign such commitments are willing to do so.

F. Submit warranties and guarantees to Contractor for Architect’s review and approval prior to final payment.

G. Do not start warranty period for delayed warranty items, until items have been completed.

H. Furnish two original copies with wet signatures of warranties and guarantees on Project.

I. Organize warranties/guarantees into orderly sequence based on Table of Contents in Project Specifications:
   1. Bind warranties/guarantees in 8-1/2 by 11 inch heavy-duty, three ring binders, same as specified in “Maintenance And Operating (M&O) Data and Manuals” Article.
   2. Identify each binder on front and spine with printed sheet “**WARRANTIES**”, project name and name of contractor.
   3. Contractor to issue Contractor’s and Subcontractor’s Warranties/Guarantees using attached Warranties/Guarantees form found at end of this Section.

1.07 SUBMITTALS

A. Submit written warranties to Architect prior to date certified for Substantial Completion.
   1. When Architect's Certificate of Substantial Completion designates commencement date for warranties other than date of Substantial Completion for Work, or designated portion of Work, submit written warranties upon request of Architect.

1.08 MANUAL FOR EQUIPMENT AND SYSTEMS

A. Submit (2) copies of final approved manual to Owner’s Project Inspector prior to final payment.

B. Content for each unit of mechanical equipment and each mechanical system, as applicable and appropriate, including but not limited to following:
   1. Description of units, or system and component parts.
   2. Operating procedures.
   3. Maintenance procedures.
   4. Servicing and lubrication schedule, with list of lubricants required.
   5. As-installed control diagrams by controls manufacturer.
   6. Other data as required in various specification sections.

C. Content, for each electrical and electronic system, as applicable and appropriate, including but not limited to following:
   1. Description of system and component parts.
   2. Circuit directories of panel boards.
   3. As-installed color-coded wiring diagrams.
   4. Operating procedures.
   5. Maintenance procedures.
   6. Other data as required in individual sections.

D. Prepare and include additional data as may be required for instruction of Owner’s personnel.

E. Additional requirements for operating and maintenance data: As may be specified in individual Sections.

F. Provide complete information for products specified in individual Sections.

1.09 INSTRUCTION OF OWNER'S PERSONNEL

A. Provide instruction/training to Owner personnel as indicated in individual specification sections and as required.

B. Provide to Owner, date and list, including signatures, of Owner personnel who attended training.
   1. Schedule instructional meeting or meetings after instructional manuals have been submitted, reviewed, and approved by Architect.
   2. Coordinate meetings to include tier subcontractors.

C. Instruction sessions will be held in Owner designated area on Project Site and at Owner's convenience.
   1. Schedule amount of time required for each session as specified in individual sections.

D. Review contents of Manuals with Owner's personnel in full detail to explain every aspect of operation and maintenance.

1.10 SPARE PARTS AND MAINTENANCE MATERIALS

A. Provide products, spare parts, maintenance and extra materials in quantities specified in individual Sections.

PART 2 PRODUCTS *(Not Applicable)*

PART 3 EXECUTION *(Not Applicable)*

END OF SECTION 01 7839

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WARRANTY/GUARANTEE FORM

FOR_____WORK

We, the undersigned, do hereby warranty and guaranty that the parts of the Work described above which we have furnished or installed for:

Project Name: (Insert Project Name)

Owner: (Insert Owner's Name)

Location: (Insert Project Location)

Are in accordance with the Contract Documents and that all said work as installed with fulfill or exceed all the Warranty and Guaranty requirements. We agree to repair or replace work installed by us, together with any other work which is displaced or damaged by so doing, that proves to be defective in workmanship, material, or operation within a period of:

(Insert written years) year(s)

from the date of filing of the Notice of Completion, ordinary wear and tear and unusual neglect or abuse excepted.

In the event of our failure to comply with the above-mentioned conditions within a reasonable time period determined by the Owner, after notification in writing, we, the undersigned, all collectively and separately, hereby authorize the Owner to have said defective work repaired and/or replaced and made good, and agree to pay to the Owner upon demand all monies that the Owner may expend in making good said defective work, including all collection costs and reasonable attorney fees.

Date:

(Insert Name of Contractor)	(Insert Name of Subcontractor, Manufacturer or Supplier)
Signature:	Signature:
Name:	Name:
Title:	Title:
State License No.	State License No.:

Local Representative: For maintenance, repair, or replacement service, contact:

Name:

Address:

Phone:

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Bid No. XXXX

[Project Name] **DSA No. N/A**

RFI BINDERS 01 OF 04

BINDERS 01 OF 04: RFI'S 001 THRU 050

BINDERS 02 OF 04: RFI'S 051 THRU 100

BINDERS 03 OF 04: RFI'S 101 THRU 150

BINDERS 04 OF 04: RFI'S 151 THRU 200

Box 1 of 5

Substitution Request Form

Project: _____ Substitution Request Number: _____

To: _____ Date:_____

_____ A/E Project Number: _____

Re: _____ Contract For: _____

Specification Title: _____

Section: _____ Page: _____ Article/Paragraph: _____

Requested Substitution: _____

Manufacturer: _____ Address: _____ Phone No._____

Trade Name: _____ Model No.: _____

Installer: _____Address_____ _Phone No.: _____

History: □ New Product □ 2-5 yrs. old □ 5-10 yrs. old □ More than 10 yrs. old

Differences between requested substitution and specified product: _____

_____

Provide Point-by-Point Itemized Comparison of requested substitution with specified product data attached

REQUIRED BY A/E – Comply with Division 01 Specification Section 01 6000.

Reason for not providing specified item: _____

_____

_____

Similar Installation:

Project: _____ Architect: _____

Address: _____ Owner: _____

_____ Date Installed: _____

Proposed substitution affects other parts of Work: □ No □ Yes; explain _____

_____

_____

Savings to Owner for accepting substitution: _____($ _____)

Proposed substitution changes Contract Time: □ No □ Yes; Add/Deduct _____days.

Supporting Data Attached (Comply with Division 01 Specification Section 01 6000):

□ Product Data □ Drawings □ Tests □ Reports □ Samples □ _____

Undersigned Certifies:

- Requested substitution has been fully investigated and determined to be equal or superior in every respect to specified product.
- Same warranty will be furnished for requested substitution as for specified product.
- Same maintenance service and source of replacement parts, as applicable, is available.
- Requested substitution will have no adverse affect on other trades, and will not affect or delay Progress Schedule.
- Cost data as stated above is complete.
- Claims for additional costs related to accepted substitution which may subsequently become apparent are to be waived.
- Requested substitution does not affect dimensions and functional clearances.
- Undersigned will make payment for changes to building design, Including architectural or engineering design, detailing, and construction costs caused by requested substitution.

Submitted by: _____

Signed by: _____

Firm: _____

Address: _____

_____

Telephone: _____

Attachmenls: _____

_____

_____

_____

_____

ARCHITECT'S REVIEW AND ACTION

□ Substitution Approved – Make submittals in accordance with Division 01 Specification Section 01 3300.

□ Substitution Approved as Noted – Make submittals in accordance with Division 01 Specification Section 01 3300.

□ Substitution Rejected – Use specified materials.

□ Substitution Request Received Too Late – Use specified materials.

Signed by: _____ Date: _____

Additional Comments: □ Contractor □ Subcontractor □ Supplier □ Manufacturer □ A/E □ _____

_____

_____

_____

_____

_____

_____

SECTION 02 4120

SELECTIVE INTERIOR DEMOLITION

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes:
   1. Furnishing labor, materials and equipment necessary for performance of selective interior demolition as indicated, specified, or required.
   2. Selective removal where indicated on Drawings and subsequent legal off-site disposal of, but not necessarily limited to following:
      a. Concrete work in path of travel
      b. Metal handrails and railings
      c. Existing door hardware, including thresholds to be replaced.
      d. Existing non-compliant directional or other signage
      e. Existing toilet accessories to be relocated.
   3. Coordinate removal from Project Site of debris removed by other trades.

B. Related Sections:
   1. Section 01 1100: Summary of Work
   2. Section 01 4100: Regulatory Requirements; current Code edition.
   3. Section 01 5000: Temporary Facilities and Controls; temporary protections.
   4. Section 01 7329: Cutting and Patching

C. Related Requirements:
   1. Refer to Civil, Structural and Electrical Specifications and respective Demolition Drawings.
   2. Respective Sections of Divisions 22 and 26 for cutting, patching, or relocating plumbing and electrical items.

1.02 REFERENCES

A. California Code of Regulations (CCR), Title 24, current edition:
   1. Part 2, California Building Code (CBC), Volumes 1 and 2:
      a. CBC Chapter 33 – Safeguards During Construction,
   2. Part 9, California Fire Code (CFC):
      a. CFC Chapter 33 – Fire Safety During Construction and Demolition.

1.03 DEFINITIONS

A. Remove:
   1. Remove and legally dispose of items except those indicated to be reinstalled, salvaged, or to remain Owner's property.

B. Remove and Salvage:
   1. Items indicated to be removed and salvaged remain Owner's property.
   2. Remove, clean, and pack or crate items to protect against damage.
   3. Identify contents of containers and deliver them to Owner's designated storage area.

C. Partial Removal:
   1. Items of salvable value to the Contractor may be removed from structure as Work progresses.
   2. Salvaged items must be transported from the Project Site as they are removed.
   3. Storage or sale of removed items on Project Site will not be permitted.

D. Remove and Reinstall:
   1. Remove items indicated; clean, service, and otherwise prepare them for reuse; store and protect against damage.
   2. Reinstall items in same locations or in locations indicated.

E. Existing to Remain:
   1. Protect construction indicated to remain against damage and soiling during selective demolition.
   2. When permitted by Architect, items may be removed to suitable, protected storage location during selective demolition and then cleaned and reinstalled in their original locations.

1.04 SUBMITTALS

A. Prior to cutting, which affects structural safety, submit written request to Architect for permission to proceed with cutting.

B. Shop Drawings:
   1. Indicating following:
      a. Extent of items and systems to be removed.
      b. Items to be salvaged or items to be protected during demolition.
      c. locations of utility terminations and extent of abandoned lines to be removed.
         1) Include details indicating methods and location of utility terminations.

C. Schedule of Removal:
   1. Indicate elements to be demolished and removed and proposed timing for Work.
   2. Coordinate with Work of other trades.

D. Record Drawings:
   1. Identify and accurately locate capped utilities and other subsurface structural, plumbing, mechanical, or electrical conditions.

1.05 QUALITY ASSURANCE

A. Demolition Firm Qualifications:
   1. Engage experienced firm that has successfully completed selective demolition work similar to that indicated for this Project.

B. Pre-Demolition Conference:
   1. Conduct conference at Project Site to comply with Pre-Installation Conference requirements of Section 01 3119.
   2. Conduct walkthrough with Owner’s Project Representative to confirm Owner property items have been removed from scheduled Work areas.

3. Identify and mark remaining property items and schedule their removal and delivery to the Owner.

C. Coordination:
1. Coordinate demolition for correct limits and methods.
2. Schedule demolition work to minimize inconvenience to the public and Owner's facility operations.

1.06 PROJECT CONDITIONS

A. Occupancy:
1. Owner will occupy portions of campus immediately adjacent to areas of selective demolition.
2. Conduct selective demolition Work in manner that will minimize need for disruption of Owner's normal operations.
3. Provide minimum of 48-hour advance notice to Owner of demolition activities that will affect Owner's normal operation.

B. Protections:
1. Ensure safety of Contractor, Owner personnel, and general public.
2. Institute measures designed to avoid physical harm to public or property damage to facilities from inadequate or improper means and methods; improper shoring, bracing and structural support; or poorly fenced off areas.

C. Traffic:
1. Conduct demolition operations and debris removal in manner to ensure minimum interference with occupied or used facilities.
2. Do not close, block or otherwise occupied or used facilities without written permission from authorities having jurisdiction.
3. Provide alternate routes around closed or obstructed traffic-ways where required by governing regulations.

D. Drawings may not indicate in detail Demolition Work to be performed.
1. Examine existing conditions to determine the full extent of required demolition.
2. When conditions are encountered that vary from those indicated, promptly notify Architect for direction or clarification before proceeding.

E. Condition of Structures:
1. Owner assumes no responsibility for actual condition of items or structures to be demolished.
2. Conditions existing at the time of contractor inspection for bidding purposes will be maintained by Owner insofar as practicable.
3. Minor variations within structure may occur by Owner's removal and salvage operations prior to start of selective demolition work.

F. Asbestos or Hazardous Waste:
1. It is understood and agreed that this contract does not contemplate handling of asbestos or hazardous waste material.
2. Should asbestos or other hazardous waste material be encountered, notify Owner immediately.
3. Do not disturb, handle or attempt to remove.

G. Damages:
   1. Promptly repair damages caused to adjacent facilities by demolition Work.
   2. Repair damage to existing improvements or damage due to excessive demolition.

1.07 REGULATORY REQUIREMENTS

A. Intent of Drawings and Specifications is that Work of selective demolition is to be in accordance with CCR, Title 24.
   1. Should existing conditions such as deterioration or non-compliant construction be discovered which is not covered by Contract Documents, and finished Work will not comply with CCR, Title 24:
      a. The Architect will submit Construction Change Document (CCD) - *DSA Form 140*, or separate set of plans and specifications, detailing and specifying required Work to, and approved by Division of the State Architect before proceeding with Work.
   2. Comply with CCR Title 24, Part 2 - CBC, and Part 9 - CFC, Article 87 – “Fire Safety During Construction, Alteration or Demolition of a Building.”
   3. Comply with governing EPA notification regulations before starting selective demolition Work.
   4. Comply with requirements of Section 01 5000 and hauling and disposal regulations of authorities having jurisdiction.

1.08 MATERIALS OWNERSHIP

A. Except for items or materials indicated to be reused, salvaged, reinstalled, or otherwise indicated to remain Owner's property, demolished materials become Contractor's property and are be removed from Project Site.

PART 2 PRODUCTS

2.01 HANDLING OF MATERIALS

A. Deliver items scheduled for salvage by the Owner to location designated by Owner.
   1. Clean, package and label Items for storage.

B. Store items scheduled for reuse on Project Site.
   1. Secure from theft, and protected from damage, and other deleterious conditions.

C. The District is responsible for removal and testing of materials suspected of asbestos or lead contamination.
   1. Asbestos abatement reports are available from District.
   2. Cease material removal and alert District immediately when suspect materials are discovered.

2.02 PRODUCTS FOR PATCHING, EXTENDING AND MATCHING

A. Provide the same products or types of construction as that in existing structure, as needed to patch, extend or match existing Work.
   1. Where identical materials are unavailable or cannot be used for exposed surfaces, use materials that visually match existing adjacent surfaces to the fullest extent possible.

2. Use materials whose installed performance equals or surpasses that of existing materials.
3. Generally, Contract Documents will not define products or standards of workmanship present in existing construction.
4. Determine products by inspection and necessary testing, and workmanship by use of existing as sample of comparison.

B. Presence of product, finish, or type of construction, requires that patching, extending, or matching, be performed as necessary to make Work complete and consistent to identical standards of quality.

PART 3 EXECUTION

3.01 GENERAL

A. Preparation:
1. Conduct demolition operations to prevent injury to people and damage to adjacent buildings and facilities to remain.
2. Provide safeguards, including warning signs, lights and barricades, for Owner and protection of workers, occupants, and public and to ensure safe passage of people around selective demolition area.
3. Erect temporary protection, complying with requirements where required, by authorities having jurisdiction.
4. Protect walls, ceilings, floors, and other existing finish work that are to remain and are exposed during selective demolition operations.

B. Protection:
1. Always have fully charged, portable fire extinguisher with each demolition crew on-site.

3.02 EXAMINATION

A. Examine existing conditions, including elements subject to movement or damage during remodeling work.

B. After uncovering Work, examine conditions affecting installation of new work.

C. Discrepancies:
1. Where uncovered conditions are not as anticipated, immediately notify Architect and secure needed directions.
2. Do not proceed in areas of discrepancy until such discrepancies have been fully resolved.

D. Time extensions or increase or decrease of costs resulting from such changes will be adjusted in the manner provided in General Conditions.

3.03 POLLUTION CONTROLS

A. Use water mist, temporary enclosures, and other suitable methods to limit the spread of dust and dirt.
1. Comply with governing environmental protection regulations.
2. Do not use water when it may damage existing construction or create hazardous or objectionable conditions, such as flooding and pollution.

B. Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and areas.

C. Clean adjacent structures and improvements of dust, dirt, and debris caused by selective demolition operations.
   1. Return adjacent areas to the condition existing before start of selective demolition.

3.04 SELECTIVE INTERIOR DEMOLITION – GENERAL

A. Adhere to Project Schedule and notify Owner of changes to Schedule imposed by unforeseen site conditions or Owner operational activities.

B. Perform selective demolition in systematic manner.
   1. Use such methods as required to complete Work indicated in accordance with Project Schedule and governing regulations.

C. Remove existing construction only to an extent necessary for proper installation of new work and interfacing with existing construction.
   1. Cut back finished surfaces to straight, plumb or level lines as required for smooth transition.
   2. Remove debris from elevated portions of building by chute, hoist, or other device that will convey debris to grade level.
      a. Do not throw or drop materials.

3.05 REMOVAL OF EXISTING ELECTRICAL EQUIPMENT AND SERVICES

A. Remove existing electrical equipment, fixtures, and services not indicated for reuse or necessary for completion of Work.
   1. Remove abandoned lines and cap unused portions of active lines.
   2. Comply with additional requirements specified in Division 26 Sections.

3.06 REMOVAL OF OTHER MATERIALS

A. Woodwork:
   1. Cut or remove to joint or panel line.

B. Modular Materials:
   1. Ceramic Tile:
      a. Remove to extent indicated without leaving damaged or defective Work where joining new construction.

C. Gypsum Board:
   1. Remove to extent indicated or required.
      a. Preferably to panel joint line on stud or support line when possible.

D. Remove existing improvements not specifically indicated or required but necessary to perform new Work.
   1. Cut to clean lines, allowing for installation of new Work.

3.07 PATCHING

A. Patch or repair materials to remain when damaged by performance of this Work.
   1. Finish material and appearance of patch or repair Work to match existing.

3.08 CLEANING

A. Clean existing materials to remain with appropriate tools and equipment.

B. Protect existing improvements during cleaning operations.

C. Dampen debris by fog water spray prior to transporting by truck.

D. Keep debris pick-up area broom clean:
   1. Wash daily with clean water.

E. Remove waste and debris, other than items to be salvaged.
   1. Turn over salvaged items to Owner, or store and protect for reuse where required.

F. Continuously clean up and remove items as Work progresses and legally dispose of off Project Site.
   1. Comply with additional requirements in Sections 01 7419 and 01 7423.

END OF SECTION 02 4120

SECTION 03 3000

CAST-IN-PLACE CONCRETE

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes:
1. Formwork for cast-in-place concrete and installation of embedded items.
   a. Work includes footings for chain link and decorative metal fence and gates.
2. Reinforcing steel for concrete unless specifically noted otherwise.
3. Reinforced concrete with compressive strengths as shown.
4. Under-slab moisture vapor barrier/retarder
5. Stair fill.
6. Concrete Finishing:
   a. Includes mock-up panels for slab and wall finishes:
      1) Broom finishes on slabs.
7. Concrete sealers.

B. Related Sections:
1. Section 01 3300: Submittal Procedures.
2. Section 01 4100: Regulatory Requirements; current Code edition.
3. Section 01 4500: Quality Control
4. Section 01 4525: Concrete Moisture Testing
5. Section 07 9200: Joint Sealants
6. Section 32 0129: Concrete Repair for Exterior Improvements; miscellaneous site concrete not specified elsewhere.

C. Products Furnished But Not Installed Under This Section:
1. Reinforcing steel for masonry work.

D. Products Installed But Not Furnished Under This Section:
1. Built-in anchors, inserts, bolts and other embedded items for connection of other Work.
2. Built-in sleeves, thimbles, dovetail slots and water stops.

1.02 REFERENCES

A. California Code of Regulations (CCR), Title 24, Part 2, California Building Code (CBC), Volumes 1 and 2, current edition.
1. Chapter 19A – Concrete

B. ASTM International (ASTM):
1. ASTM A 615 – Standard Specification for Deformed and Plain Carbon-Steel Bars for Concrete Reinforcement
2. ASTM A 706 – Standard Specification for Deformed and Plain Low-Alloy Steel Bars for Concrete Reinforcement
3. ASTM A 1064 – Standard Specification for Carbon-Steel Wire and Welded Wire Reinforcement, Plain and Deformed, for Concrete

4. ASTM C 31 – Standard Practice for Making and Curing Concrete Test Specimens in the Field
5. ASTM C 33 - Standard Specification for Concrete Aggregates
6. ASTM C 39 – Standard Test Method for Compressive Strength of Cylindrical Concrete Specimens
7. ASTM C 42 – Standard Test Method for Obtaining and Testing Drilled Cores and Sawed Beams
8. ASTM C 88 – Standard Test Method for Soundness of Aggregates by Use of Sodium Sulfate or Magnesium Sulfate
9. ASTM C 94 – Standard Specification for Ready-Mixed Concrete
10. ASTM C 143 – Standard Test Method for Slump of Hydraulic-Cement Concrete
11. ASTM C150 – Standard Specification for Portland Cement
12. ASTM C 171 – Standard Specification for Sheet Materials for Curing Concrete
13. ASTM C 595 – Standard Specification for Blended Hydraulic Cements
14. ASTM C 618 – Standard Specification for Coal Fly Ash and Raw or Calcined Natural Pozzolan for Use in Concrete
15. ASTM C 685 – Standard Specification for Concrete Made By Volumetric Batching and Continuous Mixing
16. ASTM D 882 – Test Method for Tensile Properties of Thin Plastic Sheeting
17. ASTM D 1434 – Standard Test Method for Determining Gas Permeability Characteristics of Plastic Film and Sheeting
18. ASTM D 1709 – Test Methods for Impact Resistance of Plastic Film by Free-Falling Dart Method
19. ASTM D 1751 – Standard Specification for Preformed Expansion Joint Filler for Concrete Paving and Structural Construction (Nonextruding and Resilient Bituminous Types)
20. ASTM D 1752 – Standard Specification for Preformed Sponge Rubber Cork and Recycled PVC Expansion Joint Fillers for Concrete Paving and Structural Construction
21. ASTM D 2419 – Standard Test Method for Sand Equivalent Value of Soils and Fine Aggregate
22. ASTM E 329 – Standard Specification for Agencies Engaged in Construction Inspection, Testing, or Special Inspection
23. ASTM E 1155 – Standard Test Method for Determining FF Floor Flatness and FL Floor Levelness Numbers
24. ASTM E 1745 – Standard Specification for Water Vapor Retarders Used in Contact with Soil or Granular Fill under Concrete Slabs
25. ASTM F 1249 – Test Method for Water Vapor Transmission Rate Through Plastic Film and Sheeting Using a Modulated Infrared Sensor

C. American Concrete Institute (ACI):
1. ACI 117 – Specification for Tolerances for Concrete Construction and Materials (ACI 117-10) and Commentary-Reapproved 2015
2. ACI 301 – Specification for Structural Concrete for Buildings.
3. ACI 302.1R – Guide to Concrete Floor and Slab Construction
4. ACI 302.2R – Guide for Concrete Slabs that Receive Moisture-Sensitive Flooring Materials.
5. ACI 304 – Recommended Practice for Measuring, Mixing and Placing Concrete.
6. ACI 305 – Recommended Practice for Hot Weather Concreting.
7. ACI 306 – Recommended Practice for Cold Weather Concreting.
8. ACI 318 – Building Code Requirements for Reinforced Concrete.
9. ACI 347 – Recommended Practice for Concrete Formwork

D. California Department of Transportation (Caltrans):
   1. Office of Materials Engineering and Testing Services:
      a. California Test Methods (CTM):
         1) CTM 217 – Method of Test for Sand Equivalent.
         2) CTM 227 – Method of Test for Evaluating Cleanness of Coarse Aggregate

E. The Engineered Wood Association (APA):
   1. Voluntary Product Standard Structural Plywood (PS 1-09)
   2. Guide to Plywood Grades

F. West Coast Lumber Inspection Bureau (WCLIB):
   1. Standard Grading Rules No. 17, current edition.

G. American Welding Society (AWS):
   1. AWS D1.4 – Structural Welding Code – Reinforcing Steel.
   2. AWS D1.8 – Seismic Welding Supplement.

G. South Coast Air Quality Management District (SCAQMD):
   1. Rule 1113 – Architectural Coatings

1.03 SUBMITTALS

A. Product Data:
   1. Manufacturer's product data with installation instructions for proprietary materials including reinforcement and forming accessories, form coatings, admixtures, joint materials, sealers/hardeners, curing materials (when permitted), and others as requested by Architect.

B. Mix Designs:
   1. Prepare mix designs for Architect’s review and include following information in mix design data:
      a. Design:
         1) Project name, address, Site location, and location of design usage.
         2) Contractor, Sub-Contractor, Supplier and Plant Location.
         3) Mix Number.
         4) Specified compressive strength, maximum aggregate size, slump, and placement method.
         5) Application and location in structure.
         6) Signature and stamp of licensed civil engineer responsible for mix design.
   2. Materials:
      a. Design Method.
      b. Water-Cement Ratio.
      c. Cement:
         1) Type, amount, and compliance with specified criteria statement.
      d. Aggregates:
         1) Source(s), gradations (Individual and combined).
      e. Admixtures:
         1) Brand, classification, dosage, addition method.
         2) Obtain specified approvals for admixtures prior to including in mix designs.
      f. Water source.

g. Test Results, Batch Quantities, Yield (calculations).

3. Special Considerations:
   a. Unit Weight.
   b. Other considerations relative to placement, curing, finish, and testing.

C. Shop Drawings:
1. Cast-in-place Concrete:
   a. Show construction joint locations and details.
2. Reinforcing Steel:
   a. No submittals are required.
   b. Providing steel reinforcing as indicated on Drawings and as specified herein is responsibility of Contractor.
   c. Prepared Shop Drawings are solely for use by Contractor and will not be reviewed or approved by Architect or Structural Engineer.

D. Batch Plant Certificates:
1. Accompany each load of materials or concrete with a signed copy of batch plant certificate stating quantity of each material, amount of water, admixtures, departure time and date.
2. When continuous batch plant inspection is waived, provide affidavit in accordance with Title 24, CBC, Part 2, Section 1704A.3.3 to Owner's Testing Laboratory.

E. Testing and Inspection Reports:
1. Owner's Testing Agency:
   a. Laboratory Reports:
      1) Laboratory test or evaluation reports for concrete materials and mix designs, performed in accordance with Section 01 4500, to Owner, Architect, Contractor, and Division of the State Architect.
      2) Do not begin concrete production until mix designs have been reviewed and accepted by the Architect.
2. Reinforcing Steel Reports:
   a. Certified mill test reports (tensile and bending) for each heat or melt of steel prior to delivery of material to Project Site.
   b. Where reinforcing is to be welded, furnish mill test reports verifying weldability of steel.

F. Contractor's Certifications:
1. Testing Laboratory's Certificate of Compliance.
2. Certified copies of mix designs for each concrete class specified including compressive strength test reports.
3. Certification that materials meet requirements specified.
4. Certification from vendor that samples originate from and are representative of each lot proposed for use.

G. Schedule of placing for Architect's review before starting Work.

H. Samples:
1. Upon request of Architect
   a. Furnish formwork and accessories, including expansion joint fillers and waterstops.
   b. Concrete sealer/harder products as required for application to mock-up slab panels.

I. Environmental Certifications:
   1. Certificates for EQ Low-Emitting Materials:
      a. Paints and Coatings.

1.04 QUALITY ASSURANCE

A. Formwork and Accessories:
   1. Design Criteria: Formwork conforming to ACI 347.
      a. Design Formwork to:
         1) Prevent leakage or washing out of cement mortar.
         2) Resist spread, shifting, and settling.
         3) Reproduce accurately required lines, grades, and surfaces within tolerances specified.
      b. Safety:
         1) Responsibility for adequate strength and safety of formwork including falsework, and shoring rests with Contractor.
   2. Allowable Tolerances:
      a. Construct Formwork to produce concrete within tolerance limits recommended in ACI 347, unless otherwise noted.

B. Reinforcing:
   1. Welders' Qualifications:
      a. Qualify welders in accordance with AWS D1.4 and AWS D1.
   2. Do not permit reinforcing steel to rust where there is danger of staining exposed surfaces of adjacent concrete.
      a. Replace rust-stained concrete at Contractor’s expense.
   3. Allowable Tolerances:
      a. Place reinforcing steel within tolerances permitted by ACI 318, Section 26.6.2, unless otherwise approved by Architect.
   4. The Owner’s Testing Agency will provide tests in accordance with CBC Chapter 17A.
      a. Collect mill test reports for reinforcement.
      b. Take samples from bundles at fabricators.
         1) When bundles are identified by heat number and accompanied by mill analysis, take two specimens from each ten tons, or fraction thereof, of each size and grade.
         2) When reinforcement is not positively identified by heat numbers or when random sampling is intended, take two specimens from each 2 tons, or fraction thereof, of each size and grade.
   5. Test for Tensile and Bending Strengths:
      a. Provide inspection of welding, including prior fit-up, welding equipment, weld quality and welder certification in accordance with AWS D1.4 and AWS D1.8
      b. Perform chemical analysis sufficient to determine carbon equivalent and minimum preheat temperature when reinforcement does not conform to low-alloy steel requirements of CBC Section 1903A.8.

C. Concrete:
   1. Testing Laboratory Qualifications:
      a. Testing Laboratory under direction of registered Civil Engineer licensed in State of California, having operated successfully for four years prior to this Work, conforming to requirements of ASTM E 329.

2. Requirements of ACI 301 govern Work, materials, and equipment related to this Section.
    a. Specifications set minimum results required, and references to procedures are intended to establish minimal guides.
3. Responsibility for quality of concrete in place rests with Contractor who also bears burden of proof that concrete meets minimum requirements.
4. Placing of concrete by means of pumping will be acceptable method of placement providing that Contractor can demonstrate that:
    a. Specified concrete strengths will be met.
    b. Equipment has a record of satisfactory performance under similar conditions and using a similar mix.
    c. Trial batches have been made.

D. Mock-Up Slab Panels:
1. Size: Approximately 5 feet by 5 feet, unless otherwise indicated.
2. Construct mock-up slab panels for following finishes where scheduled:
    a. Trowel Finish
    b. Light Textured Broom Finish
    c. Medium Textured Broom Finish
    d. Heavy (Coarse) Textured Broom Finish
3. Do not proceed with placing and finishing of concrete slab areas indicated to receive specified finish until mock-up panel is accepted by Architect.
4. Apply specified concrete sealer to one-half of mock-up slab panel, when requested by Architect,
5. Retain mock-up slab panel on Project Site for comparison purposes with actual slab finish work.
    a. Demolish and remove mock-up panel from Project Site after completion and acceptance of final slab finish.

E. Mock-Up Wall Panels:
1. Construct mock-up wall panels for following finishes:
    a. Smooth Form Finish:
        1) Upon Architect's review of smooth form finish, Architect may request that subsequent grout cleaned finish or paint finish be applied to portion of mock-up panel.
    b. Grout Cleaned (Sack) Finish:
        1) For surface appearance and texture.
2. Panel Size:
    a. Approximately 6 feet wide by 8 feet high by 8 inches thick, unless otherwise indicated, for smooth form finish.
    b. Approximately 2 feet by 2 feet, for grout cleaned (sack) finish.
        1) May be applied to portion of mock-up for smooth form finish.
3. Do not proceed with placing and finishing of concrete wall areas indicated to receive specified finish until mock-up panel is accepted by Architect.
4. Retain mock-up wall panel on Project Site for comparison purposes with actual finish work.
    a. Demolish and remove mock-up panel from Project Site after completion and acceptance of final wall finish.

1.05 DELIVERY, STORAGE, AND HANDLING

A. General:
1. Ensure storage facilities are weather tight and dry.

2. Deliver and store packaged materials in original containers with seals unbroken and labels intact until time of use.

B. Reinforcing:
   1. Deliver reinforcement and accessories to Project Site not more than 48 hours before placement.
   2. Store in a manner to prevent excessive rusting and fouling with grease, dirt, or other bond-weakening coatings.
   3. Take precautions to maintain identification after bundles are broken.

C. Cast-in-Place Concrete:
   1. Store bulk cement in bins capable of preventing exposure to moisture.
   2. Use sacked cement in chronological order of delivery.
      a. Store each shipment so that it may be readily distinguishable from other shipments.

1.06 PROJECT CONDITIONS

A. Sequencing Schedule for Formwork:
   1. Ensure timely delivery of embedded items.
   2. Be responsible for cutting and patching necessitated by failure to place embedded items.
   3. Plan erection and removal to permit proper sequence of concrete placing without damage to concrete.

PART 2 PRODUCTS

2.01 MATERIALS

A. Formwork and Accessories:
   1. Forming Materials:
      a. Panel or board forms at Contractor's option.
         1) Panel Forms:
            a) Minimum 5/8-inch thick exterior grade plywood with sealed edges, PS 1 grade Plyform Class I and II B-B Exterior or HDO Exterior.
   2. Wood Framing:
      a. WCLIB standard grade or better Douglas Fir.
   3. Form Ties and Spreaders:
      a. Metal type acting as spreaders, leaving no metal within one inch of concrete face and no fractures, spalls, depressions or other surface disfigurations greater than 3/4-inch in diameter.
   4. Expansion Joint Filler:
      a. Fiber Type:
         1) Premolded non-extruding preformed bituminous saturated fiberboard units, ASTM D 1751, 1/4 inch thick unless otherwise noted.
         2) Provide one of following, or approved equal:
            a) W. R. Meadows, Inc. - Sealtight Fibre Expansion Joint (Basis-of-Design)
            b) J.D. Russell Company – Fiberflex Fiber Expansion Joint
            c) Right / Pointe Company – Fibre Expansion Joint
            d) SpecChem Fiber Expansion Joint

b. Cork Type:
1) Preformed cork, ASTM D1752, Type II, 1/2-inch size unless otherwise noted.
a) Right / Pointe Company – Cork-Standard Expansion Joint or approved equal.

5. Form Release Agent:
a. Must not stain or otherwise adversely affect architectural concrete surfaces.
b. Provide one of following, or approved equal:
1) Atlas Construction Supply, Inc. – Atlas Premium Gold Release
2) Nox-Crete Co. – Nox-Crete Form Coating
3) Right / Pointe Company – Right Release Water Base

B. Waterstops:
1. Sodium bentonite based waterstop conforming to following physical properties:
a. Sodium Bentonite Content: 75 percent.
b. Hydrostatic Head Resistance: 231 ft.
c. Wet/Dry Cycling, (25 cycles at 231 ft.): No effect
d. Specific gravity, (ASTM 0 71): 1.57
e. Flash Point, (ASTM 093): > 300 °F.
2. Product and Manufacturer:
a. Waterstop-RX by CETCO div. Minerals Technologies.
b. Waterstop Adhesive: CETSEAL by CETCO

C. Under Slab Moisture Barrier/Retarder:
1. Vapor Retarder:
a. Minimum 15 mil thick, complying with ASTM E 1745, Class A and following:
1) Water Vapor Permeance, ASTM F 1249 / E 154, Section 7: 0.01 perms or less.
2) Puncture Resistance, ASTM D 1709: Minimum 2266 grams.
3) Tensile Strength, ASTM D 882: 70.6 lbf/in
4) Methane Transmission Rate, ASTM D 1434: 192.8 GTR mL(STP)/m^2/day.
2. Provide one of following products, or approved equal:
a. Moistop Ultra 15 by Fortifiber Building Systems Group.
b. VaporBlock 15 by Raven Industries, Inc.
c. Stego Wrap Vapor Barrier by Stego Industries, LLC

D. Reinforcing:
1. Bars:
a. New billet steel, ASTM A615 Grade 60, and ASTM A706.
1) Grade 60, where welded.
2) Refer to Structural Drawings for use of Grade 40 bars.
2. Tie Wires and Spirals: ASTM A 1064.
3. Bar Supports:
a. As required for assembling and supporting reinforcement in place.
b. Typical: CRSI Class B, pregalvanized.
c. Concrete adobes for foundations and slabs on grade.
4. Threaded Coupler:
a. Lenton Standard coupler by ERICO or approved equal.
b. Coupler is to develop 125 percent of specified yield strength reinforcement.

5. Welded Wire Fabric:
    a. Conforming to ASTM A 1064
    b. Fabricated from as-drawn steel wire into flat sheets.
    c. For use with concrete stair fill only.

E. Concrete:
1. General Requirements:
    a. Furnish cement and aggregates with proven history of successful use with one another.
        1) Sources of cement and aggregate are to remain unchanged throughout the Work, unless Architect approves request for change made at least 10 days prior to anticipated date of casting.
    b. Ready-mixed concrete meeting requirements of ASTM C 94.
    c. Deviations in properties of materials tested by Owner's Testing Agency is cause for their rejection pending additional test results and redesign of mix by Contractor's Testing Laboratory.
    d. Use of frozen aggregates is not permitted.
2. Cement:
    a. Conforming to ASTM C150, Type II / V, low alkali.
    b. Use one brand of cement throughout the Project, unless otherwise acceptable to Architect.

3. Aggregates:
    a. Conform to Chapter 19A, Concrete, CCR, Title 24, Part 2 CBC Sections 1705A.3.2, 1903A.5, and following:
    b. Coarse Aggregate:
        1) Conforming to ASTM C 33.
        2) Consisting of clean, hard, fine grained, sound crushed rock, or washed gravel, or combination of both.
        3) Free from oil, organic matter or other deleterious substances and not contain more than two percent by weight of shale or cherty material.
    c. Fines:
        1) Conforming to ASTM C 33.
        2) Sand Equivalent:
            a) Not less than 75 when tested per ASTM D 2419.
    d. Provide aggregates from single source for exposed concrete.

F. Water:
1. Clean and potable, free from impurities detrimental to concrete.

G. Admixtures:
1. Use of admixtures is not permitted unless a request is submitted to Architect and Structural Engineer for review and Structural Engineer’s approval.
2. Use of calcium chloride or admixtures containing calcium chloride is prohibited.
3. Upon receipt of Structural Engineer approval, Contractor modifies mix designs as necessary, and submits modifications to Owner's Testing Agency for testing and acceptance.
4. When approved, following types of admixtures may be used, conforming to manufacturer’s recommendations for use:
    a. Water Reducing: Conforming to ASTM C 494, Type A.
    b. Accelerating or Retarding: Conforming to ASTM C 494
    c. Air Entraining: Conforming to ASTM C 260.

5. Do not use admixtures which have not been incorporated and tested in accepted mix designs.

H. Fly Ash:
1. Fly ash conforming to ASTM C 618, Class N or F may be used at Contractor's option.
   a. Use of Class C is not permitted.
2. Do not substitute more than 15 percent by weight of fly ash or other pozzolan, for ASTM C 150, Portland Cement.

I. Non-Shrink, Non-Metallic Grout:
1. Premixed high strength grout requiring only addition of water at Project Site.
   a. BASF Corporation, Construction Chemicals – MasterFlow 928
   b. Five Star Products, Inc. – Five Star Grout.
   c. Sika Corporation – SikaGrout 428 FS

J. Curing Materials:
1. Concrete Curing Paper:
   a. Conforming to ASTM C 171, non-staining, reinforced type.
      1) Orange Label Sisalkraft by Fortifiber Building Systems Group.
      2) Approved equal.
2. Liquid Curing Compound:
   a. Conforming to ASTM C 309, Type 1, Class B, approved standard product resin type.
      1) Deliver in unopened labeled containers.
      2) Water based acrylic polymer blend, free of wax or oil, compatible with subsequent applied finishes or floor coverings.
      3) Do not apply curing compounds in areas designated to receive floor coverings.

K. Joint Sealing Compound:
1. Refer to Section 07 9200.

2.02 SOURCE QUALITY CONTROL

A. Furnish Plywood bearing APA grade-trademark.

B. Owner's Testing Agency will:
1. Review mix designs, certificates of compliance, and samples of materials Contractor proposes to use.
2. Test and inspect materials, as necessary, in accordance with ACI 318 and CBC Sections 1705A, 1903A, and 1910A for compliance with requirements.
3. Take samples as required from Contractor's designated sources.
4. Take one grab sample for each 100 tons of Portland cement except that, when used in bulk loading ready-mix plants where separate bins for pretested cement are not available, take grab samples for each shipment of cement placed in bin with not less than one sample being taken for each day's pour and subsequently test such samples when required by Architect who may be so advised by DSA.
5. Test coarse, intermediate, and fine aggregate by use of solution of sodium or magnesium sulfate, or both whenever in judgment of Architect such tests are necessary to determine quality of material.
   a. Perform such tests in accordance with ASTM C 88.

b. Loss not to exceed 6 percent of either fine intermediate or coarse aggregate.
c. Aggregate failing to comply with this requirement may be used in Work provided it contains less than 2 percent of shale and other deleterious particles and shows loss in soundness test of not more than 10 percent when tested in sodium sulphate solution.
d. Test aggregates as required by CBC Sections 1705A.3.2 and 1903A.5.

6. Test for sand equivalent of fine aggregate in accordance with California Test 217.
7. Test for cleanness value of coarse and intermediate aggregate in accordance with California Test 227.
8. Inspect plant prior to starting Work to verify following:
   a. Plant is equipped with approved metering devices for determining moisture content of fine aggregate.
   b. Other plant quality controls are adequate.
9. Continuously inspect quality and quantity of materials used in transit mixed concrete, in batched aggregates and ready-mixed concrete at mixing plant or other location per CBC Sections 1705A.3, 1905A.1.16, 1910A.1, and ACI 318 Section 26.12 as modified, where other materials are measured.

C. Waiver of Batch Plant Inspection:
1. Continuous batch plant inspection may be waived in accordance with CBC Section 1705A.3.3.1
2. Following requirements apply when batch plant inspection is waived:
   a. Qualified technician of Testing Agency to perform check of first batch at start of day.
   b. Licensed weighmaster to positively identify materials as to quantity and certify to each load by batch ticket.
   c. Batch tickets, including material quantities and weights, are to:
      1) Accompany load.
      2) Be transmitted to Project Inspector by truck driver with load identified thereon.
      3) Do not place load without batch ticket identifying mix.
      4) The Inspector will keep daily record of placements, identifying each truck, its load, time of receipt, and approximate location of deposit in structure, and will transmit copy of daily record to enforcement agency.

2.03 MIXES

A. General Requirements:
1. Perform tests or assemble necessary data indicating conformance with Specifications.
2. For each mix submit data showing that proposed mix will attain required strength in accordance with requirements of CBC Sections 1705A.3 and 1905A.1.16 per ACI 318 Section 26.12.2 (a) as modified
3. Instruct Laboratory to base mix design on use of materials tested and approved by Owner's Testing Agency.
4. Include compression strength test reports with mix design per CBC Section 1904A and 1905A.1.9
5. Design Mix, test, and adjust when necessary, in ample time before first concrete is scheduled to be placed.

a. Submit laboratory data and strength test results for revised mix design to Architect prior to using Mix in Project.

6. Ensure mix designs will produce concrete to strengths specified and of uniform density without segregation.
7. When mix yield exceeds 1-cubic yard, modify mix design to no more than one cubic yard without changing cement content.
8. Contractor's mix designs are subject to review by Architect and Owner's Testing Agency.
9. Introduction of calcium chloride will not be permitted.
10. Water/Cement Ratio: 0.45 maximum, unless noted otherwise on Structural Drawings.

B. Admixtures:
1. Where use of admixtures has been approved, provide admixtures produced by established reputable manufacturers.
   a. Conform to types of admixtures specified under “Materials” Article.
   b. Use in compliance with manufacturer’s printed directions.
   c. Do not use admixtures which have not been incorporated and tested in accepted mix designs.
   d. Refer to CBC Section 1903A.6 and ACI 318 Section 26.4.2.2(b) as modified.

C. Patching Mortar:
1. Mix in proportions by volume of one part cement to two parts fine sand.

D. Non-Shrink, Non-Metallic Grout:
1. Follow approved manufacturer's printed instructions and recommendations.

E. Stair Fill Mix:
1. For steel pan stair treads and landings.
   a. Portland cement, fine and coarse aggregate
   b. Minimum 2500 psi compressive strength at 28 days
   c. Coarse Aggregate: Maximum 3/8-inch, size No.8, conforming to ASTM C 33
   d. Water/Cement Ratio: 0.45 maximum.
   e. Laboratory mix not required.

2.04 MIXING

A. Batching Plant Conditions:
1. Ensure equipment and plant will afford accurate weighing, minimize segregation and will efficiently handle materials to satisfaction of Architect and Owner's Testing Agency.
2. Use approved moisture meter capable of determining moisture content of sand.

B. General Requirements:
1. Thoroughly clean concrete equipment before use for architectural concrete mixes to avoid contamination.
2. Mix cement, fine and coarse aggregates, admixtures and water to exact proportions of mix designs.
   a. Use method of mixing complying with ACI 318, Section 26.4

3. Measure fine and coarse aggregates separately according to approved method which provides accurate control and easy checking.
4. Adjust grading to improve workability; do not add water unless otherwise directed.
5. Maintain proportions, values, or factors of approved mixes throughout Work.
6. Mix concrete in transit mixers five minutes immediately prior to discharge in addition to mixing as called for by ACI 304 and ASTM C 94.

C. Admixtures:
1. Use automatic metering dispenser to introduce admixture into mix.
2. Use Dispenser recommended and calibrated by admixture manufacturer.

2.05 FINISH MATERIALS

A. General:
1. Provide concrete sealer materials complying with requirements of SCAQMD Rule 1113.

B. Concrete Sealer **Type 1**:
1. Clear, Water-based, low odor, penetrating water, oil, and stain repellent.
a. VOC Compliant: less than 100 g/L
2. Use for interior concrete slabs, walls, and columns, to prevent concrete dusting.
a. Refer to Finish Schedule for specific locations.
3. Products:
a. Subject to compliance with specified requirements, provide following, or approved equal:
1) Consolideck Concrete Protector WB by Prosoco, Inc.
b. Complies with SCAQMD Rule 1113.
c. Complies with ANSI/NFSI B101.3 for slip-resistance.

C. Concrete Sealer **Type 2**:
1. Lithium-Silicate sealer, hardener, and densifier.
2. Use for interior concrete slabs specified to receive light broom finish.
a. Refer to Finish Schedule for specific locations.
3. Products:
a. Subject to compliance with specified requirements, provide following, or approved equal:
1) Conslideck LS by Prosoco, Inc.
b. Comply with SCAQMD Rule 1113 and requirements for low-emitting materials as specified in Section 01 3329.
c. Comply with ANSI/NFSI B101.3 for slip-resistance.

PART 3 EXECUTION

3.01 EXAMINATION

A. Examine areas where formwork will be constructed and verify that:

1. Excavations are sufficient to permit placement, inspection, and removal of forms.
2. Excavations for earth forms have been neatly and accurately cut.
3. Conditions are otherwise proper for formwork construction.
4. Do not start Work until unsatisfactory conditions have been corrected.

B. Examine units of Work to be cast and verify that:
1. Construction of formwork is complete.
2. Required reinforcement, inserts, and embedded items are in place.
3. Form ties at construction joints are tight.
4. Concrete-receiving places are free of debris.
5. Depths of depressed slab conditions are correct for delayed finish noted and for its proper bonding to concrete.
6. Conveying equipment is clean and properly operating.
7. The Architect has reviewed formwork and reinforcing steel and that preparations have been checked with Project Inspector.

C. Do not begin placement of concrete before unsatisfactory conditions have been corrected.

3.02 PREPARATION

A. Obtain necessary information for coordination of formwork with items to be embedded in concrete and other related work.

B. Ensure availability of sufficient labor, equipment and materials to place concrete correctly in accordance with scheduled casting.

C. Protect finished surfaces adjacent to concrete-receiving places.

D. Clean transportation and handling equipment at frequent intervals and flush thoroughly with water before each day's run.
1. Do not discharge wash water into concrete form.

E. Construction Joints:
1. Clean and roughen construction joint contact surfaces by removing surface laitance and exposing sound mortar.
2. Sandblasting and bush-hammering are acceptable methods.

3.03 FORMWORK CONSTRUCTION

A. General:
1. Design, erect, support, brace, and maintain formwork to support vertical and lateral, static, and dynamic loads that might be applied until concrete structure can support such loads.
   a. Construct formwork so concrete members and structures are of correct size, shape, alignment, elevation and position.
   b. Maintain formwork construction tolerances complying with ACI 347.
2. Construct forms to sizes, shapes, lines and dimensions shown, and to obtain accurate alignment, location, grades, level and plumb Work in finished structures.

a. Provide for openings, offsets, sinkages, keyways, recesses, moldings, rustications, reglets, chamfers, blocking, screeds, bulkheads, anchorages and inserts, and other features required in Work.
b. Use selected materials to obtain required finishes.
c. Solidly butt joints and provide back-up at joints to prevent leakage of cement paste.

3. Frame openings where indicated on Architectural, Structural, Mechanical, Plumbing and Electrical Drawings.

B. Earth Forms:
1. Construct wood edge strips at top sides of excavations.
2. Provide forms for footings wherever concrete cannot be placed against solid earth excavation.
3. Remove loose dirt and debris prior to concrete pours.
4. Foundation concrete may be placed directly into neat excavations provided foundation trench walls are stable as determined by Geotechnical Engineer, subject to approval of DSA.
a. In such case, minimum formwork shown on Drawings is mandatory to ensure clean excavations immediately prior to and during placing of concrete.
b. Refer to Structural Drawings for footing requirements where footings are not formed.

C. Formed Elements:
1. Carefully align inside and outside forms before tightening ties.
2. Plywood Forms:
a. Ensure vertical joints are plumb and horizontal joints are level; arrange joints and ties in geometrical pattern as approved by Architect.
3. Form inside corners at exposed conditions with mitered boards or plywood so that no concrete is placed against form ends.
4. After erection, seal cracks, holes, slits, gaps, and apertures in forms so that they will withstand the pressure and will remain completely watertight.
5. Provide means to seal bottom of forms at construction joints such as foam tape or other gasket devices.
6. Apply coating of release agent prior to erection of formwork following approved manufacturer's recommendations.

D. Expansion Joints:
1. Provide in exterior concrete on grade at maximum 24 feet on center or as noted and at intersections with vertical surfaces, curbs, manholes or other penetrations through slabs.

2. Use fiber type expansion joint fillers typically and depress 1/4 inch unless otherwise noted.
3. Use cork type expansion joint fillers at conditions with non-bituminous waterproofing, liquid waterproofing, or sealant systems.

E. Construction Joints:
1. Provide where shown on Drawings as directed by Architect and per ACI 318, Section 26.5.6.
2. Provide key indentations at joints.
3. Provide pour strips on inside face of forms at horizontal joints but remove strips and thoroughly clean out reglets before placing subsequent portions of wall.

4. Prevent formations of shoulders and ledges.
5. Provide means for drawing forms into firm contact with concrete before placing additional concrete over previous pours where shrinking and warping has separated concrete from forms.

F. Embedded Items:
1. Properly locate, unless locating is specified elsewhere, and place inserts and embedded items required by other trades prior to casting concrete.

3.04 REINFORCING PLACEMENT

A. General:
1. Place bars as noted.
2. Reinforcement to be continuous.
a. Refer to Structural Drawings for lap splice schedule.
b. Stagger splices where possible.
c. Securely wire contact lap splices together to maintain alignment.
3. Ensure placement will permit concrete protection in conformance with CRSI or to extent shown.
4. Support and fasten bars securely with spacers, chairs or ties to permit their being walked upon without displacement or movement both before and during placement of concrete.
a. Wire-tie bar intersections.
5. Do not bend bars around openings or sleeves.
a. Wherever conduits, piping, inserts, or sleeves, and like items interfere with placing of reinforcement, obtain Architect's approval of placing before concreting.
6. Do not field bend bars unless expressly noted in Contract Documents.

B. Prior to placing concrete, verify reinforcement has been bent, positioned, and secured in accordance with Drawings; ensure removal of oil, grease, dirt, or other bond-weakening coatings; replace severely rust-pitted reinforcing bars.

C. Quality Assurance:
1. Project Inspector will inspect placement of reinforcement and notify Structural Engineer of discrepancies in placement.
2. Owner's Testing Agency will inspect shop and field welding of reinforcing bars in accordance with CBC Section 1903A.8; 1705A.3.1 - Table 1705A.3, Item 2 and Table 1705A.2.1, Item 5b.

3.05 CONCRETE PLACEMENT

A. Notify Project Inspector, Architect, Structural Engineer, Testing Laboratory and DSA at least 48 hours before placing concrete.

B. Place concrete in accordance with CBC Section 1705A and ACI 318.

C. Place concrete in cycles as continuous operation to permit proper and thorough integration and to complete scheduled placement.
1. Do not place concrete where sun, wind, heat, or facilities prevent proper finishing and curing.

D. Convey concrete as rapidly and directly as practicable to preserve quality and to prevent separation from re-handling and flowing.
   1. Do not deposit concrete initially set.
   2. Place concrete within ninety minutes after adding water unless otherwise noted.
   3. Re-tempering of concrete which has partially set will not be permitted.

E. Take precautions to avoid damage to under-slab moisture barrier and displacement of reinforcement and formwork.

F. Deposit concrete vertically in its final position.
   1. Avoid free falls in excess of six feet where reinforcement will cause segregation and in typical conditions unless Architect approves otherwise.

G. Keep forms and reinforcement clean above pour line by removing clinging concrete with wire brush before placing next lift.
   1. Remove leakage through forms.

H. Interruption in placement longer than 60-minutes will be cause for discontinuing placement for remainder of day.
   1. In this event, cut back concrete and provide construction joints as Architect directs.
   2. Clean forms and reinforcement as necessary to receive concrete at later time.

I. Hot Weather Concreting:
   1. Conform to ACI 305 and following requirements when mean daily temperature rises above 75 degrees F.
   2. Establish upper temperature limit of concrete mixes for each class of concrete.
      a. Ensure that concrete temperature during placing is not so high as to cause difficulty from loss of slump, flash set, or cold joints, and do not exceed 90 degrees F.
      b. Consider other project climatic conditions detrimental to concrete quality such as relative humidity, wind velocity, and solar radiation.
   3. Make trial batches of concrete for each mix design at limiting mix temperature selected.
      a. In lieu of trial batches, submit compression strength test reports (20 minimum) at limiting temperature for each proposed mix to Owners testing laboratory for review.
   4. Employ practices to maintain concrete below maximum limiting temperature in accordance with ACI 305.
      a. Concrete ingredients may be cooled before mixing, or flake ice or well-crushed ice of size that will melt completely during mixing may be substituted for part of mixing water.
   5. Employ practices to avoid potential problems of hot weather concreting in accordance with ACI 305.
   6. When the temperature of reinforcing steel or steel deck forms is greater than 120 degrees F, spray reinforcing and forms with water just prior to placing concrete.

J. Cold Weather Concreting:

1. No placement of concrete will be allowed at temperatures below 20 degrees Fahrenheit or when the mean daily temperature for curing period is anticipated to be below 20 degrees Fahrenheit.
2. No concrete placement will be allowed on frozen sub-grade.
3. Conform to ACI 306 and following requirements when mean daily temperature falls below 40 degrees Fahrenheit.
    a. Ensure that reinforcement, forms, or ground to receive concrete are completely free from frost.
    b. Temperature of concrete at time of placement for footings not to be lower than 50 degrees Fahrenheit.
        1) The minimum temperature at time of placement for other concrete to be 60 degrees Fahrenheit.
        2) Maximum temperature at time of placement to be 90 degrees Fahrenheit.
    c. Maintain concrete at temperature no lower than 50 degrees Fahrenheit for minimum 7-day period after placement by means of blanket insulation, heaters, or other methods as approved by Architect.
    d. Keep a record of concrete surface temperature for first 7 days after each pour.
        1) Make Record open to inspection by Architect.

K. Consolidating:
1. Use vibrators for thorough consolidation of concrete.
2. Provide vibrators for each location during simultaneous placing to ensure timely consolidation around reinforcement, embedded items and into corners of forms; ensure availability of spare vibrators in case of failures.
    a. Vibrate through full depth of freshly placed concrete.
3. Do not place vibrators against reinforcement, attach to forms, or use to spread concrete.
4. Exposed Concrete:
    a. Vibrate with rubber type heads and, in addition, spade along forms with flat strap or plate.

L. Construction Joints:
1. Verify location and conformance with typical details.
    a. Provide only where designated or approved by Architect.
    b. Comply with ACI 318, Section 26.5.6.
2. Horizontal and vertical construction joints to be thoroughly sandblasted to clean and roughen the entire surface to minimum 1/4-inch relief exposing clean coarse aggregate solidly embedded in mortar matrix.
3. Just prior to depositing concrete, wet surface of construction joint thoroughly.

M. Contraction (Control) Joints in Slabs-on-Grade:
1. Construct contraction joints in slabs-on-ground to form panels of patterns indicated on Shop Drawings.
    a. Use saw cuts 1/8-inch x 1/4 slab depth, unless otherwise indicated.
2. Time saw cutting to allow sufficient curing of concrete to prevent raveled or broken edges.
3. Contraction joints in unexposed floor slabs may be formed by saw cuts as soon as possible after slab finishing as may be safely done without dislodging aggregate, maximum 24 hours after pouring.

4. When joint pattern is not shown, provide joints not exceeding 15 feet in either direction and located to conform to bay spacing wherever possible; at column centerlines, half bays, third-bays

N. Formed Elements:
1. Space points of deposit to eliminate the need for lateral flow.
a. Placing procedures of concrete in forms permitting escape of mortar, or flow of concrete itself, will not be permitted.
2. Level top surface upon stopping Work.
3. Take special care to fill each part of forms by depositing concrete directly as near final position as possible, and to force concrete under and around reinforcement, embedded items, without displacement.
4. After concrete has taken its initial set, exercise care to avoid jarring forms or placing strain on ends of projecting reinforcement.

3.06 CURING

A. General Requirements:
1. Deploy curing measures immediately after placement and for measures other than application of curing compound, extend for seven days.
a. Architect may recommend longer periods based upon prevailing temperature, wind and relative humidity.
b. Comply with ACI 318, Section 26.5.3.
2. Avoid alternate wetting and drying and fluctuations of concrete temperature.
3. Protect fresh concrete from direct rays of sun, rain, freezing, drying winds, soiling, and damage.
4. Do not permit curing methods to affect adversely finishes or treatments applied to finish concrete.

B. Curing Method, Typical:
1. Keep forms and concrete surfaces moist during period forms are required to remain in place.
2. Obtain Architect's approval of alternate measures.

3.07 FORM REMOVAL

A. Secure Architect's approval for time and sequence of form removal.

B. Form Removal:
1. Remove forms carefully to avoid damaging corners and edges of exposed concrete.
2. Remove forms after concrete has developed sufficient strength to sustain its own weight and superimposed loads, but not before concrete compressive strength has reached 0.70 f'c and 7 days minimum time, or as otherwise specified by Architect.
3. Estimated curing time required to obtain desired strength:
a. Present results of 7-day test cylinder break to Architect to demonstrate compliance with above specified strength requirements prior to form removal.
b. Where 7-day test cylinder break demonstrates strength that is less than that specified, Contractor may elect to take additional cylinders at time of next pour to demonstrate strength requirements.
c. Cost of taking and testing additional sample will be borne by Contractor.

C. Reuse of Forms:
   1. Architect will approve reuse of forms provided they are straight, clean, free from nails, dirt, hardened concrete, or other injurious matter and edges and surfaces are in good condition.
   2. Clean and repair damage caused by placing, removal, or storage.
      a. Reuse of formwork with repairs or patches which would result in adverse effects to architectural concrete finish will not be permitted.
   3. Store formwork in manner to prevent damage or distortion.
   4. Reseal as required to achieve concrete of specified quality.
      a. Form Sealer:
         1) Pre-Form 100 by Nox-Crete Products Group, Omaha, NE, or approved equal.

3.08 CLEANING, PATCHING, AND DEFECTIVE WORK

A. Where concrete is under strength, out of line, level or plumb, or shows objectionable cracks, honeycombing, rock pockets, voids, spalling, exposed reinforcement, signs of freezing, or is otherwise defective, and, in Architect's judgment, these defects impair proper strength or appearance of Work, Architect will require its removal and replacement at Contractor's expense.

B. Immediately after stripping and before concrete is thoroughly dry, patch minor defects, form-tie holes, honeycombed areas, and similar areas, with patching mortar.
   1. Install patch to match the finish of adjacent surface unless otherwise noted.
   2. Remove ledges and bulges.

C. Compact mortar into place and neatly file defective surfaces to produce level, true planes.
   1. After initial set, dress surfaces of patches mechanically or manually to obtain same texture as surrounding surfaces.

D. Rock Pockets:
   1. Cut out to full solid surface and form key.
   2. Thoroughly wet before placing mortar.
   3. Where Architect deems rock pocket too large for satisfactory mortar patching as described, cut out defective section to solid surface, key and pack solid with concrete to produce firm bond and match adjacent surface.

E. Cleaning
   1. Ensure removal of bituminous materials, form release agents, bond breakers, curing compounds when permitted, and other materials employed in concrete work which would otherwise prevent proper application of sealants, liquid waterproofing, and other delayed finishes and treatments.
   2. Where cleaning is required, take care not to damage surrounding surfaces or leave residue from cleaning agents.

3.09 CONCRETE SLAB FINISHES

A. General:
   1. Comply with recommendations in ACI 302.1 R for screeding, restraightening, and finishing operations for concrete surfaces.
   2. Do not wet concrete surfaces.

B. Float Finish:
   1. Apply float finish to following slab surfaces:
      a. Surfaces to receive trowel finish.
      b. Surfaces which are to be covered with membrane, fluid-applied waterproofing, or membrane roofing.
      c. Other finishes as specified.
   2. After screeding, consolidating, and leveling concrete slabs, do not work surface until ready for floating.
   3. Begin floating when surface water has disappeared or when concrete has stiffened sufficiently to permit operation of power-driven floats, or both.
   4. Consolidate surface with power-driven floats or by hand-floating where area is small or inaccessible to power units.
   5. Check and level surface plane not exceeding tolerances specified in Article 2.06 when tested with 10-foot straightedge.
      a. Cut down high spots and fill low spots.
      b. Uniformly slope surfaces to drains.
      c. Immediately after leveling, refloat surface to uniform, smooth granular texture.

C. Scratch Finish:
   1. Apply scratch finish to slab surfaces scheduled to receive concrete floor topping or mortar setting beds for tile, Portland cement, and other bonded applied cementitious finish flooring material.
      a. After placing slabs, plane surface not exceeding tolerance specified in Article 2.06 when tested with a 10 foot straightedge.
      b. Slope surfaces uniformly to drains where required.
      c. After leveling, roughen the surface before final set, with stiff brushes, brooms, or rakes.

D. Trowel Finish:
   1. Apply trowel finish to slab surfaces to be exposed to view, and slab surfaces to be covered with resilient flooring, carpet, tile set over cleavage membrane, paint, or other thin film finish coating system.
      a. After floating, begin the first trowel finish operation using power-driven trowel.
      b. Begin final troweling when surface produces ringing sound as trowel is moved over surface.
      c. Consolidate concrete surface by final hand-troweling operation, free of trowel marks, uniform in texture and appearance.
      d. Finish and measure surface so gap at any point between concrete surface and an unlevel0ed freestanding 10-foot long straightedge, resting on two high spots and placed anywhere on surface, does not exceed [1/8] [1/4] inch.
      e. Grind smooth surface defects which would telegraph through applied floor covering system.

E. Broom Finishes:
   1. Light Textured Broom Finish:
      a. Provide light texture by drawing soft bristle broom lightly across concrete surface in one direction, as indicated on Drawings, to provide uniform fine line texture finish.
   2. Medium Textured Broom Finish:

a. For slopes less than 6 percent, provide medium texture by drawing soft bristle broom across concrete surface perpendicular to line of traffic to provide uniform fine line texture finish.

3. Heavy (Coarse) Textured Broom Finish:
   a. For slopes 6 percent and greater, provide coarse finish by striating surface 1/16 inch to 1/8 inch deep with stiff-bristled broom, perpendicular to line of traffic.
4. Match finish of approved mock-up panel specified in “Quality Assurance” Article.
   a. Match existing texture where abutting adjacent slabs.

3.10 CONCRETE SEALER APPLICATION

A. Apply specified sealers only to concrete surfaces where scheduled in Finish Schedule.

B. Apply sealers only to surfaces that are sound, properly troweled and finished, and that are clean, dry, and free of form release agents, retarders, alkali, curing compounds, oil, grease and other contaminants.
   1. Acid-clean and etch discolored or stained slabs before sealer is applied when, in Architect's judgment, satisfactory uniform finish cannot be otherwise achieved.

C. Apply Concrete Sealer Type 1 to following surfaces:
   1. Interior floor slabs, not otherwise scheduled to receive other floor coverings, or Concrete Sealer Type 2.
   2. Interior walls and columns where scheduled or indicated in Finish Schedule.

D. Apply Concrete Sealer Type 2 only to concrete slabs scheduled or indicated to receive light broom finish.
   1. Refer to Finish Schedule for specific locations.

3.11 FIELD QUALITY CONTROL

A. Owner's Testing Agency will:
   1. Perform testing in accordance with ACI 318 and CBC Section 1903A and 1905A.
   2. Review concrete mix designs.
   3. Inspect concrete and grout placement continuously.
   4. Test concrete to control slumps according to ASTM C143.
   5. Continuously monitor concrete temperature as it arrives on Project Site.
   6. Test concrete for required compressive strength in accordance with CBC Section 1705A.3 – Table 1705A.3, Item 6; 1905A.1.16; and ACI 318 – Section 26.12 as modified:
      a. Make and cure three specimen cylinders according to ASTM C 31 for each 50 cubic yards, or fraction thereof, of each class poured at Project Site each day.
      b. Retain one cylinder for 7 day test and two for 28-day test.
      c. Number each cylinder 1A, 1B, 1C, 2A, 2B, 2C, and so on.
         1) Date each set; and keep accurate record of pour each set represents.
      d. Transport specimen cylinders from Project to laboratory after cylinders have cured for 24 hours on Project Site.

e. Cover cylinders and keep at air temperatures between 60 and 80 degrees Fahrenheit.
f. Test specimen cylinders at age 7 days and age 28 days for specified strength according to ASTM C 39.
g. Base strength value on average of two cylinders taken for 28 day test.

7. Test and inspect materials, as necessary, in accordance with ACI 318, MM Test Method 227 (Coarse and Intermediate Aggregates) and MM Test Method 217 (Fine Aggregates), for compliance with requirements specified in this Section.

B. Submit ticket for each batch of concrete delivered to Project Site.
1. Provide following information on Ticket:
a. Design mix number.
b. Signature or initials of ready mix representative.
c. Time of batching.
d. Weight of cement, aggregates, water and admixtures in each batch with maximum aggregate size.
e. Total volume of concrete in each batch.
f. Notation to indicate equipment was checked for contaminants prior to batching.
2. Pay Owner's Testing Agency for taking core specimens of hardened structure and testing specimen according to ASTM C 88 and C 42 when laboratory tests of specimen cylinders show compressive strengths below specified minimum.

3.12 CLEANING

A. Perform Work to keep affected portions of Project Site neat, clean, and orderly.
1. Remove, immediately upon completion of Work, surplus materials, rubbish, and equipment associated with or used in performance.
2. Be aware that failure to perform clean-up operations within 24 hours of notice by Architect will be considered adequate grounds for having work done by others at no added expense to Owner.

3.13 PROTECTION

A. Protect concrete from injurious action of elements and defacement during construction operations.

B. Protect exposed corners of concrete from traffic or use which will damage them.

C. Make provisions to keep exposed concrete free from laitance caused by spillage or leaking forms or other contaminants.
1. Do not allow laitance to penetrate, stain, or harden on surfaces which have been textured.

END OF SECTION 03 3000

SECTION 07 9200

JOINT SEALANTS

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes:
   1. Joint sealants are required to seal exterior and interior joints to make buildings weather and watertight.

B. Related Sections:
   1. Section 01 3300: Submittal Procedures.
   2. Section 03 3000: Cast-in-Place Concrete
   3. Section 09 9100: Painting; paintable caulk.

1.02 REFERENCES

A. ASTM International (ASTM):
   1. ASTM C 920 – Standard Specification for Elastomeric Joint Sealants.
   2. ASTM C 1193 – Standard Guide for Use of Joint Sealants.

B. South Coast Air Quality Management District (SCAQMD):
   1. Rule 1168 – Adhesive and Sealant Applications

1.03 SUBMITTALS

A. Product Data:
   1. Technical data sheets on sealants, primers and cleaning agents, including procedures for priming and cleaning.
   2. Furnish following from each sealant manufacturer for sealants to be used on Project:
      a. Product recommendations, including sealant, primer, cleaners, backup and bond breaker.
      b. Certification that recommended sealant and related materials meet requirements of this Section.
      c. Approval of Contractor's sealant joint details
      d. Certification that installed materials will perform satisfactorily when applied in accordance with the manufacturer's applications instructions and Contractor's details.

B. Shop Drawings:
   1. Details of each joint type, for each combination of materials and each installation condition, based on recommendations of manufacturer.

2. Indicate following:
    a. Proposed joint size for each condition, designed to accommodate specified tolerances, building movements and deflections.
    b. Details of dual lines of sealant, indicating vent/weep tube location, zone dams and bridge seals where required.

C. Sealant Testing Services Reports:
1. Conform to requirements of Article 2.04 A.
2. Reports are to identify cleaning agents, primers and procedures used to obtain satisfactory test results.
3. Furnish following from structural sealant manufacturers:
    a. Certification that manufacturer has reviewed structural sealant details and tested contact surfaces and finds them suitable for use:
        1) With proposed sealant
        2) Compatible with and non-staining to surfaces which they will contact.
        3) In conformance with requirements of Article 2.01 B and 2.04 A
    b. Application instructions for sealant, cleaners, primers and related materials, for each installation condition encountered in the Project.
        1) Include surface preparation, quality control procedures, and evaluation of tests performed under Articles 2.04 A.
        2) Certification that sealant supplied for Work is same type and quality as that which was tested.
4. Contractor's quality control documentation specified in Article 1.03 E.
5. Reports on field inspections by manufacturer specified in Article 3.04 A.

D. Samples:
1. Minimum of four, 3-inch long samples of following”
    a. Sealant: Each type of sealant iexposed to view for material and color required (except black).
    b. Backer Rod and Bond Breaker Tape: each type, for material and color.

E. Compatibility Tests:
1. Results of each compatibility test to Architect and Contractor for approval prior to start of sealant Work.

1.04 QUALITY ASSURANCE

A. Use only qualified workers thoroughly skilled and specially trained in techniques of installing sealant, who can acceptably demonstrate to Architect their ability to fill joints solidly and neatly.

B. Compatibility Tests:
1. Prior to start of sealant Work, conduct compatibility tests of sealant for each different sealing condition and substrate for entire Project performed by sealant manufacturer and sealant installer.

C. Pre-Installation Meeting:
   1. Arrange meeting when sealant contractor and sealant manufacturers have been selected, but prior to award of contracts.
   2. Schedule meeting with Owner and General Contractor
      a. Arrange for attendance by sealant contractor and sealant manufacturer's technical representatives.
   3. Meeting to include, but not limited to, following:
      a. Review of preliminary test results on sealants.
      b. Details of sealant joints.
      c. Sealant application instruction and training of installers.
      d. Scheduling and procedures for periodic field inspections by sealant manufacturers' technical representatives.
   4. Record minutes of meeting and promptly distribute copies of minutes to attendees and other interested parties as may be necessary.
      a. Include Architect in distribution of meeting minutes.
   5. Record issues resolved during meeting.
      a. Include copies of Drawings and application instructions used in meeting.
      b. Record changes on Drawings and application instructions made at meeting.

D. Pre-installation Field Testing:
   1. Field test adhesion of joint sealant material to Project substrates.
   2. Verify joint sealant materials will satisfactorily adhere to substrates.
   3. Arrange field testing with manufacturer or designated representative.
   4. Notify parties minimum 7 days prior to field testing.
   5. Field test sealants in accordance with ASTM C 1193, Appendix X-1, Method A – "Field Applied Sealant Joint Hand-pull Tab" in compliance with manufacturer's recommendations.

E. Quality Control Documentation:
   1. Establish and administer written procedure for documenting sealant Work, including:
      a. Log in each shipment of sealant received, by lot number and date received.
      b. Record dates and results of field tests specified in Article 3.04 C
      c. Log out each lot of sealant installed or rejected, and its ultimate location in Work, when installed.

1.05 DELIVERY, STORAGE, AND HANDLING

A. Deliver materials to Project Site in original unopened containers bearing manufacturer's name, product designation, date of manufacturer and mixing instructions.

1.06 WARRANTY

A. Warrant sealants against loss of adhesion, loss of cohesion, cracking, or discoloration for period of twenty years; include labor and material to replace defective sealant.

PART 2 PRODUCTS

2.01 MATERIALS

A. Sealant Standards – General:
   1. Elastomeric Sealant: Manufacturer's standard chemically curing, elastomeric sealant of base polymer indicated, complying with requirements of ASTM C 920, including those referenced for Type, Grade, and Class.

B. Silicone Sealant:
   1. Silicone construction sealant, certified by manufacturer to meet following criteria:
      a. Has physical properties required for both structural and non-structural uses under installed conditions?
      b. Has appropriate movement capability for installation conditions?
      c. Is suitable for interior and exterior application in joint conditions shown?
      d. Will produce watertight bond and watertight joints?
      e. Is compatible with other materials which sealant will contact?
   2. Primer, backup, and bond breaker-products recommended by sealant manufacturer.
      a. Primer is required unless manufacturer's installation instructions specifically advise to contrary for certain materials.
   3. Sealant manufacturer is to recommend use of products which will perform satisfactorily under installation conditions on Work.
      a. Product recommendation is to include sealant, primer, backup, bond breaker, surface preparation, installation methods, and evaluation of tests performed under Article 3.04 A.

C. Sealant for Paving Joints:
   1. Self-leveling polyurethane, pouring grade, for gun application.
   2. Suitable for traffic service
   3. Primer, backup, and bond breaker-products recommended by manufacturer.

D. Compatibility:
   1. Provide joint sealants, joint fillers, and other related materials that are compatible with one another and with joint substrates under conditions of service and application, as demonstrated by sealant manufacturer based on testing and field experience.

E. VOC Content of Interior Sealants:
   1. Provide sealants and sealant primers for use inside building envelope that comply with following limits for VOC content complying with SCAQMD Rule 1168:
      a. Architectural Sealants: Not more than 250 g/L.
      b. Sealant Primers for Nonporous Substrates: Not more than 250 g/L.
      c. Sealant Primers for Porous Substrates: Not more than 775 g/L

F. Colors:
   1. Provide colors as scheduled or selected by Architect for various combinations of materials which form joints.
   2. Provide transparent sealant where specified.

G. **Sealant No. 1:**
1. Silicone rubber based, one-part, low-modulus, non-acid curing sealant; Type S, Grade NS, Class 100/50.
2. Provide one of following product:
   a. DOWSIL 790 or DOWSIL 795 by Dow Performance Silicones.
   b. GE Silpruf SCS2700 by Momentive Performance Products
   c. Pecora 890NST by Pecora Corp.
   d. Sikasil WS-290 by Sika Corporation.
3. Apply Sealant No.1 to following exterior joints:
   a. Joints between metal frame and cast-in-place concrete, or masonry
   b. Joints between cast-in-place concrete sections
   c. Vertical expansion and control joints
   d. Horizontal ceiling/soffit joints
   e. Sills, jambs, and heads of window frames, door frames, louvers and similar openings, and where metal, wood, or other materials abut or join concrete, or each other.
   f. Other exterior joints
4. Apply Sealant No. 1 to following interior joints:
   a. Hidden metal to metal storefront joints expected to undergo minimal movement.
   b. Under door thresholds
   c. Vertical expansion and control joints
   d. Horizontal ceiling/soffit joints

H. **Sealant No. 2:**
1. Two-Component Polyurethane Sealant:
   a. Type M, Grade P, Class 25.
2. Provide one of following products:
   a. Pacific Polymers Elasto-Thane 227/227R by ITW Polymers Sealants North America, Inc.
   b. MasterSeal SL 2 Sealant by BASF Corporation, Construction Systems
   c. Urexpan NR-200 by Pecora, Corp.
   d. Sikaflex-2C SL by Sika Corporation
3. Apply Sealant No.2 to following exterior joints:
   a. Horizontal control and expansion joints in concrete slabs and concrete paving
4. Apply Sealant No.2 to following interior joints:
   a. Horizontal control and expansion joints in concrete slabs and tile flooring.

2.02 MISCELLANEOUS MATERIALS

A. Joint Primer:
1. Provide type of joint primer recommended by sealant manufacturer for joint surfaces to be primed or sealed.

B. Bond Breaker Tape:
1. Polyethylene tape or other plastic tape as recommended by sealant manufacturer to be applied to sealant-contact surfaces where bond to substrate or joint filler must be avoided for proper performance of sealant.
2. Provide self-adhesive tape where applicable.

C. Sealant Backer Rod:
   1. Compressible rod stock of polyethylene foam, polyethylene jacketed polyurethane foam, neoprene foam or other flexible, permanent, durable non-absorptive material as recommended by sealant manufacturer for compatibility with sealant.
   2. Provide products by one of following or approved equal.
      a. Denver Foam by Backer Rod Mfg. Inc.
      b. Sof-Rod by Nomaco, Inc.
      c. Sealtight Kool-Rod by W.R. Meadows, Inc.

2.03 SOURCE QUALITY CONTROL

A. Provide sealant materials of each type to be product of one manufacturer throughout Project.

2.04 PERFORMANCE AND TESTING REQUIREMENTS

A. Non-Structural Sealant Tests:
   1. Perform testing in accordance with ASTM or other acceptable recognize standards.
   2. Provide sealant manufacturer's laboratory test results on current production sealant for applicable characteristics and properties listed in ASTM C 920, Section 8
   3. Provide sealant manufacturer's laboratory test results on recommended products applied on materials which will form joints in actual building construction.
   4. Make adhesion tests and bleed/stain tests on each material which forms joints to be sealed.
   5. Provide tests and information on compatibility of sealant with glazing materials and other accessory materials which may be in contact with sealant.
   6. Results of manufacturer's tests are to be available with certification specified in 1.03 C and for the preconstruction meeting specified in 1.04 C.
   7. Acceptable Test Results:
      a. Minimum 15 pounds Peel Adhesion Strength:
         1) per linear inch when tested according to ASTM C 794, with results reported after following cure conditions:
         2) 7-day dry cure
            a) 14-day dry cure
            b) 14-day dry plus 1-day wet cure
            c) 14-day dry plus 7-day wet cure
      b. Bleed/Stain: No visible bleeding or staining on exposed materials in contact with sealants.

PART 3 EXECUTION

3.01 EXAMINATION

A. Examine joints, with installer present, for compliance with requirements for joint configuration, installation tolerances, and other conditions affecting joint sealant performance.
   1. Correct improper conditions.

3.02 JOINT PREPARATION

A. Remove dirt, insecure coatings, moisture, and other substances which could interfere with bond of sealant.

B. Prepare joint surfaces, prime as required and install backup, and bond-breaker immediately before installation of sealant.
   1. Etch concrete and masonry joint surfaces as recommended by sealant manufacturer.
   2. Roughen vitreous and glazed joint surfaces as recommended by sealant manufacturer.

C. Prime joint surfaces where recommended by sealant manufacturer.
   1. Do not allow primer to spill or migrate onto adjoining surfaces.

3.03 INSTALLATION OF SEALANT

A. Comply with manufacturer's printed instructions except where more stringent requirements are shown or specified, and except where manufacturer's technical representative directs otherwise.

B. Set joint filler units at proper depth or position in joint to coordinate with other work, including installation of bond breakers, backer rods and sealant.
   1. Do not leave voids or gaps between ends of joint filler units.

C. Install sealant backer rod for sealants, except where recommended to be omitted by sealant manufacturer for application indicated.

D. Install bond breaker tape where required by manufacturer's recommendations to ensure that elastomeric sealants will perform properly.

E. Employ only proven installation techniques, which will ensure that sealants are deposited in uniform, continuous ribbons without gaps or air pockets, with complete wetting of joint bond surfaces equally on opposite sides.
   1. Except as otherwise indicated, fill sealant rabbet to slightly concave surface, slightly below adjoining surfaces.
   2. Where horizontal joints are between a horizontal surface and vertical surface, fill joint to form slight cove, so that joint will not trap moisture and dirt.
   3. Tool joints to form smooth, uniform beads with slightly concave surfaces, with finished joints straight, uniform, smooth and neatly finished.
   4. Remove excess sealant from adjacent surfaces of joint, leaving work in neat, clean condition.
   5. Do not use tooling agents unless recommended by sealant manufacturer.

F. Coordinate installation of backup and sealant with other work as it progresses.
   1. Seal joints before adjacent surfaces are waterproofed or painted.

G. Perform Work under conditions required by sealant manufacturer's application instructions, including training of installers.
   1. Make test applications of sealants under direction of sealant manufacturer's technical representative.
   2. Run neat, full beads without voids.
   3. Use sufficient pressure to force sealant against internal surfaces of joints.

4. Tool sealant faces to smooth surface sealed to adjacent materials.
5. Do not stain or overrun adjacent materials.
    a. Use masking or other protection as necessary.

H. Install sealant to depths recommended by sealant manufacturer but within following general limitations, measured at center (thin) section of bead:
1. For sidewalks, pavements and similar joints sealed with elastomeric sealant and subject to traffic and other abrasion and indentation exposures, fill joints to depth equal to 75 percent of joint width, but neither more than 1/2 inch deep nor less than 3/8 inch deep.
2. For normal moving joints sealed with elastomeric sealant but not subject to traffic, fill joints to depth equal to 50 percent of joint width, but neither more than 1/2 inch deep nor less than 1/4 inch deep.
3. For joints sealed with non-elastomeric sealants, fill joints to depth in range of 75 percent to 125 percent of joint width.

I. Where irregular surface or sensitive joint border exists apply masking tape at edge of joint to insure joint neatness and protection.
1. Remove masking tape after sealant is applied.

J. Spillage:
1. Do not allow sealants or compounds to overflow or spill onto adjoining surfaces, or to migrate into voids of adjoining surfaces.
2. Clean adjoining surfaces by whatever means may be necessary to eliminate evidence of spillage.

K. Recess exposed edges of exposed joint fillers slightly behind adjoining surfaces, unless otherwise shown, so that compressed units will not protrude from joints.

L. Bond ends of joint filler together with adhesive or join by other means as recommended by manufacturer to ensure continuous watertight performance.

3.04 FIELD QUALITY CONTROL

A. Testing Services:
1. Owner will provide services of testing laboratory to make tests of field installed sealant.
2. Cooperate with laboratory personnel and provide materials and facilities required for testing.
3. Work found to be deficient is to be removed and replaced at Contractor's expense.
4. Costs for additional inspection and testing resulting from investigating and retesting deficient work will be paid by Contractor.

B. Field Inspections by Sealant Manufacturer:
1. Periodic field inspections performed by sealant manufacturer’s technical representative.
2. Include representative's certification that sealant was properly installed in accordance with application instructions.
3. Identify improper Work which was discovered and describe changes in application instructions for later work.
4. Furnish final inspection report on completed Work, and certification to Owner that sealant was properly installed.

C. Field Testing by Contractor:
   1. Perform field tests on each lot of sealant received for tack-free time and proper curing.
   2. Conform to the sealant manufacturer's instructions.
   3. Document results by lot number in quality control log

3.05 PROTECTION AND CLEANING

A. Protect joint sealants during and after curing period from contact with contaminating substances or from damage resulting from construction operations or other causes so that they are without deterioration or damage at time of substantial completion.
   1. When, despite such protection, damage or deterioration occurs, cut out and remove damaged or deteriorated joint sealant immediately and reseal joints with new materials to produce joint sealant installations with repaired areas indistinguishable from original work.

B. Clean off excess sealant or sealant smears adjacent to joints as Work progresses by methods and with cleaning materials approved by manufacturers of joint sealants and of products in which joints occur.

END OF SECTION 07 9200

SECTION 10 1400

SIGNAGE

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes:
   1. Furnishing materials, labor, and equipment necessary for completion of signage as indicated on Drawings and as specified.
   2. Types of signage include, but is not necessarily limited to following:
      a. Interior and exterior room signs and directional signs
      b. Geometric restrooms signs
      c. Evacuation plans
      d. Exterior regulation and directional signage.
      e. Exterior building signs.
         1) Includes Premises Identification signage.
   3. Engaging independent Braille reading consultant.

B. Related Sections:
   1. Section 01 4100: Regulatory Requirements; current Code edition.
   2. Section 32 1723: Pavement Markings; accessible parking striping

C. Related Requirements:
   1. Refer to Division 26 Sections for illuminated exit signs.

1.02 REFERENCES

A. California Code of Regulations (CCR), Title 24, current edition.
   1. Part 2, California Building Code (CBC), Volumes 1 and 2.
      a. Chapter 11B – Accessibility to Public Buildings, Public Accommodations, Commercial Buildings, and Public Housing.
   2. Part 9, California Fire Code (CFC):
      a. Chapter 5, Section 505 – Premises Identification.

1.03 DEFINITIONS

A. Accessible Route:
   1. Continuous unobstructed path that complies with California Building Code (CBC).

B. Characters:
   1. Letters, numbers, punctuation marks, and typographic symbols.

C. Circulation Path:
   1. Exterior or interior way of passage from one place to another for pedestrians, including, but not limited to, walks and hallways.

D. Common Use:
   1. Interior and exterior rooms, spaces, or elements made available for occupancy by students, staff, or others visiting or utilizing facilities.

E. Facility:
   1. Portions of buildings, structures, equipment, walks, passageways, or other real or property located on Project Site.

F. ISA:
   1. International Symbol of Accessibility

G. Pictogram:
   1. Pictorial symbol, which is recognized as representing activities, facilities, or concepts.

H. Premises Identification:
   1. Building address identification complying with CFC Section 505.1

I. Sign:
   1. Architectural element composed of displayed text, symbolic, tactile or pictorial information.

J. Space:
   1. Definable area, such as room, toilet room, hall, entrance, storage room, or lobby.

K. Tactile:
   1. Object that can be perceived through sense of touch.

1.04 SYSTEM DESCRIPTION

A. Comply with most stringent requirements of CBC, current edition, Chapter 11B for following:
   1. Tactile character type and size.
   2. Finish and contrast.
   3. Raised and visual characters.
   4. Visual character and line spacing height and installation height.
   5. Braille:
      a. Use California (Contracted) Grade 2 Braille wherever Braille is required.
   6. Tactile sign inst allation height and location.
   7. Parking lot entrance signs and accessible parking space identification signs.
   8. Circulation path signs leading from public right of ways, public transportation, and parking lots.
   9. Identify accessible building entrances with ISA per CBC Section 11B-216.6.
   10. Identify each permanent room and space required to be identified by sign with sign installed adjacent to door it identifies, with raised characters and Braille.
   11. Tactile Exit Signs: Required per CBC Section 1013.4
   12. Signs indicating provision of special equipment for hearing impaired (i.e. TTY phone, volume control phones, and Assistive Listening Systems (ALS).

1.05 SUBMITTALS

A. Product Data:
   1. Manufacturer's technical data and installation instructions for each type of sign required.

B. Samples:
   1. Each sign form and material showing finishes, colors, surface textures and qualities of manufacturer and design of each sign component including graphics.
      a. Full-size sample units, when requested by Architect.
      b. Acceptable units may be installed as part of Work.

C. Shop Drawings:
   1. For fabrication and erection of signs.
      a. Include plans, elevations, and large scale details of sign wording and lettering layout.
      b. Show anchorages and accessory items.
      c. Furnish location template drawings for items supported or anchored to permanent construction.
      d. Furnish full-size spacing templates for individually mounted letters.

1.06 QUALITY ASSURANCE

A. Uniformity of Manufacturer:
   1. For each separate type of sign required, obtain signs from one source from single manufacturer.

B. Accessibility:
   1. Comply with CBC, Chapter 11B.
      a. Provide tactile exit signage complying with CBC Section 1013.4.

C. Independent Braille Reading Consultant:
   1. Engage independent Braille Reading Consultant to read and confirm that Braille on signage matches words on signs.
   2. Fabricate signs prior to Braille reading consultant reading signs.
      a. Physical fingertip to sign verification is required.
      b. Exceptions to this requirement are not permitted and will not be approved.
   3. When signs have been fabricated, they are to be sent to Braille Reading Consultant for verification and confirmation of compliance.
      a. Signs not in compliance are to be brought to attention of District/Owner and Architect prior to refabrication.
      b. Upon completion of review of non-compliant signs by District/Owner and Architect, those signs are to be refabricated at no additional cost to District/Owner.
      c. A final review of newly fabricated signs are to be verified and confirmed in compliance by the Braille Reading Consultant prior to installation.
   4. Provide letter from Braille Reading Consultant to District/Owner and Architect that complete review of Braille signage has been performed in accordance with requirements set forth in these Specifications.

5. Braille Reading Consultant:
    a. Following agency has been approved by District/Owner:
        1) Wayfinder Family Services, 5300 Angeles Vista Blvd., Los Angeles, CA 90043.
        2) Contact:
            a) Allison Burdett, 323-295-4555, aburdett@wayfinderfamily.org
    b. Other Braille reading consultants may be used but will require prior approval by Architect before award of Contract.
        1) No consultants will be approved after award of Contract.

PART 2 PRODUCTS

2.01 GENERAL

A. Letter Style:
1. Helvetica Medium, unless indicated otherwise..
2. Upper Case Letters only.
3. Upper and Lower Case Letters.

B. Letter Style for Premises Identification Signs:
1. Arabic Numbers and alphabetical letters.
2. Upper Case Letters only.

2.02 PLASTIC SIGNS

A. Basis-of-Design:
1. Design for exterior and interior plastic room signs is based on Best Sign Systems standard HC 300 ADA System plaque signs and accessories as manufactured by Best Plastics, Inc., Montrose, CO.

B. Subject to compliance with specified requirements, comparable products may be submitted by alternate manufacturers in accordance with requirements for product substitutions specified in Section 01 6000 and following:
1. Submit items listed in “Submittals” Article and as specified in Section 01 3300, for evaluation of proposed system.
2. Complete project shop drawings for similar project may be submitted for evaluation purposes, however shop drawings specific to this Project will be required from successful bidder.
3. Copy of manufacturer's finish and material warranty.

C. Material:
1. Plaque stock of laminated phenolic and melamine plastic (MP) for interior signs and fiberglass (FP) for exterior signs suited for graphic sandblast process.
2. Sign stock with face and core plies suited for integral raised profile of text and braille, in finishes and color combinations indicated or, when not indicated, as selected from manufacturer's standards.
3. NEMA rated self-extinguishing.
4. Thickness: 1/4 inch.
5. Edges: Square cut.
6. Corners: As indicated on Drawings.

D. Finish and Contrast:
   1. Matte finish with color of characters and symbols contrasting with background by minimum of 70 percent, and have non-glare finish per CBC Sections 11B-703.5.1, 11B-703.6.2, and 11B-703.7.1
   2. Colors as selected by Architect.

E. Raised (Tactile) and Visual Characters:
   1. Provide raised characters minimum of 5/8 inch and maximum of 2 inches high, based on height of uppercase letter “I”, complying with CBC Sections 11B-703.2 and 11B-703.2.5
      a. Accompanied by California Contracted Grade 2 Braille complying with CBC Section 11B-703.2.
   2. Proportions:
      a. Select Characters from fonts where width of uppercase letter "O" is 60 percent minimum and 110 percent maximum of height of uppercase letter "I" per CBC Sections 11 B-703.4 and 11 B-703.6
   3. Format:
      a. Horizontal Text Format per CBC Sections 11 B-703.2 and 11 B-703.5
   4. Stroke Thickness:
      a. Stroke thickness of uppercase letter "I" – 15 percent maximum of height of character per CBC Section 11 B-703.4 and 11B-703.6
   5. Raised Character and Line Spacing:
      a. Measure character spacing between two closest points of adjacent raised characters within message, excluding word spaces.
      b. Where characters have rectangular cross sections, make spacing between individual raised characters 1/8 inch minimum and 4 times raised character stroke width maximum.
      c. Where characters have other cross sections, make spacing between individual raised characters 1/16 inch minimum and 4 times raised character stroke width maximum at base of cross sections, and 1/8 inch minimum and 4 times raised character stroke width maximum at top of cross sections.
      d. Separate Characters from raised borders and decorative elements 3/8 inch minimum.
      e. Make spacing between baselines of separate lines of raised message at 135 percent minimum and 170 percent maximum of raised character height per CBC Section 11 B-703.2.
   6. Visual Character and Line Spacing:
      a. Measure visual character spacing on between two closest points of adjacent characters, excluding word spaces.
      b. Make spacing between individual characters at 10 percent minimum and 35 percent maximum of character height.
      c. Make spacing between the baselines of separate lines of characters within message at 135 percent minimum and 170 percent maximum of character height per CBC Section 11B-703.5
   7. Visual Character Height and Installation Height:
      a. Minimum character height complying with CBC Table 11 B-703.5.5
   8. Measure viewing distance as horizontal distance between character and obstruction preventing further approach towards sign.
   9. Base character height on uppercase letter "I".
      a. Install visual characters at 40 inches minimum above finish floor or ground except for elevator car controls, floor-level exit signs and emergency procedures information per CBC Section 11 B-703.5.

10. Visual Character Case and Style:
    a. Visual Characters on Sign:
        1) Uppercase or lowercase or combination of both and conventional in form.
    b. Characters:
        1) Not to be italic, oblique, script, highly decorative, or of other unusual forms per CBC Section 11 B-703.5
11. Visual Character Stroke Thickness:
    a. Stroke thickness of uppercase letter "I": 10 percent maximum of height of character per CBC Section 11 B-703.5
12. Provide pictograms, where required, complying with CBC Section 11B-703.6.
13. Symbol of accessibility (ISA): Comply with CBC Section 11B-703.7.

F. Braille:
1. Use California (Contracted) Grade 2 Braille wherever Braille is required, complying with CBC Sections 11B-703.3 and 11B-703.4.
2. Braille Dots:
    a. Locate 0.100 inch on center in each cell with 0.300 inch space between cells, measured from second column of dots in first cell to first column of dots in second cell.
    b. Raised minimum of 0.025 inch above background.
    c. Domed or rounded per CBC Sections 11B-703.3 and 11B-703.3.1.
3. Position Braille below corresponding text in horizontal format, flush left or centered.
4. Place Multi-lined text, Braille below entire text.
5. Separate Braille 3/8 inch minimum and 1/2 inch maximum from other tactile characters, and 3/8 inch minimum from raised borders and decorative elements. per CBC Section 11 B-703. 3

G. Applied copy is not acceptable.

H. Geometric Toilet Room Signs:
1. Comply with CBC Section 11B-703.7.2.6.
2. Fabricated of 1/4 inch thick, non-glare material contrasting with restroom door (light to dark, or dark to light).
3. Boys/Mens Rooms:
    a. Triangular with equal sides,12 inches in length.
4. Girls/Women Rooms:
    a. Circle, 12 inch in diameter.
5. When restroom or other sanitary facility is accessible, place ISA in center of geometric sign.
6. Non-tactile text, such as “Staff Only”, may be added to sign.
7. Install signs on door leading into restroom or other sanitary facility, centered on door, with center of sign 60 inches from finished floor.

I. Provide Plastic Signs as indicated in schedule and details.

2.03 PARKING LOT ENTRANCE AND ACCESSIBLE PARKING SPACE IDENTIFICATION SIGNS

A. Sign Requirements:
   1. Parking Lot Entrance Signs:
      a. Comply with CBC Chapter 11B, warning that cars parked in parking spaces reserved for people with disabilities will be towed.
   2. Identify parking spaces reserved for people with disabilities with reflective sign featuring ISA, complying with CBC, Chapter 11B.
      a. Identify van-accessible spaces by including term "Van Accessible" below pictogram on same sign, or install separate sign with words below ISA sign.per CBC Section 11B-502.6

B. Sign Fabrication:
   1. Fabricate signs of 3M Scotchlite Brand reflective sheeting laminated to 18 gage galvanized heavy-duty steel.
   2. Size:
      a. Minimum 17 inches x 22 inches.
   3. White reflective graphics on dark blue reflective background.
   4. Character Styles and Proportions:
      a. Minimum of one inch high.
   5. Provide with ISA, minimum 8 inches high.
   6. Posts:
      a. Provide 0.050 inch thick aluminum, or 14 gage galvanized steel, square tube, 2-1/4 inches square, punched.
      b. Furnish with corrosion and tamper resistant fasteners.

C. Sign Installation and Mounting:
   1. Install Parking Lot Entrance Signs on wall or pole in conspicuous place at each entrance to off-street parking facilities, or immediately adjacent to, and visible from each accessible stall or space.
   2. Install Parking Space Signs as follows:
      a. On wall or pole at head of each accessible parking space.
      b. In public way, with bottom edge of sign minimum of 80 inches above pavement or ground.
      c. In planting area, parking strip, or on wall, with bottom edge of sign minimum of 60 inches above pavement or ground.

D. Painting and Sriping:
   1. Identify reserved parking spaces with ISA at foot of space in compliance with CBC, Chapter 11B.
      a. Stripe access aisles as required.
   2. Perform painting and striping in accordance with requirements in Section 32 1723.

2.04 ACCESSIBLE PATH OF TRAVEL SIGNS

A. Accessible Path of Travel Signs:
   1. Circulation paths of travel with stairs or other obstacles leading from public right of ways, public transportation, and parking lots, that are not accessible, or do not lead to accessible entrances to building.

a. Locate accessible route signage at decision points compliant with CBC Chapter 11B directing people with disabilities to accessible routes or entrances.
b. Locate and install signs so steps will not have to be retraced.

2. Graphics:
   a. White on dark blue background; non-glare, high contrast signs.
   b. Conform to requirements of CBC Chapter 11B
   c. ISA minimum 4-1/2 inches high.
3. Installation Location and Mounting:
   a. Mount sign on post or wall with lower edge of sign between 48 inches and 60 inches above ground or surface.

2.05 INFORMATIONAL SIGNS

A. Building Entrance Signs:
   1. Install sign at building entrances stating: “No Smoking in Building”, in accordance with California statute prohibiting smoking in public buildings.
   2. When functional spaces have individual entrances from exterior of building, or from courtyard, and such entrances are accessible, one sign can be placed on each exterior elevation stating “All Rooms Have Accessible Entrances.”
      a. Include ISA on such signs, and include phrase: “No smoking in Building”.

B. Room Identification Signs:
   1. Identify each permanent room and space required to be identified by sign with sign installed adjacent to door it identifies, with raised characters and Braille.
      a. This includes entrances to rooms and spaces, which are entered by exterior entrance or by door off interior corridor or courtyard, per CBC Chapter 11B.
   2. Toilet Room Identification Signs:
      a. Include gender pictogram in 6 inch high field.
      b. Locate pictogram field above raised character and Braille text on tactile sign, which is to be located adjacent to latch side of the door, per CBC Chapter 11B.
      c. Where there is not adequate space for sign immediately adjacent to door, and door opens inward, gender pictogram, ISA, and raised characters and Braille can be included on geometric sign installed on door.

2.06 PREMISES IDENTIFICATION SIGNS

A. Address Identification:
   1. Provide address identification signs on [new] [existing] buildings complying with following:
      a. Cast aluminum letters and numerals same as specified for dimensional metal letters.
      b. Furnish address identification characters in contrasting color from background.
         1) Color: As selected by Architect
      c. Provide text consisting of Arabic numbers and alphabetical letters.
         1) Do not spell out numbers.
         2) Refer to Drawings for specific text.
      d. Size of Characters:
         1) Not less than 4 inches high.
         2) Minimum Stroke Width: 1/2 inch

PART 3 EXECUTION

3.01 INSTALLATION

A. General – Locate sign units and accessories where shown, scheduled, or directed by Architect.
   1. Use mounting methods shown or selected by Architect.
   2. Comply with manufacturer's instructions, and CCR, Title 24, Part 2, CBC Chapter 11 B.

B. Install level, plumb, and at proper height with sign surfaces free from distortion or other defects in appearance.
   1. Cooperate with other trades for installation to finish surfaces.
   2. Repair or replace damaged units as directed by Architect.

C. Cast Metal Plaques:
   1. Mount plaques using standard method recommended by manufacturer for type of wall surface indicated.
   2. Concealed Mounting:
      a. Mount plaques by inserting threaded studs into tapped lugs on back of plaque.
      b. Set in predrilled holes filled with quick-setting cement.
   3. Face Mounting:
      a. Mount plaques using exposed fasteners with rosettes attached through face of plaque into wall.

D. Dimensional Letters and Numbers:
   1. Mount letters and numbers using standard fastening methods recommended by manufacturer for letter form, type of mounting, wall construction, and condition of exposure indicated.
   2. Provide heavy paper template to establish letter spacing and to locate holes for fasteners.
   3. Flush Mounting:
      a. Mount letters with backs in contact with wall surface.
   4. Projected Mounting:
      a. Mount letters at projection distance from wall surface indicated.

E. Tactile Sign Installation Height and Location:
   1. Locate tactile characters on signs minimum of 48 inches above finish floor or ground surface, measured from baseline of lowest Braille cells and 60 inches maximum above finish floor or ground surface, measured from baseline of highest line of raised characters.
   2. Locate tactile signs on approach side of of door at entry or exit, and allow for reach within 0 inches of required clear floor space oer CBC Section and Figure 11B-703.4.2.
      a. Where tactile sign is provided at door, locate sign on wall alongside door at latch side.
      b. When at double doors with one active leaf, locate sign on inactive leaf.
      c. When at double doors with two active leafs, locate sign to right of right hand door.
      d. Where there is no wall space at latch side of single door or at right side of double doors, locate signs on nearest adjacent wall.

e. Locate signs containing tactile characters so that clear floor space of 18 inches minimum by 18 inches minimum, centered on tactile characters, is provided beyond arc of door swing between closed position and 45 degree open position per CBC Section 11 B-703.4

F. Plastic Signs:
1. Mount sign with aluminum T-type bracket, finish to match adjacent surface or adhesive mount with adhesive recommended by sign manufacturer for application to substrate.
2. Locate signs so that person may approach within 3 inches of sign without encountering protruding objects or standing within swing of door per CBC Chapter 11B.

G. Premises Identification Signs:
1. Install address identification signs in position visible from street or road facing Property.
a. Position as approved by fire code official.
b. Install additional address identification signs in approved locations when required by fire code official to facilitate emergency response.

3.02 CLEANING AND PROTECTION

A. At completion of installation, clean soiled sign surfaces in accordance with manufacturer's instructions.
1. Protect units from damage until acceptance by Owner.

END OF SECTION 10 1400

SECTION 14 4500

VEHICLE LIFTS

PART 1 GENERAL

1.01 SUMMARY

A. Section includes:
   1. Providing one Light Duty Vehicle Lift.
   2. Work includes:
      a. Safety equipment, controls and accessories of the following type:
         1) Self-contained in-ground two post frame contact lift as indicated on Drawings.
      b. Connection of power and wiring to lift.
      c. Connection of pneumatic (compressed air) piping to lift area.

B. Related Sections:
   1. Section 01 1100: Summary of Work
   2. Section 03 3000: Cast-in-Place Concrete

C. Related Requirements:
   1. Refer to Architectural Drawings for related pneumatic (compressed air) piping.
   2. Refer to Electrical Drawings for related electrical power and wiring.

1.02 REFERENCES

A. California Code of Regulations (CCR), current edition:
   1. Title 8 – Industrial Relations:
      a. Subchapter 7. General Industry Safety Orders.
         1) Group 3. General Plant Equipment and Special Operations.
         2) Article 19. Automotive Lifts
   2. Title 24:
      a. Part 2, California Building Code (CBC), Volumes 1 and 2.
      b. Part 3, California Electrical Code (CEC)

B. American National Standards Institute / Automotive Lift Institute (ANSI/ALI):
   1. ANSI/ALI ACTV – Standard for Automotive Lifts – Safety Requirements for Construction, Testing, and Validation.
   2. ANSI/ALI ALOIM – Standard for Automotive Lifts – Safety Requirements for Operation, Inspection and Maintenance.
   3. ANSI/ALI ALIS – Standard for Automotive Lifts – Safety Requirements for Installation and Service.

1.03 SUBMITTALS

A. Product Data:
   1. Manufacturer's data sheets for each installed product, including, but not necessarily limited to:
      a. Preparation instructions and recommendations.
      b. Storage and handling requirements and recommendations.
      c. Installation manual.
      d. Operations manual.

e. Maintenance manual.
f. Safety manual.

B. Shop Drawings:
2. Show location and layout of lifts.
3. Template drawings of anchor bolt locations for installation of lifts.
a. Including load reactions for lift application.
4. Electrical wiring diagrams
5. Diagrams of pneumatic (compressed air) system lines.

1.04 QUALITY ASSURANCE

A. Installer Qualifications:
1. Factory trained authorized company.
2. Company insured for completed operations of installing lift.

B. Lift Manufacturer who is IS09001 certified.

C. Lift Certification:
1. Third party certified by ETL testing laboratory and labeled with ETL/Automotive Lift Institute (ALI) label that affirms lifts conformance to applicable provisions of American National Standard ANSI/ALI ALCTV.

1.05 DELIVERY, STORAGE, AND HANDLING

A. Delivery Requirements:
1. Receive and unload Products at Site.
2. Promptly inspect Products jointly with Owner and installation contractor.
a. Record shortages, damaged or defective items.

B. Storage and Handling Requirements:
1. Handle Products at Site, including uncrating and storage.
2. Protect Products from exposure to elements and from damage.
3. Repair or replace items damaged by Contractor or installation contractor.

1.06 PROJECT CONDITIONS

A. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results.
1. Do not install products under environmental conditions outside manufacturer's recommended limits.

1.07 REGULATORY REQUIREMENTS

A. Comply with requirements of state and local authorities having jurisdiction for installation and operation of vehicle lifts.
1. CCR, Title 8, Subchapter 7, Group 3, Article 9.

1.08 MAINTENANCE

A. Replacement Parts:
1. Furnish documentation to Owner that replacement parts are available from nationwide network of factory designated parts distributors.

a. Include names, addresses, and phone numbers of distributors closest to this installation.

B. Repairs:
1. Furnish to Owner, names, addresses, and phone numbers of local factory authorized/trained service representatives closest to this installation, to perform maintenance and repairs on lifts.

1.09 WARRANTY

A. Manufacturer's Warranty:
1. Provide manufacturer's standard warranty for failures due to defective materials and workmanship.
2. Manufacturer will not assume responsibility, or compensation, for unauthorized repairs or labor.
3. Warranty Period:
a. Minimum of one year from date of Substantial Completion.

PART 2 PRODUCTS

2.01 MANUFACTURERS/PRODUCTS

A. Basis-of-Design:
1. Provide products as manufactured Rotary Lift, Madison, IN
2. Specified products has been selected and approved by Owner/District.
a. Substitutions: Not permitted.

2.02 VEHICLE LIFT

A. Light Duty 10,000 lb Capacity Self-Contained In-ground Two Post Frame Contact Lift
1. Model SL210
2. Lift Characteristics:
a. Two 8-1/2 inches hydraulic cylinders:
b. EasyAccess design does not require bleeding and can be removed for servicing while other components stay in place.
c. Hose connections can be accessed at floor level.
d. Steel frame contained inside a 1/4 inch thick, low-density polymer composite housing made from recycled material.
e. Housing is resistant (inert) to chemicals, corrosion, and electrolysis with liquid detection alert system.
3. Capacity:
a. SL210 Series:
1) 10,000 lbs.
2) 2500 lbs. per adapter.
4. Minimum Bay Requirements:
a. Floor Space:
1) 11 feet x 24 feet.
5. Overall Width:
a. 9 feet-7/8 inch.
6. Drive-Through Clearance:
a. 7 feet-4 inches.
7. Rise:
a. 3-Stage Arms With Flip-Up Adapters:

1) 81 inches from floor level to top of adapter fully extended.

b. 3-Stage Arms with RA Adapters:

1) 75-7/8 inches from floor level to top of adapter fully extended.

8. Finishes:
   a. Lift:
      1) Standard RAL5005 Blue, unless otherwise indicated.
   b. Arms:
      1) RAL1023 Yellow
9. Single Point Manual Controls
   a. Pneumatic:
      1) 100 psi to 120 psi Air required
      2) Lock Release Electric Power Unit:
         a) UL201 Compliant.
      3) Over Hydraulic Cylinder Drive:
         a) Bio-fluid compatible.
   b. Motor:
      1) 2hp 208-230V 1 phase 60Hz.

10. Arm Configurations:
    a. 3-Stage Arms With Flip Up Adapters:
       1) Front and Rear Arms:
          a) Minimum Reach: 21-3/8 inches (
          b) Maximum Reach: 44-3/8 inches
          c) Minimum Adapter Height: 4-1/4 inches
          d) Maximum Adapter Height: 10-1/2 inches from floor.
    b. 3-Stage Arms With RA Adapters:
       1) Front and Rear Arms:
          a) Minimum Reach: 19 inches
          b) Maximum Reach: 54-3/4 inches
          c) Minimum Adapter Height: 3-5/8 inches
          d) Maximum Adapter Height: 4-7/8 inches from floor.
    c. Moveable Pad:
       1) Front and Rear Arms:
          a) Minimum Reach: 29-3/4 inches
          b) Maximum Reach: 74-3/4 inches
          c) Minimum Adapter Height: 2-3/8 inches
          d) Maximum Adapter Height: 3 inches from floor.
11. Lift Certification:
    a. 3rd party certified by ETL testing laboratory.
    b. Labeled with ETL/Automotive Lift Institute (ALI) label that affirms lift meets conformance to applicable provisions of ANSI/ALI ALCTV, current edition.
    c. Complies with CBC Chapter 30, Section 3001.2.

PART 3 EXECUTION

3.01 EXAMINATION

A. Prior to installation of vehicle lifts, inspect Project Site with installer present and verify following:
   1. Areas scheduled to receive lifts are ready for installation.
   2. Field measurements are as shown on approved shop drawings.
   3. Correct location of anchor bolts.

4. Correct location and installation of electrical wiring and compressed air piping
5. Do not begin installation until supporting structures have been properly prepared.
6. Notify Architect of unsatisfactory preparation before proceeding.

3.02 INSTALLATION

A. Vehicle Lifts:
   1. Install in strict accordance with manufacturer instructions and in proper relationship with adjacent construction.
   2. Install plumb, level, rigid, square, and flush at locations indicated.
   3. Anchor securely to concrete slab.
   4. Install accessories including, but not necessarily limited to, those furnish by lift manufacturer.
      a. Include components and accessories as required for complete installation.

B. Upon completion of installation:
   1. Lubricate components.
   2. Test for proper operation and adjust lifts to operate easily, free from twist or distortion.
      a. Retest when necessary until satisfactory results are achieved.

3.03 DEMONSTRATION

A. Startup Services:
   1. Engage factory authorized service representative to train Owner's maintenance personnel as follows:
      a. Train Owner's maintenance personnel on procedures and schedules related to startup and shutdown, troubleshooting, servicing, and preventive maintenance.
      b. Review data in maintenance manuals.
      c. Schedule training with Owner with at least 7 days' advance notice.

3.04 PROTECTION

A. Touch-up, repair or replace products damaged during installation.

B. Protect installed products until date of Substantial Completion.

END OF SECTION 14 4500

SECTION 32 0129

CONCRETE PAVING REPAIR

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes:
   1. Concrete pavement repair consisting of:
      a. Saw cutting and removal of areas of existing concrete paving:
         1) Where grade exceeds maximum 2 percent slope and replace with new concrete paving.
         2) Where indicated for areas to receive cast-in-place detectable warning surfaces.

B. Related Sections:
   1. Section 01 4100: Regulatory Requirements; current Code edition.
   2. Section 32 0523: Concrete for Exterior Improvements.
   3. Section 32 1100: Base Course
   4. Section 32 1726: Detectable Warning Surfaces.

1.02 REFERENCES

A. California Code of Regulations (CCR), Title 24, Part 2, California Building Code (CBC), Volumes 1 and 2, current edition.
   1. Chapter 11B – Accessibility to Public Buildings, Public Accommodations, Commercial Buildings, and Public Housing.

B. ASTM International (ASTM):
   1. ASTM A 615 – Standard Specification for Deformed and Plain Carbon-Steel Bars for Concrete Reinforcement
   2. ASTM A767 – Standard Specification for Zinc-Coated (Galvanized) Steel Bars for Concrete Reinforcement
   3. ASTM A 1064 – Standard Specification for Carbon-Steel Wire and Welded Wire Reinforcement, Plain and Deformed, for Concrete
   4. ASTM C31 – Standard Practice for Making and Curing Concrete Test Specimens in the Field
   5. ASTM C 33 – Standard Specification for Concrete Aggregates
   6. ASTM C39 – Standard Test Method for Compressive Strength of Cylindrical Concrete Specimens.
   7. ASTM C 94 – Standard Specification for Ready-Mixed Concrete
   8. ASTM C143 – Standard Test Method for Slump of Hydraulic-Cement Concrete
   9. ASTM C150 – Standard Specification for Portland Cement
   10. ASTM C171 – Standard Specification for Sheet Materials for Curing Concrete
   11. ASTM C172 – Standard Practice for Sampling Freshly Mixed Concrete
   12. ASTM C231 – Standard Test Method for Air Content of Freshly Mixed Concrete by the Pressure Method
   13. ASTM C 260 – Standard Specification for Air-Entraining Admixtures for Concrete
   14. ASTM C 494 – Standard Specification for Chemical Admixtures for Concrete

15. ASTM C 1059 – Standard Specification for Latex Agents for Bonding Fresh To Hardened Concrete
16. ASTM C1064 – Standard Test Method for Temperature of Freshly Mixed Hydraulic-Cement Concrete
17. ASTM D 1751 – Standard Specification for Preformed Expansion Joint Filler for Concrete Paving and Structural Construction (Nonextruding and Resilient Bituminous Types)
18. ASTM C 1059 – Standard Specification for Latex Agents for Bonding Fresh To Hardened Concrete
19. ASTM C1064 – Standard Test Method for Temperature of Freshly Mixed Hydraulic-Cement Concrete
20. ASTM D 1751 – Standard Specification for Preformed Expansion Joint Filler for Concrete Paving and Structural Construction (Nonextruding and Resilient Bituminous Types)

C. American Concrete Institute (ACI):
1. ACI 211.1 – Standard Practice for Selecting Proportions for Normal, Heavyweight, and Mass Concrete
2. ACI 304R – Guide for Measuring, Mixing, Transporting and Placing Concrete.
3. ACI 305R – Specification for Hot Weather Concreting
4. ACI 306R – Guide to Cold Weather Concreting
5. ACI 308R – Guide to External Curing of Concrete.
6. ACI 309R – Guide for Consolidation of Concrete.

D. Concrete Reinforcing Steel Institute (CRSI):
1. CRSI Manual of Standard Practice.
2. CRSI Placing Reinforcing Bars

E. Public Works Standards, Inc.:
1. Standard Specifications for Public Works Construction (SSPWC):
   a. The "Greenbook"; current edition.
2. Standard Plans for Public Works Construction (SPPWC); current edition.

F. West Coast Lumber Inspection Bureau (WCLIB):
1. Standard Grading Rules No. 17, 2004.

G. South Coast Air Quality Management District (SCAQMD):
1. Rule 1113 – Architectural Coatings

1.03 SUBMITTALS

A. Shop Drawings:
1. Indicating areas to be repaired.

B. Design Mixes:
1. For each concrete pavement mix.
2. Include alternate mix designs when characteristics of materials, project conditions, weather, test results, or other circumstances warrant adjustments

C. Samples:
   a. Provide in-place, first installed sample of medium broom finish for compliance with CBC, Chapter 11B.

1.04 QUALITY ASSURANCE

A. Comply with Standard Specifications for Public Works Construction (SSPWC), current edition.

B. Provide Portland cement concrete paving that is stable, firm, and slip resistant, complying with CBC Sections 11B-302 and 11B-403.

C. Provide materials that comply with following:
   1. Meet or exceed specified minimum or maximum physical and mechanical properties.
   2. Materials manufactured by single manufacturer.

D. Installer Qualifications:
   1. Experienced installer who has completed pavement work similar in material, design, and extent to that indicated for this Project and whose work has resulted in construction with a record of successful in-service performance.

E. Concrete Testing Service:
   1. Engage qualified independent testing agency to design concrete mixes.

1.05 PROJECT CONDITIONS

A. Traffic Control:
   1. Maintain access for vehicular and pedestrian traffic as required for other construction activities.
   2. Comply with other requirements specified in Section 01 5000.

1.06 REGULATORY REQUIREMENTS

A. General:
   1. Construct walkways (sidewalks) to be stable, firm, and slip resistant in accordance with CBC Section 11B-302 and 11B-403 and as specified in this Section.
   2. Refer to Article 3.06 for slip resistant finishes.

PART 2 PRODUCTS

2.01 MATERIALS – GENERAL

A. Concrete Materials:
   1. Provide materials and products of the class, grade or type indicated.
   2. Refer to Section 32 1100 for base course materials.

B. Accessories for Concrete Paving:
   1. Forms: Metal, wood, or other suitable material of size and strength to resist movement during concrete placement
   2. Reinforcing Bars: ASTM A 615, Grade 60, deformed.

C. Water for Mixing: Clean, potable.

2.02 FORMWORK

A. Forms:
   1. Metal, wood, or other suitable material of size and strength to resist movement during concrete placement and to retain horizontal and vertical alignment until removal and to provide full depth, continuous straight, smooth exposed surfaces.
   2. Use flexible or curved forms to form radius bends as required.
      a. Do not use notched and bent forms.

B. Form Release Agent:
   1. Provide commercial formulation form-release agent complying with local Volatile Organic Compound (VOC) limitations that will not bond with stain. or adversely affect concrete surfaces and will not impair subsequent treatments of concrete surfaces.

2.03 REINFORCING MATERIALS

A. Reinforcing Bars:
   1. Conforming to ASTM A 615, Grade 40, deformed.

B. Joint Dowel Bars:
   1. Plain Steel Bars:
      a. Conforming to ASTM A 615, Grade 60.
   2. Zinc coated (galvanized) after fabrication according to ASTM A 767, Class I coating
   3. Cut bars to length with ends square and free of burrs.
   4. Provide polyethylene closed-end sleeve or approved alternate at expansion joint dowels

C. Bar Supports:
   1. Bolsters, chairs, spacers, and other devices for spacing, supporting, and fastening reinforcing bars and dowels in place.
   2. Manufacture bar supports, according to CRSI Manual, from steel wire, plastic, or precast concrete or fiber reinforced concrete of greater compressive strength than concrete, and as follows:
      a. Equip wire bar supports with sand plates or horizontal runners where base material will not support chair legs.

2.04 CONCRETE MATERIALS

A. Use same brand and type of cementitious material from same manufacturer throughout Project.

B. Portland Cement:
   1. Conforming to ASTM C 150, Type II.
   2. Color: Natural Gray

C. Aggregate:
   1. Normal-Weight:
      a. Conforming to ASTM C 33, uniformly graded, from single source, with coarse aggregate as follows:
         1) Class: 1N.

2. Maximum Aggregate Size: 1 inch nominal.
3. Do not use fine or coarse aggregates containing substances that cause spalling.

D. Water:
1. Conforming to ASTM C 94.

2.05 ADMIXTURES

A. Certified by manufacturer to contain not more than 0.1 percent water-soluble chloride ions by mass of cement and to be compatible with other admixtures.

B. Air-Entraining Admixture:
1. Conforming to ASTM C 260.

C. Water-Reducing Admixture:
1. Conforming to ASTM C 494, Type A.

2.06 CURING MATERIALS

A. Moisture-Retaining Cover:
1. Conforming to ASTM C 171
a. Non-staining, reinforced, waterproof sheet.

B. Water: Potable.

2.07 RELATED MATERIALS

A. Control Joint Material:
1. Expansion Joint Filler Material:
a. Fiber Type Expansion Joint Filler:
1) Resilient, flexible, non-extruding, composed of cellular fibers securely bonded together and uniformly saturated with asphalt to
2) Conforming to ASTM D 1751.
3) Fibre Expansion Joint by W.R. Meadows, or approved equal.
2. Plain or punched for dowels as required.

B. Bonding Agent:
1. Conforming to ASTM C 1059, Type II
a. Acrylic emulsion or styrene butadiene.

2.08 CONCRETE MIX DESIGN

A. Prepare design mixes for each type and strength of normal-weight concrete by either laboratory trial batch or field experience methods as specified in ACI 301.
1. For trial batch method, use qualified independent testing agency for preparing and reporting proposed mix designs.
a. Do not use Owner's field quality-control testing agency as independent testing agency.
2. Limit use of fly ash to 15 percent of cement content by weight.

B. Proportion mixes according to ACI 211.1 and ACI 301 to provide normal-weight concrete with following properties:
1. Compressive Strength:

a. 3,500 psi at 28 days when tested in accordance with ASTM C39:
b. Slump Range: 3 inches to 4 inches.
c. Water-Cement Ratio: Maximum 50 percent by weight.

C. Add air-entraining admixture at manufacturer's prescribed rate to result in concrete at point of placement having air content of 2.5 percent to 4.5 percent.

2.09 CONCRETE MIXING

A. Ready-Mixed Concrete:
1. Comply with specified requirements and ASTM C 94 and following:.
a. When air temperature is between 85 degrees F and 90 degrees F, reduce mixing and delivery time from 1-1/2 hours to 75 minutes
b. When air temperature is above 90 degrees F, reduce mixing and delivery time to 60 minutes.

PART 3 EXECUTION

3.01 CONCRETE PAVEMENT REMOVAL

A. Remove concrete pavement in accordance with applicable provisions of SSPWC Section 300 – Earthwork and following:
1. Remove areas of concrete pavement where slope exceed maximum 2 percent where indicated on Drawings.
a. Work includes saw cutting and removal of existing concrete curbs and gutters as required.
2. Saw cut existing improvements in concrete pavement to permit mechanical hand tampers to compact fill.
a. Cut to neat even line and excavate one inch below bottom of existing pavement
3. When removing concrete by saw cutting and required cut line is within 30 inches of score or joint line or edge, cut and remove to score, joint line, or edge.

3.02 SURFACE PREPARATION

Non-slip finish is required on all walk surfaces

A. Proof-roll prepared subbase surface to check for unstable areas and verify need for additional compaction.
1. Do not begin paving work until such conditions have been corrected and subbase is ready to receive paving.

B. Remove loose material from compacted subbase surface immediately before placing concrete.

3.03 EDGE FORMS AND SCREED CONSTRUCTION

A. Set, brace, and secure edge forms, bulkheads, and intermediate screed guides for paving to required lines. grades, and elevations.
1. Install forms to allow continuous progress of Work and so forms can remain in place at least 24 hours after concrete placement.

B. Check completed formwork and screeds for grade and alignment to following tolerances:

1. Top of Forms:
   a. Not more than 1/8 inch in 10 feet.
2. Vertical Face on Longitudinal Axis:
   a. Not more than 1/4 inch in 10 feet.

C. Clean forms after each use and coat with form release agent as required to ensure separation from concrete without damage.

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3.06 PLACING REINFORCEMENT

A. Follow CRSI recommended practice for placing and supporting reinforcement.

B. Clean reinforcement of loose rust and mill scale, earth, ice, or other bond-reducing materials.

C. Arrange, space and securely tie bars and bar supports to hold reinforcement in position during concrete placement. Maintain minimum cover to reinforcement.

D. When specified or indicated, install welded wire fabric in lengths as long as practicable:
   1. Lap adjoining pieces at least one full mesh and lace splices with wire.
   2. Offset laps of adjoining widths to prevent continuous laps in either direction.

3.07 JOINTS

A. Construct control, construction, and expansion joints and tool edgings true to line with faces perpendicular to surface plane of concrete.
   1. Construct transverse joints at right angles to centerline, unless indicated otherwise.
   2. When joining existing paving, place transverse joints to align with previously placed joints, unless indicated otherwise.

B. Tooled Control Joints (CJ):
   1. Form tooled control joints after initial floating by grooving and finishing each edge of joint with groover tool to radius as indicated or specified.
      a. Repeat grooving of control joints after applying surface finishes.
      b. Eliminate tool marks on concrete surfaces.
   2. Jointer Tool:
      a. 1/4 inch wide at surface, tapered, with top edges rounded to 1/4 inch radius.
   3. Location:
      a. As shown on Drawings, but not more than 15 feet on center both ways.
      b. Typical Sidewalk Joints:
         1) Make joints 5 feet on center, or as directed by Architect.

C. Sawed Joinls:
   1. Form contraction joints with power saws equipped with shatterproof abrasive or diamond-rimmed blades.
   2. Cut 1/8 inch wide joints into concrete when cutting action will not tear, abrade, or otherwise damage surface and before developing random contraction cracks.
   3. Prior approval of Architect is required for sawed joints.

D. Edging:
   1. Tool edges of pavement, gutters, curbs, and joints in concrete after initial floating with edging tool to specified radius.
   2. Repeat tooling of edges after applying surface finishes.
      a. Eliminate tool marks on concrete surfaces.
   3. Radius:
      a. 1/4 inch, unless indicated otherwise.

E. Construction Joints (CJ):
   1. Set construction joints at side and end terminations of paving and at locations where paving operations are stopped for more than 1/2 hour, unless paving terminates at isolation joints.
   2. Continue reinforcement across construction joints unless indicated otherwise.
   3. Do not continue reinforcement through sides of strip paving unless indicated.
   4. Use bonding agent on existing concrete surfaces that will be joined with fresh concrete.

F. Expansion Joints (EJ):
   1. Provide in exterior concrete paving on grade at maximum interval of 30 feet on center or as noted.
   2. Form expansion joints of preformed joint filler strips as follows:
      a. At intersections with vertical surfaces.

b. At surfaces abutting concrete curbs, catch basins, manholes, inlets, structures, walks, other fixed objects, and where indicated
c. At other penetrations through paving.

3. Joint Fillers:
   a. Use fiber type expansion joint fillers typically and depress 1/4 inch unless otherwise noted.
   b. Use cork type expansion joint fillers at conditions with non-bituminous waterproofing, liquid waterproofing, or sealant systems.
   c. Where more than one length is required, lace or clip joint filler sections together.
   d. Do not leave gaps between ends of joint filler units.
   e. Protect top edge of joint filler during concrete placement with metal, plastic, or other temporary preformed cap.
      1) Remove protective cap after concrete has been placed on both sides of joint.
4. Install dowel bars and support assemblies at joints where indicated.
   a. Lubricate or asphalt-coat one half of dowel length to prevent concrete bonding to one side of joint.

G. Installation of Sealants:
1. Comply with requirements of Section 07 9200 and following:
   a. Install sealant to depths recommended by sealant manufacturer but within following general limitations, measured at center section of bead:
      1) For sidewalks, pavements, and similar joints sealed with elastomeric sealants and subject to traffic and other abrasion and indentation exposures, fill joints to depth equal to 75 percent of joint width, but not more than 1/2 inch deep or less than 3/8 inch deep.
   b. Tool joints to form smooth, uniform beads with slightly concave surfaces, with finished joints straight, uniform, smooth and neatly finished.
   c. Remove excess sealant from adjacent surfaces of joint, leaving Work in neat, clean condition.
   d. Do not use tooling agents unless recommended by sealant manufacturer.

3.08 CONCRETE PAVEMENT INSTALLATION

A. Grading And Compacting:
1. Conform to requirements in SSPWC, as required.
2. Where subgrade or base is deemed to be unstable or otherwise unsuitable, excavate such materials to firm earth, and replace with required material.
   a. Install and compact fill materials in accordance with requirements of SSPWC.

B. Edge Forms and Screed Construction
1. Set, brace, and secure edge forms, bulkheads, and intermediate screed guides for paving to required lines, grades, and elevations.
2. Install forms to allow continuous progress of Work and so forms can remain in place at least 24 hours after concrete placement.

C. Base Course:
1. Unless otherwise indicated, provide base course in accordance with Section 32 1100..

D. Joints In Concrete Paving:
   1. Construct control, construction, and expansion joints, and tool edgings true to line with faces perpendicular to surface plane of concrete.
   2. Construct transverse joints at right angles to centerline, unless indicated otherwise.
   3. When joining existing paving, place transverse joints to align with previously placed joints, unless indicated otherwise.

E. Concrete Placement:
   1. Comply with requirements and ACI 304R for measuring, mixing, transporting, and placing concrete.

F. Finishing of Concrete Paving:
   1. Comply with requirements in Article 1.06 and following:
      a. Medium Textured Broom Finish:
         1) For slopes less than 6 percent, provide medium texture by drawing soft bristle broom across concrete surface perpendicular to line of traffic to provide uniform fine line texture finish.
         2) Match existing texture where abutting adjacent concrete surfaces.

G. Concrete Curing:
   1. Employ curing methods immediately after placement and for measures other than application of curing compound, extend for seven days.
      a. Architect may recommend longer periods based upon prevailing temperature, wind and relative humidity.
      b. Comply with ACI 318, Section 26.5.3.
   2. Avoid alternate wetting and drying and fluctuations of concrete temperature.
   3. Protect fresh concrete from direct rays of sun, rain, freezing, drying winds, soiling, and damage.
   4. Do not permit curing method to affect adversely finishes or treatments applied to finish concrete.

H. Comply with requirements specified in Section 32 1726 for installation of cast-in-place detectable warning surface tiles.

3.09 CLEANING

A. Perform Work to keep affected portions of Project Site neat, clean, and orderly.
   1. Remove, immediately upon completion of Work, surplus materials, rubbish, and equipment associated with or used in performance.
   2. Be aware that failure to perform clean-up operations within 24 hours of notice by Architect will be considered adequate grounds for having work done by others at no added expense to Owner.

B. Remove and legally dispose of rubbish, debris, and waste materials off Project Site.

3.10 PROTECTION

A. Protect concrete from injurious action of elements and defacement during construction operations.

B. Protect Work until Substantial Completion.

END OF SECTION 32 0129

SECTION 32 0523

CONCRETE FOR EXTERIOR IMPROVEMENTS

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes:
   1. Precast Concrete for:
      a. Wheel stops.

B. Related Sections:
   1. Section 01 4100: Regulatory Requirements; current Code edition.
   2. Section 01 5000: Temporary Facilities and Controls; for traffic control and project protection.
   3. Section 32 0129: Concrete Paving Repair
   4. Section 32 1723: Pavement Markings; painting of wheel stops.

1.02 REFERENCES

A. California Code of Regulations, Title 24, California Building Code (CBC), Part 2, Volumes 1 and 2, current edition.

B. ASTM International (ASTM):
   1. ASTM A 615 – Standard Specification for Deformed and Plain Carbon-Steel Bars for Concrete Reinforcement

1.03 SUBMITTALS

A. Material Sample:
   1. One concrete bumper to Project Inspector for destructive testing.

PART 2 PRODUCTS

2.01 MATERIALS

A. Reinforcing:
   1. Bars:
      a. New billet steel:
         1) Conforming to ASTM A 615 Grade 60.

2.02 WHEEL STOPS

A. Precast, air-entrained concrete, smooth finish, 3,000 psi minimum compressive strength, with continuous steel reinforcing, approximately 5-1/2 inches high x 7 inches wide.
   1. Provide minimum length of 48 inches, unless otherwise indicated on Drawings.
   2. Provide chamfered corners and drainage slots on underside.
   3. Provide holes for anchoring to substrate.
   4. Anchor Rods: Solid steel rod or No. 5 reinforcing bar, galvanized.
      a. Diameter: 5/8 inch (0.625 inch).

b. Minimum Length: 18 inches.

PART 3 EXECUTION

3.01 CONCRETE WHEEL STOP INSTALLATION

A. Provide wheel stops in locations indicated on Drawings.
   1. Set units level and flush.
   2. Drill holes in concrete paving for wheelstop anchor rods.
   3. Secure each unit with 2 steel anchor rods or rebar of type and size specified.
      a. Minimum Embedment of Stakes: 12-1/2 inches

3.02 CLEANING

A. Remove and legally dispose of rubbish, debris, and waste materials off Project Site.

3.03 PROTECTION

A. Protect Work until Substantial Completion.

END OF SECTION 32 0523

SECTION 32 1100

BASE COURSE

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes:
   1. Furnishing and installing base course material under paving.

B. Related Sections:
   1. Section 32 0129: Concrete Paving Repair

1.02 REFERENCES

A. State of California Department of Transportation (Caltrans):
   1. Standard Specifications:
      a. Division IV – Subbases and Bases
         1) Section 26 – Aggregate Bases.

B. Public Works Standards, Inc.:
   1. Standard Specifications for Public Works Construction (SSPWC):
      a. The "Greenbook"; current edition.
   2. Standard Plans for Public Works Construction (SPPWC); current edition.

1.03 DEFINITIONS

A. Caltrans Class 2 Base:
   1. Comply with Section 26-1.02B of Caltrans Standard Specifications, current edition
      a. Aggregate Gradation:
         1) Conforming within percentage passing limits for sieve sizes shown in Aggregate Gradation Table.
      b. Aggregate Quality Characteristics:
         1) Complying with requirements shown in Aggregate Quality Characteristics Table

B. Crushed Aggregate Base:
   1. Consisting entirely of crushed rock and rock dust.
      a. Conforming to requirements of SSPWC Sections 200-1.1 and 200-1.2

1.04 SUBMITTALS

A. Product Data:
   1. Include material source, technical information, and test data for base materials.
   2. Gradation and quality certifications: Dated within 30 days of submittal.

1.05 QUALITY ASSURANCE

A. Comply with Caltrans Standard Specifications or SSPWC as minimum requirement, except where indicated otherwise.

PART 2 PRODUCTS

2.01 BASE COURSE MATERIALS

A. Caltrans Class 2 Base: :
   1. Conforming to Caltrans Class 2 as defined in Article 1.05 B.

B. Crushed Aggregate Base:
   1. Conforming to requirements of SSPWC as defined in Article 1.05 A.

2.02 MATERIAL APPROVAL

A. Provide Base material as inspected by Project Inspector prior to installation.
   1. Owner may choose to have additional tests performed by geotechnical engineer, retained by Owner before installation.

PART 3 EXECUTION

3.01 BASE COURSE INSTALLATION

A. Install base course material in layers not exceeding 3 inches in thickness, unless otherwise required.
   1. Grade and compact to indicated levels or grades
      a. Cut and fill.
      b. Water and roll until surface is hard and true to line, grade and required section.
      c. Provide relative compaction of at least 95 percent, unless otherwise required.
   2. Grade base course to elevations indicated on Drawings, ready to receive specified surfacing.

3.02 CLEANING

A. Remove and legally dispose of rubbish, debris, and waste materials off Project Site.

3.03 PROTECTION

A. Protect Work until Substantial Completion.

END OF SECTION 32 1100

SECTION 32 1723

PAVEMENT MARKINGS

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes:
   1. Parking lot striping:
      a. Includes markings and accessibility symbols, for accessible spaces as indicated.
      b. Fire lane identification
      c. Other curb identification and markings.
   2. Play court game striping and symbols as indicated on Drawings.

B. Related Sections:
   1. Section 32 0523: Concrete for Exterior Improvements
   2. Section 32 1726: Tactile Warning Surfacing
   3. Section 32 1216: Asphalt Paving
   4. Section 32 1313: Concrete Paving

1.02 REFERENCES

A. California Code of Regulations, Title 24, 2016 edition, Part 2, California Building Code (CBC), Volumes 1 and 2.
   1. Chapter 11B – Accessibility to Public Buildings, Public Accommodations, Commercial Buildings, and Public Housing.

B. Federal Specifications (FS):
   1. FS TT-P-1952 – Paint, Traffic and Airfield Marking, Waterborne, current version.

C. Federal Standards (FED-STD):
   1. FED-STD 595C – Colors Used in Government Procurement, current version.

D. South Coast Air Quality Management District (SCAQMD):
   1. Rule 1113 – Architectural Coatings

1.03 SUBMITTALS

A. Product Data:
   1. Manufacturer’s product data on traffic paint products and material.

B. Shop Drawings:
   1. Indicating location, extent, color, and texture of markings.

C. Samples:
   1. Color samples of paint products.

1.04 PROJECT CONDITIONS

A. In-Service Surface Temperature Limits:
   1. Dry: 50 degrees F minimum.
   2. Do not apply when air, surface, or product temperatures are below 50 degrees F, or when adverse weather conditions are forecast.

B. Dry Time at 77 degrees F and 50 percent Relative Humidity:
   1. Drying times will vary depending on temperature, air circulation, and humidity.

1.05 REGULATORY REQUIREMENTS

A. Accessible Parking Spaces Serving Particular Building or Facility:
   1. When serving more than one accessible entrance, locate on shortest accessible route to entrance or multiple accessible entrances per CBC Section 11B-208.3.1
   2. Provide minimum number of required accessible parking spaces in accordance with CBC Section 11B-208.2
   3. Provide a least one van-accessible parking space for every six, or fraction thereof, of accessible parking spaces in accordance with CBC 11B-208.2.4
   4. Provide accessible parking spaces and access aisles comply with CBC Section 11B-502
      a. Dimension parking spaces to centerline of marked lines as follows:
         1) Mark parking spaces and access aisles according to CBC Figures 11B-502.2, 11B-502.3 and 11B-502.3.3
         2) Provide surfaces complying with CBC Section 11B-11B-302 and at same level with slopes not steeper than 1:48 in any direction per CBC Section 11B-502.4
   5. Parking Space Dimensions:
      a. Parking Spaces and Van Accessible Spaces: As indicated on Drawings.
      b. Place access aisles on either side of parking spaces.
         1) Locate on passenger side for van accessible parking spaces.
   6. Parking Space and Access Aisle Markings:
      a. Mark access aisles with blue painted borderline around their perimeter.
      b. Mark area within blue borderlines with hatched lines maximum of 36 inches on center with color contrasting to that of aisle surface.
         1) White on asphalt paving.
         2) Blue on concrete paving.
      c. Access aisle markings may extend beyond minimum required length per CBC Section 11B-502.3.3.
      d. Mark access aisles so as not to overlap vehicular way per CBC Section 11B-502.3.4.
      e. Provide vertical clearance of 8 feet-2 inches minimum for accessible parking spaces, access aisles, and vehicular routes serving them per CBC Section 11B-502.5.

PART 2 PRODUCTS

2.01 MATERIALS

A. Traffic Marking Paint:
   1. 100 percent Acrylic Resin System:

a. Ready-mixed, one–component, waterborne acrylic traffic line paint.
b. High Solids formulated for hot and cold application to either asphalt concrete or Portland cement concrete pavements.

2. Meets performance standards of FS TT-P-1952, Type II.
3. VOC Content: Less than 100g/L
4. Colors:
   a. Specified colors conforming to FED-STD 595C.
5. Product and Manufacturer:
   a. Fast Dry Paint Series by American Traffic Products, Rialto, CA, or approved equal.

PART 3 EXECUTION

3.01 PAVEMENT MARKINGS

A. Application of Paint:
   1. Prior to application of paint, allow pavement to properly cure.
      a. Clean and prepare in accordance with paint manufacturer's written recommendations.
   2. Provide mechanical equipment to install paint in a uniform, straight or curved pattern, without holidays and other defects.
   3. Do not permit traffic until paint has completely cured.
   4. Install 2 coats in thickness recommended by manufacturer.

B. Marking Width and Color:
   1. Unless indicated otherwise, marking width and color are as follows:

	Width	Color
a. Parking stall lines	4 inches	
1) General		White
2) Accessible		Blue
b. Traffic markings	4 inches	Yellow
c. Striping	4 inches	
1) General		Yellow
2) Accessible		Blue
d. International Symbol of Accessibility (ISA)	2 inches	White on blue background

3.02 CLEANING

A. Remove and legally dispose of rubbish, debris, and waste materials off Project Site.

3.03 PROTECTION

A. Protect Work:
   1. With barricades and signs until paint has completely dried.
   2. Until Substantial Completion

END OF SECTION 32 1723

SECTION 32 1726

DETECTABLE WARNING SURFACES

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes:
   1. Cast In Place Detectable Warning Surface Tiles in locations indicated on Drawings..

B. Related Sections:
   1. Section 01 4100: Regulatory Requirements; current Code edition.
   2. Section 32 0523: Concrete for Exterior Improvements
   3. Section 32 1723: Pavement Markings.

1.02 REFERENCES

A. California Code of Regulations (CCR), Title 24, Part 2, California Building Code (CBC), Volumes 1 and 2, current edition.
   1. Chapter 11B – Accessibility to Public Buildings, Public Accommodations, Commercial Buildings, and Public Housing.

B. ASTM International (ASTM):
   1. ASTM B117 – Standard Practice for Operating Salt Spray (Fog) Apparatus
   2. ASTM C 293 – Standard Test Method for Flexural Strength of Concrete (Using Simple Beam With Center-Point Loading)
   3. ASTM C1026 – Standard Test Method for Measuring the Resistance of Ceramic and Glass Tile to Freeze-Thaw Cycling
   4. ASTM D 543 – Standard Practices for Evaluating the Resistance of Plastics to Chemical Reagents
   5. ASTM D 570 – Standard Test Method for Water Absorption of Plastics
   6. ASTM D 638 – Standard Test Method for Tensile Properties of Plastics
   7. ASTM D 695 – Standard Test Method for Compressive Properties of Rigid Plastics
   8. ASTM D 790 – Standard Test Methods for Flexural Properties of Unreinforced and Reinforced Plastics and Electrical Insulating Materials
   9. ASTM D 1037 – Standard Test Methods for Evaluating Properties of Wood-Base Fiber and Particle Panel Materials
   10. ASTM D 1308 – Standard Test Method for Effect of Household Chemicals on Clear and Pigmented Organic Finishes
   11. ASTM E 84 – Standard Test Method for Surface Burning Characteristics of Building Materials
   12. ASTM G 155 – Standard Practice for Operating Xenon Arc Light Apparatus for Exposure of Non-Metallic Materials

C. Federal Standard (FS):
   1. Federal Standard 595C – Colors Used in Government Procurement, current version.

1.03 SUBMITTALS

A. Product Data:
   1. Manufacturer's literature describing products, installation procedures and routine maintenance.

B. Shop Drawings:
   1. Show fabrication details for specified products, consisting of:
      a. Composite structural system
      b. Tile surface profile
      c. Sound on cane contact amplification feature.
   2. Include plans of tile placement including joints, and material to be used.
      a. Outline installation materials and procedure
   3. Design and show tile pattern between existing expansion joints with tile rib dimension used for cut size of panels.

C. Samples:
   1. Minimum of four samples, as Project Site mock-ups, of full cast in place detectable warning surface tiles of kind proposed for use.

D. Material Test Reports:
   1. From qualified accredited independent testing laboratory indicating that materials proposed for use are in compliance with requirements and meet properties indicated.
   2. Conduct test reports on cast in place detectable warning surface tiles as certified by qualified independent testing laboratory.
   3. Do not include manufacturer’s MSDS sheets with this submittal.
      a. Furnish to Contractor only.

E. Maintenance Instructions:
   1. Copies of manufacturer's specified maintenance practices for cast-in-place detectable/tactile warning surface tiles

1.04 QUALITY ASSURANCE

A. Provide cast in place detectable warning surface tiles and accessories as produced by single manufacturer with minimum of three years experience in manufacturing of cast in place detectable/tactile warning surface tiles.

B. Installer's Qualifications:
   1. Engage experienced installer certified in writing by detectable warning surface tile manufacturer as qualified for installation, who has successfully completed tile installations similar in material, design, and extent to that indicated for Project.
   2. Arrange for manufacturer's supervisor to be present at initial pour for cast-in-place tiles.
   3. Arrange for manufacturer's supervisor to be present at initial installation of surface-mounted tiles.

1.05 DELIVERY, STORAGE AND HANDLING

A. Suitably package or crate tiles to prevent damage in shipment or handling.

1. Protect finished surfaces with sturdy wrappings, and identify tile type by part number.

B. Deliver tiles to designated location at Project Site for storage prior to installation.

1.06 PROJECT CONDITIONS

A. Environmental Conditions and Protection:
   1. Maintain minimum temperature of 40 degrees F in spaces to receive tiles for at least 24 hours prior to installations, during installation, and for not less than 24 hours after installation.
   2. Store tile material in spaces where they will be installed for at least 24 hours before beginning installation.
   3. After installation, maintain minimum temperature of 40 degrees F in areas where Work is completed.

B. Contain and control use of water for Work, cleaning, or dust control.
   1. Do not allow waste water to come into contact with public.
   2. Provide barricades or screens to protect public.

C. Conduct disposal of liquids or other materials of possible contamination in accordance with federal state and local laws and ordinances.

D. Use cleaning materials with code-compliant low VOC solvent content and low flammability when used on Project Site.

E. Coordinate phasing and flagging personnel operations as specified in Division 01.

1.07 REGULATORY REQUIREMENTS

A. Detectable Warning Surfaces:
   1. Provide detectable warning surfaces complying with CBC Section 11B-705.1
   2. Surfacing Color: No. 33538 “Federal Yellow” conforming to FS 595C.
      a. Exception:
         1) Provide colors used for locations at curb ramps, islands, or cut-through medians that contrast visually with color of adjacent walking surfaces.
      b. Provide either light-on-dark, or dark-on-light, in accordance with CBC Section 11B-705.1.1.3.
   3. Provide surfacing that differs from adjoining surfaces in resiliency or sound-on-cane contact in accordance with CBC Section 11B-705.1.1.4.

1.08 WARRANTY

A. Provide manufacturer’s minimum 5 year warranty in writing for period of five years from date of final completion complying with DSA Bulletin 10/31/02, revised 04/09/08.
   1. Warranty includes defective work, breakage, deformation, fading and chalking of finishes, and loosening of tiles.

PART 2 PRODUCTS

2.01 MANUFACTURERS/PRODUCTS

A. Provide detectable warning surface tile by one of following:

1. Engineered Plastics, Inc. (Armor-Tile)
2. ADA Solutions, Inc.
3. Armorcast Products

B. Basis-of-Design Product:
   1. Vitrified Polymer Composite (VPC) Cast in Place Detectable Warning Surface Tiles specified is based on Armor-Tile as manufactured by Engineered Plastics Inc.
   2. Existing engineered and field-tested products which are subject to compliance with requirements, may be incorporated in Work and provided they meet or exceed specified test criteria and characteristics.

2.02 MATERIALS

A. Tiles – General:
   1. Made of homogeneous vitrified polymer composite (VPC) material with ultraviolet stabilized coating, to minimize color wear
   2. Provide with slip-resistant surface, incorporating “truncated domes” of same material.
   3. Nominal thickness of detectable warning tile: 1/8 inch, exclusive of height of truncated domes.
   4. Provide tiles complying with applicable requirements of CBC, Chapter 11B.

B. Vitrified Polymer Composite (VPC) cast-in-place detectable warning surface tiles:
   1. Epoxy polymer composition with ultra violet coating employing aluminum oxide particles in truncated domes, conforming to following:
      a. Compressive Strength per ASTM D 695:
         1) Not less than 18,000 psi.
      b. Tensile Strength per ASTM D 638:
         1) Not less than 10,000 psi.
      c. Flexural Strength per ASTM C 293 or D 790:
         1) Not less than 24,000 psi.
      d. Water Absorption per ASTM D 570:
         1) Not to exceed 0.35 percent.
      e. Slip Resistance:
         1) Minimum 0.9 for combined wet/dry static co-efficient of friction when tested per ASTM C 1028
      f. Chemical Stain Resistance per ASTM D 543 or D 1038:
         1) Withstand without discoloration or staining minus 1 percent hydrochloric acid, urine, calcium chloride, stamp pad ink, gum and red aerosol paint.
      g. Fire-Resistance per ASTM E 84:
         1) Flame Spread Index: Less than 15.
      h. Accelerated Weathering per ASTM G 155:
         1) Exhibit following result for 3000 hours:
            a) Delta E, less than 4.5: No deterioration, fading or chalking of surface of tile.
      i. Accelerated Aging and Freeze Thaw Test per ASTM D 1037 or C1026:
         1) Show no evidence of cracking, delamination, warpage, checking, blistering, color change, loosening of tiles, or other defects.
      j. Salt and Spray Performance of Tile per ASTM B 117:
         1) Not show deterioration or other defects after 200 hours of exposure.

C. Pattern/Dimension:
   1. Provide detectable warning surface tile incorporating “in-line” pattern of truncated domes 0.2 inch in height, 0.9 inch minimum and 0.092 inch maximum diameter at base, and 0.45 inch minimum and 0.47 inch maximum diameter at top of dome.
   2. Space domes at 2.3 inches minimum to 2.4 inches maximum center-to-center, measured “in-line”
   3. Wheelchair Safety:
      a. Provide field area of detectable warning surface consisting of slip-resistant surface with minimum of 40 degree to 90 degree raised points, 0.045 inch high, per square inch

D. Color:
   1. Unless otherwise indicated, provide detectable warning surface tiles in color specified in Article 1.07 A
   2. Provide color integral with detectable warning device tiles and not surface applied.
   3. Do not use paints or other surface coatings.

E. Sealants:
   1. Gray epoxy, two-component sealant.
      a. Manufactured by Sika, Bostik or approved equal.
      b. Complying with requirements of Section 07 9200.
   2. As supplied by tile manufacturer.

PART 3 EXECUTION

3.01 INSTALLATION OF CAST-IN-PLACE TILES

A. During concrete pouring and tile installation procedures, ensure adequate safety guidelines are in place and are in accordance with applicable industry and government standards.

B. Prior to placement of cast in place detectable warning surface tiles, review manufacturer's shop drawings and layout drawing prepared by installation contractor to resolve issues related to pattern repeat, tile cuts, expansion joints, control joints, curves, end returns and surface interferences.
   1. Refer discrepancies to Architect.

C. Physical Characteristics of Concrete:
   1. Consistent with Section 32-1313 specifications while maintaining slump range of 4 to7 inches to permit solid placement of cast in place detectable warning surface tiles.
   2. Overly wet mix will cause tiles to float.
      a. Furnish suitable weights such as concrete blocks or sandbags (25 Ibs.)
         1) Place on each tile.

D. Concrete pouring and finishing operations require typical mason's tools.
   1. Four foot long level with electronic slope readout, 25 lb. weights, and large non-marring rubber mallet are specific to installation of cast-in-place detectable warning surface tiles.
   2. Vibrating mechanism may be employed.
      a. Fix vibrating unit to soft wood base at least 1 foot square.

E. Pour and finish concrete true and smooth to required dimensions and slope prior to tile placement.
   1. Immediately after pouring concrete, use electronic level to check that required slope is achieved
   2. Place tile square and true to curb edge in accordance with approved shop drawings.
   3. Tamp or vibrate Tiles into fresh concrete to ensure that field level of tile is flush to adjacent concrete surface.
      a. Do not attempt to accomplish embedment process by stepping on tiles as this may cause uneven setting which can result in air voids under tile surface
   4. Shop drawings indicate that tile field level (base of truncated dome) is flush to adjacent surfaces to permit proper water drainage and eliminate tripping hazards between adjacent finishes.
      a. Tolerance for elevation differences between tile and adjacent surface is 1/16 inch.

F. Immediately after tile placement, tile elevation is to be checked to adjacent concrete.
   1. Set tile elevation consistent with shop drawings to permit water drainage to curb as design dictates.
   2. Ensure field surface of tile is flush with surrounding concrete and back of curb so that no ponding of possible on tile at back side of curb

G. While concrete is workable, use 3/8 inch edging tool to create finished edge of concrete.
   1. Use steel trowel to finish concrete around tile perimeter, flush to field level of Tile.

H. During and after tile installation and concrete curing stage, do not allow walking, leaning, or external forces placed on tile to rock tile, causing void between underside of tile and concrete.

I. Following tile placement, review installation tolerances to shop drawings and adjust tile before concrete sets.
   1. Place suitable weights of 25 lbs. on each tile and additional weights at tile to tile assemblies as necessary to ensure solid contact of tile underside to concrete.

J. Following curing of concrete, remove protective plastic wrap from tile face by cutting plastic with sharp knife tight to concrete/tile interface.
   1. Where concrete bleeding occurs between tiles, soft brass wire brush will clean residue without damage to tile surface.

K. Individual tiles may be bolted together with 1/4 inch bolts or equivalent hardware to help ensure adjacent tiles are flush to each other during installation process.
   1. Place tape or sealant on underside of bolted edge to prevent concrete from rising up between tiles during installation
      a. Replace protective plastic wrap peeled back to facilitate bolting or cutting by taping to ensure tile surface remains free of concrete during installation process
   2. Replace sound-amplifying plates on underside of tile dislodged during handling or cutting and secure with construction adhesive
      a. Air gap created between plates and bottom of tile is important in preserving sound on cane audible properties of tiles.

3. Applications of Sealant:
   a. Install level to adjacent surface and straight line formed to tile edge.
   b. Mask off tile faces with duct tape to ensure clean definition of sealant to adjacent surfaces.

3.02 PAVEMENT MARKINGS

A. Refer to Section 32 1723 for coordination of pavement markings with detectable warning surface locations.

3.03 CLEANING AND PROTECTING

A. Protect panels against damage during construction period to comply with tile manufacturer's specification.

B. Protect tiles against damage from rolling loads following installation by covering with plywood or hardboard.

C. Clean detectable warning tiles not more than four days prior to date scheduled for inspection intended to establish date of Substantial Completion in each area of Project.
   1. Clean tile by method specified by manufacturer.

D. Comply with manufacturer's maintenance manual for cleaning and maintaining tile surface.
   1. Perform recommended annual inspections for safety and tile integrity

E. Remove and legally dispose of rubbish, debris, and waste materials off Project Site.

F. Protect Work until Substantial Completion.

END OF SECTION 32 1726