

SECTION 01010

SUMMARY OF WORK

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. All Contract Documents shall be reviewed for applicable provisions related to the provisions in this document, and provisions in the General Conditions and other Division 1 Specification Sections shall apply to this Section without limitation.

1.2 RELATED REQUIREMENTS SPECIFIED IN OTHER SECTIONS

- A. Section 01290 – “Payment Procedures”
- B. Section 01310 – “Construction Scheduling”
- C. Section 01312 – “Project Meetings”
- D. Section 01330 – “Submittal Procedures”
- E. Section 01400 – “Quality Control Requirements”
- F. Section 01625 – “Product Options and Substitutions”
- G. Section 01740 – “Warranties and Guaranties”
- H. Section 01770 – “Contract Closeout Procedures”
- I. Section 01780 – “Project Record Documents”
- J. Divisions 2 through 33 Sections for Summary of Work requirements for the work in those Sections.

1.3 WORK DESCRIPTIONS WITHOUT FORCE

- A. All general descriptions and/or general summaries of the work noted in this section, or elsewhere within the Contract Documents, are without force and effect on the Contract Work described and indicated in detail the Construction Documents. These general descriptions and summaries are for general reference and descriptive purposes only and in no way offer the complete and concise description of all the Work required by the Contract Documents.

1.4 WORK COVERED BY CONTRACT DOCUMENTS

The intent of the Contract Documents includes but is not limited to:

Minor interior renovations to several buildings listed below at the Diablo Valley College Pleasant Hill Campus. Refer to site plan for location of each building within the campus. Scope also includes minor renovation to components within the interior and exterior path of travel as required by 2019 CBC, Chapter 11B-202.4 Path of Travel accessibility upgrades in alterations.

Alteration work includes but is not limited to demolition, cutting, patching, new and modification of structural and non-structural walls, mechanical, electrical, and plumbing fixtures. The fire alarm scope includes the installation of new or moving of existing audible

visible fire alarm device as required in CBC 11B-215, 11B-702, and 907.5.2.3.1 as well as a standalone smoke detector system.

1-Health Services:

Student Union Building:

Remodel the ground level lobby of the DVC Student Union to house a future health services station and student lounge. The project will construct full ceiling height walls, add Elec/data outlets, new furniture, and have HVAC and plumbing modifications. A new duct smoke detector and alarm will be installed in the new rooms of the suite.

2-Student Success Center:

Business/Foreign Language:

Replace light fixtures, replace door panels in rooms B107 & B109.

Performing Arts Center:

Modify walls and add openings in existing classrooms 101 & 102, 105 & 106.

Learning Center:

Adding a new door and new window to room LC105, Minor upgrades to accessible restrooms.

Planetarium Building:

Modify wall and add openings in existing classrooms P002 & P003. Added windows and one door. Remove existing window wall in the lobby

3-Print Shop:

Bookstore Building:

Remodel the second floor of the DVC Bookstore to house the relocated print shop and all its equipment. The project will construct full ceiling height walls, add Elec/data outlets and modify the existing HVAC system.

A. CONTRACTS

1. Perform the work under a single, fixed-price Contract.

B. OTHER SCOPE:

1. Provide a Logistics' Plan for each Phase of Work prior to Mobilizing for approval by the District. Show proposed Fencing, access points, signage locations at all points of egress, temporary lighting, traffic flow for deliveries and workers, etc. Reference Spec Section 01140 Work Restrictions.
2. Provide temporary fencing for all Phases for all Projects. Include lighting along fencing as outlined in Section 01500.
3. Include all wayfinding signage at all egress points.

SUMMARY OF THE WORK

01010- 2

4. See District's Phasing Plans for Project requirements. See Section 01140. Note that AC Paving operations will need to be phased and scheduled during school breaks.
5. For Contractor Parking and Lay Down area, include cost to winterize area and restore to a new condition. Remove discuss fencing and slab. That area can be used for entry. The existing fence can be used but must be protected and maintained.
6. Provide water meter for water usage.
7. Include all abatement as required for all demolition work.
8. Include dewatering as required. Reference Geotech Reports.
9. Include single wide trailer for IORs. See Spec Section 01500 Temp Facilities Controls.
10. Include Flagmen for all deliveries of materials.
11. Keep the temporary fence gates closed at all times.

1.5 WORK BY DISTRICT

- A. General: Cooperate fully with District so work may be carried out smoothly, without interfering with or delaying work under this Contract or work by District. Coordinate the Work of this Contract with work performed by District.
- B. District reserves the right to perform construction operations with its own forces or to employ separate contractors on portions of the Project. Coordinate with this work in terms of providing site access, workspace, and storage space, cooperation of work forces, scheduling, and technical requirements.
- C. Coordination with District's Forces or District's Contractors:
 1. Provide site access, space allocation, scheduling, scheduling coordination, coordination of work forces and coordination of technical requirements with contractors that may be selected and employed by District to perform work simultaneously and in conjunction with the Work, which may include, but shall not be limited to the following, as applicable to the Project:
 - a. Materials Inspection and Testing Agency
 - b. Surveying
 - c. Geotechnical Engineering and Consulting
 - d. Furniture Contractors
 - e. Other District consultants and contractors not listed here but that may be required for successful completion of the Project.

1.6 WORK UNDER SEPARATE CONTRACTS

- A. General: Cooperate fully with separate contractors so work on those contracts may be carried out smoothly, without interfering with or delaying Work under this Contract or other contracts. Coordinate the Work of this Contract with work performed under separate contracts.
- B. Preceding Work: District has awarded, or will award before commencement of this Contract, separate contract(s) for the following construction operations at Project site. Those operations are scheduled to be substantially complete before Work under this Contract begins.

SUMMARY OF THE WORK

01010- 3

1. Furniture Contract in Student Success Center spaces

- C. Subsequent Work: District will award separate contract(s) for the following additional work to be performed at site concurrently with the work of this Contract or following Substantial Completion of the work of this Contract. Completion of that work will depend on successful completion of preparatory Work under this Contract.

1. Relocating staff, furniture, and equipment to new Buildings.

1.7 WORK SEQUENCE

- A. Construct work as shown in the Contract Documents. Coordinate Baseline CPM Schedule activities and construction operations with District and the Architect.
- B. **Work shall begin on May 23, 2022. Construction should prioritize the Student Success Center scope in order to achieve a Punch List and Substantial Completion date of August 1st, 2022. Work on the Student Success Center, Health Services, and Print Shop can be simultaneous, with an expected Substantial Completion for the Print Shop by October 2022. The Health Services is more flexible in terms of timeline. Coordinate Work Schedule and Academic Calendar Schedule with District prior to commencement of Work.**

1.8 WEATHER DAYS

- A. Delays due to Adverse Weather conditions will only be permitted in compliance with the provisions in the General Conditions and only if the number of days of Adverse Weather exceeds the following parameters and Contractor can verify that the excess days of Adverse Weather caused delays:

| | | | |
|----------|-----------|-----------|-----------|
| January | <u>11</u> | July | <u>0</u> |
| February | <u>10</u> | August | <u>0</u> |
| March | <u>10</u> | September | <u>1</u> |
| April | <u>6</u> | October | <u>4</u> |
| May | <u>3</u> | November | <u>7</u> |
| June | <u>1</u> | December | <u>10</u> |

- B. Scheduling of Contractor's use of the areas and times involved shall be determined in cooperation with the District. Notify the District a minimum of 10-days prior to commencement of work.
- C. Construction activities shall be performed between the hours of 7AM and 5PM, Monday through Friday, unless otherwise required. No Work shall be performed outside the above hours without prior written authorization from the Construction Manager/Project Manager. No work on Sundays or Holidays will be permitted.

1.9 ACCESS TO SITE

- A. General: Project is located on Diablo Valley College Pleasant Hill campus property. Contractor shall have limited use of campus for delivery and Project site access purposes only during construction period. Contractor shall have full use of Project site for construction operations during this time. Contractor's use of Project site is limited only by District's right to perform work or to retain other contractors on portions of Project.
- B. Condition of Existing Grounds: Maintain portions of existing grounds, landscaping, and hardscaping affected by construction operations throughout construction period. Repair damage caused by construction operations.

1.10 USE OF PREMISES

- A. Contractor shall only use the premises for work, storage, staging areas, and vehicular parking as designated in the Contract Documents.
- B. Use of Site: Limit use of Project site to areas within the Contract limits indicated. Do not disturb portions of Project site beyond areas in which the Work is indicated.
 - 1. Limits: Confine construction operations to areas permitted by law, ordinances, permits, and Contract Documents.
 - 2. Driveways, Walkways and Entrances: Keep driveways, loading areas, and entrances serving premises clear and available to District, District's employees, Residents, and emergency vehicles at all times. Do not use these areas for parking or for storage of materials.
 - a. Schedule deliveries to minimize use of driveways and entrances by construction operations, and to minimize space and time requirements for storage of materials and equipment on-site.

1.11 EXISTING AREA CONDITION SURVEY

- A. Prior to commencement of work, jointly survey the existing area to be remodeled with the District and Architect, noting and recording existing damage such as cracks, sags, and other damage (on Site Plan/Floor Plans).
- B. This record shall serve as a basis for determination of subsequent damage to these items due to settlement, movement, demolition, or Contractor's operations.
- C. Existing damage observed shall be marked and the official record of existing damage shall be signed by the parties making the survey.
- D. Cracks, sags, and damage to the area and other items not noted in the original survey but subsequently observed shall be reported immediately to the Architect.
- E. Contractor shall comply with Section 01321 for photographic and video recording of existing conditions.

1.12 PROTECTION OF EXISTING STRUCTURES AND UTILITIES

- A. The Drawings may not show all existing water, gas, electrical, and hot water lines, and other items known or suspected to exist around the work.

SUMMARY OF THE WORK

01010- 5

- B. Contractor shall locate these installations before proceeding with demolition or other operations which may cause damage, maintain them in service where appropriate, and repair damage caused by the performance of the Work, at no increase in the Contract Sum.
- C. In addition to notification, if a structure or utility is damaged, take appropriate action as specified in the General Conditions.

1.13 USE AND OCCUPANCY OF WORK PRIOR TO ACCEPTANCE BY DISTRICT

- A. The District may use and occupy the building before formal acceptance under the following conditions:
 - 1. A Certificate of Substantial Completion shall be prepared and executed as provided in the Contract Documents. See Section 01770 Contract Closeout Procedures. The Certificate of Substantial Completion shall be accompanied by a written endorsement of the Contractor's insurance carrier and surety permitting occupancy by the District during the remaining period of the work.
 - 2. Occupancy by the District shall not be construed as being an acceptance of that part of the Work occupied.
 - 3. The Contractor will not be held responsible for damage to the occupied part of the Work resulting from the District's occupancy.
 - 4. Occupancy by the District shall not be deemed to constitute a waiver of existing claims the District or Contractor may have against each other.
 - 5. Comply with Specification Section 01740, Warranties/Guaranties, and 01770 Contract Closeout Procedures for the Work or any Phase of Work.
 - 6. The District will pay for utility costs associated with occupancy during construction.

1.14 PROTECTION OF EXISTING IMPROVEMENTS

- A. Provide barricades, coverings, or other types of protection necessary to prevent damage to existing improvements indicated to remain in place.
- B. Protect improvements on adjoining properties as well as those on the District's property.
- C. Protect existing trees and other vegetation indicated to remain in place, against unnecessary cutting, breaking, or skinning of roots, skinning and bruising of bark, smothering of trees by stockpiling construction materials or excavated materials within drip line, excess foot or vehicular traffic, or parking of vehicles within drip line.
- D. Restore any improvements damaged by this work to their original condition as acceptable to the District or other parties or authorities having jurisdiction.

1.15 HAZARDOUS MATERIALS

Refer to section 01412

1.16 SPECIFICATION AND DRAWING CONVENTIONS

- A. Specification Content: The Specifications use certain conventions for the style of language and the intended meaning of certain terms, words, and phrases when used in particular situations. These conventions are as follows:

SUMMARY OF THE WORK

01010- 6

1. Imperative mood and streamlined language are generally used in the Specifications. The words "shall," "shall be," or "shall comply with," depending on the context, are implied where a colon (:) is used within a sentence or phrase.
 2. Specification requirements are to be performed by Contractor unless specifically stated otherwise.
- B. Division 01 General Requirements: Requirements of Sections in Division 01 apply to the Work of all Sections in the Specifications.
- C. Drawing Coordination: Requirements for materials and products identified on Drawings are described in detail in the Specifications. One or more of the following are used on Drawings to identify materials and products:
1. Terminology: Materials and products are identified by the typical generic terms used in the individual Specifications Sections.
 2. Abbreviations: Materials and products are identified by abbreviations published as part of the U.S. National CAD Standard and scheduled on Drawings.

1.17 MISCELLANEOUS PROVISIONS

- A. Items shown, scheduled, or noted to be salvaged will remain the property of the District.

PART 2 – PRODUCTS (Not Used)

PART 3 – EXECUTION (Not Used)

END OF SECTION 01010

SECTION 01015

ADDITIONAL REQUIREMENTS FOR DSA-APPROVED PROJECTS

PART 1 - GENERAL

1.1 GENERAL

The following additional requirements apply to this Project that is being reviewed by the Division of the State Architect (DSA).

1.2 ADDITIONAL REQUIREMENTS

- A. In addition to the duties specified in the Contract Documents, the duties of the Contractor shall be in accordance with the requirements specified in, Title 24, California Code of Regulations (CCR).
- B. In addition to the duties specified in the Contract Documents, the duties of the Architect and the Architect's consultants shall be in accordance with the requirements specified in Part 1, Title 24, CCR.
- C. DSA is not subject to arbitration proceedings.
- D. Notify DSA at start of construction in accordance in Part 1, Title 24, CCR.
- E. Changes: DSA defines all addenda and change orders as Construction Change Documents (CCD.) All CCD shall be submitted for DSA approval. Do not begin any work under an CCD until DSA approval is obtained. CCDs shall be in accordance in Part 1, Title 24, CCR.
 - 1. Submit DSA 140 Form for Category A changes defined as construction changes to or affecting Structural Safety, Fire Life Safety or Accessibility.
 - 2. Submit **DSA 140** Form for Category B changes defined as construction changes **NOT** affecting Structural Safety, Fire Life Safety or Accessibility.
- F. Do not begin work under a written order until a CCD has been submitted to and approved by DSA in accordance with Part 1, Title 24, CCR. Substitutions effecting structural, fire/life/safety or access compliance shall be submitted as CCDs for DSA approval. The Contractor will be responsible for the additional architectural and engineering costs associated with the review and regulatory processing of these substitutions.
- G. Unless otherwise indicated or specified, perform the work in conformance with the latest edition of applicable regulatory requirements. A copy of Part 1 and Part 2 of Title 24, CCR shall be available on the Project site. The codes adopted by the City, County, State and Federal agencies shall govern minimum requirements for this Project.
- H. Contractor shall submit verified reports in accordance with Part 1, Title 24, CCR.
- I. DSA may supervise construction, reconstruction, or repair in accordance with Part 1, Title 24, CCR.

- J. Construction shall be observed by a full-time Project Inspector approved by DSA in accordance with Part 1, Title 24, CCR.
- K. Testing requirements of the DSA approved District's Testing Laboratory shall be in accordance of Part 1, Title 24, CCR.
- L. Special Inspection on masonry construction, glued laminated lumber, wood framing using timber connectors, ready-mixed concrete, gunite, prestressed concrete, high strength steel bolt installation, welding, pile driving, and mechanical and electrical work shall be as required by Part 1, Title 24, CCR. The costs of special inspection will be paid for by the District.
- M. **DSA Box: The Contractor shall comply with the most current EPR procedures. CCD's shall be submitted via Bluebeam Studio.**

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 01015

SECTION 01030

ALTERNATES

PART 1 – GENERAL

1.1 RELATED DOCUMENTS

- A. All Contract Documents shall be reviewed for applicable provisions related to the provisions in this document, and provisions in the General Conditions and other Division 1 Specification Sections shall apply to this Section without limitation.

1.2 RELATED REQUIREMENTS SPECIFIED IN OTHER SECTIONS

- A. Section 00210 – “Information Available to Bidders”
- B. Section 00300 – “Bid Proposal Form”
- C. Section 01010 – “Summary of Work”
- D. Section 01290 – “Payment Procedures”
- E. Section 01310 – “Construction Scheduling”
- F. Section 01311 – “Project Management and Coordination”
- G. Section 01330 – “Submittal Procedures”
- H. Section 01740 – “Warranties and Guarantees”
- I. Section 01770 – “Contract Closeout Procedures”
- J. Divisions 2 through 33 Sections for Alternates requirements for the work in those Sections.

1.3 SUMMARY

- A. This Section includes administrative and procedural requirements governing Alternates. Each Alternate is identified by number and describes the basic changes to be made in the Work.

1.4 REQUIREMENTS

- A. Alternate pricing quoted on the Bid Proposal Form will be reviewed by the District, and accepted or rejected at District’s sole option. Any accepted Alternate(s) will be identified in the District-Contractor Agreement.
- B. See the Bid Proposal Form, Section 00300. Item 1.G, for District Bid evaluation procedure.
- C. Provide cost of implementing Alternates in Section 00300 – Bid Proposal Form.
- D. All Alternates are either “additive” or “deductive” or “no change” to the Lump Sum Base Bid. The Contractor shall quote the amount for each Alternate in the space provided on the Bid Proposal Form.
- E. Failure to either quote an Alternate amount or the insertion of the words “no bid,” “none” or words of similar import, may be considered as not completing the Bid Proposal Form and may constitute disqualification of the entire bid at District’s sole discretion. Bidders may insert a zero-dollar amount (\$0.00) in the Alternate price line of the Bid Proposal Form if the Bidder proposes to perform the Work of the Alternate with no additional change to the Contract Sum.

- F. The Base Bid and the Alternates are exclusive in their scope of Work. There is no overlap between or among the Base Bid and the Alternates.
- G. The Base Bid and the Alternates are exclusive in their scope of Work. There is no overlap between or among the Base Bid and the Alternates.
- H. The cost of any item of work shall be included only once, in the Base Bid or in the Alternates.
- I. Each Alternate is intended to cover all of the Work required for a complete, finished job.
 - 1. Alternate Work includes all miscellaneous devices, accessory objects, and similar items incidental to or required for a complete installation whether or not indicated as part of the Alternate, but necessary to complete the Alternate Work according to the Contract Documents.
 - 2. **Alternate to provide all labor, materials, bonds, fixtures, equipment, tools, transportation, services, sales taxes and other costs necessary to complete this Alternate construction in accordance with the Contract Documents.**

1.5 PROCEDURES

- A. Modify or adjust affected adjacent Work as necessary to completely integrate Work of each accepted Alternate into the Project.
- B. Notification: Immediately following award of the Contract, Contractor shall notify each party involved, in writing, of the status of each alternate. Indicate if alternates have been accepted, rejected, or deferred for later consideration. Include a complete description of negotiated modifications to alternates.
- C. The District reserves the right to reinstate Alternates at any time within 90 calendar days after the Notice to Proceed without any increase or decrease in Contract Price (beyond the amount of the Alternates(s) listed in Section 00300, Part 2), or any increase in Contract Time.
- D. Execute accepted Alternate(s) under the same conditions as other Work of this Contract.

PART 2 - PRODUCTS

2.1 DESCRIPTION OF ALTERNATES – PLANETARIUM BUILDING

- A. ALTERNATE 1: Omit window at north end of Classroom P002 and flip swing direction of the new door.
 - 1. BASE: New window and new door at the wall between Classrooms P002 and P003 to be located north of the existing Column at Grid PL-H and PL-5, as shown on Sheet A1.23.
 - 2. ALTERNATE: Omit new window and flip swing direction of new door so that hinges will be at north end of the room, as shown on Sheet A1.23.

PART 3 - EXECUTION

3.1 GENERAL

- A. Execute accepted alternates under the same conditions as other Work of this Contract.
- B. Coordination: Modify or adjust affected Work as required to completely and fully integrate that Work into the Project.

END OF SECTION 01030

ALTERNATES

01030- 2

SECTION 01050

FIELD ENGINEERING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. All Contract Documents shall be reviewed for applicable provisions related to the provisions in this document, and provisions in the General Conditions and other Division 1 Specification Sections shall apply to this Section without limitation.

1.2 RELATED REQUIREMENTS SPECIFIED IN OTHER SECTIONS

- A. Section 01010 – “Summary of Work”
- B. Section 01311 – “Project Management and Coordination”
- C. Section 01572 – “Storm Water Pollution Prevention Plan”
- D. Divisions 2 through 33 Sections for Field Engineering requirements for the work in those sections.

1.3 SUBMITTALS

- A. Contractor shall submit name and address of Surveyor and professional Engineer to District and Architect for approval prior to their work on the Project.
- B. On request of District and Architect, Contractor shall submit documentation to verify accuracy of field engineering work, at no additional cost to the District.
- C. At completion of the Work, Contractor shall submit a certificate signed by a licensed engineer or surveyor certifying that all elevations and locations of improvements are in conformance with Contract Documents.

1.4 REQUIREMENTS

- A. Contractor shall provide and pay for field engineering services by an engineer licensed in the State of California, required for the Project, including, without limitation:
 - 1. Survey work required in execution of the Project.
 - 2. Civil or other professional engineering services specified or required to execute Contractor’s construction methods.

1.5 QUALIFICATIONS OF SURVEYOR OR ENGINEERS

- A. Contractor shall only use a qualified licensed engineer or registered land surveyor, approved by the District.

1.6 SURVEY REFERENCE POINTS

- A. Existing basic horizontal and vertical control points for the project are those designated on the Drawings.
- B. Contractor shall locate and protect control points prior to starting Site Work and preserve all permanent reference points during construction. In addition, Contractor shall:

1. Make no changes or relocation without prior written notice to District and Architect.
2. Report to District and Architect when any reference point is lost or destroyed or requires relocation because of necessary changes in grades or locations.
3. Require surveyor to replace project control points based on original survey control that may be lost or destroyed.
4. Contractor to locate and protect existing survey control and reference points.
5. Control datum for survey is that indicated on Drawings.
6. Protect survey control points prior to starting Site Work; preserve permanent reference points during construction.
7. Promptly report to Architect, District, and Project Inspector the loss or destruction of any reference point or relocation required because of changes in grades or other reasons.
8. Replace dislocated survey control points based on original survey control. Make no changes without prior written notice.

1.7 PROJECT RECORD DOCUMENTS

- A. Maintain complete, accurate log of control and survey work as it progresses. Indicate dimensions, locations, angles, and elevations of construction and Site Work.
- B. Submit Record Documents under provisions of Section 01770

1.8 EXAMINATION

- A. Verify locations of survey control points prior to starting Work.
- B. Promptly notify District of any discrepancies discovered.

1.9 SURVEY REQUIREMENTS

- A. Provide field engineering services. Utilize recognized engineering survey practices.
- B. Establish a minimum of two permanent benchmarks on Site, referenced to established control points. Record locations, with horizontal and vertical data, on Project Record documents.
- C. Establish lines and levels, locate and lay out by instrumentation and similar appropriate means:
 1. Site improvements including pavements; stakes for grading, fill and topsoil placement; utility locations, slopes, and invert elevations.
 2. Grid or axis for structures.
 3. Building foundation, column locations, and ground floor elevations.
- D. Periodically verify layouts by same means.

1.10 QUALITY CONTROL

- A. Employ a professional Engineer of the discipline required for specific service on Project, licensed in the State of California.
- B. Submit evidence of Engineer's errors and omissions insurance coverage to District, in the form of a current Insurance Certificate.

PART 2 – PRODUCTS (Not Used)

PART 3 – EXECUTION

- 3.1** Contractor is responsible for meeting all applicable codes, OSHA, and other safety and shoring requirements.
- 3.2** Contractor is responsible for any re-surveying required by correction of nonconforming work with no additional cost to the District or its representatives.

END OF SECTION 01050

SECTION 01055

CONFORMANCE SURVEYING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. All Contract Documents shall be reviewed for applicable provisions related to the provisions in this document, and provisions in the General Conditions and other Division 1 Specification Sections shall apply to this Section without limitation.

1.2 RELATED REQUIREMENTS SPECIFIED IN OTHER SECTIONS

- A. Section 01010 – “Summary of Work”
- B. Section 01330 – “Submittal Procedures”
- C. Section 01050 – “Field Engineering”
- D. Section 01780 – “Project Record Documents”
- E. Division 2 through 33 Sections for Conformance Surveying requirements for the work in those Sections

1.3 SUMMARY

- A. All necessary Project conformance surveying and Project layout Work shall be completed by a Land Surveyor currently licensed in the State of California, and be based on established site benchmarks, monuments, lines and levels necessary for the Work covered by this Contract without additional cost to the District.
- B. Scope of Work: Provide conformance surveying required for proper completion of the Work including, but not limited to:
 - 1. All applicable Project components.

1.4 SUBMITTALS

- A. Contractor will be required to submit seven (7) hard copies, wet stamped and signed by the licensed Land Surveyor and one (1) electronic copy on CD, of all conformance surveys for the Project.

PART 2 – PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 LAYING OUT THE WORK

- A. Prior to beginning work, Contractor shall secure the electronic grading plan from the Architect. The Surveyor shall provide all conformance survey drawings both as-constructed spot elevations and compare these elevations to those on the Contract Documents for the same location. Contractor shall show the difference in these two numbers.
- B. Accuracy to all Surveys provided in this section shall be to 0.01 feet.

END OF SECTION 01055

SECTION 01140

WORK RESTRICTIONS

PART 1 – GENERAL

1.1 RELATED DOCUMENTS

- A. All Contract Documents shall be reviewed for applicable provisions related to the provisions in this document, and provisions in the General Conditions and other Division 1 Specification Sections shall apply to this Section without limitation.

1.2 SUMMARY OF WORK RESTRICTION REQUIREMENTS

- A. Prior to the start of Work, Contractor shall familiarize itself with the Work Restrictions as they relate to all Work required by the Contract Documents.
- B. Temporary Work Activity Plan shall include:
 - 1. Full size drawing (36"x42") of site plan showing the proposed locations and dimensions of temporary facilities and activities, including but not limited to, all proposed office trailers, equipment and material storage areas on the Project Site; safe and ADA complaint access (ingress/egress) for pedestrians and vehicles around the construction areas; proposed haul routes; all temporary construction, and way-finding signage; temporary fenced area(s), noise and safety barriers, and dust partitions; and temporary measures to maintain continuous and uninterrupted code compliant use of all occupied and surrounding areas impacted by construction activities. Identify any areas that require temporary paving for stabilization or prevention of tracking of mud, and for ADA complaint ingress and egress. Indicate if the use of supplemental or other staging areas might be required. Also see Section 01500 Temporary Facilities and Control for additional requirements.
 - 2. Contractor shall submit two (2) hard copies at the pre-construction meeting (For Each Phase), and email PDF Format, of the initial submittal of the Temporary Work Activity Plan for review by the District, Architect, and by personnel from the Campus (e.g., Buildings & Grounds, Police Services, and other representatives).
- C. Contractor shall construct dust partitions and other barriers as required prior to the start of abatement or demolition activities, whichever may occur first, and they must remain in place until the completion of that activity where required.
- D. Contractor shall perform and complete all Temporary Work Activities to ensure the following:
 - 1. The work areas, roads, parking lots, and streets are to be kept clear, clean, and free of loose debris, construction materials and partially installed work which would create a safety hazard or interfere with subcontractor and personnel duties and traffic. The Contractor shall sweep the areas clean at the end of each work day and make every effort to keep dust and noise to a minimum at all times.

1.3 SUMMARY OF WORK RESTRICTIONS

- A. **General:** All Temporary Work Activities must be completed within the timelines, work shift times, and the scheduled time period as required by the Contract Documents. Comply with the following:

1. The Temporary Work Activity Plan shall be approved by the District prior to any Work starting on the Project Site.
2. Contractor shall have all temporary fencing, signage, ADA compliant pathways and other temporary measures described in Paragraph 1.2 above installed, operational and accepted by the District prior to starting Work as applicable.

B. Time Related Work Restrictions within the Contract Time

1. Although the Contract Time is a total of ~~908~~ **1,027** calendar days between the Notice to Proceed and Substantial Completion, as articulated in Section 00600 (See Phasing Plan), Construction Agreement, Work by the Contractor is restricted and limited to specific time periods at specific locations during this contract duration as follows:
 - 1.1. **Rain and Impacts of Rain: See Section 1010, Summary of Work for related requirements to include in the Contractor's P-6 Baseline Schedule an activity for rain and the impacts of rain on this project.**
 - 1.2. Sunday Work: Contractor **CANNOT** work on Sundays or Holidays.
 - 1.3. **College Finals Week: The Contractor shall not work during Finals Week (i.e., include 5 Work Days in the schedule) that results in the generation of noise that will disturb students taking finals. The Contractor shall submit to the District for approval the activities the Contractor may want to perform during each final's week. Unless otherwise approved by the District/College, said work cannot be performed during Final Week(s) during the contract duration.**
2. The Contractor is responsible for its own means and methods to comply with these work restrictions, and to submit a schedule in accordance with Section 00700, Article 3.8.

C. Other Project Requirements and Restrictions

1. The Contractor's staging area for trailers, construction vehicles, construction equipment and materials are restricted within the temporary construction fencing of the project site and the area shown on the attached **Phasing Plans at the end of this Section**. Contractor shall not block the fire access road at any time within the project site or utilize for parking, staging or locating trailers. Contractor must always allow Fire District access into the project site and unobstructed use of the fire access road to other buildings on the west side of the project site. Contractor is responsible for obtaining parking passes from the Police Services.
2. **Contractor must maintain egress pathway for students and staff.**
3. Truck traffic, material deliveries and equipment deliveries on this road to the project site shall be closely monitored and controlled by the Contractor to avoid any delays to other vehicles using this road by faculty and students. The Contractor shall include delivery milestones in its Baseline P-6 CPM Schedule and provide written notice at least two (2) work days to the District and to the Police Services for all deliveries. Any material or equipment deliveries that could potentially delay traffic on this one-way road will have to be delivered after normal business hours, unless otherwise approved by the District. Contractor truck deliveries that stop traffic on this road or other roads on Campus will be subjected to being ticketed by the Police Services.
4. **Truck Hauling Routes.** Obtain City of Pleasant Hill approval for preferred construction traffic routing over public streets and/or other construction truck access and egress from public streets to the Site. Contractor shall avoid routing trucks through residential areas. Prohibit

mobilization and demobilization of heavy construction equipment and trucks on residential streets.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. All labor, equipment, materials, and all other requirements shall be provided and will be the sole responsibility of the Contractor for execution of entire work described in this specification section.

PART 3 - EXECUTION

3.1 MEANS AND METHODS OF CONSTRUCTION

- A. Contractor to provide and shall be responsible for any and all means and methods that will be constructed, implemented and/or maintained on the site for all work described above.

END OF SECTION 01140

SECTION 01250

CONTRACT MODIFICATION PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. All Contract Documents shall be reviewed for applicable provisions related to the provisions in this document, and provisions in the General Conditions and other Division 1 Specification Sections shall apply to this Section without limitation.

1.2 RELATED REQUIREMENTS SPECIFIED IN OTHER SECTIONS

- A. Section 01010 – “Summary of Work”
- B. Section 01310 – “Construction Scheduling”
- C. Section 01311 – “Project Management and Coordination”
- D. Section 01330 – “Submittal Procedures”
- E. Section 01770 – “Contract Closeout Procedures”
- F. Divisions 2 through 33 Sections for Contract Modification Procedures requirements for the work in those Sections

1.3 SUMMARY

- A. Any change in scope of Work or deviation from Contract Documents including, without limitation, extra work, or alterations or additions to or deductions from the original Work, shall not invalidate the original Contract, and shall be performed under the terms and conditions of the Contract Documents.
- B. Changes in the work generally will begin with Requests for Information (RFI), followed by a response from the District and/or Architect, and possibly a Request for Proposal (RFP), a Contractor Proposed Change Order (PCO), a negotiated Proposed Change Order, followed by a formal Change Order (CO) authorizing the Change in the Work. A Construction Directive (CD) may be used in the absence of agreement on the terms of the Change in the Work.

1.4 CHANGES - No Changes Without Authorization

- A. There shall be no change whatsoever in the drawings, specifications, or in the Work without a District executed Change Order, District executed Construction Change Directive, or District approved no cost order by the Architect for a minor change in the Work as herein provided. **Changes meeting the definition of DSA Construction Change Document Category A require DSA review and approval and shall be submitted by the Architect of Record to DSA as a Construction Change Document in accordance with IR A-6.**
- B. District shall not be liable for the cost of any extra work or any substitutions, changes, additions, omissions, or deviations from the Drawings and Specifications unless the District’s Governing Board has authorized the same and the cost thereof approved in writing by Change Order or executed Construction Change Directive.

- C. No extension of time for performance of the Work shall be allowed hereunder unless claim for such extension is made at the time changes in the Work are ordered, and such time duly adjusted in writing in the Change Order.
- D. The provisions of the Contract Documents shall apply to all such changes, additions, and omissions with the same effect as if originally embodied in the Drawings and Specifications. Notwithstanding anything to the contrary in this Section, all Change Orders shall be prepared and issued by the Architect and shall become effective when executed by the District's Governing Board, the Architect, and the Contractor.
- E. Should any Change Order result in an increase in the Contract price, the cost of such Change Order shall be agreed to, in writing, in advance by Contractor and District and be subject to the monetary limitations set forth in Public Contract Code. In the event that Contractor proceeds with any change in Work without first notifying District and obtaining the Architect's and District's consent to a Change Order, Contractor waives any claim of additional compensation for such additional work.

CONTRACTOR UNDERSTANDS, ACKNOWLEDGES, AND AGREES THAT THE REASON FOR THIS NOTICE REQUIREMENT IS SO THAT DISTRICT MAY HAVE AN OPPORTUNITY TO ANALYZE THE WORK AND DECIDE WHETHER THE DISTRICT SHALL PROCEED WITH THE CHANGE ORDER OR ALTER THE PROJECT SO THAT SUCH CHANGE IN WORK BECOMES UNNECESSARY.

1.5 REQUEST FOR INFORMATION ("RFI")

- A. Definition: An RFI is a written request prepared by the Contractor requesting the Architect to provide additional information necessary to clarify or amplify an item which the Contractor believes is not clearly shown or called for in the drawings or specifications, or to address problems which have arisen under field conditions. The Contractor shall not submit an RFI to the District or the Architect if it pertains to a Subcontractor's request for clarification of the Contractor's Subcontract or contractor's construction documents, or any other Contract Documents prepared by the Contractor.
- B. Scope: The RFI shall reference all the applicable Contract Documents including specification section, detail, page numbers, drawing numbers, and sheet numbers, etc. The Contractor shall make suggestions and interpretations of the issue raised by the RFI. An RFI cannot modify the Contract Cost, Contract Time, or the Contract Documents. The Contractor shall use RFI format provided by the District.
 - 1. The Contractor shall be responsible for Contractor and Subcontractor costs to implement and administer RFIs throughout the duration of the Project. The Contractor shall maintain an RFI log with all RFIs, including revisions, listed with a short description of the request, the date, the status, and the disposition of the RFI. Regardless of the number of RFIs submitted, the Contractor shall not be entitled to additional compensation.
 - 2. The Contractor shall be responsible for both the District and District consultant's costs, including the Architect, for answering RFIs if an RFI requests an interpretation or decision of a matter where the information sought is equally available to the party making such request, as determined by the District; at the District's discretion, such costs may be deducted from progress payments or the final payment.
 - 3. The Architect or the District may issue a Request for Proposal which includes a detailed description of a proposed change with supplementary or revised Drawings and specifications. The Contractor shall then prepare and submit an estimate within seven (7)

Calendar Days. If the Contractor fails or refuses to submit a Proposal within said seven (7) day period, the District's Representative or the District shall determine the fair and reasonable cost of the Work indicated in a Request for Proposal which shall be binding on the Contractor.

4. Supplemental Instruction or Bulletin: The Architect or the District may issue an Architect's Supplemental Instruction (ASI) or Bulletin to the Contractor.
 - a. If the Contractor is satisfied with the Supplemental Instruction or Bulletin and does not request change in Contract Sum or Contract Time, then the direction of the Work shall be executed without a Change Order.
 - b. If the Contractor believes that the Supplemental Instruction or Bulletin results in a change in Contract Sum or Contract Time, then the Contractor shall notify the District in writing within five Calendar Days after receiving the response. If the District disagrees with the Contractor, then the Contractor may give notice of intent to submit a Claim as described in the General Conditions, and submit its Claim within five Calendar Days of the District's response. If the District agrees with the Contractor, then the Contractor must submit a cost or time extension proposal within seven (7) Calendar Days of the District's response to the RFI. The Contractor's failure to deliver either the foregoing notice of Claim or proposal by the respective deadlines stated above shall result in waiver of the right to file a proposal or Claim.
- C. The Contractor shall reference each RFI to an activity of the Construction Schedule and shall note time criticality of the RFI, indicating time within which a response is required. The Contractor's failure to reference RFI to an activity on the Construction Schedule and note time criticality on the RFI shall constitute the Contractor's waiver of any claim for time delay or interruption to the Work resulting from any delay in responding to the RFI. The Contractor must submit time critical RFIs at least seven (7) Days prior to the scheduled start date of the affected Work activity.
- D. Response Time: The Architect must respond to a RFI in writing within a reasonable time, normally seven (7) days for routine RFIs, after receiving such request. If the Architect's response results in a change in the Work, then such change shall be effected by a written CO or Construction Change Directive, if appropriate. If the Architect cannot respond to the RFI within a reasonable time, the Architect shall notify the Contractor, with a copy to the Inspector and the District, of the amount of time that will be required to respond. District or the Architect will endeavor to respond within five (5) working Days from receipt of RFI with a written response to the Contractor, provided that the RFI complies with the paragraph above and is determined by the Architect or District to be time critical. Failure of the Contractor to plan ahead or mitigate problems shall not be cause for a determination that an RFI is time critical. The District or the Architect may return an RFI requesting additional information should the original RFI be incomplete or inadequately describe the information requested or conditions encountered. The Contractor shall distribute responses to all appropriate Subcontractors.
- E. If the Contractor is satisfied with the response and does not request a change in Contract Sum or Contract Time, then the response shall be executed without a change.
- F. Only the Contractor and/or the District may initiate changes in the scope of Work or deviation from Contract Documents. **Changes meeting the definition of DSA Construction Change Document Category A require DSA review and approval and shall be submitted by the Architect of Record to DSA as a Construction Change Document in accordance with IR A-6.**

1. Contractor may initiate changes by submitting an RFI or a letter providing Notice of Concealed or Unknown Conditions, or Notice of Hazardous Waste Conditions.
 - a. RFIs shall be submitted to seek clarification of or request changes in the Contract Documents. RFIs shall not be submitted to the District seeking clarification of any errors or omissions on behalf of the Contractor's preparation of the construction documents or any other Contract Documents prepared by the Contractor.
 - b. Differing Site Conditions: The Contractor shall submit a Notice of Differing Site Conditions by RFI to resolve problems regarding differing conditions encountered in the execution of the Work pursuant to General Conditions, which shall govern. If the District and the Architect determine that a change in Contract Sum or Contract Time is justified, the District and the Architect will issue RFP or CCD.
 - c. Hazardous Waste Conditions: The Contractor shall submit Notices of Hazardous Waste Conditions by RFI to resolve problems regarding undocumented hazardous materials encountered in the execution of the Work pursuant in General Conditions, which shall govern. If the District and the Architect determine that a change in Contract Sum or Contract Time is justified, the District and the Architect will issue RFP or CCD.
 2. The Contractor may submit to the Architect a written Request for Information (RFI) if one of the following conditions occurs:
 - a. Contractor discovers what appears to be an unforeseen condition or circumstance that is not described in the Contract Documents.
 - b. The Contractor discovers what appears to be a conflict or inconsistency within the Contract Documents and the intent of the Contract Documents cannot be reasonably inferred.
 - c. The Contractors discovers what appears to be an error or omission in the Contract Documents and the intent of the Contract Documents cannot be reasonably inferred.
 - d. The Contractor considers a portion of the Contract Documents is not sufficiently explained or detailed for the Contractor to proceed with that portion of the Work.
 - e. The Contractor who, after a full search of the Contract Documents and upon exercising required due diligence, fails to locate the required information.
- G. If the Contractor believes that the RFI response results in Change in the Contract Sum or the Contract Time, the Contractor shall notify the District in writing within five calendar Days after receiving the response. If the District disagrees with the Contractor, then the Contractor may give notice of intent to submit a Claim as described in General Conditions, and submit its Claim within 30 Calendar Days of the District's response. If the District agrees with the Contractor, then the Contractor must submit a cost or time extension proposal within fourteen (14) Calendar Days of the District's response to the RFI. The Contractor's failure to deliver either the foregoing notice of Claim or proposal by the respective deadlines stated above shall result in waiver of the right to file a proposal or Claim.
- H. Contractor shall identify RFIs with sequential numbering (i.e. 001, 002, 003 etc.) with a separate number assigned to each RFI. Resubmittal of apparent unresolved RFI issues shall be on a new

- RFI form with the initial RFI number amended with a sequential Revision suffix (.R1, .R2, .R3 etc.) until the issue is resolved.
- I. Unless otherwise directed by the Project Manager, the Contractor shall submit each RFI on the form required by the District.
 - 1. The Contractor shall fill in all required information. Include additional information, data, sketches and the like on separate sheets as necessary; limit sheet size to 8-1/2 by 11 inches if possible. RFIs without all required information may be returned without action to the Contractor for resubmittal. Resubmittal in accordance with the specified requirements shall be the Contractors' responsibility.
 - 2. The Contractors own proposed form may be used, if in the Project Manager's judgment, it is equal to the form required by the District and it contains all pertinent information.
 - J. In each request, include the following information, type or printed legibly in block letters with black ink:
 - 1. Project name as it appears on the Contract Documents
 - 2. Contractor's RFI identification number.
 - 3. Title of issue.
 - 4. Contract Document reference pertaining to the issue.
 - 5. Description of issue.
 - 6. Contractor's proposed written and graphic solution, Architect will determine if the proposal is in compliance with the Contract Documents and design intent of Project. Contractor's failure to make reasonable effort to propose realistic solutions may result in the Request for Information being returned with no action.
 - 7. Date of submission to Architect.
 - 8. Date that response is needed to avoid impact to Construction schedule and cost. Time for response shall be reasonable to allow for processing and review, research, and written response by the appropriate party.
 - 9. Urgency (normal or high).
 - 10. Justification for high urgency.
 - 11. Contractors' name and the printed name and signature of Contractors' representative responsible for issuance of request.
 - 12. Name (individual and company) of responsible for originating RFI and his or her relationship to the Contractor.
 - 13. Photographic image of condition. Furnish digital image if possible.
 - 14. Photocopy of Contract Documents or sketch of condition (with dimensions) that pertains to this issue.
 - K. Limit each RFI to a single subject or issue. RFIs with multiple subject or issues may be returned to the Contractor without response. Resubmittal in accordance with the specified requirements shall be the Contractor's responsibility.
 - L. Transmit each RFI to the District Project Manager as necessary to expedite the Project and to allow adequate time for review without delay to the Work. Do not transmit RFIs directly to the Architect, Architect's Consultants, or others.

- M. RFIs that do not meet the requirements of this Section will be returned to the Contractor with an explanation for its return.
- N. Inappropriate RFIs, as described hereinafter, will be returned to the Contractor with an explanation for its return but without further action:
 - 1. RFIs that are received by the Architect from an entity other than the Contractor (such as a Subcontractor, Sub-subcontractor, supplier or others.)
 - 2. RFIs that transmit or contain a request for a substitution.
 - 3. RFIs that transmit or constitute a submittal.
 - 4. RFIs that are submitted without the Contractors' thorough review of the Contract Documents or in a manner that suggests that specific portions of the Contract Documents are assumed to be excluded or taken as an isolated portion of the Contract Documents in part rather than whole.
 - 5. RFIs that are submitted in an untimely manner without adequate coordination or scheduling of the Work or related trades.
 - 6. RFIs that are submitted as a proposed or requested Change Order or other Contract Modification.
 - 7. RFIs that do not constitute a good faith request for required information.
- O. Contractor shall be responsible for resubmittal of information contained in inappropriate RFIs in accordance with the requirements of the appropriate portion of the Contract Documents.
- P. If information requested by the Contractor in an RFI is apparent from field observations, is contained in the Contract Documents, or can be reasonably inferred from them, the Contractor shall be responsible to the District for all reasonable fees charged by the Architect for additional services required to furnish such information. The amount of such additional services will be deducted from the Contractor's next payment application by the District and those funds will be forwarded to the Architect as compensation.
- Q. The quantity of RFIs submittal by the Contractor shall not be the basis for any claim by the Contractor.
- R. Should the Contractor proceed with Work affect by an RFI issue before receipt of a written response from the Architect within the time described hereinbefore, that portion of the Work not performed in accordance with the requirements of the response shall be subject to the removal and replacement by the Contractor at no increase in Contract Sum or Contract Time.
- S. Maintain a current and accurate Request for Information Log as follows:
 - 1. For each RFI, include the RFI number, subject matter, date submitted, date returned. Maintain current status of each RFI at all times.
 - 2. Submit log weekly and as requested by Project Manager or Architect.
 - 3. Accurately maintain log for the duration of the Contract.

1.6 REQUEST FOR PROPOSAL ("RFP")

- A. Definition: An RFP is a written request prepared by the Architect requesting the Contractor to submit to the District and the Architect an estimate of the effect of a proposed change on the Contract Price and the Contract Time.
- B. Scope: An RFP shall contain adequate information, including any necessary drawings and specifications, to enable Contractor to provide the cost breakdowns required by this Specification

Section. The Contractor shall not be entitled to any Additional Compensation for preparing a response to an RFP, whether ultimately accepted or not. **Changes meeting the definition of DSA Construction Change Document Category A require DSA review and approval and shall be submitted by the Architect of Record to DSA as a Construction Change Document in accordance with IR A-6.**

- C. District Requested RFP: the Contractor shall furnish a proposal within fourteen (14) Calendar Days of the District's RFP. Upon approval of RFP, the District will issue a PCO directing the Contractor to proceed with the extra Work. If the parties do not agree on the price for an RFP, the District may issue a CCD. Upon receipt of CCD, the Contractor shall promptly proceed with the change of Work involved and concurrently respond to the District's CCD within seven (7) Calendar Days. The Contractor shall perform the changed Work notwithstanding any claims or disagreements of any nature.

1.7 PROPOSED CHANGE ORDER (PCO) REQUEST

- A. Definition: A PCO is a written request prepared by the Contractor requesting that the District and the Architect issue a CO based upon a proposed change called for in an RFP or a claim pursuant to the General Conditions. **Changes meeting the definition of DSA Construction Change Document Category A require DSA review and approval and shall be submitted by the Architect of Record to DSA as a Construction Change Document in accordance with IR A-6.**
- B. Changes in Price: A PCO shall include breakdowns per this specification section to validate any change in Contract Price due to proposed change or claim.
- C. Changes in Time: A PCO shall also include any additional time required to complete the Project. Any additional time requested shall not be the number of days to make the proposed change, but must be based upon the impact to the Project Schedule as defined in the Construction Scheduling Specifications of these Contract Documents. Any changes in time will be granted only if there is an impact to the critical path. If contractor fails to request a time extension in a PCO, then the Contractor is thereafter precluded from requesting or claiming a delay.
- D. The Contractor may propose changes by submitting a Proposed Change Order (PCO form, see section 01340) to the District's Representative, describing the proposed change and its full effect on the Work. The Contractor shall include a statement describing the reason for the change and the effect on the Contract Sum and Contract Time with full documentation including detailed cost and schedule breakout, and a statement describing the effect on Work by separate or other the Contractors. Document any requested substitutions in accordance with the Contract Documents. Cost for Work in approved PCOs shall not be applied for by the Contractor or paid by the District until the PCOs are included in a Change Order (CO form, see section 01340)
- E. Cost Proposal and Procedures: Whenever the Contractor is required in this Section to prepare a Proposed Change Order form (PCO), and whenever the Contractor is entitled to submit a cost proposal and elects to do so, the Contractor shall prepare and submit to the District and the Architect for consideration a proposal using the PCO form found in the Contract Documents, or other similarly prepared form previously approved by the District. All cost proposals must contain detailed line-item backup with a complete breakdown of costs for credits, deducts and extras, which itemizes materials, labor, equipment, taxes, overhead and profit. All Subcontractor Work shall be so indicated. Subcontractor quotes for any subcontractor tier submitted as lump sum or

without the required line-item breakdown will be rejected. After receipt of a proposal with a detailed breakdown, the District and the Architect will act promptly thereon.

1. If the District and the Architect approves a proposal, the PCO will be routed for Contractor signatures, the District Representative signatures, and the District signature.
2. If a proposal is not acceptable to the District or the Architect because it does not agree with costs and/or time included in the proposal, the District or the Architect will submit in a response what it believes to be a reasonable cost and/or adjustment, if any. Except, as otherwise provided in this Section, the Contractor shall have five Calendar Days in which to respond to the District with a revised proposal.
3. When necessity to proceed with a change does not allow the District sufficient time to conduct a proper cost and schedule analysis of a proposal (or revised proposal), the District may direct the Contractor to proceed on a basis to be determined at earliest practical date. In this event, the value of the Change, with corresponding equitable adjustment to Contract, shall not be more than the increase or less than the decrease initially proposed.

1.8 CHANGE ORDERS (“CO”)

A Change Order is a written instrument prepared by the Architect and signed by the District (as authorized by the District’s Governing Board), the Contractor, the Architect, and the DSA (if necessary), stating their agreement upon all of the following:

- A. A description of a change in the Work;
- B. The amount of the adjustment in the Contract Sum, if any; and
- C. The extent of the adjustment in the Contract Time, if any.
- D. Change Order Forms: Whether or not noted on the executed form of Change Order, all Change Orders approved by the District are deemed to include and incorporate the following provision:

“The adjustment of the Contract Price and the Contract Time for the changes noted in a Change Order (the “Changes”) represents the full and complete adjustment of the Contract Price and the Contract Time due the Contractor for providing and completing such Changes, including without limitation: (i) all costs (whether direct or indirect) for labor, equipment, materials, tools, supplies and/or services; (ii) all general and administrative costs (including without limitation, home office, field office, and Site General Conditions costs) and profit; and (iii) all impacts, delays, disruptions, interferences or hindrances in providing and completing the Changes. (iv) and the removal of any cost of insurance as it relates to what is provided under the OCIP. The Contractor waives all rights, including without limitation, those arising under Civil Code Section 1542, for any other adjustment of the Contract Price or the Contract Time on account of a Change Order or the performance and completion of the Changes.”
- E. Correlation of Other Items
 1. Contractor shall promptly revise Schedule of Values and Application for Payment forms to record each authorized Change Order as a separate line item and adjust the Contract Sum as shown on the Change Order prior to the last day of the next monthly pay period.
 2. Within seven (7) days, Contractor shall promptly revise Progress schedules, look ahead schedules, and the Contractors Master Schedule to reflect any Change in Contract Time, revise sub schedules to adjust times for other items of work affected by the change and

resubmit to the District for review and approval. The Contractors shall not make changes to tasks in any schedule not impacted by the Change.

3. Contractor is responsible to promptly enter Changes in Project Record Documents.

F. All Changes:

1. Documentation of Change in Contract Sum and Contract Time:
 - a. Contractor shall maintain detailed records of all Work performed on a time-and-material basis.
 - b. Contractor shall document each proposal for a change in cost or time with sufficient data to allow detailed line item evaluation and analysis of the proposal.
 - c. Contractor shall, on request, provide additional data to support computations for:
 - i) Quantities of products, materials, labor and equipment.
 - ii) Taxes, auto insurance, and bonds.
 - a) Costs associated with the onsite work under general liability, workers compensation, pollution liability and builders' risks shall not be allowed; unless approved by the District.
 - iii) Overhead and profit.
 - iv) Justification for any change in Contract Time and new Progress Schedule showing revision due, if any. Justification for change shall comply with Construction Scheduling Section 01310.
 - v) Credit for deletions from Contract, similarly documented.
 - d. Contractor shall support each claim for additional costs and for Work performed under Force Account with additional information including:
 - i) Credit for deletions from Contract, similarly documented.
 - ii) Origin and date of claim.
 - iii) Dates and times Work was performed and by whom.
 - iv) Time records and wage rates paid.
 - v) Invoices and receipts for products, materials, equipment and subcontracts, similarly documented.

G. COST OF CHANGE ORDERS

1. It is the responsibility of the Contractor to notify the District within five Calendar Days if there is a cost change related to a change in the Work. Notification beyond this time limit may result in future claims being time barred.
2. Within seven (7) Calendar days after a request is made for a change that impacts the Contract Sum, the critical path, or the Contract Time, the Contractor shall provide the District and the Architect, with a written estimate of the effect of the proposed CO upon the Contract Sum and the actual cost of construction, which shall include a complete itemized cost breakdown of all labor and material showing actual quantities, hours, unit prices, and wage rates required for the change, and the effect upon the Contract Time of such CO. Changes may be made by District by an appropriate written CO, or, at the District's option, such changes shall be implemented immediately upon the Contractor's receipt of an appropriate written Construction Change Directive.

3. District may, as provided by law and without affecting the validity of this Agreement, order changes, modification, deletions and extra work by issuance of written CO or Construction Change Directives from time to time during the progress of the Project, contract sum being adjusted accordingly. All such work shall be executed under conditions of the original Agreement except that any extension of time caused thereby shall be adjusted at time of ordering such change. District has discretion to order changes on a "time and material" basis with adjustments to time made after Contractor has justified through documentation the impact on the critical path of the Project.
4. The amount of the increase or decrease in the Contract Price from a CO, if any, shall be determined in one or more of the following ways as applicable to a specific situation:
 - a. Mutual acceptance of a lump sum properly itemized and supported by sufficient substantiating data to permit evaluation. If an agreement cannot be reached within fifteen (15) days after submission and negotiation of Contractor's proposal, Contractor may submit a properly formatted claim per the General Conditions and this Specification Section. Submission of sums which have no basis in fact are at the sole risk of Contractor and may be a violation of the False Claims Act set forth under Government Code Section 12650 et. seq.);
 - b. By unit prices contained in Contractor's original bid and incorporated in the Project documents or fixed by subsequent agreement between District and Contractor;
 - c. Cost to be determined in a manner agreed upon by the parties and a mutually acceptable fixed or percentage fee. However, in the case of disagreement, Contractor must utilize the procedure under this Specification Section; or
 - d. By cost of material and labor and percentage of overhead and profit. (Force Account)

H. COST DETERMINATION

1. Total cost of extra Work or of Work omitted shall be the sum of construction labor costs, material costs, equipment rental costs, as defined herein plus overhead and profit as allowed herein and by the General Conditions. This limit applies in all cases of claims for extra Work, whether calculating cost proposals, Change Orders or CCDs, or calculating claims of all types, and applies even in the event of fault, negligence, strict liability, or tort claims of all kinds, including strict liability or negligence. The Contractor may recover no other costs arising out of or connected with the performance of extra Work, of any nature. No special, incidental or consequential damages may be claimed or recovered against the District, its representatives or agents, whether arising from breach of contract, negligence or strict liability, unless specifically authorized in the Contract Documents.
2. Application of Overhead and Profit: (Overhead shall be as defined in this Specification Section.)
 - a. Total overhead and profit on labor for extra Work shall not exceed 15 percent.
 - b. Total overhead and profit on materials for extra Work shall not exceed 15 percent.
 - c. Total overhead and profit on equipment for extra Work shall not exceed 10 percent.
 - d. When extra Work is performed by a first tier Subcontractor the Contractor shall receive a 5 percent markup on Subcontractors' total costs of extra Work. First tier Subcontractor's markup on its Work shall not exceed 15 percent.
 - e. When extra Work is performed by a lower tier Subcontractor, the Contractor shall receive a total of 5 percent markup on the lower tier Subcontractors' total costs of

extra Work. First tier Subcontractors and lower tier Subcontractors shall divide the 15 percent markup as mutually agreed.

- f. Notwithstanding the foregoing, in no case shall the total markup on any extra Work exceed 20 percent of the direct cost, notwithstanding the actual number of contract tiers.
 - g. On proposals covering both increases and decreases in Contract Sum, overhead and profit shall be allowed on the net increase only as determined in paragraph 1.5 above. When the net difference is a deduction, no percentage for overhead and profit shall be allowed, but rather the deduction shall apply.
 - h. No markup will be allowed on permits, fees, insurance, and bonds.
- I. Taxes: All State sales and use taxes, Contra Costa County and applicable City sales taxes, shall be included. Federal and Excise tax shall not be included.
- J. Accord and Satisfaction: Every Change Order and accepted CCD shall constitute a full accord and satisfaction, and release, of all the Contractor (and if applicable, Subcontractor) claims for additional time, money or other relief arising from or relating to the subject matter of the change including, without limitation, impacts of all types, cumulative impacts, inefficiency, overtime, delay and any other type of claim. The Contractor may elect to reserve its rights to disputed claims arising from or relating to the changed Work at the time it signs a Change Order or approves a CCD, but must do so expressly in a writing delivered concurrently with the executed Change Order or approved CCD, and must also submit a Claim for the reserved disputed items pursuant to the General Conditions no later than 30 Calendar Days of the Contractor's first written notice of its intent to reserve rights.
- K. COST BREAKDOWN
- 1. Labor: The Contractor will be paid cost of labor for workers (not including the project superintendent, or forepersons unless forepersons work greater than 50% of the time and then only when authorized by the District), used in actual and direct performance of extra Work. Labor rate, whether employer is the Contractor, Subcontractor or other forces, will be sum of following:
 - a. Actual Wages: Actual wages paid shall include any employer payments to or on behalf of workers for health and welfare, pension, vacation, and similar purposes.
 - b. Labor surcharge: Payments imposed by local, county, state, and federal laws and ordinances, and other payments made to, or on behalf of, workers, other than actual wages such as taxes. Worker's compensation is provided under the OCIP however if contractor or its subcontractors are excluded from the OCIP; it shall include cost of worker's compensation insurance in its cost of labor. Such labor surcharge shall not exceed that set forth in the Prevailing Wage schedule which is in effect on date upon which extra Work is accomplished and which schedule is incorporated herein by reference as though fully set forth herein.
 - c. If agreement cannot be reached between the District and Contractor, or its subcontractors regarding labor productivity rates then Saylor Publications Current Construction Costs, which is in effect on date upon which extra work is performed, and which is incorporated herein by reference, shall be used to determine rates and surcharges. Unless accepted in writing by the District's Representatives, other manuals, including NECA (National Electrical Contractors Association) manual, shall NOT be used as a basis to determine labor rates, labor productivity rates, labor surcharges, or any other costs.

2. Material: Only materials furnished and installed in the Work by the Contractor and necessarily used in performance of extra Work will be paid for. The Contractor and any and all subcontractors will submit proof of material cost satisfactory to the District when requested. Cost of such materials will be cost, including sales tax, to purchaser (Contractor, Subcontractor or other forces) from supplier thereof, except as the following are applicable:
 - a. If cash or trade discount by actual supplier is offered or available to purchaser, it shall be credited to the District notwithstanding fact that such discount may not have been taken.
 - b. For materials salvaged upon completion of extra Work, salvage value of materials shall be deducted from cost, less discounts, of materials.
 - c. If cost of a material is, in opinion of the District, excessive, then cost of material shall be deemed to be lowest current wholesale price at which material is available in quantities concerned delivered to Site, less any discounts as provided in this Specification Section.

Unless accepted in writing by the District's Representative, NECA (National Electrical Contractors Association) manual shall NOT be used as a basis to determine any material costs.
3. Equipment Rental: For the Contractor- or Subcontractor-owned equipment, payment will be made at rental rates listed for equipment in California Department of Transportation official equipment rental rate schedule which is in effect on date upon which extra Work is accomplished and which schedule is incorporated herein by reference as though fully set forth herein.
 - a. If there is no applicable rate for an item of equipment, then payment shall be made for the Contractor- or Subcontractor-owned equipment at rental rate listed in the most recent edition of the Association of Equipment Distributors (AED) book.
 - b. For rented equipment, payment will be made based on actual rental invoices. Equipment used on extra Work shall be of proper size and type. If, however, equipment of unwarranted size or type and cost is used, cost of use of equipment shall be calculated at rental rate for equipment of proper size and type, as determined by the District.
 - c. Rental rates paid shall be deemed to cover cost of fuel, oil, lubrication, supplies, small tools, necessary attachments, repairs and maintenance of any kind, depreciation, storage, insurance, and all incidentals. Unless otherwise specified, manufacturer's ratings, and manufacturer-approved modifications, shall be used to classify equipment for determination of applicable rental rates.
 - d. Individual pieces of equipment or tools not listed in said publication and having a replacement value of \$250 or less, whether or not consumed by use, shall be considered to be small tools and no payment will be made therefore as payment is included in payment for labor.
 - e. Rental time will not be allowed while equipment is inoperative due to breakdowns.
 - f. For equipment on Site, rental time to be paid for equipment shall be time equipment is in operation on extra Work being performed or on standby as approved by the District. The following shall be used in computing rental time of equipment:

- i) When hourly rates are listed, less than 30 minutes of operation shall be considered to be ½ hour of operation.
 - ii) When daily rates are listed, less than four hours of operation shall be considered to be ½ Day of operation.
 - g. For equipment that must be brought to Site to be used exclusively on extra Work, cost of transporting equipment to Site and its return to its original location shall be determined as follows:
 - i) District will pay for costs of loading and unloading equipment.
 - ii) Cost of transporting equipment in low bed trailers shall not exceed hourly rates charged by established haulers.
 - iii) Cost of transporting equipment shall not exceed applicable minimum established rates of California Public Utilities Commission.
 - iv) District will not make any payment for transporting and loading and unloading equipment if equipment is used on Work in any other way than upon extra Work.
 - h. Rental period may begin at time equipment is unloaded at Site of extra Work and terminate at end of the performance of the extra Work or Day on which the District directs the Contractor to discontinue use of equipment, whichever first occurs. Excluding Saturdays, Sundays, and the District's legal holidays, unless equipment is used to perform extra Work on such Days, rental time to be paid per Day shall be four hours for zero hours of operation, six hours for four hours of operation and eight hours for eight hours of operation, time being prorated between these parameters. Hours to be paid for equipment that is operated less than eight hours due to breakdowns, shall not exceed eight less number of hours equipment is inoperative due to breakdowns.
4. Work Performed by Special Forces or Other Special Services: When the District, the Architect and the Contractor by agreement, determine that special service or item of extra Work cannot be performed by forces of the Contractor or those of any Subcontractors, service or extra Work item may be performed by specialists. Invoices for service or item of extra Work on basis of current market price thereof may be accepted without complete itemization of labor, material, and equipment rental costs when it is impracticable and not in accordance with established practice of the special service industry to provide complete itemization. In those instances wherein the Contractor is required to perform extra Work necessitating a fabrication or machining process in a fabrication or machine shop facility away from Site, charges for that portion of extra Work performed in such facility may, by agreement, be accepted as a specialist billing. The District must be notified in advance of all off-Site Work. In lieu of overhead and profit provided in this Section, 15 percent will be added to specialist invoice price, after deduction of any cash or trade discount offered or available, whether or not such discount may have been taken.

L. FORCE-ACCOUNT WORK

- 1. If it is impracticable because of nature of Work, or for any other reason, to fix an increase or decrease in price definitely in advance, the Contractor may be directed to proceed at a not-to-exceed (NTE) maximum price which shall not under any circumstances be exceeded. Subject to such limitation, such extra Work shall be paid for at actual necessary cost for Force-Account Work or at the negotiated cost, as determined by the District. The cost for Force-Account Work shall be determined pursuant to this Specification Section.

2. Force-Account Work shall be used when it is not either possible or practical to price the changed Work prior to the start of that Work. In these cases, Force-Account Work will be utilized during the pricing and negotiation phase of the change. Once negotiations have been concluded and a bilateral agreement has been reached, the tracking of the Work under Force-Account is no longer necessary. Force-Account Work shall also be used when negotiations between the District and the Contractor have broken apart and a bilateral agreement on the value of the changed Work cannot be reached. The District may approve other uses of Force-Account Work.
3. Whenever any Force-Account Work is in progress, definite price for which has not been agreed on in advance, the Contractor shall report to the District each Business Day in writing in detail amount and cost of labor, equipment, and material used, and any other expense incurred in Force-Account Work on the preceding day, by using a preapproved cost proposal form. No claim for compensation for Force-Account Work will be allowed unless report shall have been made and acknowledged by the District.
4. Whenever Force-Account Work is in progress, definite price for which has not been agreed on in advance, the Contractor shall report to the District when 75 percent of the NTE amount has been expended.
5. RECORDS AND CERTIFICATION
 - a. Force-Account (cost reimbursement) charges shall be recorded daily and summarized in preapproved cost proposal form. The Contractor or authorized representative shall complete and sign form each Day and submit to the District Representative for review and approval. The Contractor shall also provide with the form: the names and classifications of workers and hours worked by each; an itemization of all materials used; a list by size type and identification number of equipment and hours operated; and an indication of all Work performed by specialists.
 - b. No payment for Force-Account Work shall be made until the Contractor submits original invoices substantiating materials and equipment charges.
 - c. District shall have the right to audit all records in possession of the Contractor relating to activities covered by the Contractor's claims for modification of Contract, including Force-Account Work and CCD Work.
 - d. Further, the District will have right to audit, inspect, or copy all records maintained in connection with this Contract, including financial records, in possession of the Contractor relating to any transaction or activity occurring or arising out of, or by virtue of, the Contract. If the Contractor is a joint venture, right of the District shall apply collaterally to same extent to records of joint venture sponsor, and of each individual joint venture member. This right shall be specifically enforceable, and any failure of the Contractor to voluntarily comply shall be deemed an irrevocable waiver and release of all claims then pending that were or could have been subject to the General Condition of Contract.
6. Force-Account Work shall be paid as extra Work under this Section. Methods of determining payment for Work and materials provided in this paragraph shall not apply to performance of Work or furnishings of material that, in judgment of the District, may properly be classified under items for which prices are otherwise established in Contract Documents.

- a. Basis for Establishing Costs.
 - i) Labor will be the actual cost for wages prevailing locally for each craft or type of workers at the time the extra Work is done, plus employer payments of payroll taxes and ~~insurance~~, health and welfare, pension, vacation, apprenticeship funds, and other direct costs resulting from Federal, State, or local laws, as well as assessments or benefits required by lawful collective bargaining agreements. The use of a labor classification which would increase the extra Work cost will not be permitted unless the Contractor establishes the necessity for such additional costs. Labor costs for equipment operators and helpers shall be reported only when such costs are not included in the invoice for equipment rental.
 - a) Worker's compensation is provided under the OCIP however if contractor or its subcontractors are excluded from the OCIP; it shall include cost of worker's compensation insurance in its costs.
 - ii) Materials shall be at invoice or lowest current price at which such materials are locally available and delivered to the Site in the quantities involved, plus sales tax, freight, and delivery. The District reserves the right to approve materials and sources of supply or to supply materials to the Contractor if necessary for the progress of the Work. No markup shall be applied to any material provided by the District.
 - iii) Tool and Equipment Rental. No payment will be made for the use of tools which have a replacement value of \$250 or less.
- b. Other Items. The District may authorize other items which may be required on the extra work. Such items include labor, services, material, and equipment which are different in their nature from those required by the Work, and which are of a type not ordinarily available from the Contractor or any of the Subcontractors. Invoices covering all such items in detail shall be submitted with the request for payment.
- c. Invoices. Vendors' invoices for material, equipment rental, and other expenditures shall be submitted with the PCO. If the request for payment is not substantiated by invoices or other documentation, the District may establish the cost of the item involved at the lowest price which was current at the time of the Daily Report.
- d. Overhead and Profit. Overhead and profit is defined and shall be applied as in this Specification Section.

M. DISTRICT-FURNISHED MATERIALS

1. District reserves right to furnish materials, as it deems advisable, and the Contractor shall have no claims for costs and overhead and profit on such materials.

N. OVERHEAD DEFINED

1. The following includes, but is not limited to, costs that are deemed included in overhead for all Contract Modifications, including COs, Force-Account Work or CCD Work, whether incurred by the Contractor, Subcontractors, or suppliers, and the Contractor shall not invoice or receive payment for these costs separately:
 - a. Drawings: field drawings, Shop Drawings, etc., including submissions of drawings.
 - b. Routine field inspection of Work proposed.

- c. General Superintendence, including Site Superintendent, Project Engineers, Project Management or Construction Management services provided by the Contractor.
- d. General administration and preparation of cost proposals, schedule analysis, change orders and other supporting documentation as necessary.
- e. Computer services.
- f. Reproduction services.
- g. Salaries of, superintendent, foremen, timekeeper, storekeeper and secretaries
- h. Janitorial services
- i. Temporary on Site facilities, including for any extended periods of Contract Time:
 - i) Offices
 - ii) Telephones
 - iii) Plumbing
 - iv) Electrical: Power, lighting, etc.
 - v) Platforms
 - vi) Fencing, barricades, signage, etc.
 - vii) Water
- 2. Home office expenses
- 3. Procurement and use of vehicles and fuel used coincidentally in Work otherwise included in the Contract Documents
- 4. Surveying
- 5. Estimating
- 6. Protection of Work
- 7. Handling and disposal fees
- 8. Final cleanup
- 9. Small tools
- 10. Warranty
- 11. All Contract General Conditions
- 12. Other incidental Work
- O. Deductive Change Orders: All deductive Change Order(s) shall be prepared in the same manner as additive change orders using the same forms and formulas, with negative numbers. Overhead and profit will be neither added nor deducted when calculating deductive changes.
- P. Discounts, Rebates, and Refunds: For purposes of determining the cost, if any, of any change, addition, or omission to the Work hereunder, all trade discounts, rebates, refunds, and all returns from the sale of surplus materials and equipment shall accrue and be credited to the Contractor, and the Contractor shall make provisions so that such discounts, rebates, refunds, and returns may be secured, and the amount thereof shall be allowed as a reduction of the Contractor's cost in determining the actual cost of construction for purposes of any change, addition, or omissions in the Work as provided herein.
- Q. Accounting Records: With respect to portions of the Work performed by COs and Construction Change Directives on a time-and-materials, unit-cost, or similar basis, the Contractor shall keep

and maintain cost-accounting records satisfactory to the District, which shall be available to the District on the same terms as any other books and records the Contractor is required to maintain under the Contract Documents.

- R. Notice Required: If the Contractor desires to make a claim for an increase in the Contract Price, or any extension in the Contract Time for completion, it shall notify the District pursuant to the General Conditions of these Contract Documents. Contractor shall proceed to execute the Work even though the adjustment may not have been agreed upon. Any change in the Contract Price or extension of the Contract Time resulting from such claim shall be authorized by a CO.
- S. Applicability to Subcontractors: Any requirements under this Section shall be equally applicable to COs or Construction Change Directives issued to Subcontractors by the Contractor to the same extent required by the Contractor.
- T. Alteration to Change Order Language: Contractor shall not alter or reserve time in Change Orders or Construction Change Directives. Contractor shall execute finalized Change Orders and proceed with the Work. If Contractor intends to reserve time, without an approved CPM schedule prepared pursuant to the Construction Scheduling Specification, the Contractor may be prosecuted pursuant to the False Claim Act.

1.9 CONSTRUCTION CHANGE DIRECTIVE

- A. Definition: A Construction Change Directive is a written order prepared by the District and signed by the Architect and District, directing a change in the Work and stating a proposed basis for adjustment, if any, in the Contract Sum or Contract Time, or both. The District may, by Construction Change Directive and without invalidating the Contract, order changes in the Work within the general scope of the Contract consisting of additions, deletions, or other revisions within. If applicable, the Contract Sum and Contract Time will be adjusted accordingly. In the case of a Construction Change Directive being issued, Contractor shall commence Work immediately or delays from failure to perform Construction Change Directive shall be the responsibility of Contractor. Any dispute as to the sum of Construction Change Directive or timing of payment, shall be resolved pursuant to the Disputes paragraphs of these Contract Documents. A Construction Change Directive shall be used in the absence of agreement on the terms of a CO. **Changes meeting the definition of DSA Construction Change Document Category A require DSA review and approval and shall be submitted by the Architect of Record to DSA as a Construction Change Document in accordance with IR A-6.**
- B. Construction Change Directives: If at any time the District believes in good faith that a timely Change Order will not be agreed upon using the foregoing procedures, the District may issue a CCD with a recommended cost and/or time adjustment.
 - 1. Upon receipt of CCD, the Contractor shall promptly proceed with the change of Work involved and concurrently respond to the District's CCD within 10 Calendar Days.
 - a. Contractor's response must be any one of following:
 - i) Return CCD signed, thereby accepting the District's response, time, and cost.
 - ii) Submit a (revised if applicable) proposal with supporting documentation (if applicable, reference original proposal number followed by letter R1, R2, etc. for each revision.
 - iii) Give notice of intent to submit a Claim as described in the General Conditions, and submit its Claim with 30 Calendar Days.

- b. If the CCD provides for an adjustment to the Contract Sum, the adjustment shall be based on one of the following methods:
 - i) Mutual acceptance of a lump sum properly itemized and supported by sufficient substantiating data to permit evaluation.
 - ii) Unit prices stated in the Contract Documents or subsequently agreed upon.
 - iii) Force account.
 - iv) Cost to be determined in a manner agreed.
 - C. A CCD signed by the Contractor indicates the agreement of the Contractor therewith, including adjustment in Contract Sum and Contract Time or the method for determining them. Such agreement shall be effective immediately and shall be recorded as a PCO.
 - D. If the Contractor does not respond promptly, or disagrees with the method for adjustment in the Contract Sum, the method and the adjustment shall be determined by the District on the basis of published estimating guides, District or Architect estimating consultant analysis, or reasonable and historical expenditures and savings of those performing similar Work including, in case of an increase in the Contract Sum, a reasonable allowance for overhead and profit. If the parties still do not agree on the price for a CCD, the Contractor may file a Claim per General Conditions. The Contractor shall keep and present, in such form as the District may prescribe, an itemized accounting together with appropriate supporting data.
 - E. The amount of credit to be allowed by the Contractor for a deletion or change which results in a net decrease in the Contract Sum shall be actual net cost as confirmed by the Architect and the District. When both additions and credits covering related Work or substitutions are involved in a change, the allowance for overhead and profit shall be figured on the basis of net increase, if any, with respect to that change.
- 1.10** Responses: For all responses for which the Contract Documents, including without limitation this Section, do not provide a specific time period, recipients shall respond within a reasonable time.
- 1.11** Disputes: For all disputes arising from the procedures herein, the Contractor shall follow this Section and the Contract General Conditions.

PART 2 – PRODUCTS (Not Used)

PART 3 – EXECUTION (Not Used)

END OF SECTION 01250

SECTION 01290

PAYMENT PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. All Contract Documents shall be reviewed for applicable provisions related to the provisions in this document, and provisions in the General Conditions and other Division 1 Specification Sections shall apply to this Section without limitation.

1.2 RELATED REQUIREMENTS SPECIFIED IN OTHER SECTIONS

- A. Section 01010 – “Summary of Work”
- B. Section 01250 – “Contract Modification Procedures”
- C. Section 01300 – “Labor Compliance Program”
- D. Section 01312 – “Project Meetings”
- E. Section 01330 – “Submittal Procedures”
- F. Section 01770 – “Contract Closeout Procedures”
- G. Section 01780 – “Project Record Documents”
- H. Divisions 2 through 33 Sections for Payment Procedures requirements for the work in those sections.

1.3 SUMMARY

- A. This Section includes descriptions of requirements and procedures for determining the quantity of Work performed during each pay period in project and the procedures for obtaining payment for Work performed. **Note – Each Project, D-1190 Print Shop, 1194 Student Success & 1195 Health Services portions of DVC Renovation will need separate payapps. Change Orders will be tracked per Project.**

1.4 CONTRACT SUM

- A. The Contract Sum is stated in the Agreement and, including authorized adjustments, is the total amount payable by the District to the Contractor for performance of the Work under the Contract Documents.

1.5 SCHEDULE OF VALUES

- A. Within ten (10) calendar days of the award of the Contract, provide an Initial Schedule of Values (SOV) along with the Initial CPM Schedule per Section 01310. This initial SOV shall include detailed breakdown of the elements of work expected in the first 90 calendar days of the Contract.
- B. Submit the Master Schedule of Values for all activities and costs under the Contract. Coordinate activities with and submit this Master SOV at the same time as the master CPM Schedule required by Section 01310.

- C. The SOV shall include Contractor's overhead, profit, insurance, cost of bonds (except to the extent expressly identified in a Proposal Item) and/or other financing, as well as general conditions costs, (e.g., Site cleanup and maintenance, temporary roads, access, signage off-Site access roads, temporary power and lighting, security, and the like). These costs shall be prorated through all activities and all Phases of the Project so that the sum of all Schedule of Values line items equals the total Contract Sum.
- D. District, Architect, and Project Manager shall review the breakdown in conjunction with the Master Construction Schedule to ensure that the amounts listed in the Schedule of Values are, in fact, fair market cost allocations for the Work items listed. Upon favorable review by the District, District will accept this Schedule of Values for use. District shall be the sole judge of fair market cost allocations.
- E. District will reject any attempt to increase the cost of early activities, i.e., "front loading," resulting in a complete reallocation of moneys until such "front loading" is corrected. Repeated attempts at "front loading" may result in suspension or termination of the Work for default, or refusal to process progress payments until such time as the Schedule of Values is acceptable to District.
- F. The Schedule of Values shall list line item costs for Project Closeout, Operations and Maintenance Manuals, Warranties, final test reports, and like items as required by this and other sections of the Contract Documents.
- G. Format and Content: Use the Project Manual Table of Contents as a guide to establish line items for the Schedule of Values. Provide at least one line item for each Specification Section.
 - 1. Identification: Include the following Project Identification on the Schedule of Values:
 - a. Project name and Campus;
 - b. Name of Architect;
 - c. District's project number;
 - d. Contractor's name and address;
 - e. Date of submittal.
 - 2. Arrange the Schedule of Values in tabular form with separate columns to indicate the following for each item listed:
 - a. Related Specification Section or Division;
 - b. Description of the Work;
 - c. Name of subcontractor;
 - d. Name of manufacturer or fabricator;
 - e. Name of supplier;
 - f. Change Orders (numbers) that affect value;
 - g. Dollar value:
 - i) Percentage of the Contract Sum to nearest one-hundredth percent, adjusted to total 100 percent.

Provide a breakdown of the Contract Sum in enough detail to facilitate continued evaluation of Applications for Payment and progress reports. Coordinate with the Project Manual Table of Contents, individual Specification Sections, and the Construction Schedule. Provide several line items for principal subcontract amounts, where appropriate.

Include separate line items under required principal subcontracts. A line item for Bonds must be supported by the evidence of the Bond cost at the time of application for payment. Provide individual line items for operation and maintenance manuals, punch list activities, Project Record Documents, Title 24 closeout, LEED commissioning (if applicable), and demonstration and training (if applicable). If the values for administrative close-out items are not realistic and supportable, the Schedule of Values will not be accepted.

3. Round amounts to nearest whole dollar; total shall equal the Contract Sum.
4. Provide a separate line item in the Schedule of Values for each part of the Work where Applications for Payment may include materials or equipment purchased or fabricated and stored, but not yet installed.
 - a. Differentiate between items stored on-site and items stored off-site. If specified, include evidence of insurance or bonded warehousing.
5. Provide separate line items in the Schedule of Values for initial cost of materials, for each subsequent stage of completion, and for total installed value of that part of the Work.
6. Provide separate line item in the Schedule of Values for maintenance and updating of Project Record Documents as specified in Section 01780 (Project Record Documents).
7. Provide a separate line item for DSA verified report retention if this is a DSA approved project. See General Conditions.
8. Allowances: Provide a separate line item in the Schedule of Values for each allowance.
9. Each item in the Schedule of Values and Applications for Payment shall be complete. Include total cost and proportionate share of general overhead and profit for each item.
10. Schedule Updating: When Change Orders result in a change in the Contract Sum, include each Change Order as a new line item, with additional line items for detail if the change involves multiple subcontractors or significant Work in more than one Specification Section.

1.6 SUBCONTRACTOR LISTING

- A. Within five (5) days of the award of the Contract, provide the name, address, telephone number, fax number, California State Contractors Board License number, and classification of all Subcontracts for parties furnishing labor, material, or equipment for the Project.

1.7 DISTRICT APPROVAL

- A. The District shall review all submittals required above in a timely manner. All submittals must be approved by the District before becoming the supporting basis for any Contractor payment request.

1.8 PROGRESS PAYMENTS

- A. Within thirty (30) days after approval of the Request for Payment, Contractor shall be paid a sum equal to ninety percent (95%) of the value of the Work performed (as certified by Architect and Inspector and verified by Contractor) up to the last day of the previous month, less the aggregate of previous payments. The value of the Work completed shall be Contractor's best estimate. No inaccuracy or error in said estimate shall operate to release the Contractor, or any surety upon any bond, from damages arising from such Work, or from the District's enforcement of each and every provision of this Contract, and the District shall have the right subsequently to correct any error made in any estimate for payment.

- B. The Contractor shall not be entitled to have any payment requests processed, or be entitled to have any payment made for work performed, so long as any lawful or proper direction given by the District concerning the Work, or any portion thereof, remains incomplete.
- C. Notwithstanding anything to the contrary stated above, the Contractor may include in its Request for Payment the value of any structural steel, G.F.R.C. panels and other such custom-made materials prepared specifically for the Project and unique to the Project so long as all of the following requirements are satisfied:
 - 1. No payment shall be made for materials stored off-site without the written approval of the District to be given or withheld in the District's sole discretion;
 - 2. Title to such materials shall be vested in the District as evidenced by documentation satisfactory in form and substance to the District, including, but not limited to, recorded financing statements, UCC filings and UCC searches;
 - 3. With each Contractor Request for Payment, the Contractor shall submit to the District a written list identifying each location where materials are stored off-site (which must be a bonded warehouse) and the value of the materials at each location. The Contractor shall procure insurance satisfactory to the District (in its reasonable discretion) for materials stored off-site in an amount not less than the total value thereof;
 - 4. The consent of any Surety shall be obtained to the extent required prior to payment for any materials stored off-site;
 - 5. Representatives of the District shall have the right to make inspections of the storage areas at any time; and
 - 6. Such materials shall be (1) protected from diversion, destruction, theft and damage to the reasonable satisfaction of the District; (2) specifically marked for use on the Project; and (3) segregated from other materials at the storage facility.
- D. The Contractor is required to order, obtain, and store materials and equipment sufficiently in advance of its Work at no additional cost or advance payment from District to assure that there will be no delays.
- E. No payment by District hereunder shall be interpreted so as to imply that District has inspected, approved, or accepted any part of the Work. Notwithstanding any payment, the District may enforce each and every provision of this Contract. The District may correct any error subsequent to any payment.

1.9 APPLICATIONS FOR PROGRESS PAYMENTS

- A. The Architect shall, within seven (7) days after receipt of the Contractor's Application for Payment, either approve such payment or notify the Contractor in writing of the Architect's reasons for withholding approval in whole or in part as provided herein. The review of the Contractor's Application for Payment by the Architect is based on the Architect's observations at the Site and the data comprising the Application for Payment that the Work has progressed to the point indicated and that, to the best of the Architect's knowledge, information, and belief, the quality of the Work is in accordance with the Contract Documents.
- B. The foregoing representations are subject to:
 - 1. An evaluation of the Work for conformance with the Contract Documents;
 - 2. Results of subsequent tests and inspections;
 - 3. Minor deviations from the Contract Documents correctable prior to completion, and

4. Specific qualifications expressed by the Architect. The issuance of a Certificate for Payment will further constitute a representation that the Contractor is entitled to payment in the amount certified.
- C. Progress Payment Procedures include the following:
1. *Pre-application Meeting.* On or before the 5th Day of each calendar month during the progress of the Work, Contractor shall attend a pre-Application meeting with District's Representatives, including the Architect, Project Manager and Project Inspector. Contractor shall provide a complete draft of the proposed Application for Payment for review. The Contractor shall revise and resubmit the draft Application for Payment, if required by District.
 2. *Application for Progress Payment.* On or before the tenth (10th) day of each calendar month during the progress of the Work, Contractor shall submit to the Architect an itemized Application for Progress Payment for operations completed in accordance with the Schedule of Values. Such application shall be notarized, if required, and supported by the following and as required by the specifications.
 3. The Contractor shall submit Applications for Payment in the form pre-approved by the District, See Section 01340 ADMINISTRATIVE FORMS. Information shall include:
 - a. The amount paid to the date of the Application to the Contractor, to all its Subcontractors, and all others furnishing labor, material, or equipment for its Contract;
 - b. The amount being requested under the Application for Payment by the Contractor on its own behalf and separately stating the amount requested on behalf of each of the Subcontractors and all others furnishing labor, material, and equipment under the Contract;
 - c. The balance that will be due to each of such entities after said payment is made;
 - d. A certification that the Record Drawings and Annotated Specifications are current;
 - e. Itemized breakdown of work done for the purpose of requesting partial payment;
 - f. Where the Work is separated into Phases, provide Applications for Payment showing values correlated with each Phase separately.
 - g. An updated Construction Schedule in conformance with the requirements of Section 01310, Construction scheduling.
 - h. All additions to and subtractions from the Contract Price and Contract Time;
 - i. A summary of the retentions held;
 - j. Material invoices, evidence of equipment purchases, rentals, and other support and details of cost as the District may require;
 - k. An updated Schedule of values showing percentage of completion of the Contractor's Work by line item.
- D. Prerequisites for Progress Payments include the following:
1. The following items must be submitted and approved before the first payment request will be accepted for processing:
 - a. List of all subcontractors;
 - b. List of Contractor's staff assignments;
 - c. Installation of the Project signs and other required temporary facilities and controls, including field office(s) required by Section 01500;

- d. Complete Schedule of Values;
 - e. Initial Construction Schedule, due within [5 edit] days after Notice to Proceed;
 - f. Submittal Schedule;
 - g. Copies of any required permits;
 - h. Copies of authorizations and licenses from governing authorities, if required;
 - i. Surveyor qualifications if needed;
 - j. All bonds and insurance endorsements;
 - k. Other early submittals required by the Contract Documents.
- E. No payment requests will be processed unless Contractor has:
- 1. Submitted copies of the Certified Payroll records for the Payment Request Work period.
 - 2. Provided an updated Construction Schedule.
 - 3. Provided an updated Schedule of Values.
 - 4. Provided all other payment request related items required by the Contract Documents.
- F. Payment requests that are not in compliance with the Contract Documents will be returned with no action taken.
- G. If Contractor is late submitting an Application for Payment, that Application may be processed at any time during the one-month period, but may result in processing of the Contractor's Application for Payment being delayed for more than a day-for-day basis. The District and its representative shall not be responsible for any such Payment being delayed due to late, incomplete, or inaccurate submission by the Contractor.
- H. Any payments made to Contractor where criteria set forth in the Contract Documents have not been met shall not constitute a waiver of said criteria by District. Instead, such payment shall be construed as a good faith effort by District to resolve differences so Contractor may pay its Subcontractors and suppliers and that Contractor agrees that failure to submit such items may constitute a breach of contract by Contractor and may subject Contractor to termination or other penalty.

1.10 WARRANTY OF TITLE

- A. The Contractor warrants title to all work. The Contractor further warrants that all work is free and clear of liens, claims, security interests, or encumbrances in favor of the Contractor, Subcontractors, material and equipment suppliers, or other persons or entities making a claim by reason of having provided labor, materials, and equipment relating to the Work.
- B. Failure to keep work free of liens, claims, security interests or encumbrances is grounds to make a claim against Contractor's payment and performance bond to immediately remedy and defend.
- C. If a lien or stop notice of any nature should at any time be filed against the Work or any District property by any entity which has supplied material or services at the request of the Contractor, Contractor and Contractor's surety shall promptly, on demand by District and at Contractor's and surety's own expense, take any and all action necessary to cause any such lien or stop notice to be released or discharged immediately therefrom.
- D. If the Contractor fails to furnish to the District within ten (10) calendar days after demand by the District, satisfactory evidence that a lien or stop notice has been so released, discharged, or secured, then District may discharge such indebtedness and deduct the amount required therefor,

together with any and all losses, costs, damages, and attorney's fees and expense incurred or suffered by District from any sum payable to Contractor under the Contract.

1.11 DECISIONS TO WITHHOLD PAYMENT

- A. The District may withhold payment, in whole, or in part, to such extent as may be necessary to protect the District from loss because of, but not limited to:
1. Defective Work not remedied;
 2. Stop Notices served upon the District;
 3. Liquidated damages assessed against the Contractor;
 4. The cost of completion of the Contract if there exists reasonable doubt that the Work can be completed for the unpaid balance of any Contract Price or by the completion date;
 5. Damage to the District or other contractor;
 6. Unsatisfactory prosecution of the Work by the Contractor;
 7. Failure to store and properly secure materials;
 8. Failure of the Contractor to submit on a timely basis, proper and sufficient documentation required by the Contract Documents, including, without limitation, acceptable monthly progress schedules, shop drawings, submittal schedules, schedule of values, product data and samples, proposed product lists, executed Change Order, Construction Change Directives, and verified reports;
 9. Failure of the Contractor to maintain record drawings;
 10. Erroneous estimates by the Contractor of the value of the Work performed, or other false statements in an Application for Payment;
 11. Unauthorized deviations from the Contract Documents;
 12. Failure of the Contractor to prosecute the Work in a timely manner in compliance with established progress schedules and completion dates.
 13. Failure to properly pay prevailing wages as defined in Labor Code section 1720, et seq.;
 14. Failure to properly maintain or clean up the Site;
 15. Payments to indemnify, defend, or hold harmless the District;
 16. Any payments due to the District including but not limited to payments for failed tests, or utilities changes or permits;
 17. Failure to submit an acceptable schedule in accordance with Section 01310;
 18. Failure to pay Subcontractor or suppliers as required herein;
 19. Failure to provide release from material suppliers or subcontractors when requested to do so.

1.12 RE-ALLOCATION OF WITHHELD AMOUNTS

- A. District may, in its discretion, apply any withheld amount to payment of outstanding claims or obligations as defined in herein. In so doing, District shall make such payments on behalf of Contractor.
- B. If any payment is so made by District, then such amount shall be considered as a payment made under Contract by District to Contractor and District shall not be liable to Contractor for such payments made in good faith. Such payments may be made without prior judicial determination

of claim or obligation. District will render Contractor an accounting of such funds disbursed on behalf of Contractor.

- C. If Contractor defaults or neglects to carry out the Work in accordance with the contract documents or fails to perform any provision thereof, District may, after ten (10) calendar days written notice to the Contractor and without prejudice to any other remedy make good such deficiencies.
- D. The District shall adjust the total Contract price by reducing the amount thereof by the cost of making good such deficiencies. If District deems it inexpedient to correct Work which is damaged, defective, or not done in accordance with Contract provisions, an equitable reduction in the Contract price (of at least 150% of the estimated reasonable value of the nonconforming work) shall be made therefore.

1.13 PAYMENT AFTER CURE

- A. When the grounds for declining approval are removed, payment shall be made for amounts withheld because of them. No interest shall be paid on any retainage or amounts withheld due to the failure of the Contractor to perform in accordance with the terms and conditions of the Contract Documents.

1.14 NONCONFORMING WORK

- A. Contractor shall promptly remove from premises all Work identified by District as failing to conform to the Contract whether incorporated or not. Contractor shall promptly replace and re-execute its own Work to comply with the Contract without additional expense to District and shall bear the expense of making good all work of other contractors destroyed or damaged by such removal or replacement.
- B. If Contractor does not remove such Work which has been identified by District as failing to conform to the Contract Documents within a reasonable time, fixed by written notice, District may remove it and may store the material at Contractor's expense. If Contractor does not pay expenses of such removal within ten (10) calendar days' time thereafter, District may, upon ten (10) calendar days' written notice, sell such materials at auction or at private sale and shall account for net proceeds thereof, after deducting all costs and expenses that should have been borne by Contractor.

1.15 SUBCONTRACTOR PAYMENTS

- A. No later than ten (10) days after receipt, or pursuant to Business and Professions Code Section 7108.5 and Public Contract Code section 7107, the Contractor shall pay to each Subcontractor, out of the amount paid to the Contractor on account of such Subcontractor's portion of the Work, the amount to which said Subcontractor is entitled. The Contractor shall, by appropriate agreement with each Subcontractor, require each Subcontractor to make payments to Sub-subcontractors in a similar manner.

1.16 NO OBLIGATION OF DISTRICT FOR SUBCONTRACTOR PAYMENT

- A. The District shall have no obligation to pay, or to see to the payment of, money to a Subcontractor except as may otherwise be required by law.

1.17 PAYMENT NOT CONSTITUTING APPROVAL OR ACCEPTANCE

- A. An approved Request for Payment, a progress payment, or partial or entire use or occupancy of the Project by the District shall not constitute acceptance of Work not in accordance with the Contract Documents.

1.18 JOINT CHECKS

- A. District shall have the right, if necessary for the protection of the District, to issue joint checks made payable to the Contractor and Subcontractors and material or equipment suppliers. The joint check payees shall be responsible for the allocation and disbursement of funds included as part of any such joint payment. In no event shall any joint check payment be construed to create any contract between the District and a Subcontractor of any tier, any obligation from the District to such Subcontractor, or rights in such Subcontractor against the District.

1.19 NO WAIVER

- A. Unless otherwise agreed upon, partial occupancy or use of a portion or portions of the Work shall not constitute acceptance of Work not complying with the requirements of the Contract Documents.

1.20 FINAL PAYMENT

- A. Contractor shall comply with requirements of Section 01770 Contract Closeout Procedures.
- B. Contractor shall maintain the presence of Project Superintendent and Project Manager until the Work is complete.
- C. Under no circumstances shall Contractor demobilize its forces prior to completion of the Final Punchlist. Upon receipt of Contractor's written notice that all of the Final Punchlist items have been fully completed and the Work is ready for final inspection and acceptance, Architect shall inspect the Work and shall submit to Contractor and District a final inspection report noting which work, if any, is required to be completed in accordance with the Contract Documents. Absent unusual circumstances, this report shall consist of the Punchlist items not yet satisfactorily completed.
- D. Upon completion of the Work contained in the Final Inspection report, the Contractor shall notify the District and Architect, who shall again inspect such Work. If the Architect and the District finds the Work contained in such Final Inspection report acceptable under the Contract Documents and, therefore, the Work fully completed, it shall notify Contractor, who may then submit to the Architect its final Application for Payment.
- E. Upon receipt and approval of such final Application for Payment, the Architect shall issue a final Certificate of Payment stating that to the best of its knowledge, information, and belief, and on the basis of its observations, inspections, and all other data accumulated or received by the Architect in connection with the Work, such Work has been completed in accordance with the Contract Documents. The District shall thereupon inspect such Work and either accept the Work as complete or notify the Architect and the Contractor in writing of reasons why the Work is not complete. Upon acceptance of the Work of the Contractor as fully complete (which, absent unusual circumstances, will occur when the Punch List items have been satisfactorily completed), the District shall record a Notice of Completion with the County Recorder, and the Contractor shall, upon receipt of payment from the District, pay the amounts due Subcontractors.
- F. The following conditions must be fulfilled prior to Final Payment:

1. A full and final waiver or release of all Stop Notices in connection with the Work shall be submitted by Contractor, including a release of Stop Notice in recordable form, together with (to the extent permitted by law) a copy of the full and final release of all Stop Notice rights.
2. The Contractor shall have made all corrections to the Work required to remedy any defects therein, to obtain compliance with the Contract Documents or any requirements of applicable codes and ordinances, or to fulfill any of the orders or directions of District.
3. Each Subcontractor shall have delivered to the Contractor all written guarantees, warranties, applications, and bonds required by the Contract Documents for its portion of the Work.
4. Contractor must have completed all requirements set forth in Section 01770 Contract Closeout Procedures.
5. Architect shall have reviewed and approved a Final Application for Payment.
6. The Contractor shall have completed final clean up as required by Section 01710 Cleaning Requirements.

1.21 RETAINAGE

- A. The retainage, less any amounts disputed by the District or which the District has the right to withhold, shall be paid:
 1. After approval by District and Architect of the Contractor's final Application for Payment;
 2. After satisfaction of all terms and conditions set forth in the Contract Documents, and
 3. After thirty-five (35) days after the acceptance of the Work by the District Governing Board and recording of the Notice of Completion by District.
- B. No interest shall be paid on any retainage, or on any amounts withheld due to a failure of the Contractor to perform in accordance with the terms and conditions of the Contract Documents, except as provided to the contrary in any Escrow Agreement between the District and the Contractor pursuant to Public Contract Code § 22300.

1.22 SUBSTITUTION OF SECURITIES

- A. The District will permit the substitution of securities in accordance with the provisions of Public Contract Code section 22300.

1.23 ALLOWANCES

- A. District will authorize and direct Contractor regarding provisions in this paragraph.
- B. Allowance Amount: as listed in Section 01210 (Allowances).
- C. District shall determine in its sole discretion which costs, if any, it will authorize in writing to be paid from the Allowance. Generally, the Allowance will be used only for District-initiated changes in the Scope of Work.
- D. Costs for Allowance Work shall be determined as provided in Section 01250, Contract Modification Procedures.

PART 2 – PRODUCTS (Not Used)

PART 3 – EXECUTION (Not Used)

END OF SECTION 01290

SECTION 01300

LABOR COMPLIANCE PROGRAM

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. All Contract Documents shall be reviewed for applicable provisions related to the provisions in this document, and provisions in the General Conditions and other Division 0 and Division 1 Specification Sections shall apply to this Section without limitation.

1.2 RELATED REQUIREMENTS SPECIFIED IN OTHER SECTIONS

- A. Section 01010 – “Summary of Work”
- B. Section 01290 – “Payment Procedures”
- C. Section 01770 – “Contract Closeout Procedures”
- D. Divisions 2 through 33 Sections for Labor Compliance Program requirements for the work in those Sections.

1.3 SUMMARY

- A. Labor Code Section 1725.5 regarding Department of Industrial Relations (DIR) contractor registration process including registration criteria and implementation of DIR registration requirements. Labor Code Section 1771.7 establishes contractor’s obligation to submit Certified Pay Roll (CPR) to the Department of Labor and Standards Enforcement (DLSE) and public works monitoring and enforcement. Labor Code Section 1773.3 requires the District to submit a PWC-100 to DIR for all public works contract awarded effective January 1, 2015.
- B. Contractors and subcontractors performing work on District projects will be expected to adhere to the labor compliance provisions outlined in Division 2, Part 7, Chapter 1 of the California Labor Code §1720- 1861 including, but not limited to, the reporting of certified payroll, payment of prevailing wages and the employment of apprentices.

1.4 LABOR COMPLIANCE PROGRAM REQUIREMENTS

- A. California Labor Code Section 1770, et seq., and Education Code Section 17424 require that contractors on Public works projects pay their workers based on the prevailing wage rates which are established and issued by the Department of Industrial Relations, Division of Labor Statistics and Research.
 - 1. Pursuant to the provisions of Division 2, Part 7, Chapter 1, Article 2 of the California Labor Code §1770, et seq., the District has obtained from the Director of the California Department of Industrial Relations the general prevailing rate of per diem wages and the prevailing rate for straight time, holiday time and overtime work in the locality in which the work is to be performed for each craft, classification or type of worker needed to execute the contract. The prevailing wage determination can be accessed online at <http://www.dir.ca.gov/dlsr/DPreWageDetermination.htm>. Copies of the prevailing rate of per diem wages are also on file at the District office, which shall be made available to any interested party on request. Per diem wages shall be deemed to include employer payments for health and welfare, pensions, vacation, travel time and subsistence pay as provided in

California Labor Code §1773.1 and as shown in the Director's determination. For apprenticeship or other training programs authorized by California Labor Code §3093, and similar purposes, when the term "per diem wages" is used herein it shall have the meaning as defined in the prevailing wage determination as published by the Director of the California Department of Industrial Relations and California Labor Code.

2. The contractor shall post at an appropriate conspicuous weatherproof point on the site of the project a copy of the prevailing wage determination published by the Director of the California Department of Industrial Relations which is applicable to the project and the Notice of Approval of the Labor Compliance Program.
3. There shall be paid to each worker of the contractor or any subcontractor, of any tier, engaged in the work, not less than the general prevailing wage rate regardless of any contractual relationship which may be alleged to exist between the contractor or any subcontractor, of any tier, and such worker. The contractor and subcontractors will be required to pay all workers on a weekly basis. Each worker needed to execute the work on the project shall also be paid travel and subsistence payments, as such travel and subsistence payments are defined in the prevailing wage determination published by the Director of the California Department of Industrial Relations.
4. Holiday and overtime work, when permitted by law, shall be paid for at the rate identified in the prevailing wage determination issued by the Director of the California Department of Industrial Relations. In accordance with Labor Code §1815, work performed by employees of contractors in excess of 8 hours per day, and 40 hours during any one week, shall be permitted upon public work upon compensation for all hours worked in excess of 8 hours per day at not less than 1 1/2 times the basic rate of pay.
5. The Contractor shall forfeit fifty dollars (\$50.00) for each calendar day or portion thereof, for each worker paid less than the prevailing rates as determined by the Director of the California Department of Industrial Relations for such work or craft in which such worker is employed by the contractor or by any subcontractor, of any tier, in connection with the work. Pursuant to California Labor Code §1775, the difference between such prevailing wage rates and the amount paid to each worker for each calendar day, or portion thereof, for which each worker was paid less than the prevailing wage rate, shall be paid to each worker in the addition to the penalties. The amount of forfeiture shall be determined by the Labor Commissioner and shall be based on consideration of the contractor's mistake, inadvertence, or neglect in failing to pay the correct rate of prevailing wages. The contractor's previous record in meeting the prevailing wage obligations or the contractor's willful failure to pay the correct rates of prevailing wages may influence the amount of penalty.
6. In accordance with Labor Code §1813, the contractor or subcontractor shall, as a penalty to the state or political subdivision on whose behalf the contract is made or awarded, forfeit twenty-five dollars (\$25) for each worker employed in the execution of the contract by the respective contractor or subcontractor for each calendar day during which the worker is required or permitted to work more than 8 hours in any one calendar day and 40 hours in any one calendar week in violation of the provisions of this article. In awarding any contract for public work, the awarding body shall cause to be inserted in the contract a stipulation to this effect. The awarding body shall take cognizance of all violations of this article committed in the course of the execution of the contract, and shall report them to the Division of Labor Standards Enforcement.

- B. California Labor Code Section 1776 requires contractors to keep accurate payroll records of trade workers on all public works projects and to submit copies of certified payroll records upon request.

1. Pursuant to California Labor Code §1776, the contractor and every subcontractor, of any tier, shall keep accurate payroll records, showing the name, address, social security number, work classification, straight time and overtime hours worked each day and week, and the actual per them wages paid to each journeyman, apprentice, worker or other employee employed by them in connection with the public works project. The payroll records shall be certified and submitted bi-weekly to the Labor Compliance Representative and shall be available for inspection at all reasonable hours at the principal office of the Contractor on the following basis:
 2. A certified copy of an employee's payroll record shall be made available for inspection or furnished to such employee or his/her authorized representative on request;
 3. A certified copy of all payroll records shall be made available for inspection or furnished upon request to the District, the Division of Labor Standards Enforcement and the Division of Apprenticeship Standards of the Department of Industrial Relations;
 4. A certified copy of payroll records shall be made available upon request to the public for inspection or copies thereof made; provided, however, that a request by the public shall be made through the District, the Division of Apprenticeship Standards, or the Division of Labor Standards Enforcement. The contractor shall have ten (10) days in which to completely comply, subsequent to receipt of written notice specifying in what respects the contractor must comply herewith. Should noncompliance be evident after such 10-day period, the contractor shall, as a penalty to the District, forfeit Twenty-Five Dollars (\$25.00) for each calendar day, or portion thereof, for each worker, until strict compliance is effectuated.
- C. California Labor Code Section 1777.5 requires contractors to employ registered apprentices on Public works projects.
1. Per California Labor Code §1777.5(e), the contractor and all subcontractors shall notify an approved training program that can supply apprentices to the area of the public works project. The contractor and subcontractors shall submit contract award information to the applicable joint apprenticeship committee which shall include an estimate of journeyman hours to be performed under the contract, the number of apprentices to be employed, and the approximate dates the apprentices will be employed. Additionally, the contractor and subcontractors shall request, from the joint apprenticeship committee, dispatch of apprentices on the public works project using the state form DAS-142.
 2. All apprentices employed by the contractor to perform any of the work shall be paid the prevailing wages identified by the Director of the California Department of Industrial Relations. Only apprentices, as defined in California Labor Code §3077 who are in training under apprenticeship standards and written apprenticeship agreements under California Code §§3070, et seq., are eligible to be employed for the work. The employment and training of each apprentice shall be in accordance with the provisions of the apprenticeship standards and apprentice agreements under which such apprentice is training or the standards established by the Division of Apprenticeship Standards.
 3. The ratio of work performed by apprentices to journeymen, who shall be employed in the work, may be the ratio stipulated in the apprenticeship standards under which the joint apprenticeship committee operates, but in no case shall the ratio be less than one hour (1) of apprentice work for each five (5) hours of labor performed by a journeyman, except as otherwise provided in California Labor Code §1777.5. Any ratio shall apply during any day or portion of a day when any journeyman, or the higher standard stipulated by the joint apprenticeship committee, is employed at the site of the Work and shall be computed on the

basis of the hours worked during the day by journeymen so employed, except for the surveyor classification. The Contractor shall employ apprentices for the number of hours computed as above before the completion of the work. The contractor shall, however, endeavor, to the greatest extent possible, to employ apprentices during the same time period that the journeymen in the same craft or trade are employed at the site of the Work. Where an hourly apprenticeship ratio is not feasible for a particular craft or trade, the Division of Apprenticeship Standards, upon application of a joint apprenticeship committee, may order a minimum ratio of not less than one apprentice for each five journeymen in a craft or trade classification. This article shall not apply to contracts of general contractors, or to contracts of specialty contractors not bidding for work through a general or prime contractor, involving less than thirty thousand dollars (\$30,000).

4. The contractor or any subcontractor, of any tier, who performs any of the work by employment of journeymen or apprentices in any apprenticeable craft or trade and who is not contributing to a fund or funds to administer and conduct the apprenticeship program in any such craft or trade in the area of the site of the work, to which fund or funds other contractors in the area of the site of the work are contributing, shall contribute to the fund or funds in each craft or trade in which it employs journeymen or apprentices in the same amount or upon the same basis and in the same manner as the other contractors do, but where the trust fund administrators are unable to accept such funds, contractors not signatory to the trust agreement shall pay a like amount to the California Apprenticeship Council. The contractors shall provide proof of such contributions when requested, including checks, check stubs, receipts, or other records required to prove that all required payments were made.
5. In the event the contractor willfully fails to comply with the provisions of California Labor Code §1777.5, and pursuant to California Labor Code §1777.7, the contractor shall: (i) be denied the right to bid on any public works contract for a period of one (1) year from the date the determination of non-compliance is made by the administrator of apprenticeship; and (ii) forfeit, as a civil penalty, one hundred dollars (\$100.00) and up to three hundred dollars (\$300.00) for each calendar day of noncompliance. The District shall withhold such amount from the contract price then due or to become due upon request of the Division of Apprenticeship Standards.

END OF SECTION 01300

SECTION 01305

DELAY AND EXTENSIONS TO THE WORK

PART 1 – GENERAL

1.1 RELATED DOCUMENTS

- A. All Contract Documents shall be reviewed for applicable provisions related to the provisions in this document, and provisions in the General Conditions and other Division 1 Specification Sections shall apply to this Section without limitation.

1.2 RELATED REQUIREMENTS SPECIFIED IN OTHER SECTIONS

- A. Section 01010 – “Summary of Work”
- B. Section 01310 – “Construction Scheduling”
- C. Section 01311 – “Project Management and Coordination”
- D. Divisions 2 through 33 Sections for Delay and Extensions to the Work requirements for the work in those Sections.

1.3 SUMMARY

- A. This Section includes administrative and procedural requirements for evaluation of excusable delays including delays due to abnormal or adverse weather conditions.

1.4 DELAYS AND EXTENSIONS TO THE WORK

- A. Contractor must complete all Work within the time specified in these Contract Documents. The Contractor will be granted an extension of time and will not be assessed liquidated damages or the cost of engineering and inspection for any delay in substantially completing the Work (or parts thereof) beyond the time set elsewhere in the Contract Documents, provided that such delay was caused by unforeseeable causes beyond the control and without the fault or negligence of the Contractor. Examples of such causes include fire, floods, abnormal weather (as described below), and earthquakes, embargoes, changes made pursuant to the provisions of “Changes in work” elsewhere in the Contract Documents or acts or neglect of the District not contemplated by the Contract Documents. In all cases, any extension of time is conditioned on the following:
 - 1. That the cause is not due to the fault or negligence of the Contractor, and the Contractor has taken reasonable precautions to prevent the delays and minimize the effects thereof; and
 - 2. That the Contractor notifies the District, Architect, Project Manager, and project Inspector in writing within five (5) days from the beginning of such delay, specifying the nature of the delay and the measures that have been or will be taken to prevent or minimize the delay. Failure to submit written notice within this time period shall constitute an absolute waiver of any claim for a time extension.
- B. No extension of time will be granted for a delay caused by a shortage of materials, unless the Contractor furnishes to the District documentary proof that he has diligently made every effort to obtain such materials from all known sources within reasonable distance of the work and further proof, in the form of schedule data as required in Section 01310 that the inability to obtain such materials as originally planned did in fact cause a delay in final completion of the Work which

could not be compensated for by revising the sequence of the Contractor's operations. Only the physical shortage of material will be considered as a cause for extension of time, and no consideration will be given to any claim that material could not be obtained at a reasonable, practical or economical cost or price, unless it is shown to satisfaction of the District that such material could have been obtained only at exorbitant prices, taking into account the quantities involved and the usual practices in obtaining such quantities.

- C. The term "shortage of materials," as used in this section, shall apply only to materials, articles, parts or equipment which are standard items and shall not apply to materials, parts, articles or equipment which are processed, made, constructed, fabricated or manufactured to meet the specific requirements of the Contract Documents.
- D. No extensions of time will be granted for delay that have no measurable impact on the completion of the Work (or parts thereof) under the Contract Documents. When extensions of time are granted, they will be limited to the period equivalent to the actual number of days lost on the critical path or controlling operations of the current approved Construction Schedule, taking into account the extent to which that delay could be decreased by reasonable mitigation measures by the Contractor. All requests for extensions of time must be supported with a critical path analysis showing the critical path and impacts to it. Contractor's failure to submit this analysis will be sufficient cause for denial of any request for a time extension.
- E. Within a reasonable period of time after the Contractor submits the notice of delay along with any other information required by this section, the District will determine whether an extension of time is justified and, if so, the number of days for the extension.

1.5 ABNORMAL OR ADVERSE WEATHER CONDITIONS

A. WEATHER DAYS

Delays due to Adverse Weather conditions will only be permitted in compliance with the provisions in the General Conditions and only if the number of days of Adverse Weather exceeds the following parameters and Contractor can verify that the excess days of Adverse Weather caused delays:

| | | | |
|----------|------|-----------|------|
| January | [11] | July | [0] |
| February | [10] | August | [0] |
| March | [10] | September | [1] |
| April | [6] | October | [4] |
| May | [3] | November | [7] |
| June | [1] | December | [10] |

- B. In addition, before a time extension may be granted for abnormal weather, Contractor must establish to District satisfaction that the rain either significantly impacted at least 75% of the planned work of the critical path operations for a particular day or prohibited at least five (5) hours of work on the critical path operations planned for that day.
- C. In the event that the project experiences favorable weather for a particular month (e.g. a number of actual rain days less than that allocated for allowable rain days per month), the cumulative float resulting from such favorable weather shall accrue to the project.
- D. Rain delay shall be only for the actual period of time established pursuant to full compliance with the above requirements.

- E. Contractor shall take reasonable steps to mitigate potential weather delays, such as dewatering the Site, providing access roads that are stable under abnormal or adverse weather conditions, and covering work and material that could be affected adversely by weather. Failure to do so shall be cause for the District to not grant a time extension due to abnormal or adverse weather, where Contractor could have avoided or mitigated the potential delay by exercising reasonable care.
- F. Abnormal weather may be a valid basis for a time extension under the Contract. The term “abnormal weather” is defined as the occurrence rain conditions that exceed the criteria set forth that cause impact to Contractor’s operations.
- G. Contractor shall employ reasonable methods to mitigate the impact of abnormal weather (i.e. dewatering, protection of site, etc.) The occurrence of rain during non-work hours or having minimal impact to work on the controlling operation shall not constitute a day of abnormal weather.

1.6 ENTITLEMENT TO CLAIM FOR DELAY AND EXTENSIONS TO THE WORK

- A. Any Contractor claim for damages or additional compensation based on delay shall be limited to only those circumstances where the Contractor has fulfilled at least one of the following three (3) requirements:
 - 1. Contractor has established its entitlement to a time extension pursuant to the provisions described above regarding delay and extensions to the Work.
 - 2. The delay was caused solely by the District by District’s issuance of changes made pursuant to the provisions of “Changes in Work” elsewhere in these General Conditions or by or acts of neglect of the district.
 - 3. The delay was unreasonable under the circumstances and not within the contemplation of the parties and/or the Contract Documents.
- B. It is expressly understood and agreed that delays caused by the District will be non-compensable when there are concurrent delays caused by the Contractor. Also, Contractor shall have no entitlement to additional compensation for any delay where there have been concurrent delays caused by non-compensable delays, including, but not limited to, fire, floods, tidal waves, earthquakes, epidemics, quarantine restrictions, strikes, labor disputes and freight embargoes weather days.
- C. In the event that the Contractor submits a claim for additional costs associated with overhead, the Contractor shall, within 60 calendar days of the District’s written request, submit to the District an audit examination and report performed by an independent Certified Public Accountant certifying the Contractor’s actual unanticipated overhead costs. The independent Certified Public Accountant’s audit examination shall be performed in conformance with the requirements of the American Institute of Certified Public Accountants Attestation Standards. The audit examination and report shall depict the Contractor’s project and company-wide financial records and shall specify the actual overall average daily rates for both field and home office overhead for the entire duration of the project, and whether the costs have been properly allocated. The rates of field and home office overhead shall exclude all unallowable costs as determined in the Federal Acquisition Regulations, 48 CFR, Chapter 1, Part 31. The audit examination shall determine if the rates of field and home office overhead;
 - 1. Are allowable in conformance with the requirements of the Federal Acquisition Regulations, 48 CFR, Chapter 1, Part 31;

2. Are adequately supported by reliable documentation; and
 3. Related solely to the project under examination.
- D. Upon the District's written request, the Contractor shall make its financial records available for audit by the District for the purpose of verifying the actual rate of overhead specified in the audit submitted by the Contractor. The overhead specified in the audit, submitted by the Contractor, will be subject to review and approval by the District.

PART 2 – PRODUCT (Not Used)

PART 3 – EXECUTION (Not Used)

END OF SECTION 01305

SECTION 01310

CONSTRUCTION SCHEDULING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. All Contract Documents shall be reviewed for applicable provisions related to the provisions in this document, and provisions in the General Conditions and other Division 1 Specification Sections shall apply to this Section without limitation.

1.2 RELATED REQUIREMENTS SPECIFIED IN OTHER SECTIONS

- A. Section 01010 – “Summary of Work”
- B. Section 01290 – “Payment Procedure”
- C. Section 01312 – “Project Meetings”
- D. Section 01330 – “Submittal Procedures”
- E. Section 01610 – “Basic Product Requirements”
- F. Section 01770 – “Contract Closeout Procedures”
- G. Divisions 2 through 33 Sections for Construction Scheduling requirements for the work in those Sections.

1.3 SUMMARY

- A. This Section describes the requirements for Project construction schedules and reports.
- B. Development of schedules, cost loading of the schedule, and schedule updates, monthly payment requests, and project status reporting requirements of the Contract shall employ computerized Critical Path Method (CPM) scheduling utilizing Primavera P6.
- C. All CPM schedules shall be cost loaded based on the Master Schedule of Values, as approved by District.
- D. **Contractor shall provide one (1) Primavera P6 licenses to be used by the on-site District Representative for the duration of the project.**

1.4 FAILURE TO MEET SCHEDULING REQUIREMENTS

- A. Failure of the Contractor to provide proper schedules as required by this Section is a material breach of the contract and grounds for termination pursuant to the General Conditions. The District, at its sole discretion, may choose, instead, to withhold, in whole or in part, any progress payments or retention amounts otherwise payable to the Contractor.

1.5 SCHEDULER’S QUALIFICATIONS

- A. Contractor shall utilize experienced scheduling personnel qualified to use Primavera P6 Enterprise, current version scheduling software, or alternate software if approved by the District. Experience level required is set forth below. Contractor may employ such personnel directly or may employ a consultant for this purpose.

- B. Within five (5) days after bid opening, the apparent successful low bidder shall provide to District and Architect a written verification either that Contractor has the required personnel under its employ or that Contractor will employ a CPM scheduling consultant. This written verification shall include:
 - 1. Name of the individual who will perform all required CPM scheduling tasks during the entire Project.
 - 2. Resume of the individual, to include description of similar, recent construction projects on which the individual has successfully created and updated computerized CPM schedules. Experience must include at least two projects of similar nature, scope and value not less than three-fourths the Contract Price of this Project.
 - 3. Contact persons for all referenced projects with current telephone and address information.
- C. District reserves right to accept or reject Contractor's scheduler, and right to reject them at any time.
- D. District also reserves right to refuse replacement of Contractor's scheduler if it believes such replacement will negatively affect the Project.

1.6 CONSTRUCTION SCHEDULES, GENERAL

- A. Upon Notice to Proceed, Contractor shall immediately commence development of initial and BASELINE CPM Schedules. Reference to Project Schedule shall pertain to the initial CPM schedule, BASELINE CPM schedule or an update of the BASELINE CPM Schedule as appropriate during the time period it is in affect during construction. When reference is made in the Contract Documents to a BASELINE CPM SCHEDULE, shall have the same meaning as an update to the BASELINE CPM SCHEDULE.
- B. All construction schedules shall be based on and incorporate all milestones and completion dates specified in the Contract Documents. See also Sections 01010, Summary of Work. Show in the schedule the sequence in which the Contractor proposes to perform the Work and dates on which the Contractor contemplates starting and completing all schedule activities. The scheduling of the entire project is required. Contractor management personnel shall actively participate in its development. Subcontractors and suppliers working on the Project shall also contribute in developing and maintaining an accurate Project Schedule. Provide a Project Schedule that is a forward planning as well as a project monitoring tool.
- C. Use the approved Project Schedule to measure the progress of the Work and to aid in evaluating time extensions.
- D. Make the master BASELINE CPM SCHEDULE cost loaded and resource loaded.
- E. The schedule will provide the basis for all progress payments. If the Contractor fails to submit any schedule within the time prescribed, the District may withhold approval of progress payments until the Contractor submits the required schedule.
- F. Provide a Schedule Status Report on at least a monthly basis. If, in the opinion of the District, the Contractor falls behind the approved schedule, the Contractor shall take all steps necessary to improve its progress including those that may be required by the Architect or Project Manager, without additional cost to the District. In this circumstance, the District may require the Contractor to increase the number of shifts, overtime operations, days of work, and/or the amount of construction plant, and to submit for approval any supplementary schedule or

- schedules as the District deems necessary to demonstrate how the approved rate of progress will be regained.
- G. Failure of the Contractor to comply with the requirements of the District shall be grounds for a determination that the Contractor is not prosecuting the Work with sufficient diligence to ensure completion within the time specified in the Contract Documents. Upon making this determination, the District may terminate the Contractor's right to proceed with the Work, or any separable part of it, in accordance with the default terms of the Contract.
- H. NOT USED
- I. No Project Schedule shall exceed time limits set forth in the Contract Documents. Failure to submit a schedule, or submittal of a Project Schedule which shows completion of the Work beyond the specified completion date shall be deemed a material breach by the Contractor.
- J. All Project Schedules must indicate the beginning and completion of all Work and shall use the "Critical path Method" for the value reporting, planning and scheduling of all Work required under the Contract Documents.
- K. Overall time of completion between the Notice to Proceed and Substantial Completion to Final Completion shown on any Project Schedule shall adhere to completion times as stated in the Construction Agreement, unless an earlier (advanced) time of completion is requested by Contractor and agreed to by District. Any such agreement shall be formalized by a Change Order.
1. District is not required to accept an advanced schedule, i.e., one that shows early completion dates for the Work or any Phase of the Work.
 2. In the event agreement is reached between Contractor and District on an advanced schedule, Contractor shall not be entitled to extra compensation if Contractor completes its Work, for whatever reason (excepting approved changes with added time components) beyond completion date(s) shown in any approved advanced schedule but within the originally specified completion dates.
 3. Contractor shall not submit a schedule showing early completion without indicating float time through the date set for Project completion by District.
 4. Contractor's schedule shall account for all days past early completion as float which belongs to the Project. Usage of float shall not entitle Contractor to any delay claim or damages due to delay.
- L. Float Ownership: Neither the District nor the Contractor owns float. The Project owns the float. As such, liability for delay of the Substantial Completion Date(s) rests with the party whose actions, last in time, actually cause delay to the Substantial Completion Date(s).
1. For example, if Party A uses some, but not all of the float and Party B later uses remainder of the float as well as additional time beyond the float, Party B shall be liable for the time that represents a delay to the Substantial Completion Date.
 2. Party A would not be responsible for the time since it did not consume the entire float and additional float remained; therefore, the Substantial Completion Date was unaffected.
- M. The District may disapprove of any construction schedule or require modification to it if, in the opinion of the Architect or District, adherence to the construction schedule will not cause the Work to be completed in accordance with the Agreement.

- N. Use Primavera P6, compatible with Windows operating system for creation and updates of all required construction schedules. Contractor shall provide digital schedule P6 XER files to District on CD at times requested by District.
- O. Transmit construction schedule files under form approved by District.

1.7 SCHEDULE FORMAT AND LEVEL OF DETAIL

- A. All Work activity durations shall be in Workdays.
- B. The Schedule shall be the basis for evaluating job progress, payment requests, and time extension requests associated with the changes.
- C. Responsibility for developing all Schedules and monitoring actual progress rests with Contractor. Schedules shall comply with following requirements:
 - 1. All Contractor, Subcontractor and assigned Contractor work shall be shown in a logical work sequence that demonstrates a coordinated plan of work for all contractors. The intent is to provide a common basis of acceptance, understanding and communication, as well as interface with other contractors.
 - 2. Activities related to the delivery of Contractor and District-furnished equipment to be Contractor installed per Contract shall be shown.
 - a. District-furnished District Installed materials and equipment, if any, shall be identified as separate activities.
 - 3. Show District and other agency activities that could impact progress. These activities include, but are not limited to: approvals, submittal reviews, environmental permit approvals by State regulators, inspections, utility tie-in, Owner Furnished Equipment (OFE) and Notice to Proceed (NTP) for Phasing requirements.
 - 4. All activities shall be identified through codes or other identification to indicate the phase of Work and Contractor/Subcontractor responsibility to which they pertain.
 - 5. Show the critical path in red. For each activity, show early start, late start, early finish, late finish, durations measured in days, float, predecessor, and successor activities, planned workday/week for the activity, and scheduled/actual progress payments.
 - 6. Reasonable activity durations are those that allow the progress of ongoing activities to be accurately determined between update periods. Less than 2 percent of all non-procurement activities shall have durations greater than 20 workdays or 30 calendar days unless otherwise approved by District and Architect. Procurement activities are defined herein.
 - a. Procurement Activities
 - i) The schedule must include activities associated with the submittal, approval, procurement, fabrication and delivery of long lead materials, equipment, fabricated assemblies, and supplies. Long lead procurement activities are those with an anticipated procurement sequence of over 45 calendar days. A typical procurement sequence includes the string of activities: submit, approve, procure, fabricate, and deliver. Procurement of all contracts required material and equipment shall be identified as a separate activity.
 - ii) These activities shall not be cost loaded unless previously approved, at the District's sole discretion, by the District.

- b. Include time for fabrication and delivery of manufactured products for the Work.
 - c. Show dependencies between procurement and related construction activity.
7. Activity durations shall be total number of actual work days required to perform that activity.
8. Provide activity coding to enable sorting by responsibility, location, phase of Work, Work Restriction, and CSI division. Assign activity codes to any activity or sequence of activities added to the Project Schedule as a result of a Change Orders, when approved by the District with a Change Order code. Integrate the code values to the Contractor's numbering system. An activity shall not have more than one Change Order code.
9. The start and completion dates of all items of Work, Work Phases, their major components, and milestone completion dates shall be included.
10. Mandatory Tasks. The following tasks must be included and properly scheduled. Items noted with "SOV item upon Approval only" shall include an amount in the cost loaded schedule and in the SOV:
- a. Submission of mechanical/electrical/information systems (BIM) layout drawings. Submission, review and acceptance of DSA deferred approval packages. (SOV item upon Approval only)
 - b. Submission and approval of O & M manuals. (SOV item upon Approval only)
 - c. Submission and approval of as-built drawings. (SOV item upon Approval only)
 - d. Submission and approval of installed equipment lists. (SOV item upon Approval only)
 - e. Submission and approval of testing and air balance (TAB) if applicable. (SOV item upon Approval only)
 - f. Submission of TAB specialist design review report if applicable.
 - g. Submission and approval of fire protection specialist if applicable.
 - h. Submission and approval of testing and balancing of HVAC plus commissioning plans and data if applicable.
 - i. Air and water balancing if applicable.
 - j. HVAC commissioning if applicable.
 - k. Controls testing plan submission if applicable.
 - l. Controls testing if applicable.
 - m. Performance Verification testing if applicable. (SOV item upon Approval only)
 - n. Other systems testing, if required.
 - o. Contractor's pre-final inspection.
 - p. Correction of punch list from Contractor's pre-final inspection. (SOV item upon Approval only)
 - q. District's pre-final inspection.
 - r. Correction of punch list from District's pre-final inspection. (SOV item upon Approval only)
 - s. Final inspection.
 - t. Allowances for normal weather and Campus non-work days

11. Dependencies (or relationships) between activities shall be shown.

12. Complete all activity descriptions, including what Work is to be accomplished, where, and when.
13. Include anticipated non-Work days, such as weekends, holidays, and/or other observances in the Schedule.
14. Provide activity coding to enable sorting by responsibility, location, phase of Work, Work Restriction, and CSI division. Assign activity codes to any activity or sequence of activities added to the Project Schedule as a result of a Change Orders, when approved by the District with a Change Order code. Integrate the code values to the Contractor's numbering system. An activity shall not have more than one Change Order code.
15. The start and completion dates of all items of Work, Work Phases, their major components, and milestone completion dates shall be included.
16. Contractor's Shop Drawing and Samples Submittal Schedule: As part of the BASELINE CPM SCHEDULE submittal, the Contractor shall prepare a separate schedule for review and approval by the Architect and the District, detailing the processing and approval of submittals and shop drawings for all Contract-required material and equipment. This schedule shall be extracted from the BASELINE CPM SCHEDULE. Activities that are dependent on submittal acceptance or material delivery shall not be scheduled to start earlier than expected acceptance or delivery dates.
 - a. Include time for submittals, resubmittals, and reviews by District and DSA. Coordinate with accepted Project Schedule for submission of shop drawings, samples and other submittals.
 - b. Contractor shall be responsible for all impacts resulting from resubmittal of either shop drawings or any other required submittal.
17. Complete all activity descriptions, including what Work is to be accomplished, where, and when.
18. The costs associated with each Work activity shall be the total of labor, material, equipment, including overhead and profit of Contractor. The sum of the costs for all activities shall equal the total Contract value.
19. Include an identify code for each activity corresponding to either the Contractor or Subcontractor responsible for performing the Work.
20. Identify the Work activities that constitute the critical path. No more than twenty-five (25%) of the activities shall be critical or near critical. Near critical is defined as float in the range of one (1) to seven (7) calendar days.
21. Include at least twenty (20) workdays for the combined durations of all activities related to developing punch list(s), completion of punch list items and final clean-up for the Work or any designated portion thereof. No other activities shall be scheduled during this period. Refer to Section 01770, Contract Closeout Procedures for specific activities required.
22. Show detailed Subcontractor Work activities. In addition, furnish copies of Subcontractor schedules upon which BASELINE CPM SCHEDULE was built.
 - a. Also furnish for each Subcontractor, as determined by District, submitted on Subcontractor letterhead a statement certifying that Subcontractor concurs with Contractor's BASELINE CPM SCHEDULE, and that Subcontractor's related schedules have been incorporated.

- b. Subcontractor schedules shall be independently derived and not a copy or subset of the Contractor's BASELINE CPM SCHEDULE.
 - c. Furnish schedule for Contractor/Subcontractor CPM schedule meetings which shall be held prior to submission of BASELINE CPM SCHEDULE to District. District shall be permitted to attend scheduled meetings as an observer.
- 23. Submit a list of anticipated non-Work days, such as weekends, holidays, and/or other observances.
- D. Seasonal weather conditions (which do not constitute a delay as defined herein) shall be considered in the planning and scheduling of all work influenced by high or low ambient temperatures or presence of high moisture for the completion of the Work within the allotted Contract Time. See Section 01305 (Delay and Extensions to the Work.)
- E. Failure by Contractor to include any element of Work required for performance of the Work on any Project schedule shall not excuse Contractor from completing all Work required within the Contract Time.
- F. Contractor shall schedule all deferred approval items and shop drawings in its schedules if appropriate. If Contractor fails to include deferred approval items and shop drawings in its schedule which results in a critical path delay, then Contractor shall be subject to the assessment of liquidated damages.
- G. CPM Logic Requirements
 - 1. The Project Schedule interval shall extend from NTP date to the required Contract Substantial and Final Completion dates. The Contract completion activity (End Project) shall finish based on the required contract duration in the Contract Documents, as adjusted for any approved contract time extensions. The first scheduled work period shall be the day after NTP is acknowledged by the Contractor. Schedule activities on a calendar to which the activity logically belongs. Activities may be assigned to a 7-day calendar when the contract assigns calendar day durations for the activity such as a District acceptance activity if the Contract Documents specify Calendar Days. If the Contractor intends to perform physical work less than seven days per week, schedule the associated activities on a calendar with non-work periods identified including weekends and holidays. Assign the Category of Work Code – Weather Sensitive Installation to those activities that are weather sensitive. Original durations must account for anticipated normal adverse weather. The District will interpret all work periods not identified as non-work periods on each calendar as meaning the Contractor intends to perform work during those periods.
 - 2. The Project Schedule shall start no earlier than the date on which the NTP was acknowledged. Include as the first activity in the Project Schedule an activity called "Start Project"(or NTP). The "Start Project" activity shall have an "ES" constraint date equal to the date that the NTP was acknowledged, and a zero-day duration
 - 3. Project Schedule Constraints and Open-Ended Logic Constrain completion of the last activity in the Project schedule by the Contract Final Completion date. Schedule calculations shall result in a negative float when the calculated early finish date of the last activity is later than the Contract Final Completion date. Include as the last activity in the Project Schedule an activity called "End Project". The "End Project" activity shall have an "LF" constraint date equal to the Contract Final Completion date for the Project, with a zero-day duration, or shall achieve the same result by using the "project must finish on" date in the scheduling software. The Project Schedule shall have no constrained dates other

than those specified in the Contract. The use of artificial float constraints such as "zero fee float" or "zero total float" are prohibited unless the Contractor specifically requests preapproval and receives District approval of this constraint on an activity specific level. There shall only be 2 open ended activities: Start Project (or NTP) with no predecessor logic and End Project with no successor logic.

4. In the event the Initial CPM schedule or BASELINE CPM SCHEDULE calculates an early completion date of the last activity prior to the Contract Final Completion date, the Contractor shall identify those activities that it intends to accelerate and/or those activities that are scheduled in parallel to support the Contractor's "early" completion. The last activity shall have a late finish constraint equal to the Contract Final Completion date and the schedule will calculate positive float. The District will not approve an early completion Project Schedule with zero float on the longest path. The District is under no obligation to accelerate activities for which it is responsible to support a proposed early contract completion.
5. Interim Completion Dates. Constrain contractually specified interim completion dates to show negative float when the calculated early finish date of the last activity in that phase is later than the specified interim completion date.
6. Start Phase. Include as the first activity for a project phase an activity called "Start Phase X" where "X" refers to the phase of work. The "Start Phase X" activity shall have an "ES" constraint date equal to the date on which the NTP was acknowledged, and zero-day duration.
7. End Phase. Include as the last activity for a project phase an activity called "End Phase X" where "X" refers to the phase of work. The "End Phase X" activity shall have an "LF" Constraint date equal to the specified completion date for that phase and a zero-day duration.
8. Phase "X" Hammock. Include a hammock type activity for each project phase called "Phase X" where "X" refers to the phase of work. The "Phase X" hammock activity shall be logically tied to the earliest and latest activities in the phase.
9. Default Progress Data Disallowed. Do not automatically update Actual Start and Finish dates with default mechanisms that may be included in the scheduling software. Activity Actual Start (AS) and Actual Finish (AF) dates assigned during the updating process shall match those dates provided from Daily Reports. Failure of the Contractor to document the AS and AF dates on the Daily Report for every in-progress or completed activity, and failure to ensure that the data contained on the Daily Reports is the sole basis for schedule updating shall result in the disapproval of the Contractor's updated BASELINE CPM SCHEDULE and the inability of the District to evaluate Contractor progress for payment purposes. Updating of the percent complete and the remaining duration of any activity shall be independent functions. Disable program features which calculate one of these parameters from the other.
10. Other Logic Requirements:
 - a. Activities that have progressed before all preceding logic has been satisfied (Out-of-Sequence Progress) will be allowed only on a case-by-case basis subject to approval by the District. Propose logic corrections to eliminate all out of sequence progress or justify not changing the sequencing for approval prior to submitting an updated

Project Schedule. Correct out of sequence progress that continues for more than two update cycles by logic revision, as approved by the District.

- b. Lag durations contained in the project schedule shall not have a negative value. Do not use Start to Finish (SF) relationships.
- c. Project Schedule calculations shall retain the logic between predecessors and successors even when the successor activity starts and the predecessor activity has not finished. Software features that in effect sever the tie between predecessor and successor activities when the successor has started and the predecessor logic is not satisfied ("progress override") will not be allowed.

- 11. Milestones. The Project Schedules must include milestone activities for each significant project event including but not limited to: All phases, foundation/substructure construction complete; superstructure construction complete; building dry-in or enclosure complete to allow the initiation of finish activities; permanent power complete; and building systems commissioning complete (for each applicable phase of Work).

1.8 INITIAL CRITICAL PATH METHOD (CPM) SCHEDULE

- A. Within ten (10) calendar days following Notice to Proceed, Contractor shall submit an Initial CPM Schedule along with an Initial Schedule of Values for District's approval.
- B. Within ten (10) calendar days following Notice to Proceed, Contractor shall submit a cost curve based on the Initial CPM Schedule and the Initial Schedule of Values, showing the cumulative estimated payments for all of the Work for the entire period of performance.
- C. District and Contractor shall meet to review and discuss the Initial CPM Schedule within five (5) working days after it has been submitted to District.
 - 1. District's review and comment on the Initial CPM schedule shall be limited to conformance with the Contract Documents (with Work phasing, sequencing, coordination, milestone requirements, and specified formatting and information requirements) and accepted CPM principals.
 - 2. Contractor shall make corrections to the Initial CPM Schedule as necessary to comply with Contract requirements and shall adjust the schedule to incorporate any missing information as requested by District. Contractor shall resubmit the Initial CPM Schedule if requested by District.
- D. Initial CPM Schedule must indicate detailed plan for the Work to be completed during the first sixty (60) days of the Contract, including details of planned mobilization of plant and equipment, the sequence of early operations, and the procurement of materials and equipment. Show Work beyond ninety (90) calendar days in summary form through the Contract Substantial and Final Completion dates.
- E. Initial CPM Schedule shall be time-scaled.
- F. The accepted Schedule of Values will be used as basis for initial payments until acceptance of the BASELINE CPM SCHEDULE by District. Use of the Initial Schedule of Values for progress payments shall not exceed sixty (60) calendar days.
- H. If, during the first thirty (30) days after Notice-to-Proceed, the Contractor is of the opinion that any of the Work included on its Initial CPM Schedule has been impacted, the Contractor shall submit to District a written Time Impact Evaluation (TIE) in accordance with the requirement of this Section. The TIE shall be based on the most current update of the initial CPM Schedule.

1.9 BASELINE CPM SCHEDULE

- A. Within fifteen (15) calendar days from approval of the Initial CPM Schedule, Contractor shall submit on P6 XER files a detailed BASELINE CPM SCHEDULE, including cost loading, presenting an orderly and realistic plan for completion of the Work, in conformance with requirements specified herein.
- B. Failure of the BASELINE CPM SCHEDULE to include any element of the Work or any inaccuracy in the BASELINE CPM SCHEDULE will not relieve Contractor from responsibility for accomplishing the Work in accordance with the Contract.
- C. District's acceptance of the BASELINE CPM SCHEDULE shall be for its use in monitoring and evaluating job progress, payment requests, and time extension requests, and shall not, in any manner, impose a duty of care upon District, or act to relieve Contractor of its responsibility for means and methods of construction.
- D. Contractor shall, within 10 calendar days from the Submittal of the BASELINE CPM SCHEDULE, shall meet with District to review the BASELINE CPM SCHEDULE submittal.
 1. Contractor shall have its Construction Manager, Project Superintendent, Project Scheduler, and key Subcontractor representatives, as required by District, in attendance. The meeting will take place over a continuous one-day period.
 2. District's review will be limited to submittal's conformance to Contract requirements. Review may also include:
 - a. Critical path method principles and tenets utilized
 - b. Clarifications of Contract Requirements
 - c. Directions to include activities and information missing from the submittal
 - d. Requests to Contractor to clarify its schedule
 3. Within five (5) days of the Schedule Review Meeting, Contractor shall respond in writing to all questions and comments expressed by District at the Meeting.

1.10 ADJUSTMENTS TO THE BASELINE CPM SCHEDULE

- A. Contractor shall revise the BASELINE CPM SCHEDULE submittal to address all review comments from the review meeting described above, and resubmit the BASELINE CPM SCHEDULE for District review and approval.
 1. District, within ten (10) days from date that Contractor submitted the revised BASELINE CPM SCHEDULE, will either:
 - a. Accept the BASELINE CPM SCHEDULE as submitted, or
 - b. Advise Contractor in writing to review any part or parts of the BASELINE CPM SCHEDULE which either do not meet Contract requirements, or are unsatisfactory for District to purposes of monitoring Project progress, resources, and status, or to evaluate monthly payment request by Contractor.
 2. District may accept the BASELINE CPM SCHEDULE with conditions that the first monthly update of the BASELINE CPM SCHEDULE will be revised to correct identified deficiencies.
 3. When the BASELINE CPM Schedule is accepted, it shall be considered the BASELINE CPM SCHEDULE, which will then be immediately updated to reflect the current status of the work.
 4. District reserves right to require Contractor to adjust, add to, or clarify any portion of BASELINE CPM Schedule which may later be discovered to be insufficient for monitoring

the Work or approving payment requests. No additional compensation will be due to the Contractor for any such adjustments, additions, or clarifications.

- B. Acceptance of Contractor's BASELINE CPM SCHEDULE by District will be based upon schedule's compliance with Contract requirements and accepted CPM principles.
 - 1. In assigning activity durations and proposing Work sequences, Contractor agrees to utilize sufficient and necessary management and other resources to perform work in accordance with the approved BASELINE CPM SCHEDULE.
 - 2. Upon submittal and District approval of any BASELINE CPM SCHEDULE Update, such updated schedule shall then be considered the "current" BASELINE CPM SCHEDULE.
 - 3. Submission of Contractor's BASELINE CPM SCHEDULE to District shall not relieve Contractor of total responsibility for scheduling, sequencing, and executing the Work to comply with requirements of Contract Documents, including recovery from adverse effects such as delays resulting from ill-timed work.
- C. Submittal of the BASELINE CPM SCHEDULE, and subsequent Updates on P6 XER files shall be understood to be the Contractor's representation that the BASELINE CPM SCHEDULE meets all requirements of Contract Documents, and that the Work shall be executed in the sequence and within the time indicated on the schedule.
- D. Contractor shall distribute the BASELINE CPM SCHEDULE to Subcontractors for review and written acceptance, which shall be noted on Subcontractors' letterhead to Contractor and transmitted to District for the Project record.

1.11 BASELINE CPM SCHEDULE MONTHLY UPDATES

- A. Following acceptance of Contractor's BASELINE CPM SCHEDULE, Contractor shall monitor the progress of Work and adjust the BASELINE CPM SCHEDULE each month to reflect actual progress, and to illustrate any anticipated changes to planned activities.
 - 1. Each BASELINE CPM SCHEDULE Update submitted by Contractor on P6 XER files shall be complete, including all information requested for the original BASELINE CPM SCHEDULE submittal.
 - 2. Each BASELINE CPM SCHEDULE Update submitted by Contractor shall continue to show all work activities including those already completed. Any completed activities shall accurately reflect "as built" information by indicating when Work activities were actually started and completed. Contractor shall warrant the accuracy of as-built information shown on each BASELINE CPM SCHEDULE Update.
- B. A meeting will be held within the first week of each month with the District and Project Inspector to review the BASELINE CPM SCHEDULE Update submittal and progress payment application for the previous month. Conduct periodic schedule update meetings for the purposes of reviewing the Contractor's proposed out of sequence corrections, determining causes for delay, correcting logic, maintaining schedule accuracy and determining earned value. Provide a computer with the scheduling software loaded and a projector during the meeting which allows all meeting participants to view the proposed BASELINE CPM SCHEDULE Update during the meeting. The meeting and resultant approvable BASELINE CPM SCHEDULE Update shall be a condition precedent to a formal submission of the BASELINE CPM SCHEDULE Update and to the submission of an invoice for payment. The meeting will be a working interactive exchange which will allow the District and the Contractor the opportunity to review the BASELINE CPM SCHEDULE Update on a real time and interactive basis. The Contractor's authorized scheduling

representative will organize, sort, filter and schedule the update as requested by the District. A rough draft of the proposed activity logic corrections and narrative report shall be provided to the District 48 hours in advance of the meeting.

1. At this monthly meeting, a minimum requirement for review shall be included, but not limited to the following items:
 - a. Percent complete of each Work activity
 - b. Time impact evaluations for Change Orders and Time Extension Requests, if any
 - c. Actual and anticipated Work activity sequence changes
 - d. Anticipated Work activity duration changes
 - e. Actual and anticipated Contractor delays
2. These meetings are a critical component of overall monthly BASELINE CPM SCHEDULE Update submittal and Contractor shall ensure appropriate personnel attend. At a minimum, Contractor's Project Engineer, General Superintendent, and Scheduler shall attend these meetings.
3. Status of Activities. Update information, including Actual Start Dates (AS), Actual Finish Dates (AF), Remaining Durations (RD), and Percent Complete shall be subject to the approval of the District at to the meeting. As a minimum, address the following items on an activity by activity basis during each progress meeting.
 - a. Start and Finish Dates. Accurately show the status of the AS and/or AF dates for each activity currently in-progress or completed since the last update. The District may allow an AF date to be assigned with the percent complete less than 100% to account for the value of work remaining but not restraining successor activities. Only assign AS dates when actual progress occurs on an activity.
 - b. Remaining Duration. Update the estimated RD for all incomplete activities independent of Percent Complete. Remaining Durations may exceed the activity original duration (OD) or may exceed the activity's prior update RD if the District considers the current OD or RD to be understated based on current progress, insufficient work crews actually manning the job, unrealistic OD or deficiencies that must be corrected that restrain successor activities.
 - c. Percent Complete. Update the percent complete for each activity started, based on the realistic assessment of earned value. Activities which are complete but for remaining minor punch list work, and which do not restrain the initiation of successor activities, may be declared 100 percent complete. To allow for proper schedule management, cost load the correction of punch list from District pre-final inspection activity(ies) for each phase not less than 1 percent of the total value of that phase, which activity(ies) may be declared 100 percent complete upon completion and correction of all punch list work identified during District's pre-final inspection(s).
 - d. Logic Changes. Specifically identify and discuss all logic changes pertaining to NTP on change orders, change orders to be incorporated into the BASELINE CPM SCHEDULE Update, Contractor proposed changes in work sequence, corrections to schedule logic for out-of-sequence progress, and other changes that have been made pursuant to contract provisions. The District will only approve logic revisions for

the purpose of keeping the schedule valid in terms of its usefulness in calculating a realistic completion date, correcting erroneous logic ties, and accurately sequencing the work.

- e. Other Changes. Other changes required due to delays in completion of any activity or group of activities include: 1) delays beyond the Contractor's control, such as strikes and unusual weather. 2) delays encountered due to submittals, District activities, deliveries or work stoppages which make re-planning the work necessary.
 - f. Changes required to correct a BASELINE CPM SCHEDULE Update that does not represent the actual or planned prosecution and progress of the Work.
- C. Within five (5) working days after monthly schedule update meeting, Contractor shall submit the updated BASELINE CPM SCHEDULE Update.
- D. Within five (5) workdays of receipt of above noted revised submittals, District will either accept or reject monthly BASELINE CPM SCHEDULE Update submittal.
- 1. If rejected, update shall be corrected and resubmitted by Contractor before the Application for Payment is submitted.
 - 2. District and Architect will not review Contractor's application for payment if the updated monthly BASELINE CPM SCHEDULE Update is not provided and accepted by District.
- E. Neither updating, changing or revising of any report, curve, schedule or narrative submitted by Contractor under this Contract, nor District's review or acceptance of any such report, curve, schedule or narrative, shall have the effect of amending or modifying in any way the Contract Substantial or Final Completion date or any phase completion dates, or of modifying or limiting in any way Contractor's obligations under this Contract.
- F. Updating the BASELINE CPM SCHEDULE to reflect actual progress shall not be considered revisions to the Project Schedule.
- G. To clarify any revisions to the BASELINE CPM SCHEDULE Update, the Contractor shall provide District with a written narrative explaining the reasons for each Work activity revision. For revisions affecting the sequence of work, the Contractor shall provide a schedule diagram which compares the original sequence to the revised sequence of work. The Contractor shall provide the written narrative and schedule diagram for revisions two (2) working days in advance of the monthly BASELINE CPM SCHEDULE Update meeting.
- H. Schedule revisions shall not be incorporated into any BASELINE CPM SCHEDULE Update until the revisions have been reviewed and approved by District. District may request further information and justification for BASELINE CPM SCHEDULE revisions. Contractor shall, within three (3) days of any such District request, provide District with a complete written narrative response.
- I. If the Contractor's revision is still not accepted by District, and the Contractor disagrees with District's position, the Contractor has three (3) work days from receipt of District's letter rejecting the revision to provide a written narrative providing full justification and explanation for the revision. The Contractor's failure to respond in writing within three (3) work days of District's written rejection of a schedule revision shall be contractually interpreted as acceptance of District's position, and the Contractor waives its rights to subsequently dispute or file a claim regarding District's position.

- J. At District's discretion, the Contractor may be required to provide subcontractor(s) certifications of Work activity performance regarding any proposed BASELINE CPM SCHEDULE revisions affecting said subcontractor(s).

1.12 WEEKLY LOOK AHEAD SCHEDULE

- A. At each Weekly Progress Meeting, the Contractor shall provide and present a time-scaled three (3) week schedule: one (1) week behind and two (2) week look ahead schedule that is based on and correlated by activity number in the current BASELINE CPM SCHEDULE Update. Provide a two week look ahead schedule in bar chart format, showing daily activities for that period.

1.13 OTHER SCHEDULE RELATED REPORTS

- A. Submit four (4) hard copies of the following reports with the Initial CPM Schedule, the Master CPM Schedule, and with each monthly update of the BASELINE CPM SCHEDULE:
1. Two (2) activity-listing reports: one report sorted by activity number and one report by total float. These reports shall also include each activity's early/late and actual start and finish dates, original and remaining duration, float, responsibility code and the logic relationship of activities.
 2. Schedule plots presenting time scaled network diagram showing activities and their relationships with the controlling operations or critical path clearly highlighted.
 3. Monthly status report, to include:
 - a. Status of major Project components (percent complete, amount of time ahead or behind schedule) and an explanation of how Project will be brought back on schedule if delays have occurred.
 - b. Progress made on critical activities indicated on Project Schedule.
 - c. Explanations for any lack of work on critical path activities planned to be performed during last month.
 - d. Explanations for any schedule changes, including changes to logic or to activity durations.
 - e. List of critical activities scheduled to be performed next month.
 - f. Status of major material, and equipment procurement.
 - g. Any delays encountered during reporting period.
 - h. Contractor may include any other information pertinent to status of Project. Contractor shall include additional status information requested by District at no additional cost.
 - i. Status reports, and the information contained therein, shall not be construed by the Contractor as claims, notice of claims, notice of delay, or requests for changes or compensation.
- B. Furnish DISTRICT with digital files of all reports and BASELINE CPM SCHEDULE Updates on labeled CD ROM

1.14 RECOVERY SCHEDULE

- A. If any BASELINE CPM SCHEDULE Update shows that the Contract Substantial Completion date is five (5) calendar days beyond the Contract Substantial Completion date, the Contractor shall submit to District proposed schedule revisions to recover the lost time within seven (7) calendar days. As part of this Recovery Schedule submittal, the Contractor shall provide a written narrative for each schedule revision made to recapture the lost time. If the revisions include sequence changes, the Contractor shall provide a schedule diagram comparing the original sequence to the revised sequence of work.
- B. Recovery Schedule revisions shall not be incorporated into any BASELINE CPM SCHEDULE Update until the revisions have been reviewed and approved by the District.
- C. If the Contractor's Recovery Schedule revisions are not accepted by District, District and the Contractor shall follow the procedures in paragraph 1.10 H through J, above.
- D. If requested by District, Contractor shall provide revised schedules within ten (10) days if, at any time, the District consider the completion date to be in jeopardy because of activities that are behind schedule. The additional schedule shall include a new arrow or precedence diagram and schedule reports conforming to the requirements herein, designed to show how the Contractor intends to accomplish the Work to meet the completion date.
- E. The Contractor shall modify any portions of the schedule that become infeasible because of "activities behind schedule" or for any other valid reason. An activity that cannot be completed by its original latest completion date shall be deemed to be behind schedule.

1.15 TIME IMPACTS EVALUATION (TIE) FOR CHANGE ORDERS AND OTHER POTENTIAL DELAYS

- A. When Contractor is directed to proceed with changed Work, which the Contractor considers have a time impact, the Contractor shall prepare and submit, within seven (7) calendar days from the direction to proceed, a Time Impact Evaluation (TIE) which includes both a written narrative and a schedule diagram depicting how the changed work affects other schedule activities. The schedule diagram shall show how the Contractor proposes to incorporate the changed Work in the schedule, and how it impacts the current BASELINE CPM SCHEDULE and critical path. The Contractor is responsible for requesting time extensions based on the TIEs impact on the critical path. The diagram must correspond to the main sequences of Work activities in the current BASELINE CPM SCHEDULE, to enable District to evaluate time impact of changed work to the scheduled critical path.
- B. Contractor shall be required to comply with the above requirements for all types of delays such as, but not limited to, Contractor/Subcontractor delays, adverse weather delays, strikes, procurement delays, fabrication delays, etc.
- C. Contractor shall be responsible for all costs associated with the preparation of Time Impact Evaluations, and the process of incorporating them into the current schedule update. The Contractor shall provide District with 3 copies of each TIE.
- D. Once agreement between District and Contractor has been reached on a TIE, the Contract time will be adjusted accordingly. If agreement is not reached on a TIE, the Contract time may be extended in an amount District allows, and the Contractor may submit a claim for additional time.

- E. If the Contractor does not submit a TIE within the required seven (7) calendar days for any issue, it is mutually agreed that the Contractor does not require a time extension for said issue.

1.16 TIME EXTENSIONS

- A. The Contractor is responsible for requesting time extensions for time impacts that, in the opinion of the Contractor, impact the critical path of the currently updated BASELINE CPM SCHEDULE.
- B. Contractor shall not be granted an extension of time for failure to obtain necessary approvals for deferral approvals due to failure to comply with laws, building codes, and other regulations (including Title 24 of the California Code of Regulations).
- C. No time extensions will be granted under this Contract for the cumulative effect of changes in the Work.
- D. District will not be obligated to consider any time extension request unless requirements of Contract Documents have been met.
- E. Failure of the Contractor to perform in accordance with the currently updated BASELINE CPM SCHEDULE Update shall not be excused because of submittal of a time extension request.
- F. Where an event for which District is responsible impacts the projected Contract Substantial Completion date of the Work, or any phase of the Work, the Contractor shall provide a written mitigation plan, including a schedule diagram, which explains how (e.g., increase crew size, overtime, etc.) the impact can be mitigated. The Contractor shall also include a detailed cost breakdown of the labor, equipment, and material the Contractor would expend to mitigate District caused time impact. The Contractor shall submit its mitigation plan to District within seven (7) calendar days from the date of discovery of said impact. The Contractor is responsible for the cost to prepare the mitigation plan.
- G. Contractor's failure to a request time extension, provide a TIE, or provide the required mitigation plan will result in Contractor waiving its right to both a time extension and to recovering any costs to mitigate the delay.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 01310

SECTION 01311

PROJECT MANAGEMENT AND COORDINATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. All Contract Documents shall be reviewed for applicable provisions related to the provisions in this document, and provisions in the General Conditions and other Division 1 Specification Sections shall apply to this Section without limitation.

1.2 RELATED REQUIREMENTS SPECIFIED IN OTHER SECTIONS

- A. Section 01010 – “Summary of Work”
- B. Section 01140 – “Work Restrictions”
- C. Section 01312 – “Project Meetings”
- D. Section 01330 – “Submittal Procedures”
- E. Section 01416 – “Special Procedures”
- F. Section 01505 – “Construction Waste Management”
- G. Section 01540 – “Site Security and Safety”
- H. Section 01770 – “Contract Closeout Procedures”
- I. Divisions 2 through 33 Sections for Project Management and Coordination requirements for the work in those Sections.

1.3 SUMMARY

- A. This Section specifies the administrative requirements and includes descriptions of required Project Coordination for the work and all phases of Project including, but not limited to, the following:
 - 1. Coordination
 - 2. Pre-Construction Conference
 - 3. Project Meetings
 - 4. Pre-installation Conferences-Coordination
 - 5. Underground and Utilities Coordination
 - 6. Electrical and Mechanical Coordination
 - 7. Coordination with Work by District
 - 8. Special Meetings-Coordination
 - 9. Coordination of Contract Closeout

1.4 COORDINATION

- A. Coordinate scheduling, submittals, and Work of the various Sections of Specifications to assure efficient and orderly sequence of Work, with provisions for accommodating items to be installed later and for accommodating items to be installed by other District Contractors.

- B. Resolve differences or disputes concerning coordination, interference, or extent of Work of the various Sections of the Specifications. Contractor's decisions if consistent with requirements of the Contract Documents shall be final.
- C. Coordinate completion and clean-up of Work of separate Sections in preparation for substantial Completion.
- D. Coordinate requests for substitutions to assure compatibility of space, of operating elements, and effect on work of other sections.
- E. Coordinate sequence of Work to accommodate District occupancy as specified within the Contract Documents. Cooperate with District and District suppliers and/or contractors during move-in and occupancy of the completed Work at each Phase.
- F. Contractor shall coordinate construction operations and means and method of construction included in different Sections of the Specifications to ensure efficient and orderly installation of each part of the Work. Coordinate construction operations, included in different Sections that depend on each other for proper installation, connection, and operation.
 - 1. Coordinate structural, mechanical, and electrical elements prior to installation. All penetrations of structural elements must first receive approval of Architect and District. Rerouting of ductwork, piping, or conduit and resulting changes to other work caused by failure to coordinate beforehand is the responsibility of the Contractor and shall not be considered justification for either additional cost or time.
 - 2. Schedule construction operations in sequence required to obtain the best constructed results where installation of one part of the Work depends on installation of other components, before or after its own installation.
 - 3. Coordinate installation of different components with other contractors or other trades to ensure maximum and appropriate accessibility for required maintenance, service, and repair. Where availability of space is limited, coordinate installation of different components to ensure maximum and appropriate performance and accessibility for required maintenance, service, operations, and repair of all components, and building systems.
 - 4. Make adequate provisions to accommodate items scheduled for later installation.
 - 5. The manner in which the Specifications are divided into Divisions and Sections is not intended to indicate division of work between trades nor indicate trade union or jurisdictional agreements. Requests for an increase in the Contract Price or Time for Work indicated in one area of the Specifications or Drawings that are not correlated with Work indicated in other areas of the Specifications or Drawings before Bidding will be denied by the District.
 - a. Assign and subcontract construction activities, and employ workers in a manner that will not risk jurisdictional disputes that could result in conflicts, delays, claims, or losses.

1.5 PRECONSTRUCTION CONFERENCE

- A. The District will schedule a conference after Notice to Proceed and prior to the start of Work.
- B. Attendance Required: District representatives, Architect and consultants, DSA Project Inspector, District Representative, Contractor, certain Subcontractors as requested by the District and others as appropriate.

1.6 ADMINISTRATIVE COORDINATION

- A. Coordinate scheduling and timing of required administrative procedures with other construction activities and activities of other contractors to avoid conflicts and to ensure orderly progress of the Work. Such administrative coordination activities include, but are not limited to, the following:
 - 1. Preparation of and coordination of Contractor's CPM Schedules Preparation of the Schedule of Values and Master CPM Schedule
 - 2. Coordinate installation and removal of temporary facilities and controls
 - 3. Coordinate and delivery and processing of submittals, and samples
 - 4. Coordinate progress meetings, testing, and inspection
 - 5. Pre-installation conferences
 - 6. Mockups
 - 7. Startup and adjustment of systems
 - 8. Project closeout activities
- B. Project Documents Management and Exchange
 - 1. The Contractor, District, IOR, and Architect shall mutually utilize an internet based system for the exchange and tracking of Project documents. See Specification Section 01318, Document Management System.

1.7 PRE-INSTALLATION CONFERENCES AND COORDINATION

- A. Contractor shall be responsible to convene pre-installation conferences as required by individual Section of the Specifications. Include all affected parties. Also refer to Section 01312 for additional Project Meetings and Coordination requirements.

1.8 COORDINATION OF THE WORK

- A. Coordinate use of project space and sequence of installation of mechanical, electrical, structural, and other Work which is indicated diagrammatically on Drawings. Follow routings shown for pipes, ducts, and conduits as closely as practicable, with due allowance for available physical space; make runs parallel with lines of building. Utilize space efficiently for maximum and appropriate accessibility for other installations, for maintenance, service, operations, and for repairs.
- B. Contractor shall use large scale drawings, if their preparation is required as part of Work of these specifications, together with shop drawings and layout drawings of other affected sections of these specifications to check, to coordinate, and to integrate the Work of various sections to prevent interferences.
- C. Perform and complete checking and coordination before commencing construction in the affected areas.
- D. In finished areas, except as otherwise shown, conceal pipes, ducts, and wiring in the construction. Coordinate locations of plumbing, fixtures, electrical fixtures, and fixtures and outlets with finish elements.

1.9 CONSERVATION

- A. Contractor shall coordinate construction activities to ensure that operations are carried out with consideration given to conservation of energy, water, and materials.

1. Salvage materials and equipment involved in performance of, but not actually incorporated into, the Work. Refer to other Sections for disposition of salvaged materials that are designated as District's property.

1.10 MEANS AND METHODS

- A. Contractor is solely responsible for construction means, methods, techniques, sequences, and procedures for performing all Work.

1.11 COORDINATION KEY PERSONNEL NAMES

- A. Contractor prior to starting construction operations shall submit a list of key personnel assignments, including Contractor's Project Manager, Superintendent, Assistant Superintendent and other personnel in attendance at Project site. Identify individuals and their duties and responsibilities; list addresses and telephone numbers, including office and cell telephone numbers. Provide names, addresses, and telephone numbers of individuals assigned as standbys in the absence of individuals assigned to Project.
 1. Contractor shall submit (10) copies of key personnel list to the District.
 2. Post copies of list in Project meeting room, in temporary field office, and by each temporary telephone. Keep list current at all times, and provide current list to the District.

1.12 ADMINISTRATIVE AND SUPERVISORY PERSONNEL

- A. Contractor shall provide other administrative and supervisory personnel as required for proper performance of the Work.
 1. Include specific or dedicated personnel required for coordination of operations with other contractors.

1.13 COORDINATION WITH WORK BY DISTRICT

- A. Coordinate service connections for District furnished and District installed equipment. Verify that service connections are correct sizes and in required locations.
- B. Coordinate support and anchorage for equipment furnished and installed by the District. Provide blocking and backing as shown or directed to facilitate installation of equipment by others.

1.14 DAILY CONSTRUCTION REPORTS

On a daily basis, Contractor shall submit a daily activity report to DISTRICT for each workday, including weekends and holidays, when worked. Contractor shall develop the daily construction reports on a computer generated data-base capable of sorting daily Work, manpower and man-hours by Contractor, Subcontractor, area, sub area, and change order work. Upon request of DISTRICT, furnish computer disk of this database. Obtain DISTRICT's written approval of daily construction report data base format prior to implementation. Include in report:

1. Project name and Project number
2. Contractor's name and address
3. Weather, temperature and any unusual site conditions

4. Brief description and location of the day's scheduled activities and any special problems and accidents, including Work of Subcontractors. Descriptions shall be referenced to CPM scheduled activities.
5. Worker quantities for its own Work force and for Subcontractors of any tier.
6. Equipment, other than hand tools, utilized by Contractor and Subcontractors.

1.15 PERIODIC VERIFIED REPORTS

- A. The Contractor shall complete and submit the Final Verified Report required by DSA In addition to other conditions precedent to Final Payment, the Contractor's completion and submission of the Final Verified Report is an express condition precedent to the District's obligation to make the Final Payment. In addition to completion and submission of the Final Verified Report, as a material obligation under the Contract Documents, the Contractor shall comply will all DSA requests for reports or other data relating to the Work, the status thereof or conformity of the Work to the Contract Documents.

PART 2 – PRODUCTS (Not Used)

PART 3 – EXECUTION (Not Used)

END OF SECTION 01311

SECTION 01312

PROJECT MEETINGS

PART 1 – GENERAL

1.1 RELATED DOCUMENTS

- A. All Contract Documents shall be reviewed for applicable provisions related to the provisions in this document, and provisions in the General Conditions and Division 1 Specification Sections shall apply to this Section without limitation.

1.2 RELATED REQUIREMENTS SPECIFIED IN OTHER SECTIONS

- A. Section 01010 – “Summary of Work”
- B. Section 01140 – “Work Restrictions”
- C. Section 01400 – “Quality Control Requirements”
- D. Section 01500 – “Temporary Facilities and Control”
- E. Section 01770 – “Contract Closeout Procedures”
- F. Divisions 2 through 33 Sections for Project Meetings requirements for the work in those Sections.

1.3 SUMMARY

- A. This Section specifies administrative requirements and provides descriptions of the required project meetings for the Work and all phases of the project. These meetings include, but not limited to, the following:
 - 1. Preconstruction Meeting
 - 2. Schedule Review Meetings
 - 3. Weekly Project Progress Meetings
 - 4. Progress Schedule and Application for Payment Meetings
 - 5. Special Meetings

1.4 PRECONSTRUCTION CONFERENCE

- A. District will schedule and conduct the Preconstruction Conference at a time and place to be determined.
- B. Contractor and all major subcontractors shall attend the Preconstruction Conference. This includes, but is not limited to, the following:
 - 1. Demolition Subcontractor
 - 2. Structural Steel Subcontractor
 - 3. Mechanical Subcontractor
 - 4. Electrical Subcontractor
 - 5. Plumbing Subcontractor
 - 6. Hazardous Material Abatement Subcontractor

C. Meeting agenda will include, but is not limited to, discussion of the following items:

1. Schedules
2. Personnel and vehicle permit procedures
3. Use of premises
4. Location of Contractor's on-Site facilities
5. Security
6. Housekeeping
7. Submittal and RFI procedures
8. Inspection and testing procedures, on-Site and off-Site
9. Utility shutdown procedures
10. Control and reference point survey procedures
11. Injury and Illness Prevention Program
12. Initial Schedule
13. Schedule of Values
14. Schedule of Submittals
15. Project Directory
16. Emergency Contact List

1.5 SCHEDULE OF VALUES and initial schedule MEETING

- A. Contractor shall meet with District and Architect within 10 days of submittal of the initial Schedule of Values and Initial CPM Schedule to review and evaluate the Schedule of Values and the Initial CPM Schedule.

1.6 SHOP DRAWINGS & SUBMITTALS SCHEDULE MEETING

- A. Contractor shall meet with District and Architect within 10 days of submittal of the draft Shop Drawings and Submittals Schedule to review and evaluate the Shop Drawings and Submittals Schedule.

1.7 WEEKLY PROGRESS MEETINGS

- A. Weekly Progress Meetings will be scheduled throughout duration of Work and all phases of the project at a time acceptable to the District. Progress meetings will be held weekly, unless otherwise directed by District.
1. Meetings shall be held at Project Manager's on-site office trailer unless otherwise directed by the District.
 2. The District Representative will record meeting notes of the Weekly Progress Meeting. Within 3 working Days after the meeting, the District Representative will distribute minutes to District via e-mail, and to those affected by decisions made at the meeting. Attendees can either submit comments or additions to the minutes within 3 working days. The minutes will constitute a final documentation of the results of meeting.
- B. Progress meetings shall be attended by the Contractor's project manager, project engineer, and job superintendent, District Representative, Architect and Engineers, the Inspector of Record, and others as appropriate to agenda topics for each meeting.
- C. Agenda: The previous week meeting minutes will be used as the agenda for the subsequent meeting, with new business discuss for each agenda item.

1.8 BILLING MEETINGS

- A. See Section 01290, Payment Procedures.

1.9 SPECIAL MEETINGS

- A. Contractor or District may call special meetings by notifying the desired participants. Notify District no less than 5 workdays in advance, and provide the reason for the meeting. Special meetings may be held without advance notice in emergency situations.
- B. At any time during the progress of Work, District shall have authority to require Contractor to attend a meeting with any or all of the Subcontractors engaged in the Work or in other work, and notice of such meeting shall be duly observed and complied with by Contractor.
- C. Contractor shall schedule and conduct his own periodic coordination meetings as necessary to discharge coordination responsibilities.
- D. Contractor shall give District five workday's written notice of his coordination meetings. Contractors shall maintain and distribute minutes of coordination meetings to District. Attendees shall have three workdays to submit comments or additions to minutes. Minutes will constitute final documentation of results of coordination meetings.

1.10 GUARANTEES/WARRANTIES, BONDS, AND SERVICE & MAINTENANCE CONTRACTS REVIEW MEETING

- A. Ten Months following date of final acceptance/completion, Contractor to hold a meeting to review guarantees/warranties, bonds, and service maintenance contracts for materials and equipment. Implement repair or replacement of defective items, and extend service and maintenance contracts, as desired by District.
- B. Attending shall be:
 - 1. District Representatives
 - 2. Architect and Architect's consultants, as appropriate
 - 3. CCC-Buildings & Grounds Representatives
 - 4. Contractor
 - 5. Subcontractors, as appropriate
 - 6. Others, as appropriate

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION (NOT USED)

END OF SECTION 01312

SECTION 01330

SUBMITTAL PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. All Contract Documents shall be reviewed for applicable provisions related to the provisions in this document, and provisions in the General Conditions and other Division 1 Specification Sections shall apply to this Section without limitation.

1.2 RELATED DOCUMENTS SPECIFIED IN OTHER SECTIONS

- A. Section 01010 – “Summary of Work”
- B. Section 01140 – “Work Restrictions”
- C. Section 01290 – “Payment Procedures”
- D. Section 01310 – “Construction Scheduling”
- E. Section 01318 – “Document Management System”
- F. Section 01400 – “Quality Control Requirements”
- G. Section 01450 – “Mockup Requirements”
- H. Section 01770 – “Project Closeout Procedures”
- I. Section 01780 – “Project Record Documents”
- J. Section 01820 – “Demonstration and Training”
- K. Divisions 2 through 33 sections for Submittal Procedures requirements for the work in these sections

1.3 SUMMARY

- A. This Section includes administrative and procedural requirements for submitting Shop Drawings, Product Data, Samples, and other Submittals.

1.4 DEFINITIONS

- A. Action Submittals, as used herein are written and/or graphic information that requires Architect and/or District responsive action. Submittals may be rejected for not complying with requirements. Prepare and submit Action Submittals as required by individual Specification Sections.
- B. Informational Submittals, as used herein are written and/or graphic information that does not require Architect responsive action. Submittals may be rejected for not complying with requirements. Prepare and submit Informational Submittals as required by individual Specification Sections.
- C. Manufactured, as used herein applies to standard units usually mass-produced, and “fabricated” means items specifically assembled or made out of selected materials to meet individual design requirements.

- D. Submittal Descriptions. Submittals requirements are specified in the technical sections. Submittals are identified by description as follows:
1. Preconstruction Submittals, as used herein are submittals which are required following a Notice to Award and prior to commencing Work on Site. Examples include, but are not limited to:
 - a. Initial CPM Schedule
 - b. Submittal Log (listing submittal schedule, including shop drawings and samples)
 - c. Initial Schedule of Values
 - d. Safety Plan (For Information Only)
 - e. Waste Management Plan
 - f. Quality Control Plan
 - g. Others as required by the Contract Documents
 2. Shop Drawings, as used herein are drawings, diagrams, schedules, and other data, which are prepared by Contractor, Subcontractors, manufacturers, fabricators, suppliers, or distributors illustrating some portion of the Work, and include: illustrations; fabrication, erection, layout and setting drawings; manufacturer's standard drawings; schedules; descriptive literature, instructions, catalogs, and brochures; performance and test data including charts; wiring and control diagrams; and all other drawings and descriptive data pertaining to materials, equipment, piping, duct and conduit systems, and methods of construction as may be required to show that the materials, equipment, or systems and their position conform to the requirements of the Contract Documents.
 - a. Shop drawings shall establish the actual detail of all manufactured or fabricated items, indicate proper relation to adjoining work, amplify design details of mechanical and electrical systems and equipment in proper relation to physical spaces in the structure, and incorporate ~~minor~~ changes of design or construction to suit actual conditions. **However, changes meeting the definition of DSA Construction Change Document Category A require DSA review and approval and shall be submitted by the Architect of Record to DSA as a Construction Change Document in accordance with IR A-6.**
 3. Product data, as used herein are catalog cuts, illustrations, standard schedules, performance charts, instructions, brochures, diagrams, and other information furnished by the Contractor to illustrate a material, product, or system for some portion of the Work. This includes samples of warranty language when the contract requires extended product warranties.
 4. Samples, as used herein are physical examples furnished by Contractor to illustrate materials, equipment, or quality and includes natural materials, fabricated items, equipment, devices, appliances, or parts thereof as called for in the Specifications, and any other samples as may be required by the Architect to determine whether the kind, quality, construction, finish, color, and other characteristics of the materials, etc., proposed by the Contractor conform to the required characteristics of the various parts of the Work. All Work shall be in accordance with the approved samples.
 5. Design Data, as used herein are design calculations, mix designs, analyses or other data pertaining to a part of Work.
 6. Test Reports, as used herein, include:

- a. Reports signed by authorized official of testing laboratory that a material, product or system identical to the material, product or system to be provided has been tested in accord with specified requirements. (Testing must have been within three years of date of contract award for the project.)
 - b. Reports which include findings of a test required to be performed by the Contractor on an actual portion of the work or prototype prepared for the project before shipment to job site.
 - c. Reports which include findings of a test made at the job site or on sample taken from the job site, on portion of work during or after installation.
 - d. Investigation reports.
 - e. Daily performance logs.
 - f. Manufacturer or Installer checklists.
 - g. Manufacturer's Factory or Field Reports, including documentation of the testing and verification actions taken by manufacturer at the factory or manufacturer's representative at the job site, in the vicinity of the job site, or on a sample taken from the job site, on a portion of the work, during or after installation, to confirm compliance with manufacturer's standards or instructions. The documentation must be signed by an authorized official of a testing laboratory or agency and must state the test results; and indicate whether the material, product, or system has passed or failed the test.
 - h. Final acceptance test and operational test procedure.
7. Manufacturer's Instructions. Preprinted material describing installation of a product, system or material, including special notices, checklists, and Material Safety Data sheets concerning impedances, hazards and safety precautions.
 8. Operation and Maintenance Data. Data that is furnished by the manufacturer or the system provider to the equipment operating and maintenance personnel, including manufacturer's help and product line documentation necessary to maintain and install equipment. This data is needed by District operating and maintenance personnel for the safe and efficient operation, maintenance and repair of the item. This data is intended to be incorporated in the Operations and Maintenance manual submittals.
 9. Closeout Submittals. Documentation to record compliance with technical or administrative requirements in order to meet all requirements necessary to properly close out the Construction Contract. These include, but are not limited to:
 - a. Record Drawings
 - b. As-built drawings
 - c. Others as required by the Contract Documents.

1.5 PREPARATION AND FORMAT

- A. Transmit each submittal, except sample installations and sample panels to the District in accordance with Section 01318 (Document Management System). If the District, the Architect, and the Contractor mutually agree, submittals from the Contractor may be transmitted to the District and the Architect at the same time. However, following review by the Architect-Engineer team, submittals shall be transmitted back to the District Construction Manager prior to further distribution.

- B. Transmit submittals with transmittal form prescribed by District and standard for the Project as described below.
1. On the transmittal form identify Contractor, indicate date of submittal, and include information prescribed by transmittal form and required in paragraph entitled "Identifying Submittals." Process transmittal forms to record actions regarding sample[s].
- C. Identifying Submittals. When submittals are provided by a Subcontractor, the Contractor shall prepare, review and stamp with Contractor's approval stamp all specified submittals prior to submitting for District approval. Identify submittals, except sample installations and sample panels, with the following information permanently adhered to or noted on each separate component of each submittal and noted on transmittal form. Mark each copy of each submittal identically, with the following:
1. District Project Number and title.
 2. Construction contract number.
 3. Date of the drawings and revisions.
 4. Product identification and location in project.
 5. Name, address, and telephone number of subcontractor, supplier, manufacturer and any other second tier Contractor associated with submittal.
 6. Section number of the specification section which requires the submittal.
 7. When a resubmission, add numeric revision suffix on submittal description, for example, submittal 18 would become 18R1, to indicate resubmission.
- D. Format for Shop Drawings
1. Submit electronic PDF documents only. Refer to Section 01318 (Document Management System) for electronic submittal requirements.
 2. Shop drawings are not to be less than 8 1/2 by 11 inches nor more than 30 by 42 inches, except for full size patterns or templates. Prepare drawings to accurate size, with scale indicated, unless other form is required. Prepare drawings that will be submitted to Division of State Architect (DSA) noted as Deferred Approval in the bid drawings and specifications as mandated by DSA.
 3. Drawings are to be suitable for reproduction and be of a quality to produce clear, distinct lines and letters with dark lines on a white background.
 4. Present 8 1/2 by 11 inches sized shop drawings as part of the bound volume for submittals required by section. Present larger drawings in sets.
 5. Include on each drawing the drawing title, number, date, and revision numbers and dates, in addition to information required in paragraph entitled "Identifying Submittals."
 6. Number drawings in a logical sequence. Each drawing is to bear the number of the submittal in a uniform location adjacent to the title block. Place the District Project name and number in the margin, immediately below the title block, for each drawing.
 7. Reserve a blank space on the right hand side of each sheet for the Architect's disposition stamp.
 8. Dimension drawings, except diagrams and schematic drawings and prepare drawings demonstrating interface with other trades to scale. Use the same unit of measure for shop drawings as indicated on the contract drawings. Identify materials and products for work shown.

9. Include the nameplate data, size and capacity on drawings. Also include applicable federal, military, industry and technical society publication references.
- E. Format of Product Data and Manufacturer's Instructions
1. Refer to Section 01318 (Document Management System) for electronic submittal requirements.
 2. Present product data submittals for each section as a complete, bound volume. Include table of contents, listing page and catalog item numbers for product data.
 3. Indicate by prominent notation each product which is being submitted; indicate specification section number and paragraph number to which it pertains.
 4. Supplement product data with material prepared for Project to satisfy submittal requirements for which product data does not exist. Identify this material as developed specifically for project, with information and format as required for submission of Certificates.
 5. Include the manufacturer's name, trade name, place of manufacture, and catalog model or number on all product data. Also include applicable industry and technical society publication references. Should manufacturer's data require supplemental information for clarification, include such information in the submittal.
 6. Where equipment or materials are specified to conform to industry and technical society reference standards of the organizations such as American National Standards Institute (ANSI), ASTM International (ASTM), National Electrical Manufacturer's Association (NEMA), Underwriters Laboratories (UL), and Association of Edison Illuminating Companies (AEIC), submit proof of such compliance. The label or listing by the specified organization will be acceptable evidence of compliance.
 - a. In lieu of the label or listing, submit a certificate from an independent testing organization, competent to perform testing, and approved by the District Project Manager. State on the certificate that the item has been tested in accordance with the specified organization's test methods and that the item complies with the specified organization's reference standard.
 7. Collect required data submittals for each specific material, product, unit of work, or system into a single submittal and marked for choices, options, and portions applicable to the submittal. Mark each copy of the product data identically. Partial submittals will not be accepted for expedition of construction effort.
 8. Submit manufacturer's instructions prior to installation.
- F. Format of Samples
1. Furnish samples in sizes below, unless otherwise specified or unless the manufacturer has prepackaged samples of approximately same size as specified:
 - a. Sample of Equipment or Device: Full size.
 - b. Sample of Materials Less Than 2 by 3 inches: Built up to 8 1/2 by 11 inches.
 - c. Sample of Materials Exceeding 8 1/2 by 11 inches: Cut down to 8 1/2 by 11 inches and adequate to indicate color, texture, and material variations.
 - d. Sample of Linear Devices or Materials: 10 inch length or length to be supplied, if less than 10 inches. Examples of linear devices or materials are conduit and handrails.

- e. Sample of Non-Solid Materials: Pint. Examples of non-solid materials are sand and paint.
- f. Color Selection Samples: 2 by 4 inches. Where samples are specified for selection of color, finish, pattern, or texture, submit the full set of available choices for the material or product specified. Sizes and quantities of samples are to represent their respective standard unit.
- g. Sample Panel: 4 by 4 feet.
- h. Sample Installation: 100 square feet.
- 2. Samples Showing Range of Variation: Where variations in color, finish, pattern, or texture are unavoidable due to nature of the materials, submit sets of samples of not less than three units showing extremes and middle of range. Mark each unit to describe its relation to the range of the variation.
- 3. Reusable Samples: Incorporate returned samples into work only if so specified, indicated, or approved by Architect and District. Incorporated samples are to be in undamaged condition at time of use.
- 4. Recording of Sample Installation: Note and preserve the notation of area constituting sample installation but remove notation at final clean-up of project.
- G. Format of Design Data and Certificates.
 - 1. Refer to Section 01318 (Document Management System) for electronic submittal requirements.
 - 2. Provide design data and certificates on 8 1/2 by 11 inches paper. Provide a bound volume for submittals containing numerous pages.
- H. Format of Test Reports and Manufacturer's Field Reports
 - 1. Refer to Section 01318 (Document Management System) for electronic submittal requirements.
 - 2. Provide reports on 8 1/2 by 11 inches paper in a complete bound volume.
 - 3. Indicate by prominent notation, each report in the submittal. Indicate specification number and paragraph number to which it pertains.
- I. Format of Operation and Maintenance Data shall comply with the requirements specified in Section 01785 "Operation and Maintenance Data" for O&M Data format.
- J. Format of Preconstruction Submittals and Closeout Submittals.
 - 1. When submittal includes a document which is to be used in Project or become part of Project Record, other than as a submittal, do not apply Contractor's approval stamp to document, but to a separate sheet accompanying document.
 - 2. Provide all dimensions in English units only.

1.6 QUANTITY OF SUBMITTALS

- A. Number of Copies of Shop Drawings. Submit in compliance with the following requirements:
 - 1. Refer to Section 01318 (Document Management System) for electronic submittal requirements.
 - 2. Submittals that require local and State agency approval, shall conform with this Specification and the requirements of the local or State agency.

- B. Contractor shall receive one (1) reviewed electronic PDF file of the submittal. Contractor shall be responsible for providing copies to its subcontractors.
- C. Number of Copies of Product Data and Manufacturer's Instructions. Submit in compliance with quantity requirements specified for shop drawings.
- D. Number of Samples
 - 1. Submit three (3) sets of samples showing range of variation, of each required item. Two approved samples or sets of samples will be retained by District and one will be returned to Contractor.
 - 2. Submit one sample panel or provide one sample installation where directed. Include components listed in technical section or as directed.
 - 3. When required by Contract Documents, provide one sample installation where directed by Architect or District.
- E. Number of Copies Design Data and Certificates. Submit in compliance with quantity requirements specified for shop drawings.
- F. Number of Copies Test Reports and Manufacturer's Field Reports. Submit in compliance with quantity and quality requirements specified for shop drawings.
- G. Number of Copies of Operation and Maintenance Data. Submit three (3) copies of O&M Data to the District Project Manager for review and approval.
- H. Number of Copies of Preconstruction Submittals and Closeout Submittals. Unless otherwise specified, submit as required for shop drawings.

1.7 SUBMITTALS, GENERAL

- A. Contractor shall obtain and shall submit all required shop drawings, samples, technical data, and other submittals as required by the Contract Documents with such promptness as to cause no delay in its own Work or in that of any other contractor or subcontractor.
 - 1. As required by the Contract Documents, the Contractor shall obtain and submit with shop drawings all seismic and other calculations, and all product data from equipment manufacturers.
 - 2. No shop drawing submittals shall be reviewed until coordinated documents per paragraph 1.13.C.1.b and c have been submitted, reviewed and signed off by representatives of each of the sub-contractors.
- B. Prepare a complete Submittal Log and maintain it as the Work progresses. Submit the initial Submittal Log for approval by District at the same time as the Initial Schedule (See Section 01310 Construction Scheduling). Include the Contractor's anticipated submission dates and the approval needed dates (if approval is required).
 - 1. Re-submit submittal log and annotate monthly by the Contractor with actual submission and approval dates. When all items on the log have been fully approved, no further re-submittal is required.
 - 2. Carefully control procurement operations to ensure that each individual submittal is made on or before the Contractor scheduled submittal date shown on the approved "Submittal Log."

3. Except as specified otherwise, allow review period of at least fifteen (15) working days for submittals requiring Architect or District approval. Period of review for submittals requiring approval begins when District receives submittal from Contractor.
 4. For submittals requiring review by fire protection engineer and/or DSA, allow review period, beginning when District receives submittal thirty (30) calendar days for return of submittal to the Contractor.
 5. Period of review for each resubmittal is the same as for initial submittal.
- C. The District may request submittals in addition to those specified when deemed necessary to adequately describe the work covered in the respective sections.
- D. Units of weights and measures used on all submittals are to be the same as those used in the contract drawings.
- E. Each submittal is to be complete and in sufficient detail to allow ready determination of compliance with contract requirements.
- F. No extensions of time will be granted to Contractor or any Subcontractor because of its failure to have shop drawings, samples, product data and/or other required submittals submitted in accordance with the approved Submittal Log and Master Construction Schedule.
- G. Each Subcontractor shall submit all shop drawings, samples, product data and other required submittals for the review by the District and the Architect through the Contractor.
- H. By submitting shop drawings, samples, product data and other required submittals, the Contractor represents that it has determined and verified all materials, field measurements, catalog numbers, related field construction criteria, and other relevant data in connection with each such submission, and that it has checked, verified, and coordinated the information contained within such submittals with the requirements of the Work and of the Contract Documents, including the construction schedule.
- I. Quality Control Certification. Stamp each sheet of each submittal with a quality control certifying statement, except that data submitted in bound volume or on one sheet printed on two sides may be stamped on the front of the first sheet only. When approving authority is Architect or District, Contractor shall certify submittals with the following certifying statement:

"I hereby certify that the (equipment) (material) (article) shown and marked in this submittal is that proposed to be incorporated with contract Number [____], is in compliance with the Contract Documents, does not constitute an unapproved substitution, deviation, or variation, can be installed in the allocated spaces, and is submitted for District approval.

I further certify that I have reviewed and approved the field dimensions and the construction criteria, and have also made written notation regarding any information in the shop drawings that does not fully conform to the Contract Documents. This submittal has been coordinated with all other submittals received to date, and this duty of coordination has not been delegated to subcontractors, material suppliers, the Architect, or the Engineers on this project.

For the Contractor:

Certified by Submittal Reviewer _____, Date _____
(Signature)

Certified by QC Manager _____, Date _____"
(Signature)

- J. Partial submittals are not acceptable, will be considered non-responsive, and will be returned without review by either District or Architect. Mark each copy of each submittal to show which products and options are applicable.
- K. The submission of the shop drawings, samples, product data and other required submittals, shall not deviate from the requirements of the Contract Documents including detailing and design intent which is specifically outlined in Contract Documents except as specifically authorized by the Architect or through an accepted substitution, per the requirements of the Contract Documents.
- L. Deviations from the Contract Documents
 - 1. Any deviations from the Contract Documents shall be fully described in a transmittal accompanying the shop drawings, samples, product data and other required submittals. However, such submittals shall not be used as a means of requesting a substitution, the procedure for which is defined elsewhere in the Contract Documents. **In addition, ALL deviations meeting the definition of DSA Construction Change Document Category A, per DSA IR A-6, are subject to DSA review and require submittal to and approval by DSA as a Construction Change Document. The Contractor shall be responsible for any delays or costs incurred due to Contractor requested or generated deviations requiring the preparation of a DSA Construction Change Document.**
 - 2. Architect and District approval is required for any proposed deviation from the accepted design which still complies with the Contract Documents before the Contractor is authorized to proceed with material acquisition or installation. If necessary to facilitate the project schedule, the Contractor and the Architect may discuss a submittal proposing a deviation with the District Project Manager prior to officially submitting it to the District. However, the District reserves the right to review the submittal before providing an opinion, if deemed necessary. In any case, the District will not formally agree to or provide a preliminary opinion on any deviation without either the Architect's approval or recommended approval.
 - 3. The District reserves the right to reject any deviation which may impact furniture, furnishings, equipment selections, and/or operations decisions that were made previously and based on the District reviewed and approved Project design.
 - 4. **Contractor is responsible for the dimensions and construction of work. Failure to point out deviations may result in the District requiring rejection and removal of such work at the Contractor's expense.**
 - 5. After submittals have been accepted by the Architect, no resubmittal for the purpose of substituting materials or equipment will be considered unless accompanied by an explanation of why a substitution is necessary.
- M. Review by District and Architect shall not relieve the Contractor or any Subcontractor from its responsibility in preparing and submitting proper submittals in accordance with the Contract Documents.

- N. Any submission, which in Architect's opinion is incomplete, contains errors, or been superficially checked will be returned by the Architect without review for resubmission by the Contractor.
- O. Electronic copies of the stamped and signed Contract Documents will not be provided by District or Architect for Contractor's use unless:
 - 1. Contractor shall first request and obtain written approval from Architect prior to use of any Architect's CAD files, drawings, or other documents for submittal purposes.
 - 2. Contractor shall be responsible for all reproduction, printing, and delivery cost associated with the use of any requested drawings and/or CAD files.
 - 3. Contractor provides disclaimer letters to the Architect and District (15) working days in advance of any proposed use of Architect's documents and/or digital files. Such disclaimer letter shall be in a form acceptable to Architect and District.
 - 4. Contractor shall not reuse any Architect's documents and/or electronic files for submittal purposes without prior written approval.
- P. Coordinate preparation and processing of submittals with performance of construction activities.
 - 1. Coordinate each submittal with fabrication, purchasing, testing, delivery, other submittals, and related activities that require sequential activity.
 - 2. Coordinate transmittal of different types of submittals for related parts of the Work so processing will not be delayed because of need to review submittals concurrently for coordination. The Contractor shall ensure Mechanical, Electrical, and Plumbing (MEP) sub-contractors provide coordinated and comprehensive submittals for all integrated systems. Multiple submittal packages will not be allowed and will be returned without review or action. No extension of Contract Time will be authorized due to incomplete or uncoordinated Contractor submittals.
 - a. Architect and District reserve the right to withhold action on, or return without review, a submittal requiring coordination with other submittals until all such related submittals are received. No extension of the Contract Time will be authorized.
 - b. Architect and District will return incomplete submittals to the Contractor without review. No extension of Contract Time will be authorized due to incomplete Contractor submittals.
- Q. Submittals Schedule: Comply with requirements in Section 01310 (Construction Scheduling) in planning for required submittals and relating them to scheduled construction activities.
 - 1. Initial Review: Allow ten (10) working days for initial review of each submittal. Allow additional time if coordination with subsequent submittals is required. Architect will, through the Construction or Project Manager, advise Contractor when a submittal review must be delayed for coordination reasons.
 - 2. Intermediate Review: If intermediate submittal review is necessary, process it in the same manner as an initial submittal.
 - 3. Re-submittal Review: Allow ten (10) working days for review of each re-submittal.
 - 4. Sequential Review: Where sequential review of submittals by Architect's consultants, District, or other parties is indicated, allow fifteen (15) working days for initial review of each submittal.
 - 5. DSA Deferred Approvals Review: see paragraph 1.13 D.18 for detailed procedures

- R. Re-submittals: Make re-submittals in same form and number of copies as initial submittal.
 - 1. Note date and content of previous submittal.
 - 2. Note date and content of revision in label or title block and clearly indicate extent of revision(s).
 - 3. Cloud or otherwise highlight and call out **ALL** changes made in each re- submittal.
 - 4. Provide cover letter in each re-submittal, identifying all changes made in each re-submittal.
 - 5. Resubmit submittals until they are marked “No Exceptions Taken” or “Make Corrections Noted” by the Architect.
- S. After submittals have been accepted by the Architect, no resubmittal for the purpose of substituting materials or equipment will be considered unless accompanied by an explanation of why a substitution is necessary.

1.8 ARCHITECT’S REVIEW

- A. Architect’s review is for general conformance with design concept only, and does not relieve Contractor in any way from compliance with Contract Documents, nor does it in any way constitute grounds for a Change Order. Contractor remains solely responsible for details and accuracy of all quantities and dimensions, and selection of fabrication and/or installation processes.
- B. The Architect’s review shall neither be construed as a complete check which relieves the Contractor, Subcontractor, manufacturer, fabricator, or supplier from responsibility for any deficiency that may exist or from any departures or deviations from the requirements of the Contract Documents unless the Contractor has, in writing, called the Architect’s attention to the deviations at the time of submission.
- C. The Architect’s review shall not relieve the Contractor or Subcontractors from responsibility for errors of any sort in any required submittals, for proper fitting of the Work, coordination of the differing subcontractor trades, and Work which is not indicated on any submittal at the time of submission.
- D. In reviewing shop drawings, samples, product data and other required submittals, the Architect will not verify dimensions and field conditions.
- E. The Architect will review and approve shop drawings, samples, product data and other required submittals for aesthetics and for conformance with the design concept of the Work and the Contract Documents.
- F. Architect will review each submittal, make marks to indicate corrections or modifications required, and return it.
- G. Contractor and Subcontractors shall be solely responsible for any quantities which may be shown on either the submittals or the Contract Documents.
- H. Architect will not review submittals that do not bear Contractor’s approval stamp and Quality Control Certification Letter, and will return them to the Contractor without review.
- I. Architect will stamp each submittal appropriately to indicate action to be taken, as follows:
 - 1. Action Codes Permitting Use:

- a. When an action code permitting use is assigned to a submittal, it does not authorize work that does not comply with the requirements of the Contract Documents. Acceptance of the Work will depend on compliance.
 - b. Code AP - Approved: The Work covered by the submittal item may proceed, provided it complies with Contract Document requirements.
 - c. Code AN - Approved as Noted: The Work covered by the submittal item may proceed, provided it complies with the Architect's notations and Contract Document requirements.
 - d. Code AN-R - Approved as Noted - Resubmit: Do not deliver or install the related work until the resubmittal has received Code AP or AN. However, fabrication and other off-site work covered by the submittal item may proceed, at the Contractor's risk, provided it complies with the Architect's notations and Contract Document requirements.
2. Action Code Prohibiting Use:
 - a. Action Code REJ - Not Approved: The Work covered by the submittal item, including purchasing, fabrication, delivery, and other activity, shall not proceed. Revise the submittal item or prepare a new item in accordance with the Architect's notations. Resubmit the corrected or new item without delay; do not permit submittal items marked "Not Approved" to be used. Work incorporating such items will be rejected.
 3. Action Code for Items Not Required:
 - a. Action Code X - Not Requested by Contract Documents: The submittal item is not called for by the Contract Documents and is being returned unreviewed by the Architect except to the extent necessary to determine its status.
- J. Informational Submittals: For Architect's information only. Architect will review each submittal and will not return it, or will return it if it does not comply with requirements. Architect will forward each submittal to appropriate party.
1. Action Code for Information Only:
 - a. Action Code INF - Information Only - Received: The submittal item is not called for a return with a reviewed action code by the Contract Documents and is being returned un-reviewed by the Architect except to the extent necessary to determine its status.
- J. Partial submittals prepared for a portion of the Work will be reviewed when use of partial submittals has received prior approval from Architect.
- K. Incomplete submittals are not acceptable, will be considered non-responsive, and will be returned without review.
- L. Architect will return without review or discard submittals received from sources other than the Contractor.
- M. Submittals not required by the Contract Documents may be returned by the Architect without action.

1.9 SUBMITTAL TRANSMITTAL REQUIREMENTS

- A. Submittal Transmittal shall be a PDF file in electronic format. It is recommended, to expedite the submittal review, the electronic form be **uploaded to EADOC** for review to the Architect as early as possible.
1. Submittal Numbering: See below.
 2. Contact Information: Full Name, Phone Number and Email Address.
- B. Submittal Definition
1. Each submittal consists of items from only ONE Specifications section.
 2. Complete Submittal: If ALL the items required by the Specifications section are listed on one Submittal Form (including continuation sheet), it is a complete submittal.
 3. Partial Submittals: If it is necessary to divide the required items of a given Specifications section into two or more submittals to meet schedule or handling requirements, the separate submittals are partial submittals. All partial submittals have the same submittal number, and are differentiated by sequential P-numbers (see below).
 4. All items in each submittal, whether complete or partial, will be processed together: Individual items will not be 'broken out' for special handling. Arrange submittals accordingly.
- C. Submittal Numbering
1. Number submittals as described below to assist tracking.
 2. Number each submittal in the format nnnnnn-nn.
 - a. The 6-digit number is the number of the section that requires the submittal. For example, 044200.
 - b. The 2-digit number is based on the numerical sequence of submittals from that section. In other words, for each section, the first submittal is 01, the second is 02, and so on. The 2-digit number does not change for partial or re-submittals, so that the submittal can be tracked.
 - c. P-Number for Partial Submittals: Number each partial submittal in the **P** space, beginning with P1, and increasing by one for each partial submittal of that submittal. If the submittal is a complete submittal, leave the P space blank.
 - d. R-Number for Re-submittals: Number each re-submittal in the **R** space, beginning with R1, and increasing by one for each re-submittal of that submittal. Do not include an R-Number for the initial submittal.
 - e. Examples:
 - 1) Initial Complete Submittal: 044200-01. First Re-Submittal: 044200-01-R1.
 - 2) Initial Partial Submittal: 044200-01-P1. Second Partial Submittal: 0044200-01-P2. First Re-submittal of Second Partial Submittal: 044200-R1-P2.

1.10 REJECTED SUBMITTALS

- A. Contractor shall make corrections required by the Architect and resubmit.

- B. If the Contractor considers any correction or notation on the returned submittals to constitute a change to the contract drawings or specifications, he shall provide notice to the Architect and District.
- C. If changes are necessary to submittals, the Contractor shall make such revisions and submission of the submittals in accordance with the procedures above. No item of work requiring a submittal change is to be accomplished until the changed submittals are approved.

1.11 NO EXCEPTIONS TAKEN OR MAKE CORRECTIONS NOTED SUBMITTALS

- A. Acceptance will not relieve the Contractor of the responsibility for any error which may exist, as the Contractor is responsible for the satisfactory construction of all work.

1.12 NO EXCEPTIONS TAKEN OR MAKE CORRECTIONS NOTED SAMPLES

- A. Acceptance of a sample is only for the characteristics or use named in such acceptance and is not be construed to change or modify any contract requirements. Before submitting samples, the Contractor shall assure that the materials or equipment will be available in quantities required in the project. No change or substitution will be permitted after a sample has been accepted.
- B. Match the accepted samples for Materials and equipment incorporated in the work. If requested, accepted samples, including those which may be damaged in testing, will be returned to the Contractor, at his expense, upon completion of the contract. Samples not accepted will also be returned to the Contractor at its expense, if so requested. Failure of any materials to pass the specified tests will be sufficient cause for refusal to consider, under this contract, any further samples of the same brand or make of that material. District reserves the right to disapprove any material or equipment which previously has proved unsatisfactory in service.
- C. Samples of various materials or equipment delivered on the site or in place may be taken by the District Construction Manager or Project Manager for testing. Samples failing to meet contract requirements will automatically void previous acceptance, and Contractor shall replace such materials or equipment at Contractor expense to meet contract requirements.
- D. Acceptance of the Contractor's samples by the AOR or District does not relieve the Contractor of his responsibilities under the contract.

1.13 WITHHOLDING OF PAYMENT

- A. Payment for materials incorporated in the work will not be made if required approvals have not been obtained.
- B. No payment for materials incorporated in the work will be made if all required Designer of Record or required District approvals have not been obtained.
- C. No payment will be made for any materials incorporated into the work for any conformance review submittals or information only submittals found to contain errors or deviations from the Solicitation or Accepted Proposal.

1.14 SUBMITTAL REQUIREMENTS

- A. Shop Drawings
 - 1. Transmittal Letter and Other Requirements. All shop drawings must be properly identified with the name of the Project and dated, and each lot submitted must be accompanied by a letter of transmittal referring to the name of the Project and to the Specification section

number for identification of each item clearly stating in narrative form, as well as “clouding” on the submissions, all qualifications, departures, or deviations from the Contract Documents. Shop drawings, for each section of the Work shall be numbered consecutively and the numbering system shall be retained throughout all revisions. All Subcontractor submissions shall be made through the Contractor. Each drawing shall have a clear space for the stamps of Architect and Contractor.

2. Copies Required. Each submittal shall include one (1) PDF format digital file, of each drawing or schedule, table, cut sheet, etc., including fabrication, erection, layout and setting drawings, and such other drawings as required under the various sections of the Specifications, until final acceptance thereof is obtained. Subcontractor shall submit copies, in an amount as requested by the Contractor, of: (1) manufacturers’ descriptive data for materials, equipment, and fixtures, including catalog sheets showing dimensions, performance, characteristics, and capacities; (2) wiring diagrams and controls; (3) schedules; (4) all seismic calculations and other calculations; and (5) other pertinent information as required by the District or Architect.
3. Corrections. The Contractor shall make all corrections required by Architect and shall resubmit, as required by Architect, corrected digital files of shop drawings or new samples until approved. Contractor shall direct specific attention in writing or on resubmitted shop drawings to revisions other than the corrections required by the Architect on previous submissions. Professional services required for more than one (1) re-review of required submittals of shop drawings, product data, or samples are subject to charge to the Contractor by the District.
4. Approval Prior to Commencement of Work. No portion of the Work requiring a shop drawing or sample submission or other submittal shall be commenced until the submission has been reviewed by Contractor and Architect and approved by Architect unless specifically directed in writing by the Architect. All such portions of the Work shall be in accordance with approved shop drawings and samples.
5. Do not base Shop Drawings on reproductions of the Contract Documents or standard printed detail.
6. Fully illustrate requirements of the Contract Documents. Include the following information, as applicable:
 - a. Dimensions
 - b. Weights and measures
 - c. Identification of products
 - d. Fabrication and installation drawings
 - e. Roughing-in and setting diagrams
 - f. Wiring diagrams showing field-installed wiring, including power, signal, and control wiring
 - g. Electrical power requirements
 - h. Shopwork manufacturing instructions
 - i. Templates and patterns
 - j. Schedules
 - k. Design calculations
 - l. Compliance with specified standards
 - m. Notation of coordination requirements

- n. Notation of dimensions established by field measurement
- o. Relationship to adjoining construction clearly indicated
- p. Seal and signature of California professional engineer or other engineer if specified
- q. Wiring Diagrams: Differentiate between manufacturer-installed and field-installed wiring
- r. Other information as necessary or required by the Contract Documents

B. Samples

1. Samples Required. In case a considerable range of color, graining, texture, or other characteristics are anticipated in finished products, a sufficient number of samples of the specified materials shall be furnished by the Contractor to indicate the full range of characteristics which will be present in the finished products; and products delivered or erected without submittal and approval of a full range of samples shall be subject to rejection by the District.
 - a. Except for range samples, and unless otherwise called for in the various sections of the Specifications, samples shall be submitted in duplicate.
 - b. All samples shall be marked, tagged, or otherwise properly identified with the name of the submitting party, the name of the Project, the purpose for which the samples are submitted and the date, and shall be accompanied by a letter of transmittal containing similar information, together with the Specification section number. Each tag or sticker shall have clear space for the review stamps of Contractor and Architect.
2. Labels and Instructions. All samples of materials shall be supplied with the manufacturer's descriptive labels and application instructions.
3. Architect's Review. The Architect will review and, if appropriate, approve submissions and will return them to the Contractor with the Architect's stamp and signature applied thereto, indicating the timing for review and appropriate action in compliance with the Contract Documents.
4. Identification: Attach label on unexposed side of Samples that includes the following information:
 - a. Generic description of Sample
 - b. Product name and name of manufacturer
 - c. Sample source
 - d. Number and title of appropriate Specification Section
 - e. District Project name and number
 - f. Contractor's name
 - g. Date of submittal
5. Disposition: Maintain sets of all approved Samples at Project site, available for quality-control comparisons throughout the course of the Project. Sample sets may be used to determine final acceptance of construction associated with each sample or sample set.
 - a. Samples that may be incorporated into the Work are indicated in individual Specification Sections. Such Samples must be in an undamaged condition at time of use.
 - b. Samples not incorporated into the Work, if any, or otherwise designated as District's property, are the property of Contractor.

6. Samples for Initial Selection: Submit manufacturer's color charts consisting of units or sections of units showing the full range of colors, textures, and patterns available.
 - a. Number of Samples: Submit 6 full sets of available choices where color, pattern, texture, or similar characteristics are required to be selected from manufacturer's product line.
7. Samples for Verification: Where required by the Contract Documents, submit full-size units of Samples, prepared from the same material to be used for the Work, cured and finished in manner specified, and physically identical with material or product proposed for use, and that show full range of color and texture variations expected. Samples include, but are not limited to, the following: partial sections of manufactured or fabricated components; small cuts or containers of materials; complete units of repetitively used materials; swatches showing color, texture, and pattern; color range sets; and components used for independent testing and inspection.
 - a. Number of Samples: Unless indicated otherwise, submit six sets of Samples. Architect will retain two Sample sets; remaining four sets will be returned.
 - i) Submit a single Sample where assembly details, workmanship, fabrication techniques, connections, operation, and other similar characteristics are to be demonstrated.
 - ii) If variation in color, pattern, texture, or other characteristic is inherent in material or product represented by Sample, submit at least four sets of paired units that show approximate limits of variations.
8. District's Property. All shop drawings, computer disks, annotated specifications, samples, and other submittals shall become the District's property upon receipt by the District or Architect.

C. Other Submittals

1. General: Prepare and submit Submittals required by other Specification Sections.
 - a. Test and Inspection Reports: Comply with requirements specified in Section 01400 Quality Control Requirements.
 - b. Coordination Drawings: Comply with requirements specified in Section 01311 Project Management and Coordination.
 - i) Coordination Drawings are required where limited space availability necessitates maximum utilization of space for efficient installation of different components or if coordination is required for installation of products and materials fabricated by separate entities.
 - ii) Contractor shall not start any portion of the Work without approval of coordination submittals from the Architect.
 - c. Coordination Documents (Mechanical, Electrical, and Plumbing)
 - i) Contractor is required to submit Coordinated Mechanical, Electrical, Plumbing Layout Drawings to coordinate installation and location of HVAC ductwork, grilles, diffusers, hydronic piping, fire sprinklers, plumbing, light fixtures and electrical services (including, but not limited to floor boxes, conduits, cable trays, low voltage systems, fire alarm, etc.).
 - ii) Coordinated MEP Layout Drawings are to be composite 1/4" equals 1 foot scale drawings that show all services color-coded on a single sheet. Drawings are to be

- coordinated with structural framing systems and architectural systems (roofing, ceilings, finishes). Section drawings, with detailed elevations above finished floor for ducts, piping, fixtures, etc. are to be included to identify and avoid conflicts.
- iii) Coordination Documents shall be submitted for review by Architect and engineers prior to submittal of MEP shop drawings.
 - iv) Shop drawings for the systems noted in 1.07.A.2 will not be reviewed before the MEP Coordination Documents are signed off by representatives of each of the Mechanical and Electrical sub-contractors as well as the Contractor.
 - v) Contractor to hold coordination meetings to complete these Coordination Documents, attended by all Mechanical, Electrical, and Plumbing sub-contractors whose work scope is represented in the Coordination Documents. These meetings shall be scheduled in the CPM Schedule.
 - vi) No fabrication work or field installation shall commence before the Coordination Documents are signed off by representatives of each of the Mechanical, Electrical, and Plumbing sub-contractors.
 - vii) See Mechanical, Electrical, and Plumbing Specification Sections for additional requirements.
2. Product Data: Submit manufacturer's printed literature in original form as required in the Contract Documents. Submittal shall include specifications, physical dimensions, and ratings of all equipment. Furnish performance curves for all fans and pumps. Where printed literature describes items in addition to that item being submitted, submitted item shall be clearly marked on submittal and superfluous information shall be crossed out in the same manner on all copies. Equipment submittals shall be complete and include space requirements, weight, electrical and mechanical requirements, performance data, and any supplemental information that may be available or requested.
 3. Qualification Data: Prepare written information that demonstrates capabilities and experience of firm or person. Include lists of completed projects with project names and addresses, names and addresses of architects and owners, and other information specified.
 4. Welding Certificates: Prepare written certification that welding procedures and personnel comply with requirements in the Contract Documents. Submit record of Welding Procedure Specification (WPS) and Procedure Qualification Report (PQR) on AWS forms. Include names of firms and personnel certified.
 5. Installer Certificates: Prepare written statements on manufacturer's letterhead certifying that Installer complies with requirements in the Contract Documents and, where required, is authorized by manufacturer for this specific Project.
 6. Manufacturer Certificates: Prepare written statements on manufacturer's letterhead certifying that product complies with requirements in the Contract Documents.
 7. Material Certificates: Prepare written statements on manufacturer's letterhead certifying that material complies with requirements in the Contract Documents.
 8. Material Test Reports: Prepare reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting test results of material for compliance with requirements in the Contract Documents.
 9. Product Test Reports: Prepare written reports indicating current product produced by manufacturer complies with requirements in the Contract Documents. Base reports on

- evaluation of tests performed by manufacturer and witnessed by a qualified testing agency, or on comprehensive tests performed by a qualified testing agency.
10. Research/Evaluation Reports: Prepare written evidence, from a model code organization acceptable to authorities having jurisdiction, that product complies with building code in effect for Project. Include the following information:
 - a. Name of evaluation organization
 - b. Date of evaluation
 - c. Time period when report is in effect
 - d. Product and manufacturer's names
 - e. Description of product
 - f. Test procedures and results
 - g. Limitations of use
 11. Schedule of Tests and Inspections: Comply with requirements specified in Section 01400 Quality Control Requirements.
 12. Preconstruction Test Reports: Prepare test reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of tests performed before installation of product, for compliance with performance requirements in the Contract Documents.
 13. Compatibility Test Reports: Prepare test reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of compatibility tests performed before installation of product. Include written recommendations for primers and substrate preparation needed for adhesion.
 14. Field Test Reports: Prepare reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of field tests performed either during installation of product or after product is installed in its final location, for compliance with requirements in the Contract Documents.
 15. Maintenance Data: Prepare written and graphic instructions and procedures for operation and normal maintenance of products and equipment. Comply with requirements specified in Section 01785 (Operation and Maintenance Data.)
 16. Manufacturer's Installation and Operations Instructions: Prepare written or published information that documents manufacturer's recommendations, guidelines, and procedures for installing or operating a product or equipment. Manufacturer's Instructions shall be available for review on site at all times. Include name of product and name, address, and telephone number of manufacturer. Include the following, as applicable:
 - a. Preparation of substrates
 - b. Required substrate tolerances
 - c. Sequence of installation or erection
 - d. Required installation tolerances
 - e. Required adjustments
 - f. Recommendations for cleaning and protection
 17. Manufacturer's Field Reports: Prepare written information documenting factory-authorized service representative's tests and inspections. Include the following, as applicable:

- a. Name, address, and telephone number of factory-authorized service representative making report.
 - b. Statement on condition of substrates and their acceptability for installation of product.
 - c. Statement that products at Project site comply with requirements.
 - d. Summary of installation procedures being followed, whether they comply with requirements and, if not, what corrective action was taken.
 - e. Results of operational and other tests and a statement of whether observed performance complies with requirements.
 - f. Statement whether conditions, products, and installation will affect warranty.
 - g. Other required items indicated in individual Specification Sections.
18. Material Safety data sheets (MSDS): Do not submit MSDS for review. Any submitted MSDS will be returned unreviewed.
19. DEFERRED APPROVALS
- a. Submit detailed plans, specifications and engineering calculations for all deferred approval items to the District. **All deferred submittals shall be prepared, signed and stamped by the appropriate State of California licensed engineer.**
 - b. **Contractor shall comply with DSA EPR procedures for all deferred submittals. See DSA PR 18-04 for additional information.**
 - c. **Contractor is responsible for all costs to comply with DSA EPR procedures for all deferred submittals.**
 - d. Fabrication and installation of deferred approval items shall not be started until detailed plans, specifications and engineering calculations have been accepted by the Architect and **approved by** the Division of the State Architect.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 01330

SECTION 01340

ADMINISTRATIVE FORMS & LOGS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. All Contract Documents shall be reviewed for applicable provisions related to the provisions in this document, and provisions in the General Conditions and other Division 1 Specification Sections shall apply to this Section without limitation.

1.2 RELATED REQUIREMENTS SPECIFIED IN OTHER SECTIONS

- A. Section 01290 – “Payment Procedures”
- B. Section 01310 – “Construction Scheduling”
- C. Section 01311 – “Project Management and Coordination”
- D. Section 01330 – “Submittal Procedures”
- E. Section 01625 - “Product Options and Substitutions”
- F. Section 01780 – “Project Record Documents”
- G. Divisions 2 through 33 Sections for Administrative Forms & Logs requirements for the Work in those Sections.

1.3 SUMMARY

- A. This section specifies the information and format requirements for administrative forms and logs.

1.4 ADMINISTRATIVE FORMS & LOGS

- A. Administrative forms and logs include, but are not limited to, the following:
 - 1. Substitution Request Form.
 - 2. Change Order Form.
 - 3. Proposed Change Order Form.
 - 4. Contractor's Proposal for Contract Modification Form* (includes sample numbers to demonstrate calculations only).
 - 5. Payapp Form.
- B. Forms generated by project management software may be substituted if substitution forms contain essentially the same information as shown in these Contract Documents. Allowance for the use of substitute forms is at the sole discretion of the District, and shall be requested and approved before use of the substitute form. Forms marked with an asterisk (*) may NOT be substituted under any condition.
- C. Microsoft Excel files of these forms are available for Contractor use from the District.

1.5 FORMS INCORPORATED BY REFERENCE

- A. Forms available from the California Department of General Services, Division of the State Architect (DSA), <http://www.dgs.ca.gov/dsa/Forms.aspx>, related to administration, construction, testing, and inspection of public works school facilities are hereby incorporated by reference into these Contract Documents.

1.6 CONTRACTOR RESPONSIBILITIES

- A. Nothing in this Section 01340 including, but not limited to the above forms and log forms, shall be construed to limit, relieve, or release Contractor from liability to District for any damages sustained as a result of inaccurate or incorrect information supplied by the Contractor.

PART 2 – PRODUCTS (Not Used)

PART 3 – EXECUTION (Not Used)

Exhibits: See following attachments

CONTRA COSTA COMMUNITY COLLEGE DISTRICT
DVC - PRINT SHOP, STUDENT SUCCESS, & HEALTH
SERVICES RENOVATION

75-21809-00
MARCH 28, 2022
BID SET



CONTRA COSTA COMMUNITY COLLEGE DISTRICT

500 Court Street, Martinez, CA 94553

SUBSTITUTION REQUEST FORM

Contractor Name: _____
Contract #: _____

RFS # _____ Date: _____
DSA Application #: _____
Campus: _____
Project No., Name: _____

Contractor pursuant to General Conditions submits the proposed items. If the District accepts such items as described, the undersigned may furnish such item with all necessary labor, materials, equipment and incidentals to perform and complete the Work.

| Item No. | SPECIFIED ITEM OR DRAWING | SPECIFICATION SECTION | PROPOSED SUBSTITUTION (and name of Subcontractor if different) |
|----------|---------------------------|-----------------------|---|
| | | | |

CERTIFICATION

Under penalty of perjury under the Laws of California, I certify that the proposed substitution will be readily available, perform adequately the functions and achieve the results called for by the design concept, be similar in substance to that specified, and be suited to the same use as that specified in Contract Documents.

Contractor: _____

(Please print name of company)

Name and Title (print/type)

Contractor Authorized Representative

Date

A. Does the substitution affect dimensions shown on Drawings?

B. Will the undersigned pay for changes to the building design, including engineering and detailing costs caused by the requested substitution?

C. What effect does the substitution have on other trades?

D. Will substitution cause change to Project Schedule, or to critical delivery dates? Add ? Shorten ?

E. Differences between proposed substitution and specified item?

F. What is the Cost Differential including all mark-ups?

G. Are Manufacturer's guarantees for the proposed item the same as for item specified? Explain differences.

H. The undersigned accepts full responsibility for delays caused by redesign of other items of the Work necessitated by substitution.

I. The undersigned states that the function, appearance and quality are equivalent or superior to the specified item.

A/E Response:

District Representative Response:

☐ Accepted

☐ Accepted

☐ Not Accepted

☐ Not Accepted

☐ Accepted As Noted

☐ Accepted As Noted

☐ Received Too Late

☐ Received Too Late

By: _____ Date: _____

By: _____ Date: _____



CONTRA COSTA COMMUNITY COLLEGE DISTRICT

500 Court Street, Martinez, CA 94553

CHANGE ORDER No.:

| | |
|------------------|--|
| Contractor Name: | |
| Contract #: | |
| Contract Date: | |
| NTP Date: | |
| GL #: | |

| | |
|--------------------|------|
| Date: | |
| DSA File #: | 7-C1 |
| DSA Application #: | |
| Campus: | |
| Project No., Name: | |

THE CONTRACT IS CHANGED AS FOLLOWS: (Attach Contractor Change Order Request or Proposal - if applicable)

| ADJUSTMENT TO CONTRACT AMOUNT / TIME | |
|--|-----------------------|
| Original Contract Amount | \$0.00 |
| Prior Contract Adjustments | \$0.00 |
| Contract Sum Prior to this Change Order | \$0.00 |
| Adjustment Per This Change Order | \$0.00 |
| Revised Contract Amount | \$0.00 |
| Original Contract Period: | Start Date: End Date: |
| The Contract Time will be Increased; Decreased; By Calendar Days | |
| Revised Contract Completion Date: | |

NOTE: The Contractor waives any claim for further adjustments of the Contract Sum and Contract Time related to the above changes in Work.

| | | | |
|--|--|---|--|
| 1 - REVIEWED & RECOMMENDED (Architect/Engineer of Record) | | 5 - CONTRACTOR ACCEPTANCE | |
| <div>Stamp (when applicable)</div> <div>Signature/Date</div> | | Company Name: | |
| | | Address: | |
| 2 - CONSTRUCTION MANAGER (CM) - (when applicable) | | Authorized Representative, Name & Title (PRINT) | |
| Signature / Date | | Signature / Date | |
| PROJECT INSPECTOR (PI) - (when applicable) | | 6 - DISTRICT AUTHORIZED REPRESENTATIVE | |
| Signature / Date | | C.O. NOT VALID WITHOUT Signature / Date | |
| 4 - PROJECT MANAGER (PM) | | DSA APPROVAL (when applicable) | |
| Signature / Date | | | |



CONTRA COSTA COMMUNITY COLLEGE DISTRICT

500 Court Street, Martinez, CA 94553

PROPOSED CHANGE ORDER

PCO No.: _____

| | |
|------------------|-------|
| Contractor Name: | _____ |
| Contract #: | _____ |
| Contract Date: | _____ |
| NTP Date: | _____ |
| GL #: | _____ |

| | |
|--------------------|-------|
| Date: | _____ |
| DSA File #: | 7-C1 |
| DSA Application #: | _____ |
| Campus: | _____ |
| Project No., Name: | _____ |

PRELIMINARY CHANGE AS FOLLOWS:

Within (7) days provide and submit to the Project Manager a complete and itemized proposal including but not limited to the following items: cost breakdown of Labor, Material, Equipment, Markup, Construction Schedule, etc. Provide either ADD or DEDUCT to the original Contract Amount.

| | |
|---|--|
| Scope of Work: | Ref. (Drawings, Specifications, Others): |
| | |
| Final Cost of this PCO | \$0.00 |
| The Contractor requests that time will be Increased; Decreased; By _____ Working Days | |

NOTE: The Contractor waives any claim for further adjustments of the Contract Sum and Contract Time related to the changes in Work as described above .

| | | | |
|--|----------------|---|--|
| 1 - REVIEWED & RECOMMENDED (Architect/Engineer of Record) | | 5 - CONTRACTOR ACCEPTANCE | |
| Stamp (when applicable) | Signature/Date | Company Name: | |
| | | Address: | |
| | | Authorized Representative, Name & Title (PRINT) | |
| 2 - CONSTRUCTION MANAGER (CM) - (when applicable) | | Signature / Date | |
| Signature / Date | | | |
| 3 - PROJECT INSPECTOR (PI) - (when applicable) | | 6 - DISTRICT REPRESENTATIVE | |
| Signature / Date | | Signature / Date | |
| 4 - PROJECT MANAGER (PM) | | DSA APPROVAL (when applicable) | |
| Signature / Date | | | |

CONTRA COSTA COMMUNITY COLLEGE DISTRICT
DVC - PRINT SHOP, STUDENT SUCCESS, & HEALTH
SERVICES RENOVATION

75-21809-00
MARCH 28, 2022
BID SET

| CONTRACTOR'S PROPOSAL FOR CONTRACT MODIFICATION | | | | DATE: |
|--|-------------------|----------------------|---------------|--------|
| (05/11) | | | | |
| Project No. and Name: | | | CONTRACT NO.: | |
| Prime Contractor: | | | | |
| SHORT DESCRIPTION OF CHANGE: | | Description attached | | |
| PRIME CONTRACTOR'S WORK | | | | |
| 1. Direct Materials | | | \$0.00 | |
| 2. Sales Tax on Materials | 9.25 % of Line 1 | 9.25% | \$0.00 | |
| 3. Direct Labor | | | \$0.00 | |
| 4. Insurance, Taxes, and Fringe Benefits | 19.19 % of Line 3 | 19.19% | \$0.00 | |
| 5. SUBTOTAL Materials and Labor (Add lines 1-4) | | | | \$0.00 |
| 6. Rental Equipment | | | \$0.00 | |
| 7. Sales Tax on Rental Equipment | 9.25 % of Line 5 | 9.25% | \$0.00 | |
| 8. Equipment Ownership and Operating Expenses | | | \$0.00 | |
| 9. SUBTOTAL Equipment (Add Lines 6-8) | | | | \$0.00 |
| SUMMARY | | | | |
| 10. Prime Contractor's Work (Add Lines 5 and 8) | | | \$0.00 | |
| 11. Overhead and Profit On Prime Material and Labor | 15.00 % of Line 9 | 15.00% | \$0.00 | |
| 12. Overhead and Profit On Prime Equipment | 10.00 % of Line 9 | 10.00% | \$0.00 | |
| 13. Total of Subcontractor's Work (See Backup) | | | \$0.00 | |
| 14. Prime's Overhead on all Subcontractor's Work | 0.00 % of Line 10 | 0.00% | \$0.00 | |
| 15. SUBTOTAL (Add Lines 10-14) | | | | \$0.00 |
| 16. Prime Contractor's Bond Premium | 1% % of Line 16 | 1.00% | \$0.00 | |
| 17. TOTAL COST (Add Lines 15-16) | | | | \$0.00 |
| Estimated time extension and justification (attach schedule analysis): | | Work Days | | |
| Prime Contractor's Comments: | | | | |
| Signature and Title of Preparer: | | | Date: | |
| <p>(1) Material (attach itemized quantity and unit cost plus sales tax)</p> <p>(3) Labor (attach itemized hours and rates)</p> <p>(4) Liability and Property Damage Insurance, Worker's, Compensation Insurance, Social Security, and Unemployment Taxes, not to exceed as follows: FICA @ 6.2%- with a wage ceiling of \$84,900; Medicare @ 1.45%- no wage ceiling; FUTA @ .8%- with a wage ceiling of \$7,000; ETT and SUI @ 2.3%- with a wage ceiling of \$7,000; Workers' Compensation @ 3.94%; Liability and Property Damage @ 2.5%. Total not-to-exceed is 19.19%. (Note: Modifications to these percentages will be evaluated and possibly modified only on a case-by-case basis and only after proper proof of alternate percentages are documented and approved in advance. In addition, as wage ceilings are met, those corresponding percentages must drop from the "burden" calculations).</p> <p>(6, 8) Equipment (attach invoices)</p> <p>(13) If Subcontractor performed Work, use Subcontractor's sheets to calculate costs.</p> <p>(14) Prime Contractor's Overhead and Profit on Subcontractor work. No more than five percent (5%) of Item (13). Subcontractor overhead and profit (all tiers cumulative) not to exceed fifteen percent (15%) of the lowest tier Subcontractor Total Cost.</p> <p>(15) Bond not to exceed two percent (2%) of Item (16). Use actual percentage from Performance/Payment bonds submitted at contract award.</p> | | | | |

INSTRUCTIONS FOR PREPARING CONTRACTOR PROPOSAL FOR CONTRACT MODIFICATION

All contract modification proposals shall be addressed to the District and be received only from the Prime Contractor. Proposals must clearly state the conditions and scope of the modification and shall be accompanied by a breakdown of costs, as indicated. Lump sum costs will not be accepted in either the prime or sub-contractor's breakdown of direct cost. The total cost for labor, material, and equipment for each item shall be transferred to the corresponding item on the front of this form.

PRIME CONTRACTOR

PCO # : _____

BREAKDOWN OF DIRECT COSTS

| Item No. | Items of Work Description | Qty | Unit | Material | | Labor | | Equipment | | | |
|----------------------------------|-------------------------------------|-----|------|---------------------|------------|-----------|------------|-----------|------|-------------|------------|
| | | | | Unit Cost | Total Cost | Unit Cost | Total Cost | Rent D | Rate | Rental Cost | Owned Cost |
| 1 | | | | \$ | - | \$ | - | \$ | - | \$ | - |
| 2 | | | | \$ | - | \$ | - | \$ | - | \$ | - |
| 3 | | | | \$ | - | \$ | - | \$ | - | \$ | - |
| 4 | | | | \$ | - | \$ | - | \$ | - | \$ | - |
| 5 | | | | \$ | - | \$ | - | \$ | - | \$ | - |
| 6 | | | | \$ | - | \$ | - | \$ | - | \$ | - |
| 7 | | | | \$ | - | \$ | - | \$ | - | \$ | - |
| 8 | | | | \$ | - | \$ | - | \$ | - | \$ | - |
| 9 | | | | \$ | - | \$ | - | \$ | - | \$ | - |
| 10 | | | | \$ | - | \$ | - | \$ | - | \$ | - |
| 11 | | | | \$ | - | \$ | - | \$ | - | \$ | - |
| 12 | | | | \$ | - | \$ | - | \$ | - | \$ | - |
| 13 | | | | \$ | - | \$ | - | \$ | - | \$ | - |
| 14 | | | | \$ | - | \$ | - | \$ | - | \$ | - |
| 15 | | | | \$ | - | \$ | - | \$ | - | \$ | - |
| 16 | | | | \$ | - | \$ | - | \$ | - | \$ | - |
| 17 | | | | \$ | - | \$ | - | \$ | - | \$ | - |
| 18 | | | | \$ | - | \$ | - | \$ | - | \$ | - |
| 19 | | | | \$ | - | \$ | - | \$ | - | \$ | - |
| 20 | | | | \$ | - | \$ | - | \$ | - | \$ | - |
| 21 | | | | \$ | - | \$ | - | \$ | - | \$ | - |
| 22 | | | | \$ | - | \$ | - | \$ | - | \$ | - |
| 23 | | | | \$ | - | \$ | - | \$ | - | \$ | - |
| 24 | | | | \$ | - | \$ | - | \$ | - | \$ | - |
| 25 | | | | \$ | - | \$ | - | \$ | - | \$ | - |
| 26 | | | | \$ | - | \$ | - | \$ | - | \$ | - |
| 27 | | | | \$ | - | \$ | - | \$ | - | \$ | - |
| 28 | | | | \$ | - | \$ | - | \$ | - | \$ | - |
| 29 | | | | \$ | - | \$ | - | \$ | - | \$ | - |
| 30 | | | | \$ | - | \$ | - | \$ | - | \$ | - |
| 31 | | | | \$ | - | \$ | - | \$ | - | \$ | - |
| 32 | | | | \$ | - | \$ | - | \$ | - | \$ | - |
| 33 | | | | \$ | - | \$ | - | \$ | - | \$ | - |
| 34 | | | | \$ | - | \$ | - | \$ | - | \$ | - |
| 35 | Continuation Page (/) of (/) No | | | Continuation Totals | | Total | | Total | | Total | |
| DIRECT Prime Contractor's Totals | | | | Total | | Total | | Total | | Total | |

CONTRA COSTA COMMUNITY COLLEGE DISTRICT
DVC - PRINT SHOP, STUDENT SUCCESS, & HEALTH
SERVICES RENOVATION

75-21809-00
MARCH 28, 2022
BID SET

| CONTRACTOR'S PROPOSAL FOR CONTRACT MODIFICATION (05/11) | | DATE: _____ | |
|--|-------------------|----------------------------|--------|
| Project No. and Name: _____ | | CONTRACT NO.: _____ | |
| Tier 1 Subcontractor: _____ | | | |
| SHORT DESCRIPTION OF CHANGE: _____ | | Description attached _____ | |
| TIER 1 SUBCONTRACTOR'S WORK | | | |
| 1. Direct Materials | | \$ - | |
| 2. Sales Tax on Materials | 9.25 % of Line 1 | 9.25% | \$0.00 |
| 3. Direct Labor | | \$ - | |
| 4. Insurance, Taxes, and Fringe Benefits | 19.19 % of Line 3 | 19.19% | \$0.00 |
| 5. SUBTOTAL Materials and Labor (Add lines 1-4) | | | \$0.00 |
| 6. Rental Equipment | | \$ - | |
| 7. Sales Tax on Rental Equipment | 9.25 % of Line 5 | 9.25% | \$0.00 |
| 8. Equipment Ownership and Operating Expenses | | \$ - | |
| 9. SUBTOTAL Equipment (Add Lines 6-8) | | | \$0.00 |
| SUMMARY | | | |
| 10. TIER 1 Contractor's Work (Add Lines 5 and 8) | | \$0.00 | |
| 11. Overhead and Profit On TIER 1 Material and Labor | 15.00 % of Line 9 | 15.00% | \$0.00 |
| 12. Overhead and Profit On TIER 1 Equipment | 10.00 % of Line 9 | 10.00% | \$0.00 |
| 13. Total of all Subcontractor's Work (See Backup) | | \$0.00 | |
| 14. Tier 1 Overhead on Subcontractor's Work | 0.00 % of Line 10 | 0.00% | \$0.00 |
| 15. SUBTOTAL (Add Lines 10-14) | | | \$0.00 |
| 16. TIER 1 Contractor's Bond Premium | 1% % of Line 16 | 1.00% | \$0.00 |
| 17. TOTAL COST (Add Lines 15-16) | | | \$0.00 |
| Estimated time extension and justification: _____ | | Work Days _____ | |
| Subcontractor's Comments: _____ | | | |
| Prime Contractor's Name: _____ | | | |
| Signature and Title of Preparer: _____ | | Date: _____ | |
| <p>(1) Material (attach itemized quantity and unit cost plus sales tax)</p> <p>(3) Labor (attach itemized hours and rates)</p> <p>(4) Liability and Property Damage Insurance, Worker's, Compensation Insurance, Social Security, and Unemployment Taxes, not to exceed as follows: FICA @ 6.2%- with a wage ceiling of \$84,900; Medicare @ 1.43%- no wage ceiling; FUTA @ .8%- with a wage ceiling of \$7,000; ETT and SUI @ 2.3%- with a wage ceiling of \$7,000; Workers' Compensation @ 3.94%; Liability and Property Damage @ 2.5%. Total not-to-exceed is 19.19%. (Note: Modifications to these percentages will be evaluated and possibly modified only on a case-by-case basis and only after proper proof of alternate percentages are documented and approved in advance. In addition, as wage ceilings are met, those corresponding percentages must drop from the "burden" calculations).</p> <p>(6, 8) Equipment (attach invoices)</p> <p>(13) If lower tier Subcontractor performed Work, use Subcontractor's sheets to calculate costs.</p> <p>(14) Subcontractor's Overhead and Profit on lower tier Subcontractor work. No more than five percent (5%) of item (13). Subcontractor overhead and profit (all tiers cumulative) not to exceed fifteen percent (15%) of the lowest tier Subcontractor Total Cost.</p> <p>(15) Bond not to exceed two percent (2%) of item (16). Use actual percentage from Performance/Payment bonds submitted at contract award.</p> | | | |

75-21809-00
MARCH 28, 2022
BID SET

| Item No. | Items of Work Description | Qty | Unit | Material | | Labor | | Equipment | | | | |
|--|---------------------------|-----|------|-----------|------------|-----------|------------|-----------|------|-------|-------------|------------|
| | | | | Unit Cost | Total Cost | Unit Cost | Total Cost | Rent | Days | Rate | Rental Cost | Owned Cost |
| 1 | | | | \$ | - | \$ | - | \$ | - | \$ | - | |
| 2 | | | | \$ | - | \$ | - | \$ | - | \$ | - | |
| 3 | | | | \$ | - | \$ | - | \$ | - | \$ | - | |
| 4 | | | | \$ | - | \$ | - | \$ | - | \$ | - | |
| 5 | | | | \$ | - | \$ | - | \$ | - | \$ | - | |
| 6 | | | | \$ | - | \$ | - | \$ | - | \$ | - | |
| 7 | | | | \$ | - | \$ | - | \$ | - | \$ | - | |
| 8 | | | | \$ | - | \$ | - | \$ | - | \$ | - | |
| 9 | | | | \$ | - | \$ | - | \$ | - | \$ | - | |
| 10 | | | | \$ | - | \$ | - | \$ | - | \$ | - | |
| 11 | | | | \$ | - | \$ | - | \$ | - | \$ | - | |
| 12 | | | | \$ | - | \$ | - | \$ | - | \$ | - | |
| 13 | | | | \$ | - | \$ | - | \$ | - | \$ | - | |
| 14 | | | | \$ | - | \$ | - | \$ | - | \$ | - | |
| 15 | | | | \$ | - | \$ | - | \$ | - | \$ | - | |
| 16 | | | | \$ | - | \$ | - | \$ | - | \$ | - | |
| 17 | | | | \$ | - | \$ | - | \$ | - | \$ | - | |
| 18 | | | | \$ | - | \$ | - | \$ | - | \$ | - | |
| 19 | | | | \$ | - | \$ | - | \$ | - | \$ | - | |
| 20 | | | | \$ | - | \$ | - | \$ | - | \$ | - | |
| 21 | | | | \$ | - | \$ | - | \$ | - | \$ | - | |
| 22 | | | | \$ | - | \$ | - | \$ | - | \$ | - | |
| 23 | | | | \$ | - | \$ | - | \$ | - | \$ | - | |
| 24 | | | | \$ | - | \$ | - | \$ | - | \$ | - | |
| 25 | | | | \$ | - | \$ | - | \$ | - | \$ | - | |
| 26 | | | | \$ | - | \$ | - | \$ | - | \$ | - | |
| 27 | | | | \$ | - | \$ | - | \$ | - | \$ | - | |
| 28 | | | | \$ | - | \$ | - | \$ | - | \$ | - | |
| 29 | | | | \$ | - | \$ | - | \$ | - | \$ | - | |
| 30 | | | | \$ | - | \$ | - | \$ | - | \$ | - | |
| 31 | | | | \$ | - | \$ | - | \$ | - | \$ | - | |
| 32 | | | | \$ | - | \$ | - | \$ | - | \$ | - | |
| 33 | | | | \$ | - | \$ | - | \$ | - | \$ | - | |
| 34 | | | | \$ | - | \$ | - | \$ | - | \$ | - | |
| 35 | Continuation Page 1 of 2 | | | | \$ | - | \$ | | | \$ | - | |
| DISTRICT Tier 1 Subcontractor's Totals | | | | Total | \$ | - | Total | \$ | | Total | \$ | - |

CONTRA COSTA COMMUNITY COLLEGE DISTRICT
DVC - PRINT SHOP, STUDENT SUCCESS, & HEALTH
SERVICES RENOVATION

75-21809-00
MARCH 28, 2022
BID SET

| CONTRACTOR'S PROPOSAL FOR CONTRACT MODIFICATION (05/11) | | DATE: _____ | |
|--|-------------------|----------------------------|--------|
| Project No. and Name: _____ | | CONTRACT NO.: _____ | |
| Tier 2 Subcontractor: _____ | | | |
| SHORT DESCRIPTION OF CHANGE: _____ | | Description attached _____ | |
| TIER 2 SUBCONTRACTOR'S WORK | | | |
| 1. Direct Materials | | \$ - | |
| 2. Sales Tax on Materials | 9.25 % of Line 1 | 9.25% | \$0.00 |
| 3. Direct Labor | | \$ - | |
| 4. Insurance, Taxes, and Fringe Benefits | 19.19 % of Line 3 | 19.19% | \$0.00 |
| 5. SUBTOTAL Materials and Labor (Add lines 1-4) | | | \$0.00 |
| 6. Rental Equipment | | \$ - | |
| 7. Sales Tax on Rental Equipment | 9.25 % of Line 5 | 9.25% | \$0.00 |
| 8. Equipment Ownership and Operating Expenses | | \$ - | |
| 9. SUBTOTAL Equipment (Add Lines 6-8) | | | \$0.00 |
| SUMMARY | | | |
| 10. TIER 2 Contractor's Work (Add Lines 5 and 8) | | \$0.00 | |
| 11. Overhead and Profit On TIER 2 Material and Labor | 15.00 % of Line 9 | 15.00% | \$0.00 |
| 12. Overhead and Profit On TIER 2 Equipment | 10.00 % of Line 9 | 10.00% | \$0.00 |
| 13. Total of all Subcontractor's Work (See Backup) | | \$0.00 | |
| 14. Tier 2 Overhead on Subcontractor's Work | 0.00 % of Line 10 | 0.00% | \$0.00 |
| 15. SUBTOTAL (Add Lines 10-14) | | | \$0.00 |
| 16. TIER 2 Contractor's Bond Premium | 1% % of Line 16 | 1.00% | \$0.00 |
| 17. TOTAL COST (Add Lines 15-16) | | | \$0.00 |
| Estimated time extension and justification: _____ | | Work Days _____ | |
| Tier 2 Subcontractor's Comments: _____ | | | |
| Tier 1 Subcontractor's Name: _____ | | | |
| Signature and Title of Preparer: _____ | | Date: _____ | |
| <p>(1) Material (attach itemized quantity and unit cost plus sales tax)</p> <p>(3) Labor (attach itemized hours and rates)</p> <p>(4) Liability and Property Damage Insurance, Worker's, Compensation Insurance, Social Security, and Unemployment Taxes, not to exceed as follows: FICA @ 6.2%- with a wage ceiling of \$84,900; Medicare @ 1.43%- no wage ceiling; FUTA @ .8%- with a wage ceiling of \$7,000; ETT and SUI @ 2.3%- with a wage ceiling of \$7,000; Workers' Compensation @ 3.94%; Liability and Property Damage @ 2.5%. Total not-to-exceed is 19.19%. (Note: Modifications to these percentages will be evaluated and possibly modified only on a case-by-case basis and only after proper proof of alternate percentages are documented and approved in advance. In addition, as wage ceilings are met, those corresponding percentages must drop from the "burden" calculations).</p> <p>(6, 8) Equipment (attach invoices)</p> <p>(13) If lower tier Subcontractor performed Work, use Subcontractor's sheets to calculate costs.</p> <p>(14) Subcontractor's Overhead and Profit on lower tier Subcontractor work. No more than five percent (5%) of item (13). Subcontractor overhead and profit (all tiers cumulative) not to exceed fifteen percent (15%) of the lowest tier Subcontractor Total Cost.</p> <p>(15) Bond not to exceed two percent (2%) of item (16). Use actual percentage from Performance/Payment bonds submitted at contract award.</p> | | | |

75-21809-00
MARCH 28, 2022
BID SET

All contract modification proposals shall be addressed to the District and be received only from the Prime Contractor. Proposals must clearly state the conditions and scope of the modification and shall be accompanied by a breakdown of costs, as indicated. Lump sum costs will not be accepted in either the prime or sub-contractor's breakdown of direct cost. The total cost for labor, material, and equipment for each item shall be transferred to the corresponding item on the front of this form.

PCO# : _____

REWORKING OF DIRECT COSTS

| Item No. | Items of Work Description | Qty | Unit | Material | | Labor | | Equipment | | | Owned Cost |
|---|----------------------------------|-----|------|-----------------------|------------|-----------|------------|-----------|------|----------|------------|
| | | | | Unit Cost | Total Cost | Unit Cost | Total Cost | Rent | Days | Rate | |
| 1 | | | | | | | | | | | |
| 2 | | | | | | | | | | | |
| 3 | | | | | | | | | | | |
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| 30 | | | | | | | | | | | |
| 31 | | | | | | | | | | | |
| 32 | | | | | | | | | | | |
| 33 | | | | | | | | | | | |
| 34 | | | | | | | | | | | |
| 35 | Continuation Page (/ Yes (/ No | | | Continuation Total is | | | | | | | |
| DISTRICT Year 25 subcontractor's Totals | | | | Total \$ | - | Total \$ | - | Total | | Total \$ | - |

CONTRA COSTA COMMUNITY COLLEGE DISTRICT
DVC - PRINT SHOP, STUDENT SUCCESS, & HEALTH
SERVICES RENOVATION

75-21809-00
MARCH 28, 2022
BID SET

| | | | |
|--|-------------------|---|--------|
| CONTRACTOR'S PROPOSAL FOR CONTRACT MODIFICATION | | DATE: | |
| (05/11) | | | |
| Project No. and Name: | | CONTRACT NO.: | |
| | | | |
| Tier 3 Subcontractor: | | | |
| | | | |
| SHORT DESCRIPTION OF CHANGE: | | Description attached | |
| | | | |
| TIER 3 SUBCONTRACTOR'S WORK | | | |
| 1. Direct Materials | | \$ | - |
| 2. Sales Tax on Materials | 9.25 % of Line 1 | 9.25% | \$0.00 |
| 3. Direct Labor | | \$ | - |
| 4. Insurance, Taxes, and Fringe Benefits | 19.19 % of Line 3 | 19.19% | \$0.00 |
| 5. SUBTOTAL Materials and Labor (Add lines 1-4) | | | \$0.00 |
| 6. Rental Equipment | | \$ | - |
| 7. Sales Tax on Rental Equipment | 9.25 % of Line 5 | 9.25% | \$0.00 |
| 8. Equipment Ownership and Operating Expenses | | \$ | - |
| 9. SUBTOTAL Equipment (Add Lines 6-8) | | | \$0.00 |
| SUMMARY | | | |
| 10. TIER 3 Contractor's Work (Add Lines 5 and 8) | | | \$0.00 |
| 11. Overhead and Profit On TIER 3 Material and Labor | 15.00 % of Line 9 | 15.00% | \$0.00 |
| 12. Overhead and Profit On TIER 3 Equipment | 10.00 % of Line 9 | 10.00% | \$0.00 |
| 13. Total of all Subcontractor's Work (See Backup) | | | |
| 14. Tier 3 Overhead on Subcontractor's Work | 0.00 % of Line 10 | 0.00% | \$0.00 |
| 15. SUBTOTAL (Add Lines 10-14) | | | \$0.00 |
| 16. TIER 3 Contractor's Bond Premium | 1% % of Line 16 | 1.00% | \$0.00 |
| 17. TOTAL COST (Add Lines 15-16) | | | \$0.00 |
| Estimated time extension and justification: | | Work Days | |
| | | | |
| Tier 3 Subcontractor's Comments: | | | |
| | | | |
| Tier 2 Subcontractor's Name: | | | |
| | | | |
| Signature and Title of Preparer: | | Date: | |
| | | | |
| <p>(1) Material (attach itemized quantity and unit cost plus sales tax)</p> <p>(3) Labor (attach itemized hours and rates)</p> <p>(4) Liability and Property Damage Insurance, Worker's, Compensation Insurance, Social Security, and Unemployment Taxes, not to exceed as follows: FICA @ 6.2%- with a wage ceiling of \$84,900; Medicare @ 1.45%- no wage ceiling; FUTA @ .8%- with a wage ceiling of \$7,000; ETT and SUI @ 2.3%- with a wage ceiling of \$7,000; Workers' Compensation @ 3.94%; Liability and Property Damage @ 2.5%. Total not-to-exceed is 19.19%. (Note: Modifications to these percentages will be evaluated and possibly modified only on a case-by-case basis and only after proper proof of alternate percentages are documented and approved in advance. In addition, as wage ceilings are met, those corresponding percentages must drop from the "burden" calculations).</p> <p>(6, 8) Equipment (attach invoices)</p> <p>(13) If lower tier Subcontractor performed Work, use Subcontractor's sheets to calculate costs.</p> <p>(14) Subcontractor's Overhead and Profit on lower tier Subcontractor work. No more than five percent (5%) of Item (13). Subcontractor overhead and profit (all tiers cumulative) not to exceed fifteen percent (15%) of the lowest tier Subcontractor Total Cost.</p> <p>(15) Bond not to exceed two percent (2%) of Item (16). Use actual percentage from Performance/Payment bonds submitted at contract award.</p> | | | |

75-21809-00
MARCH 28, 2022
BID SET

All contract modification proposals shall be addressed to the District and be received only from the Prime Contractor. Proposals must clearly state the conditions and scope of the modification and shall be accompanied by a breakdown of costs, as indicated. Lump sum costs will not be accepted in either the prime or sub-contractor's breakdown of direct cost. The total cost for labor, material, and equipment for each item shall be transferred to the corresponding item on the front of this form.

PCO# : _____

REWORKING OF DIRECT COSTS

01340- 13

75-21809-00
MARCH 28, 2022
BID SET

01340- 14

75-21809-00
MARCH 28, 2022
BID SET

END OF SECTION 01340

SECTION 01400

QUALITY CONTROL REQUIREMENTS

PART 1 – GENERAL

1.1 RELATED DOCUMENTS

- A. All Contract Documents shall be reviewed for applicable provisions related to the provisions in this document, and provisions in the General Conditions and other Division 1 Specification Sections shall apply to this Section without limitation.

1.2 RELATED REQUIREMENTS SPECIFIED IN OTHER SECTIONS

- A. Section 01010 – “Summary of Work”
- B. Section 01311 – “Project Management and Coordination”
- C. Section 01330 – “Submittal Procedures”
- D. Section 01410 – “Regulatory Requirements”
- E. Section 01411 – “Testing Laboratory Services”
- F. Section 01412 – “Regulatory Requirements – Hazardous Material”
- G. Divisions 2 through 33 Sections for Quality Control Requirements for the work in those sections.

1.3 SUMMARY

- A. This Section includes Administrative and Procedural Requirements for Quality Control and Quality Assurance Services includes, but not limited to, the followings:
 - 1. Quality assurance and control of installation.
 - 2. References.
 - 3. Mock-ups
 - 4. Inspection and testing laboratory services
 - 5. Manufacturers’ field services and reports
 - 6. Field sample
 - 7. DSA Project Inspector
 - 8. Inspection by the Division of the State Architect
 - 9. Conflicts

1.4 QUALITY ASSURANCE/CONTROL OF INSTALLATION

- A. Monitor quality control over suppliers, manufacturers, products, services, site conditions and workmanship, to produce Work of specified quality.
- B. Comply fully with manufacturer’s written instructions, including each step in sequence.
- C. When manufacturers' instructions conflict with Contract Documents, request clarification from District’s Representative before proceeding.

- D. Comply with specified standards as a minimum quality for the Work except when more stringent tolerances, codes, or specified requirements indicate higher standards or more precise workmanship.
- E. All Work shall be performed by persons qualified to produce workmanship of specified quality.
- F. Secure products in place with positive anchorage devices designed and sized to withstand stresses, vibration, physical distortion or disfigurement.
- G. Contractor's Line of Authority: Contractor shall provide one person who shall be both knowledgeable and responsible for all work to be performed on the Project at all times during normal work hours. In Contractor's absence, Contractor's appointed representative shall be responsible for all directions given and said directions shall be binding as if given to the Contractor. Contractor's representative shall be responsible to coordinate all work to be performed on the Project.
- H. Shop and field work shall be performed only by mechanics skilled and experienced in the fabrication and installation of the work involved. All work on this Project shall be performed in accordance with the best practices of the various trades involved and in accordance with the Contract Documents, approved shop drawings and these specifications.
- I. All work shall be erected and installed plumb, level, square and true and in proper alignment and relationship to the work of other trades. All finished work shall be free from defects. The District's Representatives reserve the right to reject any materials and workmanship that are not considered to be of the highest standards of the trades involved. Any such inferior material or workmanship shall be removed and replaced at no additional cost or time impact to the District.
- J. The specifications and recommendations of the manufacturer whose materials are used shall be strictly adhered to during the application or installation of materials. Manufacturer's specifications, installation instructions, and testing and startup directions shall be available for inspection on Site.
- K. Any additional work beyond that specified or illustrated in the Contract Documents, or any modification thereto, that is necessary to obtain the guarantees specified in the Contract Documents shall be provided by the Contractor without any additional cost or time impact to the District.

1.5 REFERENCES

- A. Conform to reference standards in force on the most recent date of issue of the approved Contract Documents.
- B. When specified reference standards conflict with Contract Documents, request clarification from District's Representative before proceeding.
- C. The contractual relationship of the parties to the Contract shall not be altered from the Contract Documents by mention or inference otherwise in any reference document.
- D. The Contractor shall be responsible for being current and knowledgeable for all building codes involved for all trades under the Contractor's direction.
- E. Provide all work and materials in full in accordance with the latest applicable Rules and Regulations of the California Code of Regulations Title 24 Building Code Standards, the State Fire Marshal, Safety Orders of the Division of Industrial Safety, and any other applicable laws

or regulations. Nothing in these plans or specifications is to be construed to permit Work not conforming to these Codes.

- F. American Society for Testing and Materials (ASTM):
 - 1. ASTM 548: Guide for General Criteria Used for Evaluating Laboratory Competence.
- G. Code of Federal Regulations (CFR):
 - 1. 29 CFR 1910, Subpart A, Section 1910.7: Definitions and Requirements for a National Recognized Testing Laboratory.
- H. NIST: National Institute of Standards and Technology.
- I. Furnish all material and labor required to comply with these Rules and Regulations without any additional cost to District.

1.6 MOCK-UPS (Not Used)

1.7 INSPECTION AND TESTING LABORATORY SERVICES

- A. See Section 01411 Testing Laboratory Services

1.8 MANUFACTURERS' FIELD SERVICES AND REPORTS

- A. Submit qualifications of observer to District and Architect 30 days in advance of required observations.
- B. When specified in individual Specification Sections, require material or product suppliers or manufacturers to provide qualified staff personnel to observe site conditions, conditions of surfaces and installation, quality of workmanship, start-up of equipment, testing, adjusting, and balancing of equipment as applicable, and to provide instructions when necessary.
- C. Manufacturer's Field Representatives shall report to the Contractor and the District, any observations, site decisions, or instructions given to applicators or installers that are supplemental or contrary to manufacturers' written instructions.
- D. Provide by email PDF of Manufacturer's Field Representative report to District for review within 7 days of field observation.
- E. Manufacturer's Field Service: Where indicated, engage a factory-authorized service representative to inspect field-assembled components and equipment installation, including service connections. Report results in writing as specified in Section 01330 (Submittal Procedures.)

1.9 FIELD SAMPLES

- A. Install field samples at the site for District and Architect review as required by individual Specifications Sections.
- B. Samples accepted by the Architect in writing represent the quality level required for the Work.
- C. Where a field sample is specified in individual sections to be removed, clear area after field sample has been accepted by Architect.

1.10 PROJECT INSPECTOR

- A. District will employ a Project Inspector in accordance with the regulations of the DSA and subject to the provision of Part 1, Title 24, CCR.
- B. Project Inspector's authority, rights and duties shall be as set forth in Section 4-342, Part 1, Title, 24, CCR.
- C. The Project Inspector shall make semi-monthly reports in writing to the Architect with copies forwarded to District, and the DSA in accordance with Section 4-337, Part 1, Title 24, CCR.
- D. The Project Inspector shall notify the Division of the State Architect:
 - 1. When work is started on project.
 - 2. Minimum (2) working days in advance of time when foundation trenches will be complete and ready for footing forms.
 - 3. Minimum (2) working days in advance for first placing of concrete.
 - 4. When work is suspended for period of more than two weeks.
- E. The Project Inspector shall keep records of certain phases of construction that shall be maintained on the project site until Final Completion. Upon Final Completion, these records shall be copied, with the original delivered to the District for the permanent school records and the copy forwarded to the Architect. The record shall include, but is not limited, to the following:
 - 1. The time and placing of concrete and the time and date of removal of forms in each portion of the structure.
 - 2. Weighmasters tickets delivered with each load of concrete delivered to site.
 - 3. Identification marks of welders, lists of defective welds, and manner of correction of defects.
 - 4. Certification of grounding of electrical system.
- F. The Project Inspector shall monitor the work of Special Inspectors and testing laboratories to ensure testing program is satisfactorily completed.
- G. The Project Inspector shall notify the Contractor in writing of deviations from Contract Documents. Copies of such notice shall be forwarded immediately to the Architect, District and the Division of the State Architect (DSA).
- H. The Project Inspector shall make and submit Verified Reports in accordance with Section 4-336, Part 1, Title 24, CCR. Verified Reports shall be submitted directly to the Division of the State Architect with a copy forwarded to the Architect.
- I. The Project Inspector shall prepare detailed statements of fact regarding materials, operations and other related issues when requested by the District. Such statements shall be submitted directly to the District with a copy forwarded to the Architect.
- J. The District may employ roofing and waterproofing specialist (e.g., other District inspectors, in addition to the Project Inspector to inspect and monitor application of roofing, waterproofing, and related flashings.
- K. Contractor shall cooperate with the Project inspector and other District inspectors. Provide access to the work at all times whether it is in preparation or progress. Provide proper facilities for access and inspection.

- L. Perform work with the knowledge of the Project Inspector. Cover no work prior to inspection.
- M. Notify Project Inspector in writing at least (2) working days prior to expected time for operations requiring inspection.
- N. If work is performed on Saturdays, Sundays, Holidays or beyond normal working hours, the Project Inspector, or other District inspectors, will be paid at overtime rates by the District. The cost of the Inspectors' premium time will be deducted by the District from the Contract Price by Change Order.
- O. The Contractor shall pay the cost of the Inspector's salary for the time the Inspector is required on the project beyond the allotted Contract Time. The cost of the Inspector's salary shall be in addition to liquidated damages and will be deducted by the District from the Contract Price by Change Order.

1.11 INSPECTION BY THE DIVISION OF THE STATE ARCHITECT

- A. Work will be monitored and observed through periodic site visits by the Division of the State Architect Field Inspector according to Section 4-334, Part 1, Title 24, CCR.

1.12 INSPECTIONS BY LOCAL AGENCIES

- A. Contractor will be responsible to coordinate inspections with Contra Costa Central Sanitation.
- B. Contractor will be responsible to coordinate inspections with Contra Costa County Health Department.

1.13 CONFLICTS

- A. Contractor shall comply with rules of documents interpretation as indicated in Contract General Conditions including, but not limited to the following items:
 - 1. Contract Documents take precedence over statutory requirements or standard when requiring materials of higher quality or performance, or larger sizes or capacity, or greater protection, safety or quantity than required by said codes or standards.
 - 2. This shall not operate to allow deviations from code requirements, prior approvals and other provisions as specified.
 - 3. Modifications to published statutory requirements currently adopted or enforced by regulating agencies having jurisdiction shall take precedence over said published requirements.
- B. Conflicts within Contract Documents and/or between Project Manual (including specifications) Drawings, Addenda: The more stringent requirement shall govern.
- C. Subcontractor, supplier, and installer work may be called for in any section of the Contract Documents; Project Manual Specifications, Drawings and Addenda. Work by any one discipline is not limited to any specification section of the Project Manual, Drawings, Addenda, and Contract Documents shall be bid in total and not in parts.
- D. If compliance with two or more standards is specified and the standards establish different or conflicting requirements for minimum quantities or quality levels, comply with the most stringent requirement. Refer uncertainties and requirements that are different, but apparently equal, to District with a copy to the Architect for a decision before proceeding. Contractor shall,

within (15) working days, notify the District with a copy to the Architect in writing for the context of requirements.

- E. Minimum Quantity or Quality Levels: The quantity or quality level shown or specified shall be the minimum provided or performed. The actual installation may comply exactly with the minimum quantity or quality specified, or it may exceed the minimum within reasonable limits. To comply with these requirements, indicated numeric values are minimum or maximum, as appropriate, for the context of requirements. Contractor shall, within (15) working days, notify any uncertainties to the District with a copy to the Architect for a decision before proceeding.

1.14 QUALITY ASSURANCE

- A. General: Qualifications requirements in this Article establish the minimum qualification levels required; individual Specification Sections specify additional requirements.
- B. Installer Qualifications: A firm or individual with experience in installing, erecting, or assembling work similar in material, design, and extent to that indicated for this Project, whose work has resulted in construction with a record of successful in-service performance.
 - 1. Minimum Experience: 5 years or 5 similar projects, unless indicated otherwise.
- C. Manufacturer Qualifications: A firm experienced in manufacturing products or systems similar to those indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units.
- D. Fabricator Qualifications: A firm experienced in producing products similar to those indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to product required units.
- E. Professional Engineer Qualifications: A professional engineer who is legally qualified to practice in jurisdiction where Project is located, and who is experienced in providing engineering services of the kind indicated. Engineering services are defined as those performed for installations of the system, assembly, or product that is similar to those indicated for this Project in material, design, and extent.
- F. Testing Agency Qualifications: An NRTL, an NVLAP, or an independent agency with the experience and capability to conduct testing and inspecting indicated, as documented according to ASTM E 548; and with additional qualifications specified in individual Sections; and acceptable to authorities having jurisdiction.
 - 1. NRTL: A nationally recognized testing laboratory according to 29 CFR 1910.7.
 - 2. NVLAP: A testing agency accredited according to NIST's National Voluntary Laboratory Accreditation Program.
- G. Factory-Authorized Service Representative Qualifications: An authorized representative who is trained and approved by manufacturer to inspect installation of manufacturer's products that are similar in material, design, and extent to those indicated for this Project.
- H. Preconstruction Testing: Where testing agency is indicated to perform preconstruction testing for compliance with specified requirements for performance and test methods, comply with the following:
 - 1. Contractor responsibilities include:
 - a. Provide test specimens representative of proposed products and construction.

- b. Submit specimens in a timely manner with sufficient time for testing and analyzing results to prevent delaying the Work.
 - c. Provide sizes and configurations of test assemblies, mockups, and laboratory mockups, to adequately demonstrate capability of products to comply with performance requirements.
 - d. Build site-assembled test assemblies and mockups using installers who will perform same tasks for Project.
 - e. Build laboratory mockups at testing facility using personnel, products, and methods of construction indicated for the completed Work.
 - f. When testing is complete, remove test specimens, assemblies, mockups, and laboratory mockups; do not reuse products on Project.
 2. Testing Agency Responsibilities: Submit a certified written report of each test, inspection, and similar quality-assurance service to District with a copy to the Architect and Contractor. Interpret tests and inspections and state in each report whether tested and inspected work complies with or deviates from the Contract Documents.
- I. Pre-work Meetings: The Contractor shall hold and document Pre-work Meetings for Subcontractors at least 5 work days prior to Subcontractors beginning work at the site for the first time. A copy of the completed New Subcontractor Preparatory Phase Checklist for each Pre-work Meeting shall be provided as an attachment to the Daily Report for that day, with a sign-in sheet for all persons that were present at the meeting. The Checklist is provided at the end of this section.
 1. The Pre-work Meeting shall be conducted in order to review and confirm the requirements of the Work per the Contract Documents, coordinate the Work, identify required tests and inspections, and establish a goal to obtain quality construction by planning ahead and identifying potential problems.
 2. Notify the District at least three (3) work days in advance of each Pre-work Meeting. Conduct the Pre-work Meeting with the superintendent and the foreman responsible for the work and any District representatives that wish to attend.
 3. Review the following at the Pre-work Meeting prior to allowing a Subcontractor to begin work on site:
 - a. Review the General Conditions and other Contract Specifications governing work at the Project location. Review rules governing use of workspace, parking, laydown areas, conduct of employees, and access to and from the worksite.
 - b. Review the Project Preconstruction Meeting Minutes and review pertinent portions with the new Subcontractor.
 - c. Review each paragraph of the applicable technical specification sections;
 - d. Review the Contract Drawings;
 - e. Verify that appropriate shop drawings and submittals for materials and equipment have been submitted and approved. Verify receipt of approved factory test results, when required;
 - f. Review the testing plan and ensure that provisions have been made to provide the required testing;
 - g. Examine the work area to ensure that the required preliminary work has been completed;

- h. Examine the required materials, equipment and sample work to ensure that they are on hand and conform to the approved shop drawings and submitted data;
- i. Review the Contractor's approved Site Safety Plan and appropriate Activity Hazard review to ensure that applicable safety requirements are met, and that required Material Safety Data Sheets (MSDS) are submitted;
- j. Establish the quality of workmanship required;
- k. Discuss specific controls used and the construction methods and the approach that will be used to provide quality construction by planning ahead and identifying potential problems for each definable feature of work.

1.15 QUALITY CONTROL, GENERAL

- A. District will provide inspections, tests, and similar quality control services specified to be performed by independent agencies, except where indicated as Contractor's responsibility. Costs for District-provided inspections and tests are not included in Contract Sum.
 - 1. District will furnish Contractor with names, addresses, and telephone numbers of testing agencies engaged and description of types of testing and inspecting they are engaged to perform.
 - 2. Costs for retesting and re-inspecting construction that replaces or is necessitated by work that failed to comply with the Contract Documents will be charged to Contractor, and the Contract Price will be adjusted by Change Order.
- B. Where tests and inspections are indicated as Contractor's cost and/or responsibility, provide quality-control services specified and those required by authorities having jurisdiction. Perform quality-control services required of Contractor by authorities having jurisdiction, whether specified or not.
 - 1. Where services are indicated as Contractor's responsibility, engage a qualified testing agency to perform these quality-control services.
 - a. Contractor shall not employ same entity engaged by District, unless agreed to in writing by District.
 - 2. Testing of equipment, systems, components, assemblies, and other non-structural elements of the Work that require testing shall be performed in accordance with the Contract Documents and Manufacturer's recommended testing protocols. The Contractor shall submit Manufacturer's Installation Instructions and Manufacturer's recommended tests in accordance with Section 01330, Submittal Procedures, prior to installation and testing of equipment, systems, components, assemblies, and other non-structural elements of the Work. Test results shall be recorded and submitted original Manufacturer's documents.
 - 3. Notify Project Inspector and testing agencies, at least (5) working days or as indicated otherwise in advance of time when Work that requires testing or inspecting will be performed.
 - 4. Where quality-control services are indicated as Contractor's responsibility, submit a certified written report, in duplicate, of each quality-control service.
 - 5. Testing and inspecting requested by Contractor and not required by the Contract Documents are Contractor's responsibility.
 - 6. Submit additional copies of each written report directly to authorities having jurisdiction, when they so direct.

- C. Retesting/Re-inspecting:
 - 1. Where quality-control services are Contractor's responsibility, provide quality-control services, including retesting and re-inspecting, for construction that replaces or is necessitated by Work that failed to comply with the Contract Documents.
 - 2. Where quality-control services are District's responsibility, costs for retesting and re-inspecting construction that replaces or is necessitated by Work that failed to comply with the Contract Documents will be charged to Contractor, by way of a deductive Change Order.
- D. Associated Services: Cooperate with agencies performing required tests, inspections, and similar quality-control services, and provide reasonable auxiliary services as requested. Notify agency sufficiently in advance of operations to permit assignment of personnel. Provide the following:
 - 1. Access to the Work
 - 2. Incidental labor and facilities necessary to facilitate tests and inspections
 - 3. Adequate quantities of representative samples of materials that require testing and inspecting shall be made available to the District's Special Inspection Testing Lab. **The District's Special Inspection Testing Lab, shall be responsible to make the final determination of what samples to be selected for testing.**
 - 4. Facilities for storage and field curing of test samples.
 - 5. Preliminary design mix proposed for use for material mixes that require control by testing agency.
 - 6. Security and protection for samples and for testing and inspecting equipment at Project site.
- E. Coordination: Coordinate sequence of activities to accommodate required quality-assurance and -control services with a minimum of delay and to avoid necessity of removing and replacing construction to accommodate testing and inspecting.
 - 1. Schedule times for tests, inspections, obtaining samples, and similar activities. Provide timely notice of the Work's readiness for all required tests and inspections.
- F. Testing and Inspection Log: The Contractor shall provide a detailed list of all Tests and Inspections required by the Contract Documents. Submit the Test and Inspection Log with the submittal of the Master CPM Schedule.
 - 1. Distribution: Distribute schedule to District with a copy to the Architect, testing agencies, and each party involved in performance of portions of the Work where tests and inspections are required.

1.16 QUALITY CONTROL PROGRAM

- A. Information for the District: Prior to commencing Work, the Contractor may obtain a single copy set of the current report forms from the District. The report forms will consist of the Contractor Production Report, Contractor Production Report (Continuation Sheet), Contractor Quality Control (CQC) Report, CQC Report (Continuation Sheet), Preparatory Phase Checklist, Rework Items List, and Testing Plan and Log. Deliver the following to the District during Construction (email transmittal of Adobe pdf documents may be acceptable for reports in this section if approved in advance by the District):

1. CQC Report: Mail or hand-carry the original (wet signatures) and 2 copies by 10:00 AM the next working day after each day that work is performed and for every seven consecutive calendar days of no-work.
2. Contractor Production Report: Mail or hand-carry the original (wet signatures) and 2 copies by 10:00 AM the next working day after each day that work is performed and for every seven consecutive calendar days of no-work, attached to the CQC Report.]
3. Preparatory Phase Checklist: Original attached to the original CQC Report and one copy attached to each QC Report copy.
4. Field Test Reports: Mail or hand-carry the original within two working days after the test is performed, attached to the original CQC Report and one copy attached to each QC Report copy.
5. Monthly Summary Report of Tests: Submit the report at the end of each month.
6. Testing Plan and Log: Submit the report at the end of each month.
7. Rework Items List: Submit lists containing new entries daily, in the same manner as the CQC Report.
8. CQC Meeting Minutes: Mail or hand-carry the original within two working days after the meeting is held, attached to the original CQC Report and one copy attached to each CQC Report copy.
9. QC Certifications: As required herein.

B. QUALITY CONTROL PROGRAM REQUIREMENTS

1. Contractor shall establish and maintain a QC program as described in this section. This QC program is a key element in meeting the objectives of Quality Control and systems commissioning. The QC program consists of the Contractor Organization, QC Plan, a Coordination and Mutual Understanding Meeting, QC meetings, submittal review and certification, testing, and QC certifications and documentation necessary to provide materials, equipment, workmanship, fabrication, construction and operations which comply with the requirements of this Contract.
 - a. The QA/QC program must cover on-site and off-site work and be keyed to the work sequence.
 - b. No construction work or testing may be performed unless the QA/QC Manager is on the work site.
 - c. The QA/QC Manager must report to an officer of the firm and not be subordinate to the Project Superintendent.
 - d. The QA/QC Manager, Project Superintendent and other Contractor and Subcontractor personnel must work together effectively. Although the QA/QC Manager is the primary individual responsible for quality control, all individuals will be held responsible for the quality of work on the job.
2. Acceptance of the QA/QC Plan is required prior to the start of construction. The District reserves the right to require changes in the QA/QC Plan and operations as necessary, including removal of personnel, to ensure the specified quality of work.
3. The District reserves the right to interview any member of the Contractor's organization at any time in order to verify the submitted qualifications.
4. The District may require the removal of any individual for non-compliance with quality requirements specified in the Contract.

- C. Preliminary Construction Work Authorized Prior to Acceptance. The only construction work that is authorized to proceed prior to the acceptance of the QA/QC Plan is mobilization of storage and office trailers, temporary utilities, and surveying.
- D. Notification of Changes: Notify the District, in writing, of any proposed changes in the QA/QC Plan or changes to the Contractor organization personnel, a minimum of 10 work days prior to a proposed change. Proposed changes are subject to acceptance by the District.
- E. QA/QC Manager and Duties: Provide a Full Time on site QA/QC Manager at the Work site to implement and manage the QC program.
 - 1. **The QA/QC Manager cannot serve in any other capacity on the project (e.g., project manager, superintendent, project engineer, etc.). The QA/QC Manager's sole responsibility is to ensure the development and implementation of the Quality Control Program and to fulfill all other requirements of Section 01400.**
 - 2. The QA/QC Manager is required to attend the weekly meetings, conduct new subcontractor Pre-Work Preparatory Phase meetings, perform submittal review and certification, ensure testing is performed and provide QC certifications and documentation required in this Contract.
 - 3. The QA/QC Manager is responsible for managing and coordinating the documentation performed by Contractor testing laboratory personnel and any other inspection and testing personnel required by this Contract not coordinated, overseen, and paid by the District.
 - 4. **Qualifications: Need to have a minimum of 10 years' experience as a Project Superintendent, QA/QC Manager, Project Manager, Project Engineer or Construction Manager on similar size and type construction contracts, which included the major trades that are part of this Contract.**
 - a. The individual must be familiar with the requirements of DSA, OSHA and Cal OSHA, and have experience in the areas of hazard identification, safety compliance, and sustainability.
 - 5. Alternate QA/QC Manager Duties and Qualifications: Designate an alternate for the QA/QC Manager at the work site to serve in the event of the designated QA/QC Manager's absence.
 - a. The period of absence may not exceed two weeks at one time, and not more than 30 workdays during a calendar year.
 - b. The qualification requirements for the Alternate QA/QC Manager must be the same as for the QA/QC Manager.

1.17 QUALITY CONTROL (QC) PLAN

- A. QC Plan Requirements: Provide, for acceptance by the District, a Construction QC Plan submitted in a three-ring binder that includes a table of contents, with major sections identified with tabs, with pages numbered sequentially, and that documents the proposed methods and responsibilities for accomplishing quality control and system commissioning activities during the construction of the Project and include:
 - 1. A chart showing the Contractor management organizational structure.
 - 2. Names and qualifications, in resume format, for each person in the Contractor management organization.

3. Duties, responsibilities, and authorities of each person in the Contractor management organization, including home office personnel responsible for this Project.
 4. A listing of outside organizations, such as architectural and consulting engineering firms, that will be employed by the Contractor and a description of the services these firms will provide.
 5. Letters signed by an officer of the firm appointing the QA/QC Manager and Alternate QA/QC Manager and stating that they are responsible for implementing and managing the QC program as described in this Contract. Include in this letter their authority to stop work which is not in compliance with the Contract. Include copies of the letters in the QC Plan.
 6. Procedures for reviewing, certifying, and managing submittals.
 7. Provide the name(s) of the person(s) in the QC organization authorized to review and certify submittals prior to submission to the District and Architect. Provide the initial submittal of the Submittal Log as specified in Section 01330 SUBMITTAL PROCEDURES.
 8. Testing laboratory information required herein.
 9. A Testing Plan and Log that includes the tests required, referenced by the specification paragraph number requiring the test, the frequency, and the person responsible for each test. Use District forms to log and track tests.
 10. Procedures to identify, record, track, and complete rework items. Use District forms to record and track rework items.
 11. Procedures for coordinating, tracking and documenting all required certifications for subcontractors, testing laboratories, suppliers, personnel, etc.
- B. QA/QC Manager shall ensure that certifications are current, appropriate for the work being performed, and will not lapse during any period of the contract that the work is being performed.
- C. Coordination and Mutual Understanding Meeting. After submission of the QC Plan, and prior to the start of construction, the QA/QC Manager will meet with the District to present the QC program required by this Contract. When a new QA/QC Manager is appointed, the coordination and mutual understanding meeting shall be repeated.
1. Purpose: The purpose of this meeting is to develop a mutual understanding of the QC details, including documentation, administration for on-site and off-site work, coordination of activities to be performed, and the coordination of the Contractor's management, production, and QC personnel. At the meeting, the Contractor will be required to explain in detail each management plan or requirement as listed below:
 - a. Waste Management Plan.
 - b. Storm water Pollution Prevention Plan
 - c. Environmental regulatory requirements, including requirements related to Demolition.
 - d. Noise Plan
 - e. Commissioning Plan.
 - f. Other plans required by the Contract Documents

- D. Coordination of Activities: Coordinate activities included in various sections to assure efficient and orderly installation of each component. Coordinate operations included under different sections that are dependent on each other for proper installation and operation. Coordinate pre-functional tests and startup testing with District and per the Contract Documents.
- E. Attendees: As a minimum, the Contractor's personnel required to attend include an officer of the firm, the Project Manager, Project Superintendent, QA/QC Manager, Alternate QA/QC Manager, A/E, and subcontractor representatives. Minutes of the meeting will be prepared by the QA/QC Manager and signed by the Contractor and the District. Provide a copy of the signed minutes to all parties.
- F. Agenda Items Include:
 - 1. Review of the Contract Documents to verify that requirements related to systems commissioning are adequately specified, and that each commissioned system is likely to meet the design intent relative to functionality, energy performance, water performance, maintainability, sustainability, system cost, indoor environmental quality, and local environmental impacts.
 - 2. Procedures for submission, review and approval of submittals are also described in Section 01330 SUBMITTAL PROCEDURES.
 - 3. Review of sampling and testing procedures required under this Contract.

1.18 QUALITY CONTROL: LABORATORY, TESTS, AND REPORTING REQUIREMENTS

- A. Construction materials testing laboratories must be accredited by a laboratory accreditation authority and will be required to submit a copy of the Certificate of Accreditation and Scope of Accreditation.
 - 1. The laboratory's scope of accreditation must include the appropriate ASTM standards (E 329, C 1077, D 3666, D 3740, A 880, E 543) listed in the technical sections of the specifications.
- B. Laboratories engaged in Hazardous Materials Testing shall meet the requirements of OSHA and EPA. The policy applies to the specific laboratory performing the actual testing, not just the Corporate Office.
- C. Laboratory Accreditation Authorities: Laboratory Accreditation Authorities include the National Voluntary Laboratory Accreditation Program (NVLAP) administered by the National Institute of Standards and Technology at: <http://ts.nist.gov/ts/htdocs/210/214/214.htm> the American Association of State Highway and Transportation Officials (AASHTO) program at <http://www.transportation.org/aashto/home.nsf/frontpage>, International Accreditation Services, Inc. (IAS) at <http://www.iasonline.org>, the American Association for Laboratory Accreditation (A2LA) program at <http://www.a2la.org/>.
- D. Capability Check: The District retains the right to check laboratory equipment in the proposed laboratory and the laboratory technician's testing procedures, techniques, and other items pertinent to testing, for compliance with the standards set forth in this Contract.
- E. Test Results: Reference applicable Contract requirements, tests or analytical procedures used. Provide actual results and include a statement that the item test or analyzed conforms or fails to conform to specified requirements.

1. If the item fails to conform, notify the District immediately. Conspicuously stamp the cover sheet for each report in large red letters "CONFORMS" or "DOES NOT CONFORM" to the specification requirements, whichever is applicable.
2. Test results must be signed by a testing laboratory representative authorized to sign certified test reports.
3. Furnish the signed reports, certifications, and other documentation to the District via the QA/QC Manager.
4. Furnish the signed reports, certifications, and a summary report of field tests at the end of each month to the District. Attach a copy of the summary report to the last daily Contractor Quality Control Report of each month.

1.19 QC CERTIFICATIONS AND DOCUMENTATION

- A. CQC Report Certification. Contain the following statement within the CQC Report:
"On behalf of the Contractor, I certify that this report is complete and correct and equipment and material used and work performed during this reporting period is in compliance with the contract drawings and specifications to the best of my knowledge, except as noted in this report."
- B. Invoice Certification. Furnish a certificate to the District with each payment request, signed by the QA/QC Manager, attesting that as-built drawings are current and, coordinated, and attesting that the work for which payment is requested, including stored material, is in compliance with Contract requirements.
- C. Documentation: Maintain current and complete records of on-site and off-site QC program operations and activities.
- D. Construction Documentation: Reports are required for each day that work is performed and must be attached to the Contractor Quality Control (CQC) Report prepared for the same day.
 1. Maintain current and complete records of on-site and off-site QC program operations and activities on the required forms.
 2. Reports are required for each day work is performed.
 3. Account for each calendar day throughout the life of the Contract.
 4. Every space on the forms must be filled in. Use N/A if nothing can be reported in one of the spaces.
 5. The Project Superintendent and the QA/QC Manager must prepare and sign the Contractor Production and CQC Reports, respectively.
 6. The reporting of work must be identified by terminology consistent with the Master CPM Schedule.
 7. In the "remarks" sections of the reports, enter pertinent information including directions received, problems encountered during construction, Work progress and delays, conflicts or errors in the drawings or specifications, field changes, safety hazards encountered, instructions given and corrective actions taken, delays encountered and a record of visitors to the work site, quality control problem areas, deviations from the QC Plan, construction deficiencies encountered, meetings held.
 8. For each entry in the report(s), identify the Schedule Activity No. that is associated with the entered remark.

- E. Quality Control Validation. Establish and maintain the following in a series of three ring binders. Binders shall be divided and tabbed as shown below. These binders must be readily available to the District during all business hours.
1. All completed Preparatory Phase Checklists, arranged by specification section.
 2. All milestone inspections, arranged by Activity Number.
 3. An up-to-date copy of the Testing Plan and Log with supporting field test reports, arranged by specification section.
 4. Copies of all contract modifications, arranged in numerical order. Also include documentation that modified work was accomplished.
 5. An up-to-date copy of the Rework Items List.
 6. Maintain up-to-date copies of all punch lists issued by the QC staff to the Contractor and Sub-Contractors and all punch lists issued by the District.
 7. Commissioning documentation including checklists, schedules, tests, and reports.
- F. Testing Plan and Log:
1. As tests are performed, the QA/QC Manager will record on the "Testing Plan and Log" the date the test was performed and the date the test results were forwarded to the District.
 2. Attach a copy of the updated "Testing Plan and Log" to the last daily CQC Report of each month.
- G. Rework Items List: The QA/QC Manager must maintain a list of work that does not comply with the Contract, identifying what items need to be reworked, the date the item was originally discovered, the date the item will be corrected by, and the date the item was corrected. There is no requirement to report a rework item that is corrected the same day it is discovered.
1. The Contractor is responsible for including rework items identified by the District or its representative.
- H. As-Built Drawings: The QA/QC Manager is required to ensure the as-built drawings, required by Section 01780, Project Record Documents are kept current on a daily basis and marked to show deviations which have been made from the Contract Drawings. Ensure each deviation has been identified with the appropriate modifying documentation (e.g. PCO No., CO No., Request for Information No., etc.). The QA/QC Manager must initial each revision.
1. Upon Substantial Completion of Work, the QA/QC Manager will furnish a certificate attesting to the accuracy of the as-built drawings prior to submission to the District.

1.20 NOTIFICATION ON NON-COMPLIANCE

- A. The District will notify the Contractor of any detected non-compliance with the Contract. Take immediate corrective action after receipt of such notice. Such notice, when delivered to the Contractor at the work site, shall be deemed sufficient for the purpose of notification. If the Contractor fails or refuses to comply promptly, the District may issue an order stopping all or part of the work until satisfactory corrective action has been taken. No part of the time lost due to such stop orders will be made the subject of claim for extension of time for excess costs or damages by the Contractor.

PART 2 - PRODUCTS (Not Used)

PART 3 – EXECUTION

3.1 EXAMINATION

- A. Verify existing site conditions and substrate surfaces are acceptable for subsequent Work. Beginning new Work constitutes acceptance of existing conditions by the Contractor.
- B. Verify existing substrate is capable of structural support or attachment of new Work being applied or attached.
- C. Examine and verify specific conditions described in individual specification sections.
- D. Verify utility services are available, of correct characteristics, and in correct locations.

3.2 TEST AND INSPECTION LOG

- A. Prepare a record of tests and inspections. Include the following:
 - 1. Date test or inspection was conducted.
 - 2. Description of the Work tested or inspected.
 - 3. Date test or inspection results were transmitted to District and Architect.
 - 4. Identification of testing agency or special Inspector conducting test or inspection.
- B. Maintain test and inspection log at project site. Post changes and modifications as they occur. Provide access to test and inspection log for District or its representative's reference during normal working hours.

3.3 PREPARATION

- A. Clean substrate surfaces prior to applying next material or substance.
- B. Seal cracks or openings of substrate prior to applying next material or substance.
- C. Apply manufacturer required or recommended substrate primer, sealer, or conditioner prior to applying new material or substance in contact or bond.

3.4 PREPARATION AND PROTECTION

- A. General: On completion of testing, inspecting, sample taking, and similar services, repair damaged construction and restore substrates and finishes. See also Section 01730, Cutting and Patching.
- B. Protect construction exposed by or for quality-control service activities.
- C. Repair and protection are Contractor's responsibility, regardless of the assignment of responsibility for quality-control services.

CONTRA COSTA COMMUNITY COLLEGE DISTRICT
DVC - PRINT SHOP, STUDENT SUCCESS, & HEALTH
SERVICES RENOVATION

75-21809-00
MARCH 28, 2022
BID SET

| | | | | | |
|----------------------------|--|--------------------|--|-----------------------|--------------|
| NEW SUBCONTRACTOR | | PREPARATORY | | SPEC SECTION(S) | DATE |
| (CONTINUED ON SECOND PAGE) | | | | | |
| PROJECT NO. | | SUBCONTRACTOR: | | SCHEDULE ACTIVITY NO. | CONTRACT NO. |

| | | | |
|--------------------------|--|--|--|
| PERSONNEL PRESENT | DISTRICT REP NOTIFIED _____ HOURS IN ADVANCE: YES <input type="checkbox"/> NO <input type="checkbox"/> NAME _____ POSITION _____ COMPANY/DISTRICT _____ | | |
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|-------------------|--|--|
| SUBMITTALS | REVIEW SUBMITTALS AND/OR SUBMITTAL REGISTER. HAVE ALL SUBMITTALS BEEN APPROVED? YES <input type="checkbox"/> NO <input type="checkbox"/> IF NO, WHAT ITEMS HAVE NOT BEEN SUBMITTED? _____ | |
| | | |
| | ARE ALL MATERIALS ON HAND? YES <input type="checkbox"/> NO <input type="checkbox"/> IF NO, WHAT ITEMS ARE MISSING? _____ | |
| | | |
| | | |
| | CHECK APPROVED SUBMITTALS AGAINST DELIVERED MATERIAL. (THIS SHOULD BE DONE AS MATERIAL ARRIVES.) COMMENTS: _____ | |

| | | |
|-------------------------|---|--|
| MATERIAL STORAGE | ARE MATERIALS STORED PROPERLY? YES <input type="checkbox"/> NO <input type="checkbox"/> IF NO, WHAT ACTION IS TAKEN? _____ | |
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|-----------------------|---|--|
| SPECIFICATIONS | REVIEW EACH PARAGRAPH OF SPECIFICATIONS. _____ | |
| | | |
| | | |
| | | |
| | DISCUSS PROCEDURE FOR ACCOMPLISHING THE WORK. _____ | |
| | | |
| | | |
| | CLARIFY ANY DIFFERENCES. _____ | |

CONTRA COSTA COMMUNITY COLLEGE DISTRICT
DVC - PRINT SHOP, STUDENT SUCCESS, & HEALTH
SERVICES RENOVATION

75-21809-00
MARCH 28, 2022
BID SET

| | |
|---|---|
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| | |
| PRELIMINARY WORK & PERMITS | ENSURE PRELIMINARY WORK IS CORRECT AND PERMITS ARE ON FILE. IF NOT, WHAT ACTION IS TAKEN? _____ |
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| | |
| | |
| TESTING | IDENTIFY TEST TO BE PERFORMED, FREQUENCY, AND BY WHOM. _____ |
| | |
| | |
| | WHEN REQUIRED? _____ |
| | |
| | WHERE REQUIRED? _____ |
| | |
| | |
| | REVIEW TESTING PLAN. _____ |
| | |
| | |
| SAFETY | ACTIVITY HAZARD REVIEW CONDUCTED? YES <input type="checkbox"/> NO <input type="checkbox"/> REVIEW APPLICABLE PORTION OF SAFETY PLAN. _____ |
| | |
| | |
| | |
| MEETING COMMENTS | DISTRICT COMMENTS DURING MEETING. |
| | |
| | |
| | |
| | |
| C | OTHER ITEMS OR REMARKS: |

END OF SECTION 01400

SECTION 01410

REGULATORY REQUIREMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. All Contract Documents shall be reviewed for applicable provisions related to the provisions in this document, and provisions in the General Conditions and other Division 1 Specification Sections shall apply to this Section without limitation.

1.2 RELATED REQUIREMENTS SPECIFIED IN OTHER SECTIONS

- A. Divisions 2 through 33 Sections for Regulatory requirements for the work in those sections.

1.3 SUMMARY

- A. This Section includes regulatory requirements applicable to the Contract Documents and the Project and Work.
- B. Specific reference in the Specifications to codes and regulations or requirements of regulatory agencies shall mean the latest printed edition of each adopted by the regulatory agency in effect at the time of the opening of Proposals, except as may be otherwise specifically stated in the Contract Documents.
- C. No change order shall be considered for any change in any applicable federal, state or local code or regulation if similar language existed in an alternate applicable regulation in force at the time of opening of Bids.
- D. Contractor shall not allow design or construction of any conditions wherein the finished Work will not comply with current applicable codes. No change order shall be considered by District for the Work correction of any Work not complying with code.
- E. This section shall cover the general requirements for regulatory requirements pertaining to the Work and is supplementary to all other regulatory requirements mentioned or referenced elsewhere in the Contract Documents.

1.4 REFERENCES TO REGULATORY REQUIREMENTS

- A. Code, laws, ordinances, rules and regulations referred to shall have full force and effect as though printed in full in these Specifications. Code, laws, ordinances, rules and regulations are not furnished to Contractor because Contractor is assumed to be and shall be familiar with these requirements, including readily available access to these requirements. The listing of applicable codes, laws, and regulations for hazardous waste abatement Work in the Contract Documents is supplied to Contractor as a courtesy and shall not limit Contractor's responsibility for complying with all applicable laws, regulations or ordinances having application to the Work. Where conflict among the requirements or with these Specifications occurs, the most stringent requirements shall be used with no change in Contract Sum or Contract Time.
- B. Contractor shall conform to all applicable federal, state, and local codes, laws, ordinances, rules and regulations, whether or not referenced in the Contract Documents.

C. Precedence:

1. Where specified requirements differ from the requirements of applicable codes, ordinances and standards, the more stringent requirements shall take precedence.
2. Where Contract Documents require or describe products or execution of better quality, higher standard or greater size than required by applicable codes, ordinances and standards, Contract Documents shall take precedence so long as such increase is legal.
3. Where no requirements are identified on Contract Documents, comply with all requirements of applicable codes, ordinances and standards of governing authorities have jurisdiction.

1.5 REGULATORY REQUIREMENTS

- A. All statutes, ordinances, laws, rules, codes, regulations, standards, and lawful orders of all public authorities have jurisdiction of the Work, are hereby incorporated into these Contract Documents as if repeated in full herein and are intended to be included in any reference to Code or Building Code, unless otherwise specified, including, without limitation, the references in the list below. Contractor shall make available at the Site, copies of all the listed documents applicable to the Work as the District and/or Architect may request, including, without limitation, applicable portions of the California Code of Regulations (“CCR”).
- B. This Project shall be governed by applicable regulations, including, without limitation, the State of California’s Code Section Group 1, Chapter 4, Part 1, Title 24, CCR, and the most current version on the date the bids are opened and as it pertains to school construction including, without limitation:
1. Test and testing laboratory per Section 4-335 (District shall pay for the testing laboratory.)
 2. All special inspections per Section 4-333(c).
 3. Contractor shall submit verified reports per Section 4-365 & 4-343(c).
 4. Administration
 - a. Duties of the Architect & Engineers shall be per Section 4-333(a) & 4-341.
 - b. Duties of the Contractor shall be per Section 4-343.
 - c. Verified Reports per Section 4-336.
 5. Contractor shall keep and make available a copy of Part I and II of the most current version of Title 24 at the Site during construction.
 6. Contractor shall notify the Division of State Architect (“DSA”) upon the start of construction per Section 4-334 if applicable.
 7. Addenda and Change Orders per Section 4-338.

1.6 CODES

- A. Codes that apply to Contract Documents include, but are not limited to, the following:
1. 2016 California Building Code, Part 2, Title 24 (2015 International Building Code and California Amendments)
 2. 2016 California Electrical Code, Part 3, Title 24 (2015 National Electrical Code and California Amendments)
 3. 2016 California Mechanical Code, Part 4, Title 24 (2015 National Mechanical Code and California Amendments)
 4. 2016 California Plumbing Code (CPC), Part 5, Title 24 (2015 Uniform Plumbing Code and 2016 California Amendments)
 5. 2016 California Energy Code (CEC), Part 6, Title 24

6. 2016 California Green Building Standards Code, Part 11, Title 24
7. California Fire Code, Part 9, Title 24 C.C.R. (2015 International Fire Code with 2016 California Amendments)
8. California Elevator Safety Construction Code, Part 7, Title 24 C.C.R.
9. 2016 California Referenced Standards Code, Part 12, Title 24 (2015 International Building Code Standards, California Amendments, and 2015 California Fire Code)
10. Public Safety, Title 19, California Code of Regulations, State Fire Marshal Regulations
11. National Fire Protection Association (NFPA) 72, Local Alarm Systems, 2015 Edition with California Amendments - California Building Code 3504
12. NFPA 13 (fire sprinkler systems)
13. NFPA 72 Chapter 5, Automatic Fire Detectors, 2015 Edition (Calif. Electrical Code 760-1)
14. NFPA 72 Chapter 6, Notification Appliances, 2015 Edition with 2016 California Amendments - California Building Code 3504
15. NFPA 72 Chapter 7, Testing Procedures, 2015 Edition
16. California Public Utilities Commission (PUC), General Orders 95 and 128.
17. California Code of Regulations (CCR):
 - a. Title 8, Industrial Relations (Cal/OSHA Standards).
 - b. Title 24, State Access Compliance.
18. California Air Resources Board (CARB), and in particular Rule 1113.
19. Bay Area Air Quality Management District Rules & Regulations.
20. State Water Resources Control Board Waste Discharge Requirements
21. County ordinances and regulations.
22. Other codes as specified.

1.7 LAWS, ORDINANCES, RULES, AND REGULATIONS

- A. During prosecution of Work to be done under Contract Documents, comply with applicable laws, ordinances, rules and regulations, including, but not limited to, the following:
 1. Federal:
 - a. Americans with Disabilities Act of 1990, and applicable amendments.
 - b. 29 CFR, Section 1910.1001, Asbestos
 - c. 40 CFR, Subpart M, National Emission Standards for Asbestos
 - d. Executive Order 11246
 - e. Federal endangered Species Act
 - f. Clean Water Act
 - g. Environmental Protection Agency (EPA)
 2. State of California:
 - a. California Code of Regulations, Titles 5, 8, 19, 21, 22, 24 and 25
 - b. California Public Contract Code
 - c. California Health and Safety Code
 - d. California Government Code
 - e. California Labor Code
 - f. California Civil code
 - g. California Code of Civil Procedure

- h. CPUC General Order 95, Rules for Overhead Electric Line Construction
 - i. CPUC General Order 128, Rules for Construction of Underground Electric Supply and Communications systems
 - j. Cal/OSHA
 - k. OSHA: Hazard Communications Standards
 - l. California Endangered Species Act
 - m. Water Code
 - 3. State of California Agencies:
 - a. State and Consumer Services Agency
 - b. Office of the State Fire Marshall
 - c. Not used
 - d. Bay Area Air Quality Management District
 - e. San Francisco Bay Regional Water Quality Control Board
 - f. Division of the State Architect
 - 4. Local Agencies:
 - a. Central Contra Costa Sanitary District
 - b. Contra Costa County Fire Protection District
 - c. Contra Costa Health Services
 - 5. Other Requirements:
 - a. National Fire Protection Association (NFPA): Pamphlet 101, Life Safety.
 - b. References on Drawings on in specifications to “code” or “building code” not otherwise identified shall mean the cods specified in this Section 1410 together with all additions, amendments, changes, and interpretations adopted by code authorities of the jurisdiction.
- B. Contractor shall have immediate access to all of the foregoing.
- C. Other Applicable Laws, Ordinances and Regulations:
 - 1. Work shall be accomplished in conformance with all applicable laws, ordinances, rules and regulations of federal, state, and local governmental agencies and jurisdictions having authority over the Project.
 - 2. Work shall be accomplished in conformance with all rules and regulations of public utilities and utility districts.
 - 3. Where such laws, ordinances, rules and regulations require more care or greater time to accomplish Work, or require better quality, higher standards or greater size of products, Work shall be accomplished in conformance to such requirements with no change to the Contract Time and Contract Sum, except where changes in laws, ordinances, rules and regulations occur subsequent to the time of opening of the Proposals.
- D. Under California Government Code Section 930.2 et. Seq. and Public Contract Code Section 7105(d)(2), neither the Contract Claims Procedure nor the Change Order Procedure may be modified, waived, or otherwise not complied with, absent a written change order that explicitly and expressly makes such modifications.

1.8 CONFLICTS

- A. Between reference regulatory requirements: Comply with the one establishing the more stringent requirement.
- B. Between referenced regulatory requirements and Contract Documents: Comply with the one establishing the more stringent requirement.

1.9 COMPLIANCE WITH AMERICANS WITH DISABILITIES ACT

- A. Contractor acknowledges that, pursuant to the Americans with Disabilities Act (ADA), programs, services and other activities provided by a public entity to the public, whether directly or through a contractor, must be accessible to people with disabilities. Contractor shall provide the services specified in the Contract Documents in a manner that complies with the ADA and any and all other applicable federal, state and local disability rights legislation. Contractor agrees not to discriminate against people with disabilities in the provision of services, benefits, or activities provided and further agrees that any violation of this prohibition on the part of Contractor, its employees, agents or assigns shall constitute a material breach of the Contract Documents.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 01410

SECTION 01411

TESTING LABORATORY SERVICES

PART 1 – GENERAL

1.1 RELATED DOCUMENTS

- A. All Contract Documents shall be reviewed for applicable provisions related to the provisions in this document, and provisions in the General Conditions and other Division 1 Specification Sections shall apply to this Section without limitation.

1.2 RELATED REQUIREMENTS SPECIFIED IN OTHER SECTIONS

- A. Section 01010 – “Summary of Work”
- B. Section 01400 – “Quality Control Requirements”
- C. Section 01410 – “Regulatory Requirements”
- D. Section 01412 – “Hazardous Material”
- E. Section 01770 – “Contract Closeout Procedures”
- F. Division 2 through 33 Sections for Special Inspections, tests required and standard for testing.

1.3 SUMMARY

- A. This section describes the requirements and procedures for work involving the testing laboratory.

1.4 REFERENCES

- A. CBC - California Building Code.
- B. CCR - California Code of Regulations.
- C. ANSI/ASTM D3740 – Practice for Evaluation of agencies Engaged in Testing and/or Inspection of Soil and Rock as Used in Engineering Design and Construction.
- D. ANSI/ASTM E329 – Standard Recommended Practice for Inspection and Testing Agencies for Concrete, Steel and Bituminous Materials as Used in Construction.

1.5 REGULATORY REQUIREMENTS

- A. Testing, sampling and preparing samples will be in accordance with the standards referenced in individual specification sections and in the applicable sections of CBC State Chapters.
- B. Testing and submitting test reports will conform to provisions of Section 4-335, Part 1, Title 24, CCR.
- C. Comply with Requirements of ANSI/ASTM E329 and ANSI/ASTM D3740.
- D. Laboratory shall maintain a full-time registered Engineer on staff to review services.
- E. Laboratory authorized to operate in State in which Project is located.
- F. Testing Equipment shall be calibrated at reasonable intervals with devices of accuracy traceable to either NSB Standards or accepted values of natural physical constants.

1.6 SELECTION AND PAYMENT

- A. The District will employ and pay for the services of testing laboratory and/or testing agencies acceptable to the Division of the State Architect to conduct required tests and inspections for the Project.

1. Soils: The testing laboratory will observe excavating, grading, and filling operations and provide testing of soil materials as required by the Division of the State Architect and as specified in the Contract Documents. The Soils Engineer will have management, laboratory and field supervisory personnel with minimum 5 years' experience in testing and inspection of soils materials and will have adequate facilities, equipment, and technical references to permit performance of testing and inspections within applicable regulations and standards in accordance with Section 4-335, Part 1, Title 24, CCR.
2. Other Construction: The testing laboratory will conduct tests, inspections, and special inspections as required by the Division of the State Architect and as specified in the Contract Documents.
 - a. Construction Requiring Testing and Inspection Other Than Special Inspection: The testing laboratory will have management, laboratory and field supervisory personnel with minimum 5 years' experience in testing and inspection of work and materials of construction and will have adequate facilities, equipment, and technical references to permit performance of testing and inspections within applicable regulations and standards in accordance with Section 4-335, Part 1, Title 24, CCR.
 - b. Construction Requiring Special Inspection: The testing laboratory will have special inspectors approved by the Division of the State Architect to conduct special inspections as required by the Division of the State Architect under provisions of Section 4-333, Part 1, Title 24, CCR.
- B. Retesting: When initial tests indicate non-compliance with the Contract Documents, subsequent retesting caused by the non-compliance shall be performed by the same testing agency and the costs thereof will be deducted by the District from the Contractor's Contract Price by Change Order.
- C. Retesting Covered Work: Re-examination of previously tested and inspected work may be ordered by the District. The Contractor shall uncover such work if retesting is ordered. If work is found in accordance with Contract Documents, the

District will pay costs of uncovering, removing, retesting and replacing. If work is found not in accordance with Contract Documents, the District will deduct the cost of retesting from the Contract Price by Change Order and the Contractor will bear the costs of uncovering, removing and replacing work.
- D. Testing and inspecting performed for Contractor's convenience, such as testing and inspection to establish equivalence of substitutions, equivalence of repairs to damaged materials, and testing and inspecting to expedite the operations, shall be the Contractor's responsibility.
 1. The Contractor shall employ a licensed professional engineer of the discipline required to develop a testing program which will establish equivalency.
 2. The Contractor shall submit the testing program to the District for review.
 3. The Contractor shall arrange testing in accordance with the accepted testing program to be performed by the District's testing laboratory.
 4. The costs of testing done by the District's testing laboratory for the Contractor will be deducted from the Contract Price by Change Order.
 5. The Contractor may not arrange for testing upon portions of the work already completed except with the written consent of the District and Architect.

- E. Employment of testing laboratory shall in no way relieve Contractor of obligation to perform work in accordance with requirements of Contract Documents.
- F. The District shall have the right to make tests at any time on materials or work done whether those materials are specified or substituted items.

1.7 LABORATORY RESPONSIBILITIES

- A. Provide qualified personnel at site. Cooperate with District, Architect, Project Inspector and Contractor in performance of services.
- B. Perform specified sampling and testing of materials in accordance with specified standards.
- C. Ascertain compliance of materials and mixes with requirements of Contract Documents.
- D. Promptly notify Division of the State Architect, District, Project Inspector and Contractor of observed irregularities and non-conformance of work and products.
- E. Perform additional tests required by District, and Division of the State Architect.
- F. Attend Pre-Construction Meeting, Progress Meetings and other meetings as requested by District.
- G. Perform all tests required by the Division of the State Architect for this Project. See form DSA-103 in this Project Manual and individual specification sections.

1.8 LABORATORY REPORTS

- A. Test/Inspection Reports:
 - 1. Reports will comply with Section 4-335(d), Part 1, Title 24, CCR.
 - 2. Include every test and inspection made regardless of whether such tests and inspections indicate that the material and procedures are satisfactory or unsatisfactory.
 - 3. Include records of special sampling operations as required.
 - 4. Indicate that materials were sampled and tested in accordance with requirements of CCR regulations and Construction Documents.
 - 5. Indicate specified design strength of materials such as masonry, concrete and steel.
 - 6. State whether or not materials and procedures comply with requirements of the Contract Documents.
 - 7. Submit copies of reports to Division of the State Architect, District, Project Inspector, and Contractor within 14 days of tests. Submit copies of reports of non-complying materials and procedures immediately.
- B. Verified Reports:
 - 1. Soils Engineers inspecting placement of fills and Special Inspectors will submit Verified Reports in accordance with Section 4-336, Part I, Title 24, CCR.
 - a. Special inspections requiring Verified Reports include, but are not limited to, inspections of masonry construction, glued-laminated timber fabrication, wood framing using timber connectors, manufactured trusses, ready-mixed concrete batching, shotcrete application, shop welding and field welding.
 - b. Submit two copies of reports directly to the Office of Regulation Services; forward one copy each to District, Architect and Project Inspector.

2. Soils Engineers and testing laboratories conducting tests on materials will submit verification of test reports at completion of testing program and when required by Office of Regulation Services in accordance with Section 4-335(e), Part I, Title 24, CCR.
 - a. The Final Laboratory Verified Report or Laboratory Affidavit will indicate whether every material tested passed and disposition of problems associated with earlier deficient test reports.
 - b. Submit two copies of each report directly to Office of Regulation Services; forward one copy each to District and Project Inspector.

1.9 LIMITS ON AGENCY OR TESTING LABORATORY AUTHORITY

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

1.10 CONTRACTOR RESPONSIBILITIES

- A. Package and deliver to laboratory at designated location adequate samples of materials proposed to be used which require testing. Samples shall be selected by laboratory personnel. Allow proper time for selecting samples, and making tests or considerations.
- B. Cooperate with laboratory personnel, and provide access to work and to manufacturer's facilities.
- C. Provide incidental labor and facilities to provide access to work to be tested, to obtain and handle samples as selected by laboratory personnel at the site or at source of products to be tested, to facilitate tests and inspections, and for storage and curing of test samples.
- D. Schedule all tests and inspections with the testing and inspections firm and to notify District and Project Inspector a minimum of 3 working days prior to expected time for operations requiring inspection and testing services. Do not allow work to be covered prior to inspection and testing.
- E. Cooperate fully with the testing laboratory's personnel and with special inspectors in inspecting any part of the construction and in taking any samples of materials required to be tested. Provide access to the work. The Contractor's personnel shall furnish and cut or prepare all samples in the presence of either the testing laboratory personnel or the special inspectors and secure the witness's initial on each sample prepared.
- F. Notify the testing laboratory to send a bonded messenger to pick up the initialed samples the same day the samples were prepared. Alert the testing laboratory 3 working days in advance as to the times and location of the required sampling, tests and inspections so as to not delay the work of the project, and make sure that the required sampling, tests inspections are promptly completed.

1.11 INSPECTIONS AND TESTS

Required inspections and tests may include, but are not limited to, the following:

- A. Testing Certificates to be provided by Contractor:
 1. Mill test reports for reinforcing steel.
 2. Mill test reports for cement.

3. Weighmaster's tickets for each load of transmit mixed concrete.
 4. Weighmaster's affidavit.
 5. Certifications of welders.
 6. Certifications of materials.
- B. Initial Testing Provided by District:
1. Site Clearing: Test compaction of excavation backfill.
 2. Earthwork:
 - a. Sample and test fill and base materials for compliance with specified requirements.
 - b. Inspect placement of engineered fill.
 - c. Inspect bottoms of footings and foundation trenches.
 - d. Test compaction of each layer of engineered fill.
 3. Trenching:
 - a. Inspect placement of trench backfill.
 - b. Test compaction of trench backfill.
 4. Asphaltic Concrete Paving:
 - a. Sample and test quality of paving and base if directed by District.
 - b. Test compaction of paving and base if directed by District.
 5. Portland Cement Concrete Paving:
 - a. Review mix designs.
 - b. Sample and test compressive strength of concrete.
 - c. Sample and test slump of concrete.
 6. Concrete Reinforcing:
 - a. Review mill tests.
 - b. Sample and test unidentified reinforcing steel.
 - c. Sample and test identified reinforcing steel.
 - d. Inspect placement and installation of reinforcing steel.
 - e. Inspect field welding of reinforcing steel.
 7. Cast-In-Place Concrete:
 - a. Sample and test cement.
 - b. Sample and test aggregate.
 - c. Review mix designs and confirm mix design proportions with weighmaster.
 - d. Perform initial batch plant inspection.
 - e. Inspect concrete placement.
 - f. Sample and test slump of concrete.
 - g. Test air content of concrete.

- h. Sample and test concrete for compressive strength.
 - i. Test concrete for shrinkage.
- 8. Structural Steel:
 - a. Review mill certificates for shapes and plates.
 - b. Sample and test unidentified steel.
 - c. Establish recommended procedures for shop and field welding.
 - d. Inspect shop and field welding, including welded studs.
 - e. Test full penetration welds.
- 9. Metal Fabrications:
 - a. Inspect shop and field welding of load bearing fabrications.
 - b. Test full penetration welds in load bearing fabrications.
- 10. Rough Carpentry: Load test expansion anchors.
- 11. **DSA 103 Form. See the DSA 103 form, following Section 00007, for required tests.**
- C. The cost of the following initial tests, if required, will be deducted by the District from the Contract Price by Change Order.
 - 1. Testing to establish equivalence of material not properly identified.
 - 2. Testing to establish equivalence of substitutions.
 - 3. Testing required to expedite Contractor's operations.
 - 4. Testing relating to repair of work which fails to meet specifications.
 - 5. Testing and inspection required to correct damage to material in shipping and erection.

PART 2 – PRODUCTS (Not Used)

PART 3 – EXECUTION (Not Used)

END OF SECTION 01411

SECTION 01412

HAZARDOUS MATERIALS

PART 1— GENERAL

1.1 RELATED DOCUMENTS

- A. All Contract Documents shall be reviewed for applicable provisions related to the provisions in this document, and provision in the General Conditions and other Division 1 Specification Sections shall apply to this Section without limitation.

1.2 RELATED REQUIREMENTS SPECIFIED IN OTHER SECTIONS

- A. Section 01010 – “Summary of Work”
- B. Section 01311 – “Project Management and Coordination”
- C. Section 01312 – “Project Meetings”
- D. Section 01420 – “References”
- E. Section 01572 – “Storm Water Pollution Prevention Plan ‘SWPPP’”
- F. Divisions 2 through 33 Sections for Hazardous Materials requirements for the work in those Sections.

1.3 SUMMARY

- A. This Section describes Project requirements applicable to Work in connection with hazardous materials, hazardous waste, abatement, and disposal including, but not limited to, asbestos and asbestos-containing materials, lead-based paint, polychlorinated biphenyls, petroleum-contaminated soils and materials, construction and demolition debris and any other hazardous substance or hazardous waste. This Section supplements the requirements elsewhere in the Contract Documents.

1.4 DISCOVERY OF HAZARDOUS MATERIALS

- A. In the event the Contractor encounters or suspects the presence on the Site of material reasonably believed to be asbestos, polychlorinated biphenyl (PCB), or any other material defined as being hazardous by § 25249.5 of the California Health and Safety Code, which has not been rendered harmless, the Contractor shall immediately stop Work in the area affected and report the condition to the District and copy the Architect in writing, whether or not such material was generated by the Contractor or the District. The Work in the affected area shall not thereafter be resumed, except by written agreement of the District and the Contractor, if in fact the material is asbestos, polychlorinated biphenyl (PCB), or other hazardous material, and has not been rendered harmless. The Work in the affected area shall be resumed only in the absence of asbestos, polychlorinated biphenyl (PCB), or other hazardous material, or when it has been rendered harmless by written agreement of the District and the Contractor.
- B. If hazardous materials are encountered, they shall be handled in accordance with applicable local, state and federal regulation which may include: (1) CCR Title 8, Division 4, Chapter 4, Sections 5163 through 5167 and 5192 (Hazardous Waste Operations and Emergency Response); (2) CCR Title 22, Division 4.5, Chapters 10 through 13 and 18 (Environmental

- Health Standards for Management of Hazardous Waste); and (3) CCR Title 23, Division 3, Chapter 15 (Discharges of Hazardous Waste to Land).
- C. Should the discovery of contaminants cause delay to Contractor's operation, extension of Contract Time will be granted by District in accordance with Section 00700 (General Conditions) and Section 01310 (Construction Scheduling.) Contractor may not be entitled to damages or additional payment due to such delays. District may, if it believes appropriate in its sole discretion, grant an extension of Contract Time.
- D. The Contractor shall take all measures to avoid and/or mitigate delays due to Hazardous Materials/Waste finds such as; avoiding the area of the find and proceeding with other work on the project; developing "work around" plans; and documenting his best efforts to avoid and/or mitigate delays. See Section 01310 (Construction Scheduling) regarding requirement to demonstrate Time Impacts.

1.5 SUBSURFACE HAZARDOUS MATERIALS

- A. If Contractor encounters surface contamination, the following provisions and precautionary measures shall be implemented during construction.
1. Contractor's personnel shall be alert for and immediately report to the District any detectable chemical odors, unusual debris, or discolored soil.
 2. Disposal requirements: Soils containing hazardous materials shall be disposed by Contractor at permitted treatment, recycling, or disposal facilities in accordance with CCR Title 23, Division 3, Chapter 15 (Discharge of Waste to Land). Determine to which permitted treatment, recycling, or disposal facilities the soil will be delivered.
 3. Dewatering: Construct, operate and maintain as required by applicable laws, codes and standards and to complete the Work all necessary cofferdams, channels, pipes, flumes, drains, sumps, well points and protective works; and furnish, install, operate and maintain all necessary pumping and other equipment for dewatering the areas of Work suspected of containing hazardous materials; and control all surface flow and groundwater as may be encountered while performing the Work. Remove all water that may accumulate in the excavation while the Work progresses so that all Work can be performed in dry conditions. All contaminated water shall be removed from the excavation before it is backfilled. The excavation shall be kept free from water until backfilling has progressed to a height above the water source.
 4. Water sampling and chemical analysis: Water samples shall be collected from the holding tanks and submitted to a State-Certified chemical analysis laboratory. Chemical analyses required for the samples shall at a minimum include: TPHg following EPA Test Methods 5030/8015 (modified); benzene, toluene, ethyl benzene and total xylenes (BTEX) following EPA Test Method 8020; and chlorinated solvents following EPA Test Method 8010. Perform additional chemical analyses that may be required for disposal or recycling of the water.
 5. Laboratory chemical analysis reports associated with the water samples shall be provided to District's Representative.
 6. Removal of dewatering equipment: After having served their purpose, all protective works and dewatering pumps, shall be decontaminated and removed from the Site. Contractor is responsible for permanent disposal of all equipment that cannot be decontaminated or recycled in accordance with all applicable laws and regulations.

7. Fees: Pay for any fees associated with the treatment, recycling, or disposal of these soils. Any additional soil sampling and chemical analyses required for acceptance of the soil at facilities other than those described above may be deemed to be the responsibility of the Contractor.
8. Transport: Transport the soils to the selected facilities under approved manifests and submit copies of these manifests and the facility weight tickets to District's Representative.

1.6 HAZARDOUS MATERIAL WORK LIMITATIONS

- A. In the event that the presence of hazardous materials is suspected or discovered on the Site the District shall retain an independent testing laboratory to determine the nature of the material encountered and whether corrective measures or remedial action is required. The Contractor shall not be required pursuant to Specification Section 01250 to perform without consent any Work in the affected area of the Site relating to asbestos, polychlorinated biphenyl (PCB), or other hazardous material, until any known or suspected hazardous material has been removed, or rendered harmless, or determined to be harmless by District, as certified by an independent testing laboratory and approved by the appropriate government agency.
- B. To protect construction workers and members of the public from known or undiscovered hazardous building materials, including asbestos and lead, undertake all demolition activities in accordance with Cal-OSHA standards, contained in Title 8 of the California Code of Regulations (CCR). See Hazardous Materials Removal Specifications (02080, 02081, 02082 and 02085) and Reports for additional requirements.
- C. During demolition activities, all building materials containing lead paint shall be removed in accordance with Cal-OSHA Lead in Construction Standard, title 8 and California Code of Regulations 1532.1.
- D. All potentially friable asbestos-containing materials (ACMs) shall be removed in accordance with National Emissions Standards for Hazardous Air Pollutants (NESHAP) guidelines prior to building demolition or renovation that may disturb the materials. Applicable standards include the following:
 1. The facility shall be inspected before any renovation occurs in which 160 square feet or more of building materials or 260 linear feet or more of pipe insulation will be disturbed at a regulated facility or any demolition occurs at a regulated facility.
 2. An asbestos notification form shall be submitted to the Bay Area Air Quality Management District (BAAQMD) for any regulated asbestos abatement project or regulated demolition 10 working days before the activity begins.
 3. If ACMs are discovered during a renovation or demolition, they must be removed before the project may proceed. Also, the Cal-OSHA and California Environmental Protection Agency (Cal-EPA) hazardous waste regulation apply in most cases.
- E. No Work will be accepted until asbestos contamination is reduced to levels deemed acceptable by the District's asbestos consultant.
- F. Interface of Work under this Contract with work containing asbestos shall be executed by the Contractor at his risk and at his discretion, with full knowledge of the currently accepted standards, hazards, risks, and liabilities associated with asbestos work and asbestos-containing

products. By execution of this Contract, the Contractor acknowledges the above and agrees to hold harmless District and its assigns for all asbestos liability which may be associated with this work and agrees to instruct his employees with respect to the above-mentioned standards, hazards, risks, and liabilities.

1.7 INDEMNIFICATION BY CONTRACTOR FOR HAZARDOUS MATERIAL CAUSED BY CONTRACTOR

- A. In the event the hazardous materials on the Site is caused by the Contractor, the Contractor shall pay for all costs of testing and remediation, if any, and shall compensate the District for any additional costs incurred as a result of Contractor's generation of hazardous material on the t Site. In addition, the Contractor shall defend, indemnify and hold harmless District and its agents, officers, and employees from and against any and all claims, damages, losses, costs and expenses incurred in connection with, arising out of, or relating to, the presence of hazardous material on the Site.

1.8 TERMS OF HAZARDOUS MATERIAL PROVISION

- A. The terms of this Hazardous Material provision shall survive the completion of the Work and/or any termination of this Contract.

1.9 NON-UTILIZATION OF ASBESTOS MATERIAL

- A. NO ASBESTOS OR ASBESTOS-CONTAINING PRODUCTS SHALL BE USED IN THIS CONSTRUCTION OR IN ANY TOOLS, DEVICES, CLOTHING, OR EQUIPMENT USED TO EFFECT THIS CONSTRUCTION.
- B. Asbestos and/or asbestos-containing products shall be defined as all items containing, but not limited to, chrysotile, amosite, anthophyllite, tremolite, and antinolite.
- C. Any or all material containing greater than one-tenth of one percent (>.1%) asbestos shall be defined as asbestos-containing material.

1.10 REMOVAL OF CONTRACTOR INSTALLED ASBESTOS MATERIALS

- A. All Work or materials found to contain asbestos, or Work or material installed with asbestos-containing equipment will be immediately rejected and this Work will be removed at no additional cost to the District.
1. Decontamination and removal of Work found to contain asbestos or Work installed with asbestos-containing equipment shall be done only under supervision of a qualified consultant, knowledgeable in the field of asbestos abatement and accredited by the Environmental Protection Agency.
 2. The asbestos removal contractor shall be appropriately licensed and registered, qualified in the removal of asbestos and shall be approved by the asbestos consultant, who shall have sole discretion and final determination in this matter.
 3. The asbestos consultant shall be approved by the District, who shall have sole discretion and final determination in this matter.

1.11 NATURALLY OCCURRING ASBESTOS

- A. To protect construction workers and members of the public from exposure to known areas of naturally occurring asbestos (NOA), all ground disturbing activities will be undertaken in

accordance with all applicable Cal-OSHA standards, contained in Title 8 of the California Code of Regulations (CCR). In addition, any ground-disturbing activity in an area that meets one or more of the applicability criteria for the Asbestos Airborne Toxic Control Measure (ATCM) for Construction, Grading, Quarrying and Surface Mining Operations, as adopted by the California Air Resources Board (CARB), is subject to the requirements therein, Per Section 93105 (b) of the ATCM, these criteria are as follows:

1. The area to be disturbed is located in a geographic ultramafic rock unit; or
2. The area to be disturbed has naturally-occurring asbestos, serpentine, or ultramafic rock as determined by the District, or the Air Pollution Control Officer (APCO); or
3. Naturally-occurring asbestos, serpentine, or ultramafic rock is discovered by the District, a registered geologist, or the APCO in the area to be disturbed after the start of any construction, grading, quarrying, or surface mining operation.

1.12 REFERENCES TO REGULATORY REQUIREMENTS

- A. Codes, laws, ordinances, rules and regulations applicable to the Work shall have full force and effect as though printed in full in the Contract Documents. Codes, laws, ordinances, rules and regulations are not furnished to Contractor, because Contractor is assumed to be familiar with their requirements. The listing herein of applicable codes, laws, and regulations for hazardous waste abatement work is supplied to Contractor as a courtesy and shall not limit Contractor's responsibility for complying with all applicable laws, regulations or ordinances having application to the Work. Where conflict among the requirements or with these Contract Documents exists, the most stringent requirements shall be used.
- B. Conform to all applicable codes, laws, ordinances, rules and regulations that are in effect on date of contracting.

1.13 LAWS, ORDINANCES, RULES, AND REGULATIONS

- A. During prosecution of Work under Contract Documents, Contractor shall comply with applicable laws, ordinances, rules and regulations including, but not limited to, those listed below.
- B. Federal:
 1. Statutory Requirements:
 - a. Resource Conservation and Recovery Act, 42 U.S.C. Sections 6901 *et seq.*
 - b. Comprehensive Environmental Response, Compensation and Liability Act of 1980, as amended by the Superfund Amendments and Reauthorization Act of 1986, 42 U.S.C. Sections 9601 *et seq.*
 - c. Toxic Substances Control Act of 1976, 15 U.S.C., Sections 2601 *et seq.*
 - d. Hazardous Materials Transportation Act of 1975, 49 U.S.C. Sections 1801 *et seq.*
 - e. Clean Water Act, 33 U.S.C. Sections 1251 *et seq.*
 - f. Safe Drinking Water Act, 42 U.S.C., Sections 3001 *et seq.*
 - g. Clean Air Act, Section 112, 42 U.S.C., Section 7412
 - h. Occupational Safety and Health Act of 1970, 29 U.S.C., Sections 651 *et seq.*
 - i. Underground Storage Tank Law, 42 U.S.C., Sections 6991 *et seq.*
 - j. The Emergency Planning and Community Right to Know Act of 1986, 42 U.S.C.,
 - k. Sections 11011 *et seq.*

2. Environmental Protection Agency (EPA):
 - a. 40 C.F.R. Parts 260, 264, 265, 268, 270
 - b. 40 C.F.R. Parts 258 et seq.
 - c. 40 C.F.R. Part 761
 - d. 40 C.F.R. Parts 122-124
 3. Occupational Safety and Health Administration (OSHA):
 - a. OSHA Worker Protection Standards, Title 29 C.F.R. Part 1926.58, Construction Standards and 29 C.F.R. 1910.1001 General Industry Standard
 - b. OSHA, 29 C.F.R. Part 1926.1101, Construction Standards for Asbestos
 - c. OSHA, Lead Exposure in Construction: Interim Final Rule, 29 C.F.R. 1926.62
 - d. National Emission Standard for Hazardous Air Pollutants, Title 40 C.F.R. Part 61
 - e. Asbestos Hazardous Emergency Response Act, Title 40 C.F.R. 763
 4. Department of Transportation:
 - a. Title 49 C.F.R. 173.1090
 - b. Title 49 C.F.R. 172
 - c. Title 49 C.F.R. 173
 - d. DOT, HM 181 and MH126f
- C. State of California Requirements:
1. Statutory Law:
 - a. The Carpenter-Presley-Tanner Hazardous Substance Account Act, Health & Safety Code, Sections 25300 *et seq.*
 - b. Health and Safety Code, Section 25359.4
 - c. Hazardous Waste Control Law, Health & Safety Code, Sections 25100 *et seq.*
 - d. Porter-Cologne Water Quality Control Act, Water Code, Sections 13000 *et seq.*
 - e. Health and Safety Code, Sections 25915-25924
 - f. California Labor Code Chapter 6, including, without limitation, Sections 6382, 6501.5-6501.9, 6503.5, 9021.5, 9080
 - g. Business and Professions Code, including without limitation, Sections 7058.5, 7065.01, 7118.5
 - h. Underground Storage of Hazardous Substance Act, Health and Safety Code, Sections 25280 *et seq.*
 - i. Petroleum Underground Storage Tank Cleanup, Health and Safety Code, Sections 25299.10 *et seq.*
 - j. Safe Drinking Water and Toxic Enforcement Act of 1986, Health & Safety Code, Sections 25249.5 *et seq.* (Proposition 65)
 - k. Above Ground Petroleum Storage Act, Health and Safety Code, Sections 25270 *et seq.*
 - l. Hazardous Materials Release Response Plans and Inventory, Health and Safety Code, Chapter 6.95

2. Administrative Code and Regulations:
 - a. Title 22 CCR Division 4.5, Environmental Health Standards for the Management of Hazardous Waste, Sections 6600 *et seq.*
 - b. Title 8 CCR, Section 1529, Asbestos
 - c. Title 8 CCR, Section 1532.1, Lead in Construction
 - d. Title 23 CCR, Sections 2610 *et seq.*
3. Local Agency Requirements:
 - a. Bay Area Air Quality Management District, Fugitive Dust Rules
 - b. Bay Area Air Quality Management District Regulation 11, Rule 2
 - c. State Water Resource Control Board, General Construction and Land Disturbance Activities (Order 2009-009 DWQ)
4. Local Agency Requirements:
 - a. Contra Costa County Fire Protection District
 - b. City of San Pablo, CA
 - c. City of Pleasant Hill, CA

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 01412

SECTION 01416

SPECIAL PROCEDURES

PART 1 – GENERAL

1.1 RELATED DOCUMENTS

- A. All Contract Documents shall be reviewed for applicable provisions related to the provisions in this document, and provisions in the General Conditions and other Division 1 Specification Sections shall apply to this Section without limitation.

1.2 RELATED REQUIREMENTS SPECIFIED IN OTHER SECTIONS

- A. Section 01010 – “Summary of Work”
- B. Section 01290 – “Payment Procedures”
- C. Section 01330 – “Submittal Procedures”
- D. Section 01740 – “Warranties and Guaranties”
- E. Section 01780 – “Project Record Documents”
- F. Section 01820 – “Demonstration and Training”
- G. Divisions 2 through 33 Sections for Contract Closeout Procedure requirements for the work in those Sections.

1.3 SUMMARY

- A. In Compliance with CEQA requirements, the District conducted an Initial Study to ascertain if the project may have an effect on the environment. The Initial Study identified potential impacts on the environment. However, all potential impacts of the proposed Project can be avoided or reduced to a less-than-significant level by implementation of the following mitigation measures. Contractor shall conform with the following mitigation measures, including but not limited to, the following:
 - 1. Noise Control Plan
 - 2. Dust Control Plan
 - 3. Traffic Control Plan
 - 4. Spill Prevention, Control and Countermeasure Program
 - 5. Tree Protection Plan
 - 6. Migratory Bird Protection Plan
 - 7. Cultural Resources Protection Plan
- B. In no case shall the restrictions identified in this Section limit the Contractor's responsibility for compliance with all Federal, state, and local safety ordinances and regulations.

1.4 NOISE CONTROL

- A. Definitions
 - 1. Noise is any audible sound which has the potential to annoy or disturb humans, or to cause an adverse psychological or physiological effect on humans.

2. Daytime refers to the period from 7 AM to 7 PM local time daily, except Sundays and Federal holidays.
 3. Evening refers to the period from 7 PM to 10 PM local time daily, except Sundays and Federal holidays.
 4. Nighttime refers to the period from 10 PM to 7 AM local time daily, as well as all day Sunday and Federal holidays.
 5. Nuisance Noise refers to sound levels that annoy or disturb a reasonable person of normal sensitivities, but do not exceed the noise limits specified herein.
 6. Lot-line refers to the line separating the campus from another parcel or from the street.
 7. Background Noise shall be defined as the measured ambient noise level associated with all existing environmental, transportation, and community noise sources in the absence of any audible construction activity.
 8. dBA shall be defined as the sound level (in decibels referenced to 20 micro-pascals) as measured using the A-weighting network on a sound level meter, in accordance with ANSI S1.4 Standards.
 9. Lmax shall be defined as the maximum measured sound level at any instant in time.
 10. Leq shall be defined as the equivalent sound level, or the continuous sound level that represents the same sound energy as the varying sound levels, over a specified monitoring period.
 11. L10 shall be defined as the sound level exceeded 10 percent of the time for a specified monitoring period.
 12. Slow specifies a time constant or 1 second for the root-mean-square (RMS) detector used by a sound level meter, in accordance with ANSI S1.4 Standards.
 13. Impact noise is noise produced from impact or devices with discernible separation in sound pressure maxima. Examples for impact equipment include, but are not limited to; blasting, clam shovel or chisel drops, pavement breakers, jackhammers, hoe rams, mounted impact hammers, and impact pile drivers (but not vibratory pile drivers).
- B. The intent of this Section is to minimize construction noise within construction areas, lay-down areas, and communities adjacent to the construction site. To this end, the Contractor and all subcontractors, suppliers, and vendors, are required to comply with all applicable noise regulations, specification requirements, and the noise level limits specified herein.
- C. The Contractor shall use equipment with efficient noise-suppression devices and employ other noise abatement measures such as enclosures and barriers necessary for the protection of the public, as necessary.
- D. The Contractor shall schedule and conduct operations in a manner that will minimize, to the greatest extent feasible, the disturbance to the public in areas adjacent to the Work and to occupants of buildings in the vicinity of the Work.
- E. After the Preconstruction Meeting and prior to the commencement of the Work at the Site, Contractor shall submit a Noise Control and Monitoring Plan for review and acceptance by the District.
1. The Noise Control and Monitoring Plan shall describe the noise monitoring and reporting procedure to be used during construction, the procedures for predicting construction noise levels prior to performing construction activities, and describe the noise reduction measures required to meet the noise level limitations and minimize nuisance noise conditions. Noise

- generating equipment shall not be operated prior to acceptance of the Noise Control and Monitoring Plan.
2. The Noise Control and Monitoring Plan shall identify and describe the following in detail:
 - a. The receptor locations where noise monitoring will be performed. Include a site plan showing all locations.
 - b. The type of noise level measurement device that will be used.
 - c. The noise monitoring methods and procedures that will be used.
 - d. The data reporting method that will be used.
 - e. The response procedure and actions to be taken by the Contractor for any lot-line, educational facility, or equipment noise level that exceeds the noise limits specified in this Section. The response procedure may include, but not be limited to, use of additional noise reduction materials and equipment.
 - f. The noise complaint response and resolution procedures.
 - g. A description of the anticipated significant noise generating construction activities.
 - h. An inventory of construction equipment to be utilized and the associated noise levels for each.
- F. Submit a current laboratory calibration conformance certificate for the noise monitoring equipment to be used prior to performing any noise level monitoring. Submit updated certificates following subsequent yearly calibrations, or upon completion of repairs to the instrument, for the duration of this Contract.
- G. Noise Control Measures: Contractor shall implement the following noise-control measures to reduce and control noise generated from construction, demolition, and construction related activities:
1. Restrict noise-producing construction activities Monday through Friday between the hours of 7:00am to 3:30pm, or until 5:30pm with city engineers approval. Saturday from 8:00am to 5:00pm with city engineers approval. Construction on Sundays shall be avoided, if possible, and there will be no construction on public holidays without prior written request submitted to and written approval returned by the District, at its sole discretion. A decision by the District to deny Sunday or holiday work shall not be deemed to cause a delay in the Contract Time. When activities must occur outside the hours specified above, conform with notification requirements of this Section and utilize local barriers around equipment and other noise attenuating devices if necessary to limit noise to acceptable levels.
 2. Comply with all City of Pleasant Hill requirements regarding both allowable hours of Work and noise level limitations.
 3. Contractor shall comply with applicable regulatory requirements for the operation of powered construction equipment during all phases of construction.
 4. All construction equipment shall have appropriate mufflers, intake silencers, and other required noise-control features, shall be properly maintained and in compliance with State standards.
 5. Vehicles and other gas or diesel powered equipment shall be prohibited from unnecessary warming up, idling, and engine revving.
 6. Impact tools shall utilize "quiet technology" to minimize noise.
 7. Contractor shall provide and post signs at the Site giving the name and telephone number or e-mail address of the District and/or designated College Representative whom the public should contact regarding any noise complaints. If necessary due to complaints, Contractor

shall provide additional noise-attenuating measures such as additional mufflers or engine shrouding.

- H. Secure written permission from the District at least three (3) working days prior to using noisy and vibratory equipment, such as jackhammers, concrete saws, impact tools, and high frequency electrical equipment. Cooperate with District if the use of noisy equipment becomes objectionable to college employees and/or students
- I. The work must be conducted so that nearby residents will not be disturbed at any time during the Work including, but not limited to, the following requirements:
 - 1. The Contractor shall perform all work within the permissible noise levels, day of week, or weekend and hour of day limitations, and within the guidelines established by applicable federal, state, and municipal codes, regulations, laws, and standards.
 - 2. During the Work, the Contractor shall ensure that all noise generated from construction-related equipment and construction activity complies with applicable Contra Costa County and City of Pleasant Hill noise standards and thresholds where technically feasible. Noise standards and thresholds of Contra Costa County and City of Pleasant Hill are therefore included, by reference, in the Contractor's contract.
 - 3. In the event of complaints from nearby residents or the campus community, the Contractor shall measure noise levels at adjacent residential lot lines. In the event that construction noise exceeds the specified limits, the responsible construction activity shall cease until appropriate noise control measures are implemented. In the event that the measured noise level exceeds allowable limits as specified in this Section, or is resulting in nuisance conditions, the Contractor shall immediately alter operations or use noise reduction materials and methods to reduce noise levels or to alleviate the nuisance conditions.
 - 4. Do not use loud vocal or mechanical signals. Use of outside speakers, loud radios and similar devices are prohibited.
 - 5. Not Used.
 - 6. Work shall be performed in a manner to prevent nuisance conditions such as noise which exhibits a specific audible frequency or tone (e.g., backup alarms, poorly maintained equipment, brake squeal, etc.) or impact noise (e.g., jackhammers, hoe rams). The District will make any final interpretation concerning whether or not nuisance noise conditions exist. Only the District representatives and specifically designated College representatives have the authority to stop the Work until nuisance noise conditions are resolved, without additional Contract Time or compensation for the Contractor.

1.5 DUST CONTROL PLAN

- A. Contractor shall develop and submit, in accordance with Section 01330, a Dust Control Plan, and implement dust control measures to protect air quality during construction to control dust emissions generated during construction, implement the following Bay Area Air Quality Management District (BAAQMD) measures for construction emissions of particulate matter over 10 microns in size (PM10):
 - 1. Water all active construction areas at least twice daily.
 - 2. Cover all trucks hauling soil, sand and other loose materials, or require all trucks to maintain at least 2 feet of freeboard.
 - 3. Apply water three times daily or apply (nontoxic) soil stabilizers on all unpaved access roads, parking areas and staging areas at the Site.

4. Sweep driveways and adjacent public streets daily (with water sweepers) if visible soil materials have been carried onto adjacent public streets.
5. Suspend excavation and grading activity when winds (instantaneous gusts) exceed 25 miles per hour.
6. Limit speed of vehicles to 10 miles per hour or less on the Site.
7. If Campus or neighborhood complaints regarding objectionable dust are received by the College, the Contractor shall take immediately action to abate such conditions.

1.6 TRAFFIC CONTROL PLAN

- A. Contractor shall develop and submit a Traffic Control Plan, and implement the traffic control plan to minimize the effects of construction traffic on the Campus and surrounding residential areas, as appropriate. Submit the plan in accordance with Section 01330 to the District for review and approval.
- B. The Construction traffic control plan will include, at a minimum, the following requirements:
 1. Provide clearly marked pedestrian detours if any sidewalk or pedestrian walkway closures are necessary. Provide clear directional signage as required.
 2. Provide clearly marked bicycle detours if bicycle routes must be closed, or if bicyclist safety would be otherwise compromised. Provide clear signage as required.
 3. Provide crossing guards and/or flag persons as needed to avoid traffic conflicts and ensure both pedestrian and bicyclist safety at all times.
 4. Use nonskid traffic plates over open trenches to minimize hazard.
 5. Locate all stationary equipment as far away as possible from areas used heavily by vehicles, bicyclists and pedestrians.
 6. Notify and consult with emergency service providers, including the Campus Police Department, and maintain clear, unobstructed access by whatever means necessary to expedite and facilitate the passage of emergency vehicles.
 7. Obtain City of Pleasant Hill approval for preferred construction traffic routing over public streets, location of temporary curb cuts, if any, and/or other construction traffic access and egress from public streets to the Site. Consult with District concerning preferred construction traffic routing prior to requesting City approval. Contractor shall be responsible for obtaining any required permits and for all associated costs.
 8. Avoid routing construction traffic through residential areas to the extent feasible. Prohibit mobilization and demobilization of heavy construction equipment during AM and PM peak traffic hours, and pursuant to City of Pleasant Hill requirements.
 9. Provide access for drive ways and private roads outside the immediate construction zone by using steel plates or temporary backfill as necessary.
 10. Prohibit construction worker parking in student parking lots and in residential areas.
- C. Contractor shall notify the District, Project Inspector, Campus Police Department, city and county agencies, as applicable, a minimum of five (5) working days in advance of performing work which necessitates closing or interfering with traffic on public thoroughfares, parking areas, driveways and walks. Obtain written permission prior to effecting such closures and interruptions.
- D. The District will designate an entrance to the Site for the Contractor's use for the Work.

1.7 SPILL PREVENTION, CONTROL AND COUNTERMEASURE PROGRAM

- A. Contractor shall prepare and implement a Spill Prevention, Control and Countermeasure Program (SPCCP) to minimize the potential for and effects from spills of hazardous, toxic or petroleum substances during construction and demolition activities. Submit a SPCCP Plan to the District in accordance with Section 01330 and obtain approval of the SPCCP before any construction or demolition activities begin at the Site.
- B. Contractor shall routinely inspect the construction area to verify that the measures specified in the SPCCP are properly implemented and maintained. Inform the District immediately if there is a noncompliance issue and take immediate measures to restore compliance.
- C. The federal reportable spill quantity for petroleum products, as defined in 40 CFR 110, is any oil spill that includes any of the following:
 - 1. Violates applicable water quality standards.
 - 2. Causes a film or sheen on or discoloration of the water surface or adjoining shoreline.
 - 3. Causes a sludge or emulsion to be deposited beneath the surface of the water or adjoining shorelines.
- D. If a spill is reportable, notify the District's Representative and take action to contact appropriate safety and clean-up crews to ensure that the SPCCP is followed.
 - 1. A written description of reportable releases must be submitted to the District's Representative and to the San Francisco Bay Regional Water Quality Control Board (RWQCB). This submittal must contain a description of the spill, including the type of material and an estimate of the amount spilled, the date of the release, an explanation of why the spill occurred and a description of the steps taken to prevent and control future releases. Document the releases on a spill report form.
 - 2. If a reportable spill has occurred and results determine that project activities have adversely affected surface water or groundwater quality, the District will engage a registered environmental assessor at Contractor's expense for a detailed analysis to identify the likely cause of contamination. This analysis will conform to American Society for Testing and Materials (ASTM) standards and will include recommendations for reducing or eliminating the source or mechanisms of contamination.
 - 3. Based on this analysis, the Contractor shall select and implement measures to control contamination, with a performance standard that groundwater quality must be returned to baseline conditions. These measures will be subject to approval by the District.

1.8 TREE PROTECTION PLAN

- A. Develop and submit a Tree Protection Plan to the District in accordance with Section 01330 and obtain approval prior to Start or Work on site. The plan shall include full-size drawings of the Site and indicate all trees that may be impacted by the Work, and all trees that will require proactive protection from damage. Protective measures must be indicated in the plan and on the Drawings.
- B. Definitions:
 - 1. Dripline: The area on the ground from the trunk of any tree to the point directly below the outermost tips of the foliage of that tree.
 - 2. Root Protection Zone ("RPZ"): The areas enclosed with tree protection fencing as designated on the Drawing(s).

3. Tree damage: Tree damage shall include, but not limited to, the following: Significant injury to the root system or other parts of a tree including burning, application of toxic substances, damaging through contact with equipment or machinery, changing the natural grade within the Dripline or RPZ, compacting the soil within the Dripline or RPZ, interfering with the normal water requirements of the tree, unauthorized trenching or excavating within the Dripline or RPZ, or unauthorized removal of more than 1/3 of the live wood, foliage or roots.
- C. Root Protection: No storage of materials or equipment will be allowed within the Dripline. Whenever possible, excavation shall be on a radial line, diverging from the tree trunk. For items of Work delayed materially beyond the date of Substantial Completion, provide update submittal within 14 Days after acceptance, listing date of acceptance as start of warranty period.
- D. Exposure to harmful substances: No storage or dumping of any substances that may be harmful to trees shall occur at any location on the Site.
- E. Where construction is to be performed in the vicinity of trees and shrubbery, the Work shall be carried on in a manner that will cause minimum damage. District will designate trees that are to be removed. Under no circumstances are additional trees to be removed without written permission from District. Trees and shrubbery that are not to be removed shall be protected from injury or damage resulting from Contractor's operations.
- F. Any tree that is removed without District's permission or is irreparably damaged, in the opinion of District, shall cost Contractor in damages [\$100.00] per square inch of cross section, measured at 4 ½ feet above ground, but not less than [\$250.00], such cost to be deducted from monies due or to become due under the Contract. If tree protection is not performed or is not performed adequately and District determines that a tree has been irreparably damaged, Contractor shall pay the same amount of damages as for unauthorized removal of a tree. Contractor shall immediately report all tree damage to District, so that District may determine applicable damages.

1.9 MIGRATORY BIRD PROTECTION

- A. Conduct tree removal and building demolition outside of the migratory bird nesting season. The bird nesting season for migratory birds in this part of California is March 1st through July 31. See Section 01415, Table 1, Section IV, Biological Resources for more information on the bird nesting season.
- B. If tree removal or building demolition must take place during the bird nesting season, these activities shall be preceded by a survey paid for by the District for nesting migratory birds by a certified Wildlife Biologist in the State of California. If bird nests are discovered in the trees or on the buildings, they shall not be removed while the nest(s) are active. Contractor shall plan and schedule to remove all trees and buildings during the non-bird nesting season, which is between August 1st and February 28th each year to avoid the need for such activities during the bird nesting season. Any delays as result of tree or building removal that could not occur during the bird nesting season due to active nests are the responsibility of the Contractor if said delays were within the control of the Contractor by performing the work in the non-bird nesting season.

1.10 CULTURAL RESOURCES PROTECTION PLAN

- A. Develop and submit a Cultural Resources Protection Plan in accordance with Section 01330. If buried cultural resources, such as chipped or ground stone, historic debris, building foundations or human bones or paleontological resources are discovered inadvertently during ground-disturbing activities, Contractor shall avoid any further disturbance of the materials and immediately discontinue earthwork within 100 feet of the find. Contractor shall notify District's Representative immediately upon encountering cultural resources. Contractor shall be prepared

to move on to another location or phase of work, allowing sufficient time for District's Representative to evaluate the nature and significance of the find and implement appropriate management procedures.

- B. In the event that prehistoric human remains are encountered, further excavation or disturbance of the site shall cease immediately, pursuant to Health and Safety Code 7050.5. Contractor shall notify District's Representative immediately upon encountering human remains. Contractor shall move on to another location or phase of Work to allow proper assessment of the situation.
- C. If human remains of Native American origin are discovered during construction, it will be necessary to comply with State laws relating to the disposition of Native American burials, which fall under the jurisdiction of the NAHC (Public Resources Code (PRC) Section 5097. Consequently, if any human remains are discovered or recognized in any location other than a dedicated cemetery, there will be no further excavation or disturbance of the site or any nearby areas reasonably suspected to overlie adjacent human remains:
 - 1. Until the Contra Costa County Coroner has been informed and has determined that no investigation of the cause of death is required;
 - 2. If the remains are of Native American origin;
 - a. The descendants of the deceased Native American(s) have made a recommendation to the landowner or the person responsible for the excavation work regarding means of treating or disposing of, with appropriate dignity, the human remains and any associated grave goods as provided in PRC Section 5097.98 or
 - b. The NAHC has been unable to identify a descendent or the descendent failed to make a recommendation within 24 hours after being notified by the NAHC.

PART 2 – PRODUCTS (Not Used)

PART 3 – EXECUTION (Not Used)

END OF SECTION 01416

SECTION 01420

REFERENCES

PART 1 – GENERAL

1.1 RELATED DOCUMENTS

- A. All Contract Documents shall be reviewed for applicable provisions related to the provisions in this document, and provisions in the General Conditions and other Division 1 Specification Sections shall apply to this Section without limitation.

1.2 RELATED REQUIREMENTS SPECIFIED IN OTHER SECTIONS

- A. Section 01010 – “Summary of Work”
- B. Section 01312 – “Project Meetings”
- C. Section 01410 – “Regulatory Requirements”
- D. Section 01770 – “Contract Closeout Procedures”
- E. Division 2 through 33 for References requirements for the work in those Sections.

1.3 INDUSTRY STANDARDS

- A. Applicability of Standards: Unless the Contract Documents specify more stringent requirements, applicable construction industry standards have the same force and effect as if bound or copied directly into the Contract Documents to the extent referenced. Such standards are made a part of the Contract Documents by reference.
- B. Publication Dates: Comply with standards in effect as of date of the Contract Documents, unless otherwise indicated.
- C. Conflicting Requirements: If compliance with two or more standards is specified and the standards establish different or conflicting requirements for minimum quantities or quality levels, comply with the most stringent requirement. Refer uncertainties and requirements that are different, but apparently equal, to Architect for a decision before proceeding.
 - 1. Minimum Quantity or Quality Levels: The quantity or quality level shown or specified shall be the minimum provided or performed. The actual installation may comply exactly with the minimum quantity or quality specified, or it may exceed the minimum within reasonable limits. To comply with these requirements, indicated numeric values are minimum or maximum, as appropriate, for the context of requirements. Refer uncertainties to Architect for a decision before proceeding.
- D. Copies of Standards: Each entity engaged in construction on the Project must be familiar with industry standards applicable to its construction activity. Copies of applicable standards are not contained within the Contract Documents.
 - 1. Where copies of standards are needed to perform a required construction activity, obtain copies directly from publication source and make them available on request.
- E. Abbreviations and Acronyms for Industry Organizations: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the entities indicated in Gale Research's "Encyclopedia of Associations" or in Columbia Books' "National Trade & Professional Associations of the U.S."

- F. Abbreviations and Acronyms for Code Agencies: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the entities.
- H. Abbreviations and Acronyms for Federal Government Agencies: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the entities.
- I. Abbreviations and Acronyms for State Government Agencies: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the entities.

PART 2 – PRODUCTS (Not Used)

PART 3 – EXECUTION (Not Used)

END OF SECTION 01420

SECTION 01500

TEMPORARY FACILITIES AND CONTROLS

PART 1 –GENERAL

1.1 RELATED DOCUMENTS

- A. All Contract Documents shall be reviewed for applicable provisions related to the provisions in this document, and provisions in the General Conditions and other Division 1 Specification Sections shall apply to this section without limitation.

1.2 RELATED REQUIREMENTS SPECIFIED IN OTHER SECTIONS

- A. Section 01010 – “Summary of Work”
- B. Section 01140 – “Work Restrictions”
- C. Section 01311 – “Project Management and Coordination”
- D. Section 01412 – “Hazardous Material”
- E. Section 01416 – “Special Procedures”
- F. Section 01505 – “Construction Waste Management”
- G. Section 01572 – “Storm Water Pollution Prevention Plan”
- H. Section 01710 – “Cleaning Requirements”
- I. Section 01770 – “Contract Closeout Procedures”
- J. Divisions 2 through 33 Sections for specific requirements for Temporary Facilities and Controls for the Work in those Sections.

1.3 TEMPORARY FACILITIES AND CONTROLS PLAN

- A. Prior to the start of Work at the Site, Contractor shall provide full size drawings of site plan drawings illustrating the following:
 - 1. Locations and dimensions of temporary facilities including, but not limited to, all site trailers. Include floor plan layouts and pertinent details.
 - 2. Equipment and material storage areas.
 - 3. Pedestrian access paths and crossings,
 - 4. Location of way finding and other signage,
 - 5. Contractor haul routes and avenues of ingress/egress to and within the Campus.
 - 6. All fenced area and details of the fence installation.
 - 7. Identify any areas which may have to be paved or graveled to control dust or prevent tracking of mud.
 - 8. Other items including locations of safety and construction fences and/or barriers, construction entrances, trash dumpsters, temporary sanitary facilities, and worker parking areas.
- B. Contractor shall submit to District one (1) hard copy, and a PDF of the Temporary Facilities and Control Plans for review by the District.

- C. Contractor shall not perform any work at the Site until said site plan submitted by the Contractor has been accepted in writing by the District.
- D. Contractor can include this plan as part of the plan required by Section 01140, Work Restrictions.

1.4 REQUIRED TEMPORARY FACILITIES AND CONTROLS

- A. Contractor shall provide and maintain all temporary facilities, utilities, and controls as required to perform the Work and as required herein. Materials, installation, and maintenance of temporary utilities and facilities shall be in compliance with all applicable local and State regulatory requirements. Remove temporary utilities and facilities, including associated materials and equipment, when no longer required. Restore and recondition existing facilities used during construction and areas of the Site, roads, driveways, parking lots, landscaping, and any other existing improvements either damaged or disturbed by the installation of temporary facilities or utilities to their original condition. Remove and properly dispose of debris resulting from removal and reconditioning operations.
- B. Contractor shall furnish and install requirements for temporary utilities, facilities, security, and protection which include but are not limited to the following:

1. Temporary Electric Power and Lighting

- a. The installation and removal of all temporary distributions of power throughout the Site shall be the sole responsibility of the Contractor without adjustment to the Contract Price or the Contract Time. The Contract Price shall not be adjusted on account of any disruption, reduction or elimination of electrical power service to the Site. Contractor shall provide power outlets for construction operations, with branch wiring and distribution boxes located as required to complete the Work.
- b. Contractor shall provide and maintain electrical power at the Site for construction purposes, for temporary facilities and trailers, and for any other site offices or trailers required by the Contract Documents. Contractor shall provide all necessary wiring and appurtenances.
- c. Contractor shall provide and maintain distribution of temporary electrical power and lighting to the Work and for use by the District project manager and project inspector.
- d. Contractor shall provide temporary power main service disconnect and over current protection at convenient locations and as required by governing codes.
- e. The Contractor shall be responsible for providing temporary facilities as required to deliver power service from the point of connection to the point(s) of intended use.
- f. The Contractor shall provide, install, and maintain temporary electrical lighting wherever necessary to provide illumination for the proper performance and/or observation of the Work. Where required, a minimum of 20 foot-candles for rough work and 50 foot-candles for finish work shall be provided.
- g. **Existing Temporary LED Lighting: In addition to maintaining existing exterior light poles and lighting during the construction duration, the Contractor shall maintain in good condition the existing temporary LED lighting installed approximately every eight feet along the temporary fencing on 2"x4" wood posts secured to the temporary fencing adjacent to pedestrian paths of travel on all sides of the project site. Contractor shall replace any lighting that may burn out or damaged by Contractor during the contract duration. Contractor is**

responsible for removing all of the temporary lighting after Substantial Completion and when existing permanent lighting is in place.

2. Temporary Communications/Telephone

- a. Contractor shall provide, maintain, and pay for all required communications and data services (including without limitation telephone, e-mail and internet) to all Project field offices to include a multi-function printer, copier, scanner, fax unit commencing at the time of Project mobilization, including all installation, connection, and monthly charges. The installation and removal of all temporary telephone and data distribution shall be the sole responsibility of the Contractor without adjustment of the Contract Price or the Contract Time.
- b. Contractor shall provide, maintain, pay for telephone and data/internet service to field offices at time of project mobilization and for the duration of the project. Contractor to pay costs for telephone installation, telephones, internet access, maintenance services and removal.
- c. Contractor to provide a list of important telephone numbers at each telephone on the site offices including, but not limited to the following:
 - i) Police and Fire Departments
 - ii) Campus Police Services
 - iii) Ambulance Service
 - iv) Contractor's home office
 - v) All Principal Subcontractors' field and home offices
 - vi) Architect's office
 - vii) Engineer's office
 - viii) District office
 - ix) Project Manager and Construction Manager
 - x) Project Inspector of Record
 - xi) Campus Building & Grounds Department
 - xii) Testing Laboratory
- d. Provide Contractor superintendent with cellular telephone for use when away from field office.

3. Temporary Water

- a. The District will furnish and pay for water during the work to the extent water is available on the Site. The Contractor shall be responsible for providing all temporary facilities required to deliver District water from the point of connection to point of intended use on the Project.
- b. Contractor shall be allowed to utilize water from the **District for domestic use only. Water shall not be provided nor used for dust control, street cleaning, cleaning tools, soil compaction, or vehicle washing. Water used for such purposes shall be provided by the Contractor at its expense.**
- c. Contractor shall provide and maintain necessary temporary water supply connections, pipes, hoses, nozzles, and fittings required. Before final acceptance, all temporary water supply components installed by Contractor shall be removed in a manner approved by District's Representative.

- d. Unnecessary waste of water will not be permitted. Special hydrant wrenches shall be used for opening and closing fire hydrants, in no case shall pipe wrenches be used for this purpose. **Contractor shall obtain written approval and pay all required fees of governing agencies having jurisdiction (e.g., EBMUD and Contra Costa County Fire Protection District (CCCFPD) prior to using any fire hydrant water on or off Contra Costa Community College District property.**
- e. Contractor shall provide and use backflow preventers on water lines at point of connection to any District water supply. Backflow preventers shall comply with requirements of California Uniform Plumbing Code. The installation and removal of all temporary backflow preventers on the Site shall be the sole responsibility of the Contractor without any adjustment to either the Contract Sum or the Contract Time. Before final acceptance, all temporary connections and piping installed by Contractor shall be removed in a manner approved by District's Representative.
- f. Contractor shall provide and make potable water available for human consumption. Contractor shall provide and maintain suitable quality water service required for construction operations.

4. Temporary Fences

- a. Temporary Fencing: Contractor shall provide temporary fencing around specified construction areas for safety and protection. Provide chain link fencing not less than six (6) feet in height, complete with metal posts and required bracing, anchorage, visual screening (green fabric), and with truck and pedestrian gates. All vehicle and Pedestrian gates and openings shall have gates secured after hours of operation.
- b. Contractor shall provide padlocks used for securing all gates. Padlocks shall be designed to prohibit cutting of shackle. Contractor shall coordinate keying strategy with District and Contra Costa County Fire Protection District
- c. Contractor shall be responsible for locking gates and shall be secured with minimum 3/8-inch-thick, 30 grade coil chain, minimum 5/16-inch cable. Gates shall be kept closed and locked at all times when not in use.
- d. All existing fences affected by the Work shall be maintained by Contractor until Final Completion of Project. Fences which interfere with construction operations shall not be relocated or dismantled until District gives written permission to do so, and the timing of fence relocation or dismantling has been agreed upon. Where fences must be maintained across the construction easement, adequate gates shall be installed. Site Enclosure Fence: Contractor shall furnish and install site enclosure fence in a manner that will prevent people and animals from easily entering site except by entrance gate.
- e. Contractor will be responsible for maintaining security by limiting number of keys and restricting distribution to authorized personnel.
- f. Security Enclosure and Lockup: Install substantial temporary enclosure around partially completed areas of construction. Provide lockable entrances to prevent unauthorized entrance, vandalism, theft and similar violation of security.
- g. Contractor shall provide secure lockup for stored materials and equipment which are of value or attractive for theft.
- h. Contractor shall be responsible for project security for materials, tools, equipment, supplies and completed and partially completed Work.

- i. On completion of the Work across any tract of land, Contractor shall restore all fences to their original or to a better condition, and to their original locations.

5. Temporary Protection of Public and Private Property

- a. Contractor shall protect, shore, brace, support and maintain all existing underground utilities including but not limited to the following: all pipes, conduits, drains and other underground construction uncovered or otherwise affected by construction operations.
- b. All pavement, surfacing, driveways, curbs, walks, buildings, utility poles, guy wires, fences and other surfaces structures affected by construction operations, together with all sod and shrubs in yards, planting areas, and medians, shall be restored to their original condition, wherever affected by construction operations. All replacements shall be made with new materials.
- c. Contractor shall be responsible for all damage to streets, roads, highways, shoulders, ditches, embankments, culverts, bridges and other public or private property, regardless of location or character, which may be caused by transporting equipment, materials, or workers to or from the Work, Site or any part thereof, whether by Contractor or Subcontractors. Contractor shall be solely responsible without adjustment of the Contract Price or the Contract Time to make satisfactory and acceptable arrangements with the District, or the agency or authority having jurisdiction over the damaged property, concerning its repair or replacement or payment of costs incurred in connection with the damage.
- d. **All fire hydrants and water control valves shall always be kept free from obstruction and available for use.**

6. Temporary Sanitary Facilities

- a. Contractor shall provide and maintain temporary sanitary toilets for use of all workers throughout the course of the Work. At a minimum, sanitary facilities shall be located at the trailer site, Contractor staging area(s) and adjacent to Work areas.
- b. Sanitary facilities shall be of reasonable capacity, properly maintained throughout the Project, and obscured from public view to the greatest practical extent. If toilets of the chemically treated type are used, at least (1) toilet will be furnished for each (15) persons. Contractor shall enforce the use of such sanitary facilities by all personnel at the Site.
- c. Contractor shall comply with all minimum requirements of the Contra Costa Health Department or other public agency having jurisdiction.
- d. Maintain temporary facilities in a sanitary condition at all times during the Project.
- e. Contractor will keep sanitary facilities free from graffiti.
- f. Use of toilet facilities installed as part of the Work shall not be permitted.
- g. All Portable toilets shall be located within fenced areas of the Site.
- h. Contractor shall be responsible for providing access to the temporary toilet facilities.

7. Temporary Barriers and Enclosures

- a. Contractor shall provide barriers to prevent unauthorized entry to construction areas to allow for District's use of the Site, and to protect existing facilities and adjacent improvements from damage during construction operations.

- b. Contractor shall provide barricades as required by the Contract Documents, governing agencies, and/or field conditions in order to protect public access pathways to existing buildings scheduled to remain open during any part of the Work
 - c. Contractor shall protect vehicular traffic, stored materials, Site, and existing structures from damage.
 - d. Contractor shall provide and maintain temporary enclosures to prevent public entry to any construction area, and to protect all persons using other existing buildings and portions of the Site and/or premises Contractor shall maintain safe access to all existing facilities to remain in operation during any part of the Work
8. **Temporary Water Control**
- a. Contractor shall comply with Section 01572 (Storm Water Pollution Prevention Plan.)
9. **Temporary Pollution Control**
- a. Contractor shall prevent the pollution of drains and watercourses by sanitary waste, sediment, debris and other substances resulting from construction activities. See Section 01572 and the other Contract Documents for additional information and requirements.
 - b. No sanitary wastes shall be permitted to enter any drain or watercourses other than sanitary sewers. No sediment, debris or other substance shall be permitted to enter sanitary sewers without authorization of the receiving sanitary sewer service and all possible Best Management Practices (BMPs) shall be taken to prevent such materials from entering any drain to watercourse. Rate of discharge for storm water may be not increased by the Project during or following construction.
 - c. In the event that dewatering of excavations is required, Contractor shall obtain the necessary approval and permits for discharge of the dewatering effluent from the local jurisdiction. Contractor shall be responsible for assuring that water quality of such discharge meets the appropriate permit requirements prior to any discharge.
 - d. Contractor shall comply with the District Storm Water Pollution Prevention Plan for this Project.
10. **Construction Aids**
- a. Contractor shall furnish, install, maintain and operate all construction aids as required for the performance of the Work. Such construction aids include, but are not limited to, elevators and hoists, cranes, temporary enclosures, swing staging, scaffolding, and temporary stairs.
11. **Erosion Control**
- a. Contractor shall comply with the Storm Water Pollution Prevention Plan for all Work on this Project including Work under this Specification Section. See Section 01572 and the other Contract Documents for additional information.
 - b. Contractor shall prevent soil erosion on the Site and adjacent property resulting from its construction activities to the maximum extent practical, including implementation of Best Management practices. Effective measures shall be initiated prior to the commencement of clearing, grading, excavation or other operations that will disturb the natural protection.

- c. Work shall be scheduled to expose areas subject to erosion for the shortest possible time and natural vegetation shall be preserved to the greatest extent practicable. Temporary storage, temporary construction buildings and temporary Field office buildings shall be located and construction traffic routed to minimize erosion. Contractor shall provide temporary fast-growing vegetation or other suitable ground cover shall be provided as necessary to control runoff.

12. Vehicular and Pedestrian Traffic Controls

- a. The Campus is an active site, with vehicular and pedestrian traffic occurring at all times of the day and all days of the week. Contractors shall coordinate with District's Representative concerning vehicular traffic associated with the construction to minimize disruption to campus operations. Delivery trucks and large equipment shall enter the Contractors access gate and shall use the route mutually agreed upon between District and Contractor. Contractor shall provide signage directing construction and delivery traffic to this gate. Contractor shall provide information regarding sign types, size, material, text and locations to be reviewed and approved by the District Representative, and the Campus prior to installation. See Article 12 below for additional requirements, **and Section 01140, Work Restrictions for additional requirements for vehicular access, traffic control and related restrictions and requirements.**
- b. Contractor shall always keep all required Fire District (CCCFPD) and emergency vehicle access paths free from obstruction during the Project. See **Architectural Drawings** for the location of the existing fire road. The Contra Costa County Fire Protection District always requires unobstructed access along this road and will require keys to the Contractor's temporary fence gates. The Contractor will not be allowed to park vehicles along the fire lane, nor be allowed to store any materials or equipment that obstructs the path of travel by the Fire District (CCCFPD), unless approved in writing by both the Fire District and the District.
- c. Path of Travel to Construction Site. The Path of Travel to the construction site is anticipated to be heavily traveled by pedestrian traffic (students and faculty) and Contractor truck traffic. Consequently, Contractor shall include automatic flashing safety warning signs on both sides of the Path of Travel, pedestrian crosswalk striping and signage to provide a safe path of travel on the asphalt to and from Golf Club Road. Contractor shall also provide a minimum one flag person per site, at all times, for truck traffic entering or exiting. Contractor shall provide a plan for review and approval by the District. Contractor shall anticipate, and include in their bid, curb cuts, regrading driveways and walkways in some areas to accommodate pedestrian and vehicular traffic, including Contractor's ingress and egress to the Site.
- d. Contractor shall not allow any construction personnel parking or other related equipment parking on City streets, or Student & Staff Parking Areas. City streets shall not be used for material storage or laydown areas unless the Contractor obtains encroachment permits from the City.
- e. Project Gates should be closed at all times.

13. Trees and Plant Protection

- a. Contractor shall preserve and protect existing trees and plants on the Site that are not designated or required to be removed and those adjacent to the Site. See other Contract Documents for additional information and requirements.

14. Dust Control

- a. Contractor shall conduct all construction operations to minimize the generation of dust and dirt and prevent dust and dirt from interfering with the progress of the Work and from accumulating in the Work and adjacent areas including, without limitation, occupied facilities and neighboring communities. See other Contract Documents for additional information and requirements.

15. Temporary Signage

- a. See Section 01140, Work Restrictions, Drawing and other Contract Documents for additional information and requirements for temporary signage.
- b. Sign must be reviewed and approved by the District and the Campus prior to installation. Contractor shall use an experienced sign company to produce all temporary signs. Install signs where indicated in Contract Documents, and/or as required by the District. Unauthorized signs are not permitted.
- c. Contractor shall provide temporary directional way-finding signs around the Project site to guide faculty, students, and visitors to safely navigate around construction activities at the Project site and to warn faculty, students, and visitors of potential safety hazards. Contractor shall provide an additional 6 wayfinding signs per Site to match existing at the Project Site, or on fencing or other structures as approved by the District. A sample way-finding sign is attached at the end of this section that provides basic dimensions, materials, backgrounds and related information. However, final proposed signs by Contractor shall be reviewed and approved by the District and Campus prior to fabrication and installation.
- d. In addition too way-finding signs, additional safety sign types shall include, but not be limited to: Danger/Construction Area/No Trespassing; Caution/Demolition Work in Progress; Do Not Enter/Authorized Personnel Only; Warning/Hard Hat Required Beyond this Point; Eye Protection Required Beyond this Point; Danger/Flammable Materials/ No Smoking Within 25 Feet; Danger/Keep Gate Closed; Caution/Laser Operation in Use; Caution/Overhead Work in Progress; Power Actuated Tools in Use; All Visitors Report to Job Trailer; Eye Wash Station; Authorized Access Only; Danger/No Trespassing; Caution/Construction Traffic; Caution/Pedestrian Traffic; Building Closed, and Contractor Deliveries. All signs shall be in both English and Spanish; and shall be in a quantity required and applicable as approved by the District.
- e. Contractor shall maintain and touch-up signs, so they are always legible.

16. Temporary Heat, Ventilation and Lighting

- a. Provide temporary heat as required to maintain adequate environmental conditions to facilitate progress of the work, to meet specified minimum environmental conditions for the Work and to protect materials and finishes from damage due to improper temperature and humidity conditions.
- b. Portable heaters shall be standard units complete with controls, appropriate safety features, and bear testing lab approval markings.
- c. Provide adequate forced ventilation of enclosed areas as required for proper installation and curing of materials, to disperse humidity, and to prevent hazardous accumulations of dust, fumes, vapors and gases.

- d. HVAC Equipment: Unless District authorizes use of permanent HVAC system, provide vented, self-contained, liquid-propane-gas or fuel-oil heaters with individual space thermostatic control.
 - i) Use of gasoline-burning space heater, open-flame heater or salamander-type heating units is prohibited.
 - ii) Heating Units: Listed and labeled for type of fuel being consumed, by a testing agency acceptable to authorities having jurisdiction and marked for intended use.

PART 2 – PRODUCTS

2.1 TEMPORARY FACILITIES/TEMPORARY FIELD OFFICE

- A. Contractor shall provide Temporary Field Offices: Prefabricated or mobile units with serviceable finishes, heating and air conditioning systems, temperature controls, and foundations adequate for normal loading. Trailer shall include adequate space and furniture to hold OAC meetings for a minimum of 14 people.
- B. **Separate Project Inspector's Field Office Building:** Provide heated and air-conditioned space for sufficient size to accommodate needs of Project Inspector, nominally 10' x 20'. Project Inspector's field office space may not be combined with Contractor's or District's field office building. Furnishings shall be like new condition, no older than three years, except as noted below and subject to acceptance by Project Inspector. Furnish and equip as follows:
 - 1. Three 4-drawer vertical file cabinets
 - 2. One plan table capable of holding full size plans fully open
 - 3. Plan racks sufficient to hold all project and shop drawings.
 - 4. Two 5' long desks with drawers
 - 5. Two side table for desk
 - 6. Two swivel ergonomically adjustable office chair on casters
 - 7. Two 3'-wide 4-shelf book shelving units
 - 8. One 4' x 5' cork tack boards (for office)
 - 9. One 4' x 5' white board (for office)
 - 10. Two telephone lines (at desks)
 - 11. One color copier/scanner/fax machine that will accommodate 8.5' x 11", 8.5" x 14", and 11" x 17" paper. Contractor to provide maintenance for copy machine. Contractor will supply ink and paper as needed or required by inspector. This machine will be for use by Project Inspector representative for this project only.
 - 12. Two wastebaskets
 - 13. Operable mini blinds on all windows.
 - 14. Intrusion alarm with motion sensor. Local bell only; no monitoring.
 - 15. Fire extinguisher(s) as required by codes.
 - 16. Smoke detector (9-volt battery type).
 - 17. Drinking water dispenser. Provide bottled water refills throughout the project.
 - 18. Heating and cooling equipment necessary to maintain a uniform indoor temperature of 68 to 72 deg F, year-round.
 - 19. Lighting fixtures capable of maintaining average illumination of 20 fc at desk height.
 - 20. Provide electrical power service and 120V AC duplex receptacles, with not less than one receptacle on each wall.

21. Keyed entry door.
 22. Submit plans to District for approval.
 23. Utility Services: Contractor shall make all provisions and pay all installation and all other costs to provide telephone service, internet connection and services, electrical service, exterior lights and any local code and OSHA requirements. The Contractor shall pay all monthly charges for all services provided, including all local calls and any toll calls by the Construction Manager's personnel to the Contractor's home office, Architect's home office, subcontractors, suppliers, and/or any other tolls calls specifically related to the Work.
 24. Internet Services: Contractor shall provide internet connection using cable or DSL modem or equivalent to achieve a minimum speed of 6 Mbps for download and upload of data. Modem shall be Voice Over IP capable and be accompanied with wireless G capable router for District Construction Manager's use only. Possible high speed providers are Comcast Cable (866-890-2061) or AT&T DSL (866-429-7222). In the event high speed internet technology is not available from Internet Service Providers, Contractor shall provide USB mobile broadband (Cellular 4G) cards for District computers from the Notice to Proceed through Final Completion.
 25. All equipment provided under this section, with the exception of basic office furniture, shall become the property of the District upon final completion.
- C. Access to Office Trailers: Provide paved pedestrian access path to all temporary offices.
- D. Contractor's Field Office: Provide as required for Contractor personnel.
- E. Field office locations must be reviewed and approved by the District and Architect prior to installation.
- F. Contractor's Storage and Fabrication Sheds: Provide sheds sized, furnished and equipped to accommodate materials and equipment for construction operations.
- G. Contractor shall be responsible for Temporary field offices/facilities, security and protection.

2.2 EQUIPMENT

- A. Fire Extinguishers: Contractor shall provide Portable, UL rated; with class and extinguishing agent as required by locations and classes of fire exposures according to NFPA 10.
- B. First Aid Supplies: In compliance with governing regulations.

2.3 MATERIALS

NOT USED

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

- A. Locate facilities where they will serve Project adequately and result in minimum interference with performance of Work. Relocate and modify facilities as required by progress of the Work during entire project including all phases of project.
- B. Provide each facility ready for use when needed to avoid delay. Do not remove until facilities are no longer needed or are replaced by authorized use of completed permanent facilities.
- C. Contractor shall verify and coordinate all relocation of facilities with the District Representative.

3.2 OPERATION, TERMINATION AND REMOVAL

- A. Supervision: Enforce strict discipline in use of temporary facilities. To minimize waste and abuse, limit availability of temporary facilities to essential and intended uses.
- B. Maintenance: Maintain facilities in good operating condition until removal.
 - 1. Maintain operation of temporary enclosures, heating, cooling, humidity control, ventilation and similar facilities on a 24-hour basis where required to achieve indicated results and to avoid possibility of damage.
- C. Temporary Facility Changeover: Do not change over from using temporary security and protection facilities to permanent facilities until Substantial Completion and acceptance by the District.
- D. Termination and Removal: Remove each temporary facility when need for its service has ended, when it has been replaced by authorized use a permanent facility or no later than Final Completion. Complete or, if necessary, restore permanent construction that may have been delayed because of interference with temporary facility. Repair damaged Work, clean exposed surfaces and replace construction that cannot be satisfactorily repaired.
 - 1. Materials and facilities that constitute temporary facilities are property of Contractor. District reserves the right to take possession of Project Identification signs at no cost to the District.
 - 2. Remove temporary paving not intended for or acceptable for integration into permanent paving. Where area is intended for landscape development, remove soil and aggregate fill that do not comply with requirements for fill or subsoil. Remove materials contaminated with road oil, asphalt and other petrochemical compounds, and other substances that might impair growth of plant materials or lawns. Repair or replace street paving, curbs and sidewalks at temporary entrances, as required by authorities having jurisdiction.
 - 3. Clean and renovate permanent facilities used during construction period prior to Final Completion. Comply with final cleaning requirements specified in Section 01770, Contract Closeout Procedures.

END OF SECTION 01500

SECTION 01505

CONSTRUCTION WASTE MANAGEMENT

PART 1 – GENERAL

1.1 RERLATED DOCUMENTS

- A. All Contract Documents shall be reviewed for applicable provisions related to the provisions in this document, and provisions in the General Conditions and other Division 1 Specification Sections shall apply to this Section without limitation.

1.2 RELATED REQUIREMENTS SPECIFIED IN OTHER SECTIONS

- A. Section 01010 – “Summary of Work”
- B. Section 01412 - “Hazardous Material”
- C. Divisions 2 through 33 Sections for Construction and Demolition Waste Management requirements for the work in those Sections.

1.3 SUMMARY

- A. The District has established that this Project shall generate the least amount of waste possible and that processes that ensure the generation of as little waste as possible due to error, poor planning, breakage, mishandling, contamination, or other factors shall be employed.
- B. Of the inevitable waste that is generated, as many of the waste materials as economically feasible shall be reused, salvaged, or recycled. Waste disposal in landfills shall be minimized.
- C. The existing buildings that are shown to be demolished by the Contractor in the Contract Documents currently contain furniture, fixtures and equipment (FF&E)-both fixed and movable. The District has determined said FF&E has zero salvageable value. Therefore, for bidding purposes, the Contractor shall bid removing and disposing of said FF&E assuming and allocating zero-dollar value to whatever FF&E remains when the Contractor takes possession of the Site. Contractor shall include said FF&E in its Waste Management Plan that is submitted to the District. The Contractor is also advised that the District is in the process of removing some, but not all, of the movable FF&E through its normal Purchasing Department process by the anticipated Notice of Award date.

1.4 WASTE MANAGEMENT GOALS FOR THE PROJECT

- A. The District has established that this Project shall minimize the creation of construction and demolition waste, and shall divert a minimum of 75% of Project generated waste from landfills. Factors that contribute to waste such as over packaging, improper storage, ordering error, poor planning, breakage, mishandling, and contamination, shall be minimized. Of the inevitable waste that is generated, as many of the waste materials as economically feasible shall be reused, salvaged, or recycled. Waste disposal in landfills shall be minimized. Both recycled and waste need to be logged and documented by volume and weight.
- B. Diversion Goals: A minimum 75% of total Project waste shall be diverted from landfill. The following waste categories, at a minimum, shall be diverted from landfill. The Contractor’s Waste Management Plan shall establish a program for reusing or recycling materials which are recyclable. These materials include, but not limited to:

1. Landscape and land clearing debris (green wood materials)
2. Asphalt pavement
3. Gravel and aggregate products
4. Concrete
5. Masonry scrap and rubble (brick, concrete, masonry, stone)
6. Metals (ferrous and nonferrous)
7. Clean wood (dimensional lumber, sheet goods, millwork, scrap, pallets)
8. Plastics (films, containers, PVC products, polyethylene products)
9. Asphalt/Bituminous roofing
10. Insulation Materials
11. Glass (un-tempered)
12. Door and window assemblies
13. Carpet and carpet pad
14. Fibrous acoustic materials
15. Ceiling Tiles
16. Plumbing fixtures and equipment
17. Mechanical equipment
18. Lighting fixtures and electrical components
19. Cardboard packing and packaging
20. Furniture
21. Sheet Rock
22. Electronic Waste
23. Universal Waste
24. Paper

1.5 DEFINITIONS

- A. Clean: Untreated and unpainted; not contaminated with oils, grease solvents, caulk, no Freon with air-conditioning units or similar products.
- B. Class III Landfill: A landfill that accepts non-hazardous waste such as household, commercial, and industrial waste, including construction, remodeling, repair, and demolition operations.
- C. Commingled or Off-site Separation: Collecting all material types into a single bin or mixed collection system and separating the waste materials into recyclable material types in an off-site facility.
- D. Construction and Demolition Waste: Solid wastes typically including building materials, packaging, trash debris and rubble resulting from construction, remodeling repair and demolition operations. Hazardous materials are not included.
- E. Debris: Including both combustible and noncombustible wastes, such as leaves and tree trimmings that result from construction or maintenance and repair work.
- F. Deconstruction: The process of removing existing building materials from renovation and demolition projects for the purposes of reuse, and recycling, in an efficient and safe manner possible.

- G. Divert or Diversion from Landfill: To remove, or have removed, from the site for recycling, reuse or salvage material that might otherwise be sent to a landfill. Diversion from Landfill does not include using the material as alternative daily cover at a landfill site, nor does it include burning, incinerating, transformation processing or thermally destroying waste.
- H. Inert Fill: A permitted facility that accepts inert waste such as asphalt and concrete exclusively.
- I. Recovery: Any process that reclaims materials, substances, energy, or other products contained within or derived from waste on-site. It includes waste-to-energy, composting, and other processes.
- J. Recyclable: The ability of a product or material to be recovered at the end of its life cycle and remanufactured into a new product.
- K. Recycle (recycling): To sort, separate, process, treat or reconstitute solid waste and other discarded materials for the purpose of redirecting such materials into the manufacture of useful products. The process of collecting and preparing recyclable materials in their original form, or in manufacturing processes, that do not cause the destruction/contamination of recyclable materials in a manner that precludes further use. Recycling does not include burning, incinerating, transforming or thermally destroying waste.
- L. Return: To give back reusable items or unused products to vendors.
- M. Reuse: Using a material or product that is recovered from construction, renovation, or demolition activities.
- N. Reuse on Site: To reuse excess of discarded construction material in some manner on the Project site.
- O. Rubbish: Including both combustible and noncombustible wastes, such as paper, boxes, glass, crockery, metal and lumber scrap, tin cans, and bones.
- P. Salvage: to remove a waste material from the Project site for resale or reuse.
- Q. Sources Separation: Sorting the recovered materials into specific material types with no or a minimum amount of contamination on site.
- R. Time-Based Separation: Collecting waste during each phase of construction or deconstruction which results in primarily one major type of recovered material. The material is removed before it becomes mixed with the material from the next phase of construction.
- S. Waste Materials: Large and small pieces of listed materials which are excess to contract requirements and generally include materials to be recycled and/or recovered from existing construction and items of trimmings, cuttings, and damaged goods resulting from new installations, which can be effectively used in the Work. Extra material or material that has reached the end of its useful life in its intended use.

1.6 REFERENCES AND RESOURCES

- A. This information is provided for Contractor's convenience only, and the District does not warrant its accuracy. County specific information is available on the Contra Costa County Waste Reduction and Recycling web page at <http://www.co.contra-costa.ca.us/depart/cd/recycle/index.html> . Additional information may also be found at the Contra Costa County Department of Conservation and Development web page at <http://www.cccounty.us/index.aspx?NID=285> , and CalGreen / Construction & Demolition Debris Recovery Program, <http://www.cccounty.us/4746/CalGreen-Construction-Demolition->

Debris. Refer to the Contra Costa County *Builder's Guide to Reuse & Recycling* and the Contra Costa County Reuse and Recycling Guide. Both are available from Contra Costa County <http://www.co.contra-costa.ca.us/4911/Recycling> ; Contact Lorna Thomson at 925-674-8823 (lorna.thomson@dcd.cccounty.us) for assistance in the management of construction & demolition debris.

- B. The recyclers listed below provided for the convenience of Contractor. No preference is given to the recyclers listed below. Contractor shall contact any additional resources as required to complete the work. Some of the names and numbers may be out of date, and Contractor shall not rely on the information presented in this Section in preparing its Bid or its Waste Management Plan.
1. Cardboard:
Contact: National Recycling Corporation (510) 268-1022; California Waste Solutions (510) 836-6200; Community Conservation Centers (510) 524-0113. May find the public will remove if made available.
 2. Clean, untreated, dimensional wood and pallet wood:
Contact: California Waste Solutions (510) 836-6200, Waste Management, Inc. (916) 374-2711.
 3. Usable Palettes
Contact: Check with manufacturer or installer for take-back programs.
 4. Beverage containers:
Contact: California Waste Solutions (510) 836-6200.
 5. Metals from banding, ductwork, piping, rebar, roofing, steel studs, other trim, steel, iron, galvanized sheet steel, stainless steel, aluminum, copper, zinc, lead, brass, and bronze:
Contact: Aaron Metals (510) 569-6767; DC Metals (510) 569-2255; Lakeside Non-Ferrous Metals, (510) 444-5466.
 6. Carpet and pad:
Contact: Return to manufacturer; donate large remnants to Habitat for Humanity (510) 251-6304 or other non-profit.
 7. Paint:
Contact, paint recycles: E-Coat, Kelly Moore (925)-687-3006.
Contact: Alameda County, <https://www.acgov.org/sustain/what/greenbuilding/cdd.htm>
Safety Clean (408) 294-8778.
 8. Insulation:
Check with manufacturer or installer for take-back programs.
 9. Brick:
Contact, (whole bricks): A Bygone Era; Ohmega Salvage (510) 843-7368.
 10. Gypsum Board:
Contact: Zanker Recycling 408 263-2385.
- C. The following sources provided for references:
1. BuildingGreen.com
 2. CalRecycle

3. Office of Land and Emergency Management (OLEM)
4. Construction Waste Management Handbook

1.7 WASTE MANAGEMENT PLAN

- A. Waste Management Plan: Within 10 calendar days after receipt of Notice of Award, or prior to any waste removal, whichever occurs sooner, Contractor shall submit to the District and District's Representative a Waste Management Plan, tailored to this project and Site, for review and acceptance. The Waste Management Plan shall include, but not limited to, the following:
 1. The Contractor shall designate an on-site party (or parties) as the Waste Management Plan Program Manager responsible for instructing workers and overseeing and documenting results of implementation of the Waste Management Plan for the Project.
 2. Indicate how the Contractor proposes to recover at least 75% of the wastes for reuse and recycling.
 3. The Waste Management Plan should coordinate the recovery effort with the construction, and renovation / demolition schedule.
 4. Indicate compliance with this specification's section on Quality Assurance.
 5. Description of the regular meetings to address waste management.
 6. Include a list of reuse facilities, recycling facilities and processing facilities that will be receiving the recovered materials (including take back by District or on-site auctions.)
 7. If some of the materials will be donated or sold on-site auctions, describe the process and identify the organizations that may receive the materials.
 8. Identify materials that are not recyclable or not recovered which will be disposed of in a landfill (or other means acceptable by the State of California and local ordinance and regulations) and explain why the materials are not recovered.
 9. List the permitted landfill, or other permitted disposal facilities, that will be accepting the disposed waste materials.
 10. Indicate instances or situations where compliance with the requirements of this specification do not apply or do not appear to be possible.
 11. Identify each type of waste material to be reused or recycled and estimate the amount, by weight.
 12. Provide estimate of time requirements for demolition and for the removal of valuable reusable items and materials.
- B. Revise and resubmit the Waste Management Plan as required by District.
- C. Acceptance of Contractor's Waste Management Plan will not relieve Contractor of responsibility for compliance with applicable environmental regulations.

1.8 QUALITY ASSURANCE

- A. Regulatory Requirements. Comply with applicable requirements of the State of California, local ordinances and regulations concerning management of construction, clearing, and inert materials.
- B. Disposal Site, Recyclers and Waste Materials Processors. Use only facilities properly permitted by the State of California, and/or by local authorities where applicable.
- C. Pre-Work Waste Management Plan Meeting.

1. Prior to beginning work at the Site, schedule and conduct a meeting to review the Waste Management Plan and discuss procedures, schedules, coordination and specific requirements for waste materials recycling and disposal. Discuss coordination and interface between Contractor, sub-contractors, architect, engineers, project manager, District, and other waste management activities. Identify and resolve problems of compliance with requirements. Record minutes of the meeting, identifying conclusions reached and matters requiring further resolution. Maintain waste management as an agenda item at future construction meetings.
2. Attendees: Contractor and related contractor personnel associated with work of this section, including personnel in charge of the waste management program; Waste Management Plan Program Manager; architect; engineers; material and equipment suppliers where appropriate; and such additional District personnel as District deems appropriate.
3. Waste Management Plan Revision: Make revisions to Waste Management Plan agreed upon during the meeting and incorporate resolutions agreed to be made subsequent to the meeting. Submit revised Waste Management Plan to the District as District deems appropriate for acceptance.

1.9 RECYCLING PROGRAM

- A. The recycling program could utilize one or a combination of any of the following common waste diversion strategies:
 1. Sources Separation
 2. Time-Based Separation
 3. Commingled or Off-site Separation
 4. Back haul of packaging
 5. On-site sales auctions and removal.
- B. Waste Material management hierarchy can be viewed as: reuse on-site, recycle on-site, reuse off-site, and recycle off-site.

1.10 WASTE MANAGEMENT PLAN IMPLEMENTATION

- A. Plan Distribution:
 1. Contractor shall provide copies of the Waste Management Plan to the Job Site Foreman, each Subcontractor, job site Superintendent, Project Inspector, District, , and Architect or Engineer.
 2. Contractor shall provide Waste Management Plan to comply with this Section 01505.
- B. Instruction: Contractor shall provide on-site instruction of appropriate separation, handling, and recycling, salvage, reuse, and return methods to be used by all parties at the appropriate stages and/or phases of the Project.
- C. Meetings: Contractor shall conduct Construction Waste Management Plan meetings. Meetings shall include all subcontractors affected by the Waste Management Plan. At a minimum, waste management goals and issues shall be discussed at the following meetings:
 1. Pre-bid meetings.
 2. Pre-construction meeting; (including pre-construction meeting for the Project)
 3. Regularly scheduled job-site meetings.

- D. Separation Facilities: Contractor shall designate a specific area or areas to facilitate separation of materials for potential reuse, salvage, recycling, and return. Recycling and waste bin areas are to be kept neat and clean and clearly marked in order to avoid co-mingling of materials. Bins shall be protected during non-working hours from offsite contamination. Secure waste collection areas to protect from wind, access, rain, run off, ground contamination, etc.
- E. Materials Handling Procedures: Materials to be recycled shall be protected from contamination, and shall be handled, stored and transported in a manner that meets the requirements set by the designated facilities for acceptance.

1.11 PROGRESS DOCUMENTATION

- A. Provide the Contractor's Waste Program Manager with delivery receipts for the recovered materials and waste materials sent to the permitted recycling facilities, processing facilities, or landfill with the following information on a form to be approved by the District:
 - 1. Name of firm accepting the recovered materials or waste materials
 - 2. Specify type of facility (e.g. retail facility, recycler, processor, Class III landfill, MRF)
 - 3. Location of the facility
 - 4. Type of materials
 - 5. Net weights (or volume) of each type of material
 - 6. Date of delivery
 - 7. Value of the materials or tipping fee paid
- B. Document on form shall be reviewed and approved by District.
- C. Application for Progress Payments: Contractor shall submit with each Application for Progress Payment a Summary of the project waste generated. Failure to submit this information shall render the Application for Payment incomplete and shall delay Progress Payment. The District and its representatives shall not be responsible for delay Progress Payment. With each Application for Payment, submit required Progress Documentation, including:
 - 1. Manifest;
 - 2. Weight tickets;
 - 3. Receipts;
 - 4. Invoices specifically identifying the project and waste material.
- D. Record Submittals: With Record Submittals as specified in Section 01330, submit the following:
 - 1. Summary of solid waste disposal and diversion. Submit on form preapproved by District.
 - 2. Estimate of total Project waste to be generated; name of the landfill(s) where Project waste would normally be disposed of.
 - 3. Estimate of amounts (weight, feet, square yards, gallons, etc.) All waste categories listed.
 - 4. Estimate of net cost revenue or additional costs resulting from separating and recycling, (versus land filling), each material. Net means that the following have been subtracted from the cost of separating and recycling:

PART 2 – PRODUCTS (Not Used)

PART 3 –EXECUTION

3.1 STORAGE AND HANDLING

A. Site Storage

1. Remove materials for recycling and recovery from the work locations to approved containers or storage area as required. Failure to remove waste or recovered materials will be considered cause for withholding payment and termination of Contract.
2. Position containers for recyclable and recoverable waste materials at a designated location on the Site. If materials are sorted on Site, also provide a sorting area and necessary storage containers.
3. Change-out loaded containers for empty containers, as demand requires.
4. If recovered materials are stored on-site for project duration, provide adequate security from pilferage.

B. Handling

1. Deposit indicated recyclable, and recoverable materials in storage areas or containers in a clean (no mud, adhesive, solvents, petroleum contamination), debris-free condition. Do not deposit contaminated materials into the containers until such time as such materials have been cleaned.
2. Insure all recovered materials are made safe for handling and storage.
3. If the contamination chemically combines with the material so that it cannot be cleaned, do not deposit into the recycle containers. In such case, request resolution by the District for disposal of the contaminated material. Directions from the District do not relieve the Contractor of responsibility for compliance with all legal and regulatory requirements for disposal, nor shall such directions cause a request for modification of the Contract.

3.2 PROJECT CONDITIONS

A. Site Condition:

1. Signs and instructions should be clear, and easy to understand. All recycling containers should be clearly labeled and lists of acceptable and unacceptable materials will be posted throughout the site. Whenever possible, they should be in multiple-languages, especially in Spanish, and in graphic symbols.
2. The Contractor shall ensure the safety of all personnel involved in the waste management process.
3. As a part of the Waste Management Plan, a site management plan shall be created including: work areas, materials processing areas, materials storage and disposal areas, worker hand-washing and changing stations, first aid and medical information.

END OF SECTION 01505

SECTION 01540

SITE SECURITY AND SAFETY

PART 1 – GENERAL

1.1 RELATED DOCUMENTS

- A. All Contract Documents shall be reviewed for applicable provisions related to the provisions in this document, and provisions in the General Conditions and other Division 1 Specification Sections shall apply to this Section without limitation.

1.2 RELATED REQUIREMENTS SPECIFIED IN OTHER SECTIONS

- A. Section 01010 – “Summary of Work”
- B. Section 01311 – “Project Management and Coordination”
- C. Section 01312 – “Project Meetings”
- D. Section 01410 – “Regulatory Requirements”
- E. Section 01412 – “Hazardous Materials”
- F. Section 01416 – “Special Procedures”
- G. Section 01500 – “Temporary Facilities and Control”
- H. Section 01770 – “Contract Closeout Procedures”
- I. Section 01780 – “Project Record Documents”
- J. Divisions 2 through 33 Sections for Site Security and Safety requirements for the work in those Sections.

1.3 SUMMARY

- A. This Section specifies the requirements for Site safety and security.

1.4 CONTRACTOR RESPONSIBILITIES

- A. The Contractor is constructive owner of Project site.
- B. The Contractor shall be responsible for all damages to persons or property that occur as a result of its fault or negligence in connection with the prosecution of this Contract and shall take all necessary measures and be responsible for the proper care and protection of all materials delivered and work performed until Final Completion by the District.
- C. All work shall be solely at the Contractor’s risk, with the exception of damage to the work caused by “acts of God” as defined in Public Contract Code Section 7105(b)(2).
- D. The Contractor shall be solely responsible for initiating, maintaining and supervising all safety programs required by applicable law, ordinance, regulation or governmental orders in connection with the performance of the Contract, or otherwise required by the type or nature of the Work.
- E. Without limiting or relieving the Contractor of its obligations hereunder, the Contractor shall require that its Subcontractors similarly initiate and maintain all appropriate or

required safety programs. Prior to commencement of Work at the Site, the Contractor shall provide the District with the Contractor's proposed site specific safety plan for the Work for the District's review.

- F. Contractor shall take, and require all subcontractors to take, all necessary precautions for safety of workers on the Work and shall comply with all applicable federal, state, local and other safety laws, standards, orders, rules, regulations, and building codes to prevent accidents or injury to persons on, about, or adjacent to premises where Work is being performed and to provide a safe and healthful place of employment.
- G. In addition to meeting all requirements of OSHA, Cal-OSHA, state, and local codes, Contractor shall furnish, erect and properly maintain at all times, as directed by District or required by conditions and progress of work, all necessary safety devices, safeguards, construction canopies, signs, audible devices for protection of the blind, safety rails, belts and nets, barriers, lights, and watchmen for protection of workers and the public, and shall post danger signs warning against hazards created by such features in the course of construction.
- H. The Contractor and Subcontractors shall continuously protect the Work, the District's property, and the property of others, from damage, injury, or loss arising in connection with operations under the Contract Documents. The Contractor and Subcontractors, at their own expense, shall make good any such damage, injury, or loss, except such as may be solely due to, or caused by, agents or employees of the District. The Contractor shall immediately repair or replace all property damaged or lost due to Contractor's, or Subcontractor's, failure to protect the Work or otherwise caused by Contractor or Subcontractor operations. A determination as to cause of damage or insurance or risk coverage at any level shall not delay repair or replacement. Contractor shall not rely on District insurance or risk coverage. If Contractor or Subcontractor disagrees with the District's determination of cause, a claim may be filed in accordance with these Contract Documents.
- I. Contractor shall maintain protection as necessary to protect the Work, as a whole and in part, and adjacent property and improvements from accidents, injuries or damage.
- J. Contractor shall protect the Work, material, and/or equipment to be incorporated therein, whether in storage on or off the Site, and under the care, custody, or control of the Contractor or the Contractor's Subcontractors.
- K. Contractor shall correct any violations of safety laws, rules, orders, standards, or regulations. Upon the issuance of a citation or notice of violation by the Division of Occupational Safety and Health, such violation shall be corrected promptly.
- L. Contractor shall require that Subcontractors participate in, and enforce, the safety and loss prevention programs established by the Contractor for the Project, which will cover all Work performed by the Contractor and its Subcontractors.
 - 1. Subcontractors shall enforce the District's and the Contractor's instructions, laws, and regulations regarding signs, advertisements, fires, smoking, the presence of liquor, and the presence of firearms by any person at the Site.
 - 2. Each Subcontractor shall designate a responsible member of its organization whose duties shall include loss and accident prevention, and who shall have the responsibility and full authority to enforce the program. This person shall attend meetings with the

representatives of the various Subcontractors employed to ensure that all employees understand and comply with the programs.

3. All Subcontractors and material or equipment suppliers shall cooperate fully with Contractor, the District, and all insurance carriers and loss prevention engineers.
4. Subcontractors shall immediately report in writing to the Contractor all accidents whatsoever arising out of, or in connection with, the performance of the Work, whether on or off the Site, which caused death, personal injury, or property damage, giving full details and statements of witnesses.

1.5 CONFORMANCE WITHIN ESTABLISHED LIMITS

- A. The Contractor and Subcontractors shall confine their construction equipment, the storage of materials, and the operations of workers to the limits indicated by laws, ordinances, permits, and the limits established by the District, or the Contractor in the case of Subcontractors, and shall not unreasonably encumber the premises with construction equipment or materials.

1.6 CONTRACTOR NOTICES

- A. The Contractor shall give notices and comply with applicable laws, ordinances, rules, regulations, and lawful orders of public authorities bearing on the safety of persons or property or their protection from damage, injury, or loss.

1.7 SITE SAFETY OFFICER

- A. Contractor shall designate a responsible member of its organization on the Work, whose duty shall be to enforce the Contractor's Safety program Plan, post information regarding protection and obligations of workers and other notices required under occupational safety and health laws, to comply with reporting and other occupational safety requirements, and to protect the life, safety and health of workers. The name and position of person so designated shall be reported to District in writing by Contractor within ten (10) days of award of the Contract.
- B. District's representative(s) shall be allowed access to accident/injury and illness reports, inspection reports, scheduling and construction meetings, and safety meetings.

1.8 SAFETY PROGRAM PLAN

- A. Prior to commencing Work at the Site, Contractor shall submit a Safety Program Plan specifically tailored for this Project and this Site that has been reviewed and approved by an Industrial Hygienist certified by the American Board of Industrial Hygiene or a Certified Safety Professional. The Safety Program Plan shall include the name, certification number, and certification seal of the Industrial Hygienist or Certified Safety Professional. Comply with the Safety Program and all applicable federal, state, and local regulation codes, rules, law and ordinances during the course of the Work.
- B. The Contractor's Safety Program Plan shall include all actions and programs necessary for compliance with California or federally statutorily mandated workplace safety programs, including without limitation, compliance with the California Drug Free Workplace Act of 1990 (California Government Code SS 8350 et seq.)
- C. Plan shall comply with the requirements of the Occupational Safety and Health Act, and other applicable federal, state and local standards.

- D. Contractor shall keep copies of all health and safety-related plans on the Site at all times.
- E. Receipt and/or review of the Safety Program Plan by District shall not relieve Contractor of any responsibility for complying with all applicable safety regulations.
- F. It is essential that Contractor and each Subcontractor implement an effective and vigorous site specific Safety Program for the Work.
- G. The Contractor shall have sole responsibility for Project safety, and shall be solely responsible for providing a safe workplace
- H. Safety Program Plan Components:
 - 1. Injury and Illness Prevention Program (IIPP): Conforming to the General Industrial Safety Orders (CCR Title 8, Division 1, Chapter 4, Subchapter 7, Section 3203), and the California Labor Code (Section 6401.7).
 - 2. Site-Specific Safety and Health Plan (SSHP): This Plan shall describe the health and safety procedures that shall be implemented during the Work in order to ensure safety of the public and those performing the Work. Follow the guidelines for a SSHP listed in CCR Title 8, Division 1, Chapter 4, Subchapter 7, Section 5192, Item (b)(4)f.
 - 3. Permit-Required Confined Space Program: (CCR Title 8, Division 1, Chapter 4, Subchapter 7, Section 5157). Permit-required space entry is allowed only through compliance with a permit-required confined space program meeting the requirements of Section 5157 of the General Industrial Safety Orders. During entry operations, or at the conclusion of entry operations, verbally notify Engineer of the permit space program followed, and of any hazards confronted or created in permit-required spaces during entry operations.
 - 4. A written and certified workplace hazard assessment as required by OSHA and Cal OSHA, updated on a regular basis, and maintained on site. The certified hazard assessment shall be made available immediately upon request by the District, the Architect, or the Inspector of Record.
- I. Supply sufficient hard hats to properly equip all employees, workers, and visitors. Hard hats shall be mandatory as per CAL OSHA Construction Safety orders.
- J. Whenever an exposure exists, appropriate personal protective equipment (PPE) shall be used by all affected personnel. Contractor shall provide PPE to all personnel under Contractor's direction and responsibilities.
- K. After review by District, the implementation and enforcement of all Safety-related plans shall become the responsibility of the Contractor and Site Safety Officer. The Contractor shall notify the District in writing of any changes to Safety-related plans.

1.9 SAFETY PRECAUTIONS

- A. The Contractor shall be solely responsible for initiating and maintaining reasonable precautions for safety of, and shall provide reasonable protection to prevent damage injury or loss to:
 - 1. Employees on the Work and other persons who may be affected thereby
 - 2. The Work and materials and equipment to be incorporated therein, whether in storage on or off the site, under care, custody or control of the Contractor or the Contractor's Subcontractors or Sub-subcontractors

3. Other property or items at the site of the Work, or adjacent thereto, such as trees, shrubs, lawns, walks, pavements, roadways, structures and utilities not designated for removal, relocation or replacement in the course of construction. The Contractor shall
 4. take adequate precautions and measures to protect existing roads, sidewalks, curbs, pavement, utilities, adjoining property and improvements thereon (including without limitation, protection from settlement or loss of lateral support), and to avoid damage thereto. Without adjustment of the Contract Price or the Contract Time, the Contractor shall repair, replace or restore any damage or destruction of the foregoing items as a result of performance or installation of the Work.
 5. The Contractor shall at all times maintain good housekeeping practices to reduce the risk of fire damage.
 6. Good housekeeping practices shall be maintained continually on all areas of the Site and the Work. District may request that the Contractor hire additional staff or help until housekeeping in a work or storage area is improved. All scrap materials, rubbish and trash shall be removed daily from in and about the building and shall not be permitted to be scattered on adjacent property.
- B. Suitable storage space shall be provided outside immediate building areas for storing flammable materials and paints. Excess flammable liquids being used inside the building shall be kept in closed metal containers and be removed from the building during unused periods.
- C. A fire extinguisher shall be available at each location where cutting or welding is being performed. Where electric or gas welding or cutting work is done, interposed shields of incombustible material shall be used to protect against fire damage due to sparks and hot metal. When temporary heating devices are used, a watchman shall be present to cover periods when other workmen are not on the premises.
- D. The Contractor shall provide fire extinguishers in accordance with all OSHA and Cal OSHA requirements, and the recommendations NFPA Bulletins Nos. 10 and 241.

1.10 REQUIREMENTS FOR EXISTING SITES

- A. Deliver materials to building area over route(s) approved by the District.
- B. Take preventive measures to eliminate objectionable dust, noise, or other disturbances.
- C. Confine apparatus, the storage of materials, and the operations of workers to limits indicated by law, ordinances, permits or directions of Architect; and not interfere with the Work or unreasonably encumber premises or overload any structure with materials; and enforce all instructions of District and Architect regarding signs, advertising, fires, and smoking and require that all workers comply with all regulations while on the Site.
- D. Take care to prevent disturbing or covering any survey markers, monuments, or other devices marking property boundaries or corners. If such markers are disturbed by accident, they shall be replaced by a licensed land surveyor or civil engineer, and all lawfully required maps and records shall be filed with county and local authorities at no cost to the District. All related filing and plan check fees shall be paid by Contractor.
- E. Contractor shall take adequate precautions to protect existing roads, sidewalks, curbs, pavements, utilities, adjoining property and structures (including, without limitation, protection from settlement or loss of lateral support), and to avoid damage thereto, and

repair any damage thereto caused by construction operations. All permits, licenses, or inspection fees required for such repair Work shall be obtained and paid for by Contractor.

- F. The Contractor, at Contractor's expense, will remove all mud, water, or other elements as may be required for the proper protection of existing improvements, and prosecution of the Work.
- G. Protect all other property at the Site or adjacent thereto as required, such as trees, shrubs, lawns, walks, pavement, roadways, structures, and utilities not designated for removal, relocation, or replacement in the course of construction.

1.11 SAFETY AND EMERGENCY CONDITIONS

- A. **Emergency Action:** In an emergency affecting the safety of persons or property, the Contractor shall take any action necessary, at the Contractor's discretion, to prevent threatened damage, injury, or loss. Additional compensation or extension of time claimed by the Contractor on account of an emergency shall be determined as provided herein. Emergency conditions shall be any condition at the Site which has the actual or potential for significant adverse effects to persons or property, whether or not resulting from the Contractor's operations.
- B. **Accident Reports:** The Contractor shall promptly report in writing to the District all accidents arising out of or in connection with the Work, which caused death, personal injury, or property damage, giving full details and statements of any witnesses. In addition, if death, serious personal injuries, or serious property damages are caused, the accident shall be reported immediately by telephone or messenger to the District and Campus Police Department.
- C. The District's Representatives and Project Inspector, as appropriate, shall be notified of the existence of such a condition, but shall not be called upon to perform any emergency service. The fact that the District may not respond to the emergency condition shall not be used as an excuse by the Contractor to neglect immediate action; nor will the District or its Representatives be liable for any resulting condition. The fact that a representative of the Contractor may not be present when emergency conditions occur shall not relieve the Contractor from an immediate response to the situation which shall return the disruption to normalcy.
- D. If the emergency circumstances are not the result of any fault or neglect of the Contractor, the Contract time shall be adjusted to reflect the actual direct effect of such actions to the then critical path of the Construction Progress Schedule. The foregoing notwithstanding, adjustments of the Contract Price or the Contract Time for actions taken by the Contractor in response to emergency circumstances shall be subject to the Contractor's strict compliance with all other applicable provisions of the Contract Documents relating to notices and time for delivery of notices.

1.12 SAFETY SIGNS AND BARRICADES

- A. The Contractor shall erect and maintain, as required by existing conditions and conditions resulting from performance of the Contract, reasonable safeguards for safety and protection of property and persons, including, without limitation, posting danger signs and other warnings against hazards, promulgating safety regulations and notifying Districts and users of adjacent sites and utilities.

- B. Contractor shall properly protect the Work:
 - 1. With lights, guard rails, fencing, temporary covers and barricades.
 - 2. Enclose excavations with proper barricades.
 - 3. Brace and secure all parts of the Work against to protect against inclement weather and to prevent accidents.
- C. Provide such additional forms of protection that may be necessary under during the course of the Work.
- D. Contractor shall provide and maintain in good condition all protective measures required to adequately protect the public from hazards resulting from the Work. When regulated by Building Code, Cal OSHA, or other authority, such legal requirements for protection shall be considered as minimum requirements. Contractor shall be responsible for the protection in excess of such minimum requirements as required.
- E. Contractor shall prevent unauthorized persons from the entering the Work Site(s).

1.13 CONTROL OF SITE

- A. Contractor shall ensure that no alcohol, firearms, weapons, or controlled substances are present on the Project Site. Contractor shall immediately remove from the Site and terminate from this Project the employment of any employee found in violation of this provision.

1.14 SITE SECURITY

- A. Contractor shall take and be fully responsible for all reasonably required measures to protect and maintain the security of persons, existing facilities, and property at the Site, including prevention of theft, loss, and/or vandalism by persons lawfully present on the Site, including non-working times. Contractor's measures shall include, at a minimum, maintaining a log of all persons entering and leaving the Site, who they represent, what they are delivering, and to whom.
- B. No claim shall be made against District by reason of any act of an employee or trespasser, and Contractor shall repair all damage to District's property resulting from Contractor's failure to provide adequate security measures.
- C. But for immediate access to and from the Contractor controlled Site and staging area(s), the access gates shall remain closed and locked at all times. Contractor shall appoint one person to monitor access through the gate and maintain the sign-in/out list. Alternatively, Contractor may provide a full-time security guard at the gate to control access and maintain the sign-in/out list. The sign in/out list shall be available to District at any time, upon request. If District determines that the gate has been left unlocked, Contractor shall, if requested by District, provide a full time guard at no additional expense to the District.
- D. The Contractor and the Subcontractors shall use only those ingress and egress routes designated by the District, observe the boundaries of the Site designated by the District, park only in those areas designated by the District, which areas may be on or off the Site, and comply with any parking control program established by the District, such as furnishing license plate information and placing identifying stickers on vehicles.
- E. Contractor shall supply all security fencing, barricades, lighting, and other security measures as required to protect and control the Site.

- F. The Contractor shall be responsible for providing security services for the Site as needed for the protection of the Site and as determined in the District's sole discretion. **Campus Police Services are not responsible for any aspect of Site safety or security.**

1.15 OPERATORS OF MOBILE EQUIPMENT SAFETY

- A. Under Federal and State Safety requirements, Contractor must certify that all operators of mobile equipment including but not limited to forklifts, cranes, man-lifts, scissor and boom lifts, and similar equipment are required to have been trained and/or certified on the proper operation of such equipment. Copies of equipment training and certification records shall be forwarded, upon request, to the District.

1.16 SAFETY REQUIREMENTS

- A. Contractor shall meet and comply with requirements of current local, State and Federal regulations.
- B. Contractor shall meet and comply with the following rules:
1. The Contractor will provide and maintain at the Site first-aid supplies that comply with the current Occupational Safety and Health Regulations.
 2. Hard hats shall be worn at all times. (This includes welders when using welding hoods)
 3. Sleeved shirts shall be worn at all times. (No tank tops)
 4. If required, Fire Retardant Clothing (FRC) shall be supplied by Contractor for all their employees.
 5. One Hundred Percent (100%) Fall Protection Policy: All subcontract employees shall comply with Fall Protection Policy. The Policy simply states "Anytime employees are working from an unprotected elevation of six (6) feet or more, fall protection must be used." Working, as stated above, means while traveling, stationary, or anytime exposed to a fall from a surface not protected by approved handrails, cable or some other approved fall elimination device. Adherence to this policy is a requirement of your Subcontract.
- C. Hazards Control:
1. When use or storage of any hazardous materials or equipment, or unusual method is necessary for execution of the Work, the Contractor shall exercise utmost care and carry on such activities under supervision of properly qualified personnel. The Contractor shall notify the District any time that explosives or hazardous materials are expected to be stored on Site. Location of storage shall be coordinated with the District and local fire authorities.
 2. Store volatile wastes in covered metal containers and remove from premises daily.
 3. Prevent accumulation of wastes that create hazardous conditions.
 4. Provide adequate ventilation during use of volatile or noxious substances.
- D. Conduct cleaning and disposal operations to comply with local ordinances and anti-pollution laws.
1. Do not burn or bury rubbish or waste material on the Site.
 2. Do not dispose of volatile wastes such as mineral spirits, oil, or paint thinner in storm or sanitary drains.

3. Do not dispose of wastes into streams or waterways.
- E. Provide accident information on the forms provided by Contractor. This information shall be provided on the same day as the occurrence of said incident and shall be submitted to District within a reasonable time.

1.17 ADDITIONAL SAFETY CONTROLS

- A. According to industry practices, it is the responsibility of the Contractor and subcontractors of every tier to exercise reasonable care to prevent work-related injuries and property and equipment damage at the Site, as well as minimize risk to the public and third-party property. The Contractor, all sub-contractors, suppliers, and installers shall undertake loss control prevention practices according to the requirements set forth by federal, state and city laws, statutes, and the specific procedures developed for this Project.
- B. Contractors and subcontractors participating in the project will be expected to comply with the following safety and loss control requirements:
 1. All sub-contractors, suppliers, and installers shall identify their contact person(s) to the Contractor.
 2. Follow District procedures regarding dealing with the media, including, but not limited to, TV, Radio, and Newspaper.
 3. All construction employees will be required to be attired in workpants, shirt and appropriate boots or closed toe shoes.
 4. Smoking is prohibited on the Site.
 5. Controlling access to the construction site is a very high priority, and Contractors will be required to take whatever preventative measure, such as barriers, fencing, etc., as outlined in the Contract Documents.
 6. Construction personnel cannot enter District property other than the construction site unless accompanied by District personnel, and they are allowed only 'incidental' contact with students. Violations of these requirements by any construction employee will result in a mandatory background check of that employee – including fingerprinting – as required by state law.
 7. Fall protection is mandatory on all projects in accordance with CAL OSHA, OSHA and any other Local, State, and Federal appropriate code and requirements.
 8. Personal radios, headsets, walkmans and CD players are not allowed on the Site.
 9. All Contractors must attend the pre-construction safety meeting.
 10. No sexual reference or preference shall be permitted on any piece of clothing or the hardhat. Any employee observed disregarding this policy shall be removed from the Site until further notice from the District.
 11. Contractor personnel and subcontractor personnel at all levels will refrain from interacting with Campus staff or students unless required to prevent an unsafe situation. Personnel found speaking to staff or students for any reason unrelated to the Work or Safety shall be removed from the Site and not be allowed to return.
 12. All Contractors' employees shall park in their designated parking area. Any sticker attached to the employees' vehicle that displays any form of sexual preference or reference shall be removed prior to parking at the Site. Each employee will provide

- their license plate number to the Contractor. Any employee disregarding this policy shall be removed from the Site until further notice from the District.
13. The Contractor shall control the break time activities of the employees to assure the cleanup of all soda cans, food wrappers, plastic bottles, or food containers from the break area. Such areas shall be cleaned immediately after the break and all waste placed in trash receptacles.
 14. Theft or willful damage to any property of the District, student, or other Campus or District personnel will be prosecuted fully by the District.
 15. No guns, switchblades, or knives with blades greater than two inches shall be allowed on the Site. Any employee disregarding this policy shall be removed from the Site until further notice from the District.
- C. The Contractors and all subcontractors, suppliers and installers participating in the Project will further be expected to comply with the following safety and loss control requirements:
1. All Contractor, subcontractors, supplier, and installer personnel shall comply with all District, local, state, and federal emergency responder directions in the event of an emergency or disaster.
 2. Any Contractors' employee observed providing or selling cigarettes or other smoking materials to students shall be removed from the Site until further notice from the District.
 3. All Contractors will agree to conduct and fund post-injury drug screening of their employees. Those employees failing the test will be removed permanently from the Site.
 4. The District has the right to instruct the Contractor to correct an unsafe act or condition. If the Contractor fails to correct the unsafe act or condition within the requested time frame, the District or its representative may have the condition corrected and bill the non-compliant contractor, supplier, subcontractor, or installer for the costs associated with the correction.
 5. The District may require a follow-up meeting or contact if there is a death, serious and willful claim, serious disabling injury, adverse loss experience, major fire, or serious third party claim.
 6. Any contractor displaying, in the opinion of the Contractor or District, a repeated disregard for safety can be removed from the Site.
- D. All Contractors will advise those non-English speaking employees in their native language either in a written format or via an interpreter of these policies.

1.18 HAZARD COMMUNICATION PROGRAM SAFETY

- A. Contractor shall have a copy of the Contractor's Hazard Communication Program which shall be forwarded to the District and a copy is required to be in the possession of the Contractor on the Site. Documentation of employee Hazard Communication Training must be established by the Contractor prior to commencement of work.
- B. Any potential hazardous material or chemical brought onto the project is required to be accompanied by a Material Safety Data Sheet (MSDS). Copies of the MSDS shall be forwarded to the District, and Project Inspector before the product is brought onto the Site.

- C. Contractor is required to have material safety data sheets available in a readily accessible place at the Site for any material requiring a material safety data sheet per the Federal “hazard communication” standard, or employees’ “right-to-know law.” The Contractor is also required to properly label any substance brought into the Site, and require that any person working with the material, or within the general area of the material, is informed of the hazards of the substance and follows proper handling and protection procedures.
- D. Contractor is required to comply with the provisions of California Health and Safety Code section 25249, et seq., which requires the posting and giving of notice to persons who may be exposed to any chemical known to the State of California to cause cancer. The Contractor agrees to familiarize itself with the provisions of this section, and to comply fully with its requirements.
- E. Contractor shall notify the District and Project Inspector before any chemical/material creating noxious or toxic fumes is used.

1.19 SHORING AND STRUCTURAL LOADING

- A. The Contractor shall not impose structural loading upon any part of the Work under construction or upon existing construction on or adjacent to the Site in excess of safe limits, or loading such as to result in damage to the structural, architectural, mechanical, electrical, or other components of the Work.
- B. The design of all temporary construction equipment and appliances used in construction of the Work and not a permanent part thereof, including, without limitation, hoisting equipment, cribbing, shoring, and temporary bracing of structural steel, is the sole responsibility of the Contractor. All such items shall conform with the requirements of governing codes and all laws, ordinances, rules, regulations, and orders of all authorities having jurisdiction.
- C. The Contractor shall take special precautions, such as shoring of masonry walls and temporary tie bracing of structural steel work, to prevent possible wind damage during construction of the Work. The installation of such bracing or shoring shall not damage the Work in place or the Work installed by others. Any damage which does occur shall be promptly repaired by the Contractor at no cost to the District.
- D. The Contractor is required to provide shoring as required to protect existing buildings and other structures. All shoring to protect existing structures shall be designed by a licensed California Structural Engineer and submitted to the District prior to any work occurring in the vicinity of the existing structure(s). Contractor shall also be responsible to place monitoring points by a California Licensed Surveyor prior to the start of work to monitor any possible movement during the course of construction. Prior to, during and after nearby utilities have been installed, the Contractor’s California Licensed Surveyor shall survey the pre-established survey points to confirm existing structures did not move during the installation of the nearby utility work.
- E. The Contractor is responsible to provide all temporary shoring for utility trenching activities, and other temporary shoring as required by law to install new improvements. All temporary shoring noted above shall be designed by a California Licensed Civil Engineer, other than the structural shoring required by a Licensed Structural Engineer in Paragraph 1.19D above.

1.20 SAFETY AND ELECTRICAL STANDARDS

- A. The Contractor shall comply with all safety and electrical standards to ensure that all its employees are protected by Ground Fault Circuit interrupters as required, throughout the course of the Contractor's work.
- B. The Contractor is responsible for installation of any and all temporary power service for the project and shall provide it with Ground Fault Interrupter Protection with no additional cost to the District.

1.21 HAZARDOUS SUBSTANCES

- A. No asbestos or asbestos-containing products shall be used in this construction or in any tools, devices, clothing, or equipment used to effect this construction. See Section 01412, Hazardous Materials and other related Contract Documents.
- B. The Contractor shall not receive, use or store at the Site any hazardous substance unless contained in a container labeled with the original label applied by the Manufacturer of such substance. The Contractor shall maintain at the Site and forward to the District and Project Inspector copies of the most current material safety data sheets with respect to each hazardous substance received, used or stored at the Site by the Contractor.
- C. The Contractor shall immediately forward to the District and Project Inspector any updated material safety data sheets.
- D. The Contractor shall properly label and inform the District and Project Inspector of, any pipes or piping systems containing hazardous substances used or maintained at the Site by the Contractor. Prior to the receipt of such materials at the Site, the Contractor shall submit a list of all materials which the Contractor intends to receive, use or store at the Site that are classified as hazardous substances pursuant to applicable federal, state or local Employee or Community Right to Know statutes, regulations or requirements.

1.22 SAFETY SURVEYS

- A. Inspector of Record may conduct periodic safety surveys of the Project. Any safety discrepancy observed will be reported to the appropriate Contractor Site Safety Representative for immediate correction.
- B. District, Architect, and/or Inspector of Record safety surveys do not, without any limitation, relieve the Contractor of their primary responsibility to self-inspect the Work and equipment, and to conduct the Work in a safe manner.
- C. Contractor shall provide the District, and Project Inspector with Monthly Contractor Accident Statistics Reports.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 01540

SECTION 01572

STORM WATER POLLUTION PREVENTION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. All Contract Documents shall be reviewed for applicable provisions related to the provisions in this document, and provisions in the General Conditions and other Division 1 Specification Sections shall apply to this Section without limitation.

1.2 RELATED DOCUMENTS SPECIFIED IN OTHER SECTIONS

- A. Section 01010 – “Summary of Work”
- B. Section 01050 – “Field Engineering”
- C. Section 01330 – “Submittal Procedures”
- D. Section 01410 – “Regulatory Requirements”
- E. Section 00700 - General Conditions Article 13.12, Storm Water Pollution Prevention
- F. Divisions 2 through 33 Sections for Storm Water Prevention Plan requirements for the work in those sections.

1.3 BACKGROUND

- A. Storm drains discharge directly to creeks and the Bay without treatment. Discharge of pollutants (any substance, material, or waste other than uncontaminated storm water) from this project into the storm drain system is strictly prohibited by the State Water Resources Control Board (SWRCB) Order 2009-0009 DWQ (Order) and California Regional Water Quality Control Board (RWQCB) Water Quality Control Plan San Francisco Bay Basin Plan (Basin Plan).
- B. This specification is applicable to this Project since it will disturb (e.g., digging, trenching, grading, clearing, filling) one or more acres of land surface. Contractor shall calculate and confirm the disturbed soil acreage and submit calculations to the District.
- C. This specification also covers Linear Underground/Overhead Projects as regulated by the Order.
- D. Area of land surface disturbance includes but is not limited to:
 - 1. Clearing of the land both for access (i.e. access roads) to the site as well as preparing the site for constructing the project,
 - 2. Constructing access roads to the Site,
 - 3. Grading of the Site in total,
 - 4. Equipment staging area, maintenance area, and construction easement if they occur atop a soil surface which has not been included in the calculation for area of soil disturbance,
 - 5. Material and/or soil stockpiles if atop a soil surface (not if atop an impervious surface such as concrete or asphalt),
 - 6. Area of asphalt or concrete pavement removal if it is removed entirely to the soil surface,
 - 7. Area that is related to demolition and removal of existing structures if that demolition and removal is to the soil surface.

8. Concrete truck clean-out areas if atop a soil surface.

1.4 SUMMARY OF WORK

- A. Provide storm water pollution prevention plan as specified and as required by appropriate regulatory authorities, complete.
- B. Work In this section includes all labor, equipment, and materials necessary for the preparation, implementation, maintenance, and monitoring of the Storm Water Pollution Prevention Plan (SWPPP). Principal items of work included herein include, but are not limited to:
 1. Plan administration, maintenance, update, and termination.
 2. Placement of erosion/pollution control devices (where applicable).
 3. Maintenance and monitoring of control devices.
 4. Miscellaneous related work necessary for plan compliance.
 5. Reports and certificates.
 6. Monitoring and associated report (based on Risk Level).
- C. Work under all other sections of this specification shall comply with the requirements of this section. All trades working on the Project need to be aware of and in compliance with the SWPPP.
- D. All materials that can potentially enter and/or pollute storm water discharges and the generation of non-storm water discharges shall be in compliance with the SWPPP. Representative materials and procedures include erosion control of construction vehicles and equipment, and general construction debris potentially entering the storm drain system's natural flow course.

1.5 REQUIREMENTS

- A. The State Water Resources Control Board uses the Storm Water Multiple Application and Report Tracking System (SMARTS) SMARTS web based application for storm water permit processing and tracking. The Contractor shall input data and upload documents required for storm water permit compliance. The program is also responsible for processing, reviewing, updating, terminating Notices of Intent (NOIs), annual reports, and maintaining the billing status of each discharger. SMARTS has been developed to provide an online tool to assist dischargers in submitting their NOIs, NECs, NOTs, and Annual Reports, as well as, viewing/printing Receipt Letters, monitoring the status of submitted documents, and viewing their application/renewal fee statements. The system will also allow the Regional Board and State Board staff to process and track the discharger submitted document is a user account and password protected system where a valid user account and password is needed to access the system. Prepare Permit Registration Documents according to the requirements found in this section. Electronically submit these documents to the District at least 15 working days prior to the land surface disturbance at the Site. Once the documents.

SMARTS is a user account and password protected system where a valid user account and password is needed to access the system. Prepare Permit Registration Documents according to the requirements found in this section. Electronically submit these documents to the District at least 15 working days prior to the land surface disturbance at the Site. Once the documents are approved, the Contractor shall upload the required data and documents to the SMARTS web site.

- B. Provide a Qualified Storm-Water Pollution Prevention Plan (SWPPP) Practitioner (QSP) for SWPPP implementation as defined in the Order. Refer to the specific requirements as shown within the SWRCB General Construction Permit and regulations). The QSP shall input and

maintain data and documents in the SMARTS web site to ensure compliance with the state storm permit at all times.

- C. Provide all material, labor, equipment, for installation, implementation, and maintenance of all surface-water pollution prevention measures. This work includes the following:
 - 1. Furnishing, placing, and installing effective measures for preventing erosion and runoff of soil, silts, gravel, hazardous chemicals or other prohibited materials defined by the SWRCB and RWQCB.
 - 2. Managing on-site construction materials in such a manner as to prevent said materials from contacting storm water or wash water and running off-site into the storm drain system.
 - 3. Complying with applicable standards and regulations for water pollution and erosion control.
 - 4. Include post-construction storm water pollution prevention structures in the storm water pollution prevention plan. Contractor shall use construction drawings as the reference for post-construction BMPs.
- D. Contractor will not be required to maintain post-construction pollution prevention structures. However, Contractor is required to provide operations and maintenance documents to the District at the end of construction.
- E. In this section, the term "storm drain system" shall include storm water conduits, storm drain inlets and other storm drain structures, street gutters, channels, watercourses, creeks, lakes, and the San Francisco Bay.
- F. Sanitary sewer discharge regulations are intended to provide protection of the sanitary sewer system and appropriate municipal utility water pollution control plant. In this specification, "sanitary sewer" shall include any sanitary sewer manhole, clean-out, side sewer or other connection to the area wastewater treatment plant.
- G. Contractor shall have storm drain pollution prevention measures in place and follow this specification anytime rain is predicted in the San Francisco Bay Area by the National Oceanic and Atmospheric Administration (NOAA) prediction for rain at or above 50%. It is the responsibility of the Contractor to be prepared for a rain event at all times required by the Order, to be aware of weather predictions, and to perform actions triggered by prediction of such rain events. The District is not responsible for informing the Contractor of rain predictions. In the event the Project is determined to be a Risk Level two or higher project by the Contractor's QSP, the Contractor must create a Rain Even Action Plan (REAP) anytime rain is predicted (50% or greater chance as mentioned above) within 48 hours. The QSP must implement the REAP and have it on-site no later than 24 hours prior to the rain event.
- H. Construction site sanitary sewer blockage will likely result in a back-up and overflow to the storm drain system. The Contractor shall immediately notify the District and the Project Inspector of record if there is a clogged sanitary sewer, and implement a plan to re-direct sewage if an overflow of the sanitary sewer will result in sewage discharge to the storm drain.
- I. Contractor shall not allow any non-storm water to enter the storm drain system. Non-storm water includes domestic supply water used to wash streets, painting and drywall equipment, tools, equipment, or vehicles. Except for certain fire-line flushing and testing procedures, contact the District for discharge approval.

1.6 REGULATIONS AND STANDARDS

- A. Contractor shall comply with the following applicable regulations:

1. Clean Water Act, United States Environmental Protection Agency, and Porter-Cologne Clean Water Act, State of California.
 2. "San Francisco Bay Basin (Region 2) Water Quality Control Plan" (Basin Plan), California Regional Water Quality Control Board,
 3. California State Water Resources Control Board NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) GENERAL PERMIT FOR STORM WATER DISCHARGES ASSOCIATED WITH CONSTRUCTION AND LAND DISTURBANCE ACTIVITIES, Order 2009- 0009 DWQ (Order) and all Amendments.
- B. Contractor shall comply with industry-standard guidelines on storm drain pollution prevention, such as:
1. "Erosion and Sediment Control Field Manual" California Regional Water Quality Control Board (RWQCB)—San Francisco Bay Region.
 2. 2009 CASQA Construction BMP Handbook, available electronically at the California Stormwater Quality Association (CASQA) interactive web portal.

1.7 SUBMITTALS/DELIVERABLES

- A. Prepare Permit Registration Documents (PRD) according to the requirements found in Attachment B of the Order. Submit these documents to the District electronically at least 20 working days prior to the soil disturbance at the Site. Some or all of the following documents may be required, depending on the site Risk calculation, monitoring requirements, construction phase storm water treatment systems, and post-construction storm water treatment structures:
1. Storm Water Pollution Prevention Plan created by the QSD
 2. Site Map
 3. Post-construction water balance form
 4. Risk Calculation
 5. Active Treatment Systems plans (based on Risk Level determined in PRD)
 6. Others as may be required by the State Water Resources Control Board Order 2009 0009 DWQ.
 7. Erosion control and water pollution control drawings based on actual construction phasing and staging locations. Contractor shall use construction drawings and requirements from the construction general permit as the reference for these drawings.
- B. The Notice of Intent (NOI) will be completed by the District following electronic upload of the approved documents to the SMARTS web site by the Contractor.
- C. Monitoring Reports. Monitoring sampling results reports are mandated according to the Risk Level and specific characteristics of the Site as prescribed in the Order. Contractor shall determine the required monitoring reports according to the Order and submit a list of such documents to the District and the SMARTS database. When the Project is underway, the Contractor shall produce the mandated reports electronically and submit them to the District and SMARTS electronically within 2 days of the conclusion of the rain event, and within 1 day of Numeric Action Level exceedance.
- D. Annual Reports. Contractor shall determine the required information according to the Order and electronically submit the Annual Report electronically to the District and the SWRCB via SMARTS database.
- E. Notice of Termination. Contractor shall determine the required information according to the Order and electronically submit Notice of Termination documents to the District and the SWRCB via the SMARTS database.

- F. Complete and provide the Post-Construction Water Balance Performance Standard Spreadsheet as found in Appendix 2/2.1 of the Order.

1.8 ENVIRONMENTAL ENFORCEMENT

- A. State, regional, and local agencies have authority to enforce, through codified regulations, any portions of this Section that if not implemented may violate applicable regulations. Agency enforcement may include but is not limited to: citations, orders to abate, bills for cleanup costs and administration, civil suits, and/or criminal charges. Contract compliance action by the District shall not be constructed to void or suspend any enforcement actions buy these or other regulatory agencies.

PART 2 - MATERIALS

2.1 GENERAL

- A. Provide materials as required for execution of the Work required by the approved Stormwater Pollution Prevention Plan, prepared by the QSD

PART 3 - EXECUTION

3.1 GENERAL

- A. Report any hazardous or unknown material spills immediately to a District Representative. If a spill occurs after hours or on a weekend, contact the campus Police Department. The Contractor is responsible for ensuring that its employees and subcontractors (if any) working on site are aware of the location of the campus phone nearest the Site. The Contractor is also responsible for creating the necessary spill reports outlined in the construction general permit and must upload them to SMARTS.
- B. Adhere to the requirements of the Order.

3.2 SPILL PREVENTION AND CONTROL

- A. The Contractor shall keep spill cleanup materials, such as rags or absorbents, readily accessible on-site.
- B. The Contractor shall immediately contain and prevent leaks and spills from entering storm drains, and properly clean up and dispose of the waste and cleanup materials. If the waste is hazardous, the Contractor shall dispose of hazardous waste only at authorized and permitted Treatment, Storage, and Disposal Facilities, and use only licensed hazardous waste haulers to remove the waste off-site, unless quantities to be transported are below applicable threshold limits to transportation specified in State and Federal regulations.
- C. The Contractor shall not wash any spilled material into streets, gutters, storm drains, or creeks and shall not bury spilled hazardous materials.
- D. The Contractor shall report any hazardous materials spill to Emergency 911.

3.3 DE-WATERING AND SEDIMENT MANAGEMENT AND NONHAZARDOUS MATERIAL/WASTE MANAGEMENT

- A. If storm water or groundwater in site excavations or drilled holes, (e.g., trenches, pits, pier holes, footings), needs to be removed, it shall be made clean by filtering, settling, or other method capable of removing solids and suspended particles from this water prior to discharge to the storm drain system. The Contractor shall ensure that this discharge complies with all applicable provisions of the Basin Plan.

- B. If excavation water is domestic supply water, or the water is contaminated with a hazardous substance, then the Contractor shall dispose of according to guidance from the District. For disposal authorization, the Contractor shall contact the District to determine the discharge requirement.
- C. If the Contractor suspects the presence of contaminated groundwater, or domestic supply water, the Contractor shall immediately notify the District. The Contractor shall not attempt to pump out or treat any material suspected of containing a hazardous material or petroleum product.
- D. Designated Area:
 - 1. The Contractor shall propose designated areas of the Site, for approval by the Engineer, suitable for material delivery, storage, and waste collection that, to the maximum extent practicable, are near construction entrances and away from catch basins, gutters, drainage courses, and creeks.
- E. Granular Material:
 - 1. The Contractor shall store granular material at least ten feet away from catch basin and curb returns.
 - 2. The Contractor shall not allow granular material to enter the storm drains or creeks.
 - 3. When rain is forecast within 24 hours or during wet weather, the Engineer shall require the Contractor to cover granular material with a tarpaulin and to surround the material with sand bags
- F. Dust Control: The Contractor shall use reclaimed water if available to control dust on a daily basis or as directed by the QSP. If reclaimed water is not available, Contractor to use domestic water.

3.4 HAZARDOUS MATERIAL/WASTE MANAGEMENT

- A. Label all hazardous materials and hazardous wastes (such as pesticides, paints, thinners, solvents, fuel, oil, and antifreeze) in accordance with City, State and Federal regulations.
- B. Store hazardous materials and wastes in secondary containment and cover them during wet weather.
- C. Follow manufacturer's application instructions for hazardous materials and do not use more than necessary. Do not apply chemicals outdoors when rain is forecast within 24 hours.
- D. Arrange for appropriate disposal of all hazardous waste.
- E. See Specification Section 01412, Hazardous Materials for more information and requirements.

3.5 SANITARY SEWER DISCHARGE POINT IDENTIFICATION

- A. If the Contractor will be disposing of water from a settling operation, or any other water approved by the District for sanitary sewer disposal, the Contractor will verify with the Buildings and Grounds Department that the manhole used for disposal is a sanitary sewer and not a storm drain. (Note: do not assume that a manhole is a sanitary sewer, even if the words "sanitary sewer" is embossed on it. Sometimes utility maps and manhole cover designations are incorrect.)

3.6 WATER MAIN AND SANITARY SEWER LINE BREAK CONTINGENCY PLAN

- A. If working on or near a water main line or sanitary sewer line, the Contractor shall have a written emergency response plan that states procedures for responding to a break and release of supply water to the storm drain system. This plan shall be made part of the SWPPP. The Contractor shall meet the following requirements:
 - 1. Water Main Work
 - a. Determine the direction of water flow if the main were to break.

- b. Build a containment berm between the work area and the storm drain inlet(s) that the water would flow into. Make the containment structure large enough to hold the water so that it can be pumped to a sanitary sewer.
 - c. Build this containment structure before digging.
 - d. If there is a water main break, pump the water that collects in the containment structure to a sanitary sewer.
 - e. If the containment fails, prevent chlorinated water from entering the storm drain system.
 - f. Put in place, before digging, sediment control structures upstream of drain inlets and at drain inlets.
 - g. If a break occurs, contact the District and Project Inspector of record immediately.
 - h. Include in the plan the phone numbers of the District and Project Inspector contact information.
2. Sanitary Sewer Line Work.
 - a. Determine where the sewage will flow if the work could cause a blockage.
 - b. Build a containment structure between the work area and the storm drain inlet(s) that the sewage water would flow into. Make the containment structure large enough to hold the sewage flow so that it can be pumped to a sanitary sewer.
 - c. Build the containment before working on the sewer line. Put in place, before digging, solids (toilet paper, etc.) control structures upstream of drain inlets and at drain inlets.
 - d. If a sewage blockage occurs, pump it to a sanitary sewer, and do not allow it to flow into the storm drain system.
 - e. If the containment fails, prevent chlorinated water from entering the storm drain system by placing dechlorination sodium sulfite tablets in the sewage according to Attachment 2 of this Section).
 - f. If a sewage blockage or spill occurs contact the District and Project Inspector of record immediately.
3. Excavation Work. This Paragraph applies to Contractors that excavate in the vicinity of sanitary sewer lines and cause or discover a sewage spill, leak or blockage. a. Immediately notify the District. The District will immediately notify Project Inspector. Include in the plan the phone numbers of the District and Project Inspector contact information.

3.7 PAVING OPERATIONS

- A. Project Site Management:
 1. When rain is forecast within 24 hours or during wet weather, the District or the QSP may prevent the Contractor from paving.
 2. The QSP may direct the Contractor to protect drainage courses by using control measures, such as earth dike, straw bale, straw wattles, and sand bag, to divert runoff or trap and filter sediment.
 3. The Contractor shall place drip pans or absorbent material under paving equipment when not in use.
 4. The Contractor shall cover catch basins and manholes when paving or applying seal coat, tack coat, slurry seal, or fog seal.
 5. If the paving operation includes an on-site mixing plant, the Contractor shall comply with the County's General Industrial Activities Storm Water Permit requirements.
- B. Paving Waste Management: The Contractor shall not sweep or wash down excess sand (placed as part of a sand seal or to absorb excess oil) into gutters, storm drains, or creeks. Instead, the Contractor shall, either collect the sand and return it to the stockpile, or dispose of it in a trash container. The Contractor shall not use water to wash down fresh asphalt concrete pavement.

3.8 SAW CUTTING

- A. During saw cutting, the Contractor shall cover or barricade catch basins using control measures, such as filter fabric, straw bales, sand bags, and fine gravel dams, to keep slurry out of the storm drain system. When protecting a catch basin, the Contractor shall ensure that the entire opening is covered.
- B. The Contractor shall vacuum saw cut slurry and pick up the waste prior to moving to the next location or at the end of each working day, whichever is sooner.
- C. If saw cut slurry enters catch basins, the Contractor shall remove the slurry from the storm drain system immediately.

3.9 CONTAMINATED SOIL MANAGEMENT

- A. The Contractor shall look for contaminated soil as evidenced by site history, discoloration, odor, differences in soil properties, abandoned underground tanks or pipes, or buried debris. If the Project is not within an area of known soil contamination and no evidence of soil contamination is found, then testing of the soil shall only be required if directed by the District.
- B. If the Project is within an area of known soil contamination or evidence of soil contamination is found, then soil from grading or excavation operations shall be tested by the District's testing agency. The soil shall be managed as required by designated agency.

3.10 CONCRETE, GROUT, AND MORTAR WASTE MANAGEMENT

- A. Material Management: The Contractor shall store concrete, grout, and mortar away from drainage areas and ensure that these materials do not enter the storm drain system.
- B. Concrete Truck/Equipment Wash Out:
 - 1. The Contractor shall not wash out concrete trucks or equipment into streets, gutters, storm drains, or creeks.
 - 2. The Contractor shall perform washout of concrete trucks or equipment off-site.

3.11 PERSONNEL TRAINING

- A. The Contractor shall train its employees working on the Site on the requirements contained in this Section. The Contractor shall document this training in writing. District representatives for the Site will request to see the training materials and records at the onset of work.
- B. The Contractor shall inform all subcontractors (if any) of the water pollution prevention requirements contained in this specification and include appropriate subcontract provisions to ensure that these requirements are met.

3.12 LIST OF CONTRACTORS DESIGNATED SWPPP CONTACTS AND PHONE NUMBERS

- A. Provide a list of employees who will be responsible for preparing, implementing and updating the SWPPP, including, but not limited to, the name of the QSD and the Contractor's QSP.

END OF SECTION 01572

SECTION 01610

BASIC PRODUCT REQUIREMENTS

PART 1 –GENERAL

1.1 RELATED DOCUMENTS

- A. All Contract Documents shall be reviewed for applicable provisions related to the provisions in this document, and provisions in the General Conditions and other Division 1 Specification Sections shall apply to this Section without limitation.

1.2 RELATED DOCUMENTS SPECIFIED IN OTHER SECTIONS

- A. Section 01010 – “Summary of Work”
- B. Section 01030 – “Alternates”
- C. Section 01400 – “Quality Control Requirements”
- D. Section 01625 – “Product Options and Substitutions”
- E. Section 01770 – “Contract Closeout Procedures”
- F. Divisions 2 through 33 Sections for Basic Product Requirements for the Work in those Sections.

1.3 SUMMARY

- A. This Section describes the basic requirements for the selection, handling, and storage of products to be used in the Project.

1.4 PRODUCTS

- A. All products are to be new and not previously incorporated into or used in any other project or facility. Products salvaged or recycled from other projects are not considered new products and are not permitted.
- B. The term product, as used in the Contract Documents, includes materials, equipment, systems, and like terms of similar intent.
- C. Products include materials, machinery, components, equipment, fixtures and systems forming the Work and purchased for incorporation into the Work.
- D. Products do not include machinery and equipment used for preparation, fabrication, conveying and erection of the work. Products may also include existing materials or components required for reuse.
- E. Do not reuse materials and/or equipment removed from existing premises except as specifically permitted by the Contract Documents.
- F. Provide interchangeable components of the same manufacturer, for similar components.
- G. Named products are items identified in the Contract Documents by manufacturer’s product name, including make or model number or other designation shown or listed in manufacturer’s published product literature that is current as of date of the Contract Documents.

1.5 TRANSPORTATION AND HANDLING

- A. Transport and handle products in accordance with manufacturer's instructions.
- B. Promptly inspect shipments to assure that products comply with requirements, quantities are correct, and products are undamaged.
- C. Provide equipment and personnel to handle products by methods to prevent soiling, disfigurement, and/or other damage.

1.6 SHIPPING REQUIREMENTS

- A. Preparation for Shipment: All equipment shall be suitably packaged to facilitate handling and to protect against damage during transit and storage. All equipment shall be boxed, crated, or otherwise completely enclosed and protected during shipment, handling, and storage. All equipment shall be protected from exposure to the elements and shall be kept dry at all times.
- B. Painted and coated surfaces shall be protected against impact, abrasion, discoloration, and other damage. Painted and coated surfaces which are damaged prior to acceptance of equipment shall be repainted to the satisfaction of District at the expense of Contractor. Any refinished items shall carry the warranty specified in the Contract Documents for new items.
- C. Grease and lubricating oil shall be applied to all bearings and similar items.
- D. Identification: Before shipping, each item of equipment shall be tagged or marked as identified in the delivery schedule or on the Shop Drawings. Complete packing lists and bills of material shall be included with each shipment.

1.7 PRODUCT DELIVERY, STORAGE, AND HANDLING

- A. Store products only in staging area per provisions of the Contract Documents.
- B. Handle, store, and protect products in accordance with manufacturer's instructions, with seals and labels intact and legible. Store sensitive products in weather-tight, climate-controlled enclosures.
- C. For exterior storage of fabricated products, place on appropriate supports, above ground.
- D. Cover products subject to deterioration with impervious sheet covering. Provide ventilation to avoid condensation.
- E. Store loose granular materials on solid flat surfaces in a well-drained area.
- F. Provide equipment and personnel to store products by methods to prevent soiling, disfigurement, or damage.
- G. Arrange storage of products to permit access for inspection. Periodically inspect to assure products are undamaged and are maintained under specified conditions.
- H. Deliver, store and handle products using means and methods that will prevent damage, deterioration, and loss, including theft. Comply with manufacturer's written instructions.
- I. Schedule product deliveries to minimize long-term storage at the Site and to prevent overcrowding of construction spaces.
- J. 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.

- K. Deliver products to Site in an undamaged condition in manufacturer's original sealed container or other packaging system, complete with intact and legible labels and instructions for handling, storing, unpacking, protecting, and installing.
- L. Contractor shall comply with the following without limitation:
 - 1. Contractor shall bear the responsibility for delivery of equipment, spare parts, special tools, and materials to the Site and shall comply with the requirements specified herein and provide required information concerning the shipment and delivery of the materials specified in the Contract Documents. These requirements also apply to any sub-suppliers making direct shipments to the Site. Acceptance of the equipment shall be made only after it is installed, tested, placed in operation and found to comply with all the specified requirements.
 - 2. All items shall be checked against packing lists immediately on delivery to the Site for damage and for shortages. Damage and shortages shall be remedied with the minimum of delay.
 - 3. No metalwork (including miscellaneous steel shapes and reinforcing steel) shall be stored directly on the ground. Masonry products shall be handled and stored in a manner to hold breakage, chipping, cracking, and spilling to a minimum. Cement, lime, and similar products shall be stored off the ground on pallets and shall be covered and kept completely dry at all times. Pipe fittings and valves may be stored out of doors, but must be placed on wooden blocking. PVC pipe, geo-membranes, plastic liner, and other plastic materials shall be stored off the ground on pallets and protected from direct sunlight.
 - 4. Electrical equipment and all equipment with antifriction or sleeve bearings shall be stored in weather-tight structures maintained at a temperature above 60 degree Fahrenheit. Electrical equipment controls and insulation shall be protected against moisture and water damage. All space heaters furnished in or with equipment shall be connected and operated continuously or according to manufacturer's requirements.
 - 5. Equipment having moving parts such as gears, bearings, and seals, shall be stored fully lubricated with oil, grease, etc., unless otherwise instructed by the manufacturer. Manufacturer's storage instructions shall be carefully followed.
 - 6. When required by the equipment manufacturer, moving parts shall be rotated a minimum of twice a month to ensure proper lubrication and to avoid metal to metal "welding". Upon installation of the equipment, Contractor shall, at the discretion of District, start the equipment at one-half load for an adequate period of time to ensure that the equipment does not deteriorate from lack of use.
 - 7. When required by the equipment manufacturer, lubricant shall be changed upon completion of installation and as frequently as required thereafter during the period between installation and acceptance. New lubricants shall be put into the equipment by Contractor at the time of acceptance.
 - 8. Equipment and materials shall not have any pitting, rust, decay, or other deleterious effects of storage when installed in the Work.
 - 9. In addition to the protection specified for prolonged storage, the packing of spare units and spare parts shall be as for export packing and shall be suitable for long-term storage in a damp location. Each spare item shall be packed separately and shall be completely identified on the outside of the container.

10. Handling: Stored items shall be laid out to facilitate their retrieval for use in the Work. Care shall be taken when removing the equipment for use to ensure the precise piece of equipment is removed and that it is handled in a manner that does not damage the equipment.
11. Store products to allow for inspection, measurement, and/or counting of units.
12. Store materials in a manner that will not endanger adjacent Work.
13. Store products that are subject to damage by the elements, under cover in a weather-tight enclosure above ground, with ventilation adequate to prevent condensation.
14. Store cementitious products and materials on elevated platforms.
15. Store foam plastic from exposure to sunlight, except to extent necessary for period of installation and concealment.
16. Comply with product manufacturer's written instructions for temperature, humidity, ventilation, and weather-protection requirements for storage.
17. Protect stored products from damage.
18. Protect liquids from freezing.

PART 2 – PRODUCTS (Not Used)

PART 3 – EXECUTION (Not Used)

END OF SECTION 01610

SECTION 01625

PRODUCT OPTIONS AND SUBSTITUTIONS

PART 1 – GENERAL

1.1 RELATED DOCUMENTS

- A. All Contract Documents shall be reviewed for applicable provisions related to the provisions in this document, and provisions in the General Conditions and other Division 1 specification Sections shall apply to this Section without limitation.

1.2 RELATED REQUIREMENTS SPECIFIED IN OTHER SECTIONS

- A. Section 01010 – “Summary of Work”
- B. Section 01311 – “Project Management and Coordination”
- C. Section 01400 – “Quality Control Requirements”
- D. Section 01610 – “Basic Product Requirements”
- E. Section 01722 – “Execution Requirements”
- F. Section 01780 – “Project Record Documents”
- G. Division 2 through 33 Sections for specific requirements for Materials and Equipment (Product Options and Substitutions) for the work in those Sections.

1.3 SUMMARY

- A. This Section includes administrative and procedural requirements concerning product options and substitutions.

1.4 GENERAL

- A. The term product, as used in the Contract Documents, includes materials, equipment, systems, and like terms of similar intent.
- B. All products are to be new and not previously incorporated into or used in any other project or facility. Products salvaged or recycled from other projects are not considered new products and are not permitted.
- C. Named products are identified in the Contract Documents by manufacturer’s product name, make or model number, and/or other specific designation.
 - 1. Do not use materials and/or equipment removed from existing premises, except as specifically permitted by the Contract Documents.
- D. List of Manufacturers and Products Required. The Contractor shall require all Subcontractors to prepare and submit to the Contractor, within thirty (30) days of execution of the Subcontract, four (4) copies of the comprehensive lists of manufacturers and products proposed for the Project, including information on materials, equipment, and fixtures required by the Contract Documents, as may be required for the Contractor’s or Architect’s approval.
 - 1. Approval of such lists of products shall not be construed as a substitute for the shop drawings, manufacturer’s descriptive data, and samples, required by the Contract

Documents, but rather shall be considered as a base from which more detailed submittals shall be developed for final review by the Contractor and the Architect.

1.5 PRODUCT SELECTION AND SUBSTITUTION REQUIREMENTS

- A. Substitutions are defined as any changes in products, materials, equipment, and/or methods of construction from those required by the Contract Documents, and that are proposed by the Contractor.
- B. When only one product is specified, and unless the Specifications state that no substitution is permitted, whenever the Contract Documents indicate any specific article, device, equipment, product, material, fixture, patented process, form, method, or type of construction or any specific name, make, trade name, or catalog number, with or without the words “or equal,” such specification shall be deemed to be used for the purpose of facilitating description of the material, process, or article desired and shall be deemed to be followed by the words “or equal” unless the Contract Documents specify “no substitution allowed”, “no equal”, “no equivalent”, “to match campus standard”, “single source,” or other language with similar meaning, in which case no substitutions will be allowed.
 - 1. Pursuant to Paragraph 3.11.4 of the General Conditions, the apparent lowest responsive and responsible bidder may, within ~~three~~ **thirty** (30) calendar days after bid opening offer any material, process, article, etc., which shall be materially equal or better in every respect to that so indicated or specified (“Specified Item”) and will completely accomplish the purpose of the Contract Documents. to Paragraph 3.11.4 of the General Conditions, the Contractor may, unless otherwise stated below, at time of bid offer any material, process, article, etc., which shall be materially equal or better in every respect to that so indicated or specified (“Specified Item”) and will completely accomplish the purpose of the Contract Documents.
- C. For products specified by naming only one manufacturer and including the words “no substitutions allowed”, “no equal”, “to match campus standard”, “single source” and/or other phrase with similar meaning:
 - 1. There is no product option due to necessity to match existing products or systems, to meet other design criteria or dependencies, or to comply with established standards. No substitution will be allowed.
 - 2. If product becomes unavailable due to no fault of Contractor, submit Request for Substitution, including all information required herein.
- D. When more than one product is specified, and in the absence of language stating “no substitutions allowed”, “no equal”, “to match campus standard”, “single source,” or other phrase with similar meaning:
 - 1. Select products of any named manufacturer meeting all specified requirements, or submit a request for substitution at time of bid.
 - 2. If product becomes unavailable due to no fault of Contractor, submit Request for Substitution (RFS), including all information required herein.
- E. For products specified by naming one or more products followed by the words “or approved equal”:
 - 1. Select products of any named manufacturer meeting all specified requirements, or submit a request for substitution at time of bid.
- F. For products specified only by reference standard, select any product meeting or exceeding all requirements of the specified standard.

- G. Compatibility of product options: If Contractor is given an option of selecting between two or more products for use on the Project; product selected shall be compatible with products previously selected, even if previously selected products were also options.
1. Contractor shall be responsible for providing products and construction means and methods that are compatible with the products and construction means and methods of other contractors.
- H. Products Specified which are Commercially Unavailable. If the Contractor fails to make a request for substitutions for products, at the time of submitting bids to the District, and such products subsequently become commercially unavailable, the Contractor may request a substitution for such commercially unavailable item.
1. The decision to grant this request is solely at the District's discretion. The written approval of the District, consistent with the procedure for Change Orders, shall be required for the use of a proposed substitute material.
 2. The District may condition its approval of the substitution upon the delivery to District of an extended warranty or other assurances of adequate performance of the substitution as well as an equitable deduction in the contract price should the substituted item cost less than the Specified Item.
 3. All risks of delay due to the approval of a requested substitution by the DSA, or any other governmental agency having jurisdiction, shall be on the requesting party. All additional costs, all procurement and construction delays, and all costs for review by the Architect or its consultants shall be the responsibility of the Contractor and will be deducted from Contractor's pay request.
- I. Substitution Request Form. All requests for substitutions of products, materials, or processes in place of a Specified Item must be submitted in writing on the District's Substitution Request Form ("Request Form") within **thirty** (30) calendar days after bid opening. The Request Form must be accompanied by evidence as to whether the proposed substitution meets the requirements of the Contract Documents as specified herein.
- J. After bids are opened, the apparent lowest responsive and responsible bidder shall provide, within **thirty** (30) days of opening such bids, any and all Drawing, Specifications, samples, performance data, calculations, and other information, as required herein to assist the Architect and the District in determining whether the proposed substitution is acceptable. The burden of establishing these facts shall be upon the bidder.
- K. After the District's receipt of such evidence by the bidder, the District will make its final decision as to whether the bidder's request for substitution for any Specified Items will be granted. The decision as to whether a proposed request for substitution is equal to a Specified Item shall be at the sole discretion of the District.
1. Any request for substitution that is granted by the District shall be documented and processed through a Change Order.
 2. The District may condition its approval of any substitution upon delivery to the District of an extended warranty or other assurances of adequate performance of the substitution.
 3. Any and all risks of delay due to approval by the DSA or any other governmental agency having jurisdiction shall be on the bidder.
 4. In the event that the bidder has agreed in the Request Form to provide the Specified Item and the District denies the bidder's requested substitution for a Specified Item, the bidder shall provide the Specified Item without any additional cost or charge to the District.

- L. If the Architect and District accept a proposed substitution, the Contractor agrees to pay for all engineering and design services, including, without limitation, compensation to the Architect and affected engineers for their required time to process such substitution through the Division of the State Architect, if required, and to make all changes and adjustments in materials or the work of all trades directly or indirectly affected by the substituted item or items at no cost to the District.
- M. Substitutions will not be considered for acceptance (or, at the District's sole discretion, District may make Contractor solely responsible for all resulting costs, expenses and other consequences of a substitution) when a substitution:
 - 1. Results in delay meeting established construction milestones and/or Phase completion dates.
 - 2. Is indicated or implied on submittals without formal Substitution Request from Contractor.
 - 3. Is requested directly by a Subcontractor or supplier.
 - 4. Acceptance will require substantial revision to the Contract Documents.
 - 5. Disrupts the Contractor's Work progress or ability to perform efficiently.
- N. Substitute products shall not be ordered without written acceptance of Architect and District.
- O. Architect and/or District shall determine acceptability of proposed substitutions and reserve right to reject proposals due to insufficient information.
- P. Accepted substitutions will be evidenced by a Change Order. All Contract Document requirements apply to all Work involving substitutions.
- Q. Coordinate all substitute products with Contractor's Construction and Submittal Schedules.

1.6 PRODUCTS WITH NO SUBSTITUTION ALLOWED

- A. No substitutions shall be allowed for District standard products. District standard products include:
 - 1. **Door Locksets & Keys – Corbin Russwin Door Locksets and Latches.**
 - 2. **Panic Door Hardware – Von Duprin Panic hardware.**

1.7 PRODUCT SUBSTITUTION REQUESTS: REQUIRED INFORMATION

- A. Requests for substitutions of products, materials, or processes in place of a specified item must in writing on the District's Substitution Request Form at the time of submitting bids to the District.
- B. Except as provided in the Contract Documents with respect to "or equal" items, District will consider a Contractor's substitution request only when the specified product or products become unavailable due to no fault of Contractor.
- C. Requests for review of proposed substitute items will not be accepted from anyone other than Contractor.
- D. A Request for Substitution shall state the extent, if any, to which the evaluation and acceptance of the proposed substitute will prejudice Contractor's achievement of Substantial Completion of the Work or any Phase of the Work on time pursuant to the completion dates specified in the Contract Documents, and whether or not acceptance of the substitute for use in the Work will require a change in any of the Contract Documents (or in the provisions of any other direct contract with the District for Work on the Project.)
- E. Substitution Product List: Submit a list, in tabular form, showing specified product(s) and requested substitute product(s). Include generic names of products required, and manufacturer's

proprietary name for each product. Provide all product data for each requested substitute product, variations from specified product, and other pertinent data as specified herein.

- F. Submit separate submittals (four copies) for each product substitution requested, to include the following:
1. A statement either explaining why the specified product cannot be provided or why the Contractor is proposing a substitution.
 2. Product identification, including specification section number, and title.
 3. Manufacturer's literature, including product data and specifications.
 4. Physical samples, as applicable
 5. Color chart, as applicable.
 6. Name and address of similar projects on which product has been used, and dates of installation.
 7. Name, address, and telephone number of supplier, installer, and manufacturer's representative.
 8. Construction methods: Include detailed description with drawings or other illustrations as required for clarity.
 9. Provide product availability information with projected delivery date.
 10. A completed Substitution Request Form (see Section 01340 "Administrative Forms and Logs") for each product substitution requested. Submittals with an incomplete Substitution Request Form will be returned to the Contractor without review.
 11. A detailed comparison of the proposed substitution with specified product, listing all variations including all dimensional, weight, service requirements, and functional differences, if any. If variation(s) from the specified product is not identified in the submittal, it may be rejected.
 12. Indicate available maintenance, repair, and replacement services for substitute products.
 13. Contractor shall state whether the substitute will require a change in any of the Contract Documents (or provisions of any other direct contract with District for work on the Project) to adapt the design for the proposed substitute, and whether or not incorporation or use of the substitute in connection with Work is subject to payment of any license fee or royalty.
 14. Contractor shall provide an accurate cost comparison of the proposed substitution with the specified product and identify the net change in Contract Price related to use of the proposed substitution.
 - a. The cost comparison shall include, but not be limited to, an itemized estimate of all costs or credits that will result directly or indirectly from acceptance of such substitute, and include costs for redesign and/or claims of other contractors affected by the resulting change.
 - b. Architect or District may require Contractor to furnish additional cost data concerning the proposed substitute.
 15. Coordination information, including a list of changes or modifications needed to other parts of the Work and to construction performed by District and separate contractors that will be necessary to accommodate proposed substitution.
 16. Material test reports from a qualified testing agency indicating and interpreting test results for compliance with requirements indicated.

17. Research/evaluation reports evidencing compliance with building code in effect for Project, from a model code organization acceptable to authorities have jurisdiction.
18. Submit complete information identifying any changes to the Contractor's Baseline CPM Schedule required as a result of the proposed substitution.
 - a. If 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 other reason for delays in delivery.
 - i. Contractor's certification that proposed substitution complies with requirements in the Contract Documents.
19. 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.

1.8 CONTRACTOR'S REPRESENTATION AND WARRANTY

- A. Contractor's Substitution Request constitutes a representation and warranty that Contractor complies with all of the following requirements:
 1. Contractor has investigated proposed product and determined that it meets or exceeds, in all respects, the requirements for the specified product.
 2. Contractor shall provide the same warranty for substitution as for specified product.
 3. Contractor shall coordinate installation and make all other changes that may be required for Work to be integrated and complete in all respects.
 4. Contractor waives claims for any additional costs which may subsequently become apparent.
 5. Contractor shall compensate District for any Construction Document revisions and/or agency approval costs associated with any product substitution. Any such compensation shall be deducted from the Contract Price by the District via Change Order.
 6. Contractor shall be responsible for maintaining the Baseline CPM Schedule and for recovering any time lost due to a product substitution.
 7. Contractor shall be responsible for any Baseline CPM Schedule delay caused by late ordering of available specified products caused by Substitution Requests that are subsequently rejected by the District.
 8. Contractor shall compensate District for all costs, including extra costs for performing Work under Contract Documents, extra cost to other contractors, and any claims brought against District, caused by late Product Substitution Requests.

1.9 ARCHITECT'S ACTION

- A. Architect shall respond in writing to Contractor within (10) working days of receipt of a Substitution Request. Architect's response shall include a list of unacceptable product selections and a brief explanation of reasons for this action. Architect's response, or lack of response, does not constitute a waiver of requirement to comply with the Contract Documents.
- B. Architect shall notify Contractor in writing of decision to accept or reject Contractor's requested substitution.
- C. If necessary, Architect may request additional information or documentation for evaluation Substitution Request. Architect shall notify Contractor of acceptance or rejection of proposed substitution within (5) working days of receipt additional information of documentation.

1.10 ADMINISTRATIVE REQUIREMENTS

- A. Specified products, materials, or systems for Project may include engineering or on-file standards required by the regulatory agency. Contractor's substitution of products, materials or systems may require additional engineering, testing, reviews, approvals, assurances, or other information for compliance with regulatory agency requirements, or both. Contractor shall provide all agency approvals or other additional information required and pay additional costs for required District services made necessary by the substitution at no increase in Contract Price or Contract Time, and as a part of substitution proposal.

PART 2 – PRODUCTS (Not Used)

PART 3 – EXECUTION (Not Used)

END OF SECTION 01625

SECTION 01710

CLEANING REQUIREMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. All Contract Documents shall be reviewed for applicable provisions related to the provisions in this document, and provisions of General Conditions and other Division 1 Specification Sections shall apply to this Section without limitation

1.2 RELATED REQUIREMENTS SPECIFIED IN OTHER SECTIONS

- A. Section 01400 – “Quality Control Requirements”
- B. Section 01500 – “Temporary Facilities and Controls”
- C. Section 01505 – “Construction Waste Management”
- D. Section 01572 – “Storm Water Pollution Prevention Plan”
- E. Section 01722 – “Execution Requirements”
- F. Section 01770 – “Contract Closeout Procedures”
- G. Divisions 2 through 33 Sections for specified Cleaning Requirements for the work in those Sections.

1.3 DISPOSAL OF MATERIALS

- A. See Section 01505 Construction Waste Management for additional requirements.
- B. As part of the scope of Work included within the Contract Price, Contractor shall be fully responsible for disposing of all construction debris, dirt and spoils resulting from the Work.
- C. All waste materials, debris, dirt and rubbish shall be disposed of at sites to be chosen by Contractor in accordance with applicable local, state and federal regulations and requirements of the Contract Documents. Also see Sections 01505 and 01412.
- D. Contractor is cautioned that both the County of Contra Costa and cities within the County have regulations governing the disposal of rubble, broken pavement, and similar materials.
- E. Contractor shall become familiar with the requirements of the agency having jurisdiction over any contemplated disposal site and shall comply with requirements.
- F. This is already addressed in Section 01505/1.7 and 1.11. Under no circumstances shall rubbish, debris, waste, dust, dirt or surplus materials be allowed to accumulate in the building or on the Site, and all such shall be removed continually as the Work progresses and by the end of each day’s Work.
 - 1. Materials: In occupied building areas, only sufficient materials and flammable or toxic substances necessary for the Work being performed that day or shift shall be brought into the building and work areas. In no case shall flammable or toxic substances be stored in the building, and these substances shall be immediately removed from the building when not needed and not later than the end of the day’s Work.
 - 2. Splattering or spilling of material shall be promptly cleaned up at time of occurrence.

- G. Contractor shall provide sweeping whenever silt from Site is carried over to adjacent pedestrian paths, parking lots, and streets within the Campus as well as public thoroughfares surrounding the Campus.
- H. Failure to maintain a clean and orderly Site may necessitate action by the District. In the event that the Contractor fails to clean up and maintain the project in a clean and orderly manner, the District may clean the Site and charge the Contractor for such cleaning costs. Any cleaning costs incurred by District will be deducted from the Contract Price by Change Order.
- I. All trash, debris, waste, and excess soil resulting from performance of the Work shall be disposed of at sites to be chosen by Contractor in accordance with applicable local, state, and federal regulations. If Contractor elects to dispose of soil on any private property, a permission letter shall be obtained from the property owner and presented to District prior to disposal. Contractor is advised that the property owner is required to obtain a fill permit from the applicable government agency(ies). In addition, placement of fill in wetland areas is subject to permit procedures of the US Army Corps of Engineers. At the completion of Work, a letter from each affected property owner releasing Contractor, Contra Costa County, District, and District consultants from any future liability.

1.4 FINAL CLEANING

- A. District's Representative's Inspection: Provide District at least twenty-four (24) hours advance notice of readiness for inspection.
- B. Any deficient cleaning, as determined by District's Representative, shall be immediately corrected as directed by District at Contractor's expense.
- C. Contractor shall execute final cleaning prior to final inspection, using only properly skilled workers.
- D. Remove grease, dust, dirt, stains, labels, fingerprints, and other foreign materials from exposed interior and exterior finished surfaces.
- E. Repair, patch, and touch up marred surfaces to match adjacent finishes.
- F. Clean interior and exterior surfaces exposed to view; remove temporary labels, stains and foreign substances, clean and/or polish all transparent and glossy surfaces,
- G. Vacuum carpeted and soft surfaces.
- H. Remove waste and surplus materials, rubbish, and construction facilities from Site.
- I. Wash and shine mirrors.
- J. Ventilating systems:
 - 1. Clean permanent filters and replace disposable filters of units operated during construction; in addition, clean ducts, blowers, and coils when units have been operated without filters during construction.
 - 2. Clean ducts, blower, and coils of units operated during construction.
- K. Clean surfaces of equipment; remove excess lubrication.
- L. Clean plumbing fixtures to a sanitary condition
- M. Vacuum and wipe inside of electrical panels and cabinetwork.
- N. Clean light fixtures and lamps.
- O. Broom clean interior spaces.
- P. Clean, damp mop, wax and polish resilient and hard-surfaced floors as specified.

- Q. Remove waste, debris and surplus materials from site. Clean grounds; remove stains, spill, and foreign substances from paved areas and sweep clean. Rake clean other exterior surfaces.
- R. Use cleaning materials which will not create hazards to health or property or cause damage to the Work. Use cleaning materials and methods recommended by the manufacturers of the products to be cleaned.
- S. Contractor shall not use nor permitted to use any kind of material/cleaning chemical that are not permitted for use in the State of California, or not permitted by the Health Department
- T. Schedule operations to prevent dust and other contaminants resulting from cleaning operations from adhering to wet or newly finished surfaces.
- U. Clean roofs, gutters, downspouts and drainage systems.
- V. Interior surfaces and areas where Work is performed shall be left in vacuum clean condition with all dust, dirt, stains, hand marks, paint spots, plaster droppings, and other blemishes and defects completely removed. To the extent of Contractor's operations, use or materials, the following requirements apply to all areas where Work is performed:
 - 1. Walls: Bare and painted surfaces shall be cleaned and free of dust, lint, streaks, or stains.
 - 2. Hardware and metal surfaces shall be cleaned and polished using non-corrosive and non-abrasive materials.
 - 3. Glass: New glass and soiled existing glass shall be washed and polished both sides and left free of dirt and spots. Labels shall be removed.
 - 4. Ceilings shall be clean and free of stains, hand marks, and defacing.
 - 5. Fixtures and Equipment: New mechanical and electrical fixtures and like items shall be cleaned and polished. Lighting fixtures shall be free of dust, dirt, stains, or waste material. Equipment and machinery shall be cleaned, serviced, and ready for use. Existing items shall be cleaned as required including ventilating supply and return equipment in walls and ceilings.
 - 6. Surfaces not mentioned shall be cleaned according to the intent of this Section and as required for District's Representative's approval.

PART 2 – PRODUCTS (Not Used)

PART 3 – EXECUTION (Not Used)

END OF SECTION 01710

SECTION 01722

EXECUTION REQUIREMENTS

PART 1 – GENERAL

1.1 RELATED DOCUMENTS

- A. All Contract Documents shall be reviewed for applicable provisions related to the provisions in this document, and provisions in the General Conditions and other Division 1 Specification Sections shall apply to this section without limitation.

1.2 RELATED REQUIREMENTS SPECIFIED IN OTHER SECTIONS

- A. Section 01010 – “Summary of Work”
- B. Section 01050 – “Field Engineering
- C. Section 01055 – “Conformance Surveying”
- D. Section 01311 – “Project Management and Coordination”
- E. Section 01710 – “Cleaning Requirements”
- F. Section 01770 – “Contract Closeout Procedures”
- G. Divisions 2 through 33 Sections for Execution Requirements for the work in those Sections.

1.3 SUMMARY

- A. This Section includes Administrative and General procedural requirements governing execution of the Work including, but not limited to, the following:
 - 1. Construction layout
 - 2. General installation of products
 - 3. Coordination of District-installed products
 - 4. Starting and adjusting
 - 5. Protection of installed construction
 - 6. Correction of the Work

PART 2 – PRODUCTS (Not Used)

PART 3 – EXECUTION

3.1 EXAMINATION

- A. Acceptance of Conditions: Examine substrates, areas, and conditions, with Installer or Applicator present where indicated, for compliance with requirements for installation tolerances and other conditions affecting performance. Record all observations in writing.
 - 1. Written Report: Where a written report listing conditions detrimental to performance of the Work is required by other Sections, include the following:
 - a. Description of the Work
 - b. List of detrimental conditions, including substrates
 - c. List of unacceptable installation tolerances

- d. Recommended corrections
 - 2. Examine roughing-in for mechanical and electrical systems to verify actual locations of connections before equipment and fixture installation.
 - 3. Examine walls, floors, and roofs for suitable conditions where products and systems are to be installed.
 - 4. Proceed with installation only after unsatisfactory conditions have been corrected. Proceeding with the Work indicates acceptance of surfaces and conditions.
- B. Existing Site and/or Building Conditions: The existence and location of site improvements, utilities, and other construction indicated as existing are not guaranteed. Before beginning Work, investigate and verify the existence and location of mechanical and electrical systems and other construction affecting the Work.
 - 1. Before construction, verify the location and points of connection of all utility services for each Phase of the Work and the entire Project.
- C. Existing Utilities: The existence and location of underground and other utilities and construction indicated in the Contract Documents as existing are not guaranteed. Prior to beginning the Work, investigate and verify the existence and location of all underground utilities and/or other improvements affecting the Work.
 - 1. Before construction, verify the location and invert all elevations at points of connection of sanitary sewer, storm sewer, and water-service piping; and all underground electrical services.
 - 2. Furnish location data for work related to Project that must be performed by public utilities serving Site.

3.2 PREPARATION

- A. Review of Contract Documents and Field Conditions: Immediately on discovery of the need for clarification of the Contract Documents, submit a written request for information (RFI) to the District and a copy to the Architect.
- B. Existing Utility Information: Furnish information to the District and a copy to the Architect that is necessary to adjust, move, or relocate existing utility structures, utility poles, lines, services, or other utility appurtenances located in or affected by construction. Contractor shall coordinate with authorities having jurisdiction.
- C. Field Measurements: Take field measurements as required to fit the Work properly. Recheck measurements before installing each product. Where portions of the Work are indicated to fit to other construction, Contractor shall investigate and verify all dimensions of other construction by field measurements before fabrication. Contractor shall coordinate fabrication schedule with construction progress to avoid delaying the Work.
- D. Space Requirements: Verify space requirements and dimensions of items shown diagrammatically on Contract Documents. Contractor shall be responsible for all coordination and measurements including means and methods of Construction.

3.3 CONSTRUCTION LAYOUT

- A. Verification: Before proceeding to lay out the Work, Contractor shall verify layout information and Field condition in relation to the Contract documents. Notify District and copy the Architect immediately of any discrepancies.

3.4 INSTALLATION

- A. Contractor shall locate the Work and components of the Work accurately, in correct alignment and elevation, as indicated.
 - 1. Make vertical work plumb and make horizontal work level.
 - 2. Where space is limited, install components to maximize space available for maintenance and ease of removal for replacement.
 - 3. Conceal pipes, ducts, and wiring in furnished areas, unless otherwise indicated.
 - 4. Maintain minimum headroom clearance of eight feet in spaces without a suspended ceiling.
- B. Contractor shall comply with manufacturer's written instructions and recommendations for installing products in applications indicated.
- C. Contractor shall install products at the time and under conditions that will ensure the best possible results. Maintain conditions required for performance until accepted by District.
- D. Contractor shall conduct construction operations, so no part of the Work is subjected to damage or loading in excess of that expected during normal conditions of occupancy.
- E. Tools and Equipment: Do not use tools or equipment that produces harmful noise levels. Contractor shall comply with noise requirements in Section 01416, Special Procedures
- F. Templates: Obtain and distribute to the parties involved templates for work specified to be factory prepared and field installed. Check Shop Drawings of other work to confirm that adequate provisions are made for locating and installing products to comply with indicated requirements.
- G. Anchors and Fasteners: Provide anchors and fasteners as required to anchor each component securely in place, accurately located and aligned with other portions of the Work.
- H. Mounting Heights: Where mounting heights are not indicated, mount components at heights directed by Architect.
- I. Allow for building movement, including thermal expansion and contraction.
- J. Coordinate installation of anchorages. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, and items with integral anchors, that are to be embedded in concrete or masonry. Deliver such items to the Site in time for installation.
- K. Joints: Make joints of uniform width. Where joint locations in exposed work are not indicated, arrange joints for the best visual effect. Fit exposed connections together to form hairline joints.
- L. Hazardous Materials: Use only products, cleaners, and installation materials that are not classified as or considered hazardous.

3.5 DISTRICT-INSTALLED PRODUCTS

- A. Site Access: Provide access to Site for District's construction forces.
- B. Coordination: Coordinate construction and operations of the Work with work performed by District construction forces.
 - 1. Baseline CPM Schedule: Inform District of Contractor's preferred schedule for District's portion of the Work. Adjust Baseline CPM Baseline CPM Schedule based on a mutually agreeable timetable. Provide timely notice (i.e., at least 14 calendar days) to the District if changes to schedule are required due to differences in actual construction progress.

2. Pre-installation Conferences: Include District's construction forces at pre-installation conferences covering portions of the Work that are to receive District's work. Attend pre-installation conferences conducted by District's construction forces if portions of the Work depend on District's construction forces.

3.6 PROTECTION OF INSTALLED CONSTRUCTION

- A. Provide final protection and maintain conditions that ensure installed Work is without damage or deterioration at time of Substantial Completion.
- B. Comply with manufacturer's written instructions for temperature and relative humidity.

3.7 CORRECTION OF THE WORK

- A. Repair or remove and replace defective construction. Restore damaged substrates and finishes. Comply with requirements Section 01730, Cutting and Patching.
 1. Repairing includes replacing defective parts, refinishing damaged surfaces, touching up with matching materials, and properly adjusting operating equipment.
- B. Restore permanent facilities used during construction to their specified condition. See also Section 01500, Temporary Facilities and Controls.
- C. Remove and replace damaged surfaces that are exposed to view if surfaces cannot be repaired without visible evidence of repair.
- D. Repair components that do not operate properly. Remove and replace operating components that cannot be repaired.
- E. Remove and replace chipped, scratched, and/or broken glass or reflective surfaces.

END OF SECTION 01722

SECTION 01730

CUTTING AND PATCHING

PART 1 – GENERAL

1.1 RELATED DOCUMENTS

- A. All Contract Documents shall be reviewed for applicable provisions related to the provisions in this document, and provisions in the General Conditions and other Division 1 Specification Sections shall apply to this section without limitation.
- B. Individual Product Specification Sections:
 - 1. Cutting and patching incidental to work of the section.
 - 2. Advance notification to other sections of openings required in work of those sections.
 - 3. Limitations on cutting structural members.

1.2 RELATED REQUIREMENTS SPECIFIED IN OTHER SECTIONS

- A. Section 01311 – “Project Management and Coordination”
- B. Section 01710 – “Cleaning Requirements”
- C. Section 01722 – “Execution Requirements”
- D. Divisions 2 through 33 Sections for specific requirements and limitations applicable to cutting and patching individual parts of the Work.

1.3 DEFINITIONS

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

1.4 RESPONSIBILITIES

- A. Contractor shall be responsible for all cutting, fitting, and patching, including associated excavation and backfill, required to complete the Work. This includes, but is not limited to:
 - 1. Making parts fit together properly
 - 2. Removal and replacement of defective Work
 - 3. Removal and replacement of Work not conforming to requirements of Contract Documents
 - 4. Provide routine penetrations of non-structural surfaces for installation of piping and electrical conduit
 - 5. Attaching new materials to existing improvements
 - 6. Painting (or other finishes) to match adjacent or existing conditions
- B. Contractor shall not cut or alter any part of the Work in such a way that endangers or compromises the integrity of the Work, the work of others, or the Project.

1.5 QUALITY ASSURANCE

- A. Requirements for Cutting and Patching relating to structural elements: Do not cut and/or patch structural elements in a manner that would alter their structural design characteristics.
 - 1. Obtain written approval of the cutting and patching proposal from the Structural Engineer of Record **and** DSA prior to cutting and/or patching any structural elements. Structural elements include, but are not limited to:
 - a. Foundation construction
 - b. Structural Concrete
 - c. Structural Steel
 - d. Wood Framing
 - e. Bearing and retaining walls
 - f. Stair systems
 - g. Roofing and framing systems
 - h. Glue lam beam
 - i. Shear wall systems
 - 2. Where cutting and patching Work involves adding reinforcement to structural elements, submit details and engineering calculations showing integration of reinforcement with original structure. Contractor shall be responsible for any costs associated with required Structural Engineer and/or DSA reviews and approvals.
- B. Operational Limitations: Do not cut and patch operating elements or related components in a manner that would result in reducing their capacity to perform as intended. Do not cut and patch operating elements or related components in a manner that would result in increased maintenance or decreased operational life or safety.
- C. Visual Requirements: Do not cut and patch exposed Work in a manner that would, in the Architect or District's opinion, reduce the building's aesthetic qualities. Do not cut and patch construction in a manner that would result in visual evidence of cutting and patching. Remove and replace construction cut and patched in a visually unsatisfactory manner as directed by District.
- D. Contractor shall ensure that all cutting, fitting, and patching shall achieve the security, strength, weather protection, and appearance for aesthetic match, efficiency, operational life, maintainability, safety of operational elements, and the continuity of existing fire ratings as required by the Contract Documents.
- E. Contractor shall ensure that cutting, fitting, and patching shall successfully duplicate undisturbed adjacent profiles, materials, textures, finishes, colors, and that materials shall match existing construction. Where there is dispute as to whether duplication is successful or has been achieved to a reasonable degree, the District's decision shall be final.
- F. Operational Elements: Do not cut and patch operating elements and/or related components in a manner that results in reducing their capacity to perform as intended, results in increased maintenance requirements, that decreases operational life, or that affects system or component safety. Operating elements include, but are not limited to the following:
 - 1. Fire-suppression systems.
 - 2. HVAC systems.
 - 3. Control systems.
 - 4. Mechanical systems piping and ducts.

5. Air smoke barriers
 6. Telephone and communication systems.
 7. Electrical wiring systems.
 8. Primary operational systems and equipment.
- G. Miscellaneous Elements: Do not cut and patch miscellaneous elements or related components in a manner that could change their load-carrying capacity, that results in reducing their capacity to perform as intended, or those results in increased maintenance or decreased operational life or safety. Miscellaneous elements include, but are not limited to the following items:
1. Exterior curtain wall construction
 2. Equipment supports
 3. Noise-and vibration-control elements and systems
 4. Water, moisture, or vapor barriers
 5. Membranes and flashings
 6. Vessels, and equipment

1.6 PAYMENT FOR COSTS

- A. Cost caused by ill-timed or defective cutting and patching Work or Work not conforming to Contract Documents, including costs for additional services of the District and its consultants will be borne by the Contractor and deducted from the Contract Price via Change Order by the District.
- B. Cost of Work cutting and patching Work performed upon approval from the District, other than defective or nonconforming Work, will be paid by District via written Change Order.

1.7 WARRANTY

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

PART 2 – PRODUCTS

2.1 MATERIALS

- A. Contractor shall provide for replacement and restoration of any Work affected by cutting and patching operations. Contractor shall comply with the Contract Documents and with the Industry Standard(s), for the type of Work involved. If not specified, Contractor shall first recommend a product of a manufacturer or appropriate trade association for approval by the District.
- B. Materials to be cut and patched include those damaged by Contractor in the performance of the Work.
- C. Use materials identical to existing materials. For exposed surfaces, use materials that visually match existing adjacent surfaces to the fullest extent possible. If identical materials are unavailable or cannot be used, use materials whose installed performance will equal or exceed that of existing materials and that are visually compatible in the sole opinion of the District.

PART 3 – EXECUTION

3.1 INSPECTION

- A. Contractor shall inspect existing conditions of the Site and the Work, including elements subject to movement or damage during cutting and patching, excavating and backfilling. After uncovering Work, Contractor shall inspect conditions affecting the installation of new products.
- B. Contractor shall report unsatisfactory or questionable conditions in writing to District as indicated in the Contract Documents, and shall proceed with Work as directed by District.

3.2 PREPARATION

- A. Contractor shall provide adequate shoring, bracing and supports as required to maintain structural integrity for all portions of the Project during cutting and patching operations.
- B. Contractor shall provide devices and means and methods to protect other portions of Project from damage during cutting and patching operations.
- C. Contractor shall provide all necessary protection from weather and extremes of temperature and humidity for the Project, including without limitation, any work that may be exposed by cutting and patching Work. Contractor shall keep excavations free from water.
- D. Avoid interference with use of adjoining areas or interruption of free passage to adjoining areas.
- E. Do not cut existing pipe, conduit, or ductwork serving existing buildings and/or other improvements that are scheduled to be removed or relocated until provisions have been made to bypass them. Maintain all active existing services at all times.

3.3 PERFORMANCE

- A. With respect to performance, Contractor shall:
 - 1. Execute cutting and patching Work to provide finished installation complying with specified tolerances and matching adjacent finishes.
 - 2. Execute cutting and patching using means and methods that will prevent damage to other Work, and that will result in proper surfaces to receive installation of repairs and/or new Work.
 - 3. Execute cutting, demolition, patching, excavating, and backfilling by methods that will prevent damage to other Work and damage from settlement or other movement.
 - 4. Contractor shall employ original installer or fabricator to perform cutting and patching for:
 - a. Weather-exposed surfaces and moisture-resistant elements such as roofing, sheet metal, sealants, waterproofing, and other similar Work.
 - b. Exposed finished surfaces
 - 5. Contractor shall fit Work airtight to pipes, sleeves, ducts, conduit, and other penetrations through surfaces. Contractor shall conform to Contract Document requirements for penetrations. If a discrepancy exists between applicable Code requirements and the Contract Documents, the more stringent requirement shall apply.
 - 6. Completed cutting and patching Work shall not affect the integrity of fire walls, ceilings, floors, smoke barriers, shafts, and similar components.

7. Contractor shall restore Work which has been cut or patched. Contractor shall install new products to provide completed Work in accordance with requirements of the Contract Documents and as required to match adjacent areas and surfaces.
8. Contractor shall refinish all continuous surfaces to nearest intersection as necessary to match the new finish to any existing finish.
9. Cutting: Cut in-place construction by sawing, drilling, breaking, chipping, grinding, and similar operations, including excavation, using methods least likely to damage adjacent Work to remain. If possible, review proposed procedures with original Installer and comply with his written recommendations.
 - a. In general, use hand or small power tools designed for sawing and grinding, not hammering and chopping. Cut holes and slots as small as possible, neatly to size required, and with minimum disturbance of adjacent surfaces. Temporarily cover openings when not in use.
 - b. Finished Surfaces: Cut or drill from the exposed or finished side into concealed surfaces.
10. Concrete and Masonry: cut using a cutting machine, such as an abrasive saw or a diamond-core drill.
11. Excavating and Backfilling: Comply with requirements in applicable specification sections where required by cutting and patching operations.
12. Mechanical and Electrical Services: Cut off pipe or conduit in walls or partitions to be removed. Cap, valve, or plug and seal remaining portion of pipe or conduit to prevent entrance of moisture or other foreign matter after cutting.
13. Proceed with patching after construction operations requiring cutting are complete.
14. Patching: Patch construction by filling, repairing, refinishing, closing up, and similar operations following performance of other Work. Patch with durable seams that are as invisible as possible. Provide materials and comply with installation requirements specified in other Sections.
15. Inspection: Where feasible, test and inspect patched areas after completion to demonstrate integrity of installation.
16. Exposed Finishes: Restore exposed finishes of patched areas and extend finish restoration into retained adjoining construction in a manner that will eliminate evidence of patching and refinishing.
 - a. Clean all materials affected by cutting and patching operations before applying finishes.
 - b. Restore any damaged pipe covering to original condition.
 - c. Floors and Walls: Where walls or partitions that are removed extend from one finished area into another, patch and repair floor and wall surfaces in the both spaces. As required to provide an even surface of uniform finish, color, texture, and appearance. Remove in-place floor and wall coverings and replace with new materials as necessary to achieve uniform color and appearance.
 - d. Where patching occurs on a painted surface, apply specified primer and intermediate coats over the patch. Apply final coat over entire unbroken surface containing the patch. Provide additional coats as required until patched area blends completely with adjacent surfaces.
17. Ceilings: Patch, repair, or re-hang in-place ceilings as necessary to provide a level, planar surface of uniform appearance.

18. Exterior Building Enclosure: Patch components in a manner that restores enclosure to a weather-tight condition and results in a uniform visual appearance.
- B. Cleaning: Clean areas, spaces, materials, and/or equipment where cutting and patching Work is performed. Completely remove dirt, dust, cuttings, paint, mortar, oils, putty, adhesive, and any other similar materials.
- C. Alterations to Existing Work:
 1. Existing work shall be cut, drilled, altered, removed, or temporarily removed and replaced as necessary for performance of work under the Contract. Work that is replaced shall match similar existing work. Structural members shall not be cut or altered, except where noted on drawings, without authorization of the Structural Engineer. Work remaining in place, which is damaged or defaced during this contract, shall be restored to the condition existing at time of award of contract.
 2. Discolored or unfinished surface exposed by removal of existing work and indicated to be the final exposed surfaces shall be refinished or the material shall be replaced as necessary to make contiguous work uniform and harmonious. Work out of alignment, where exposed by removal of existing work, shall be called to the District's attention with a copy to the Architect's.

END OF SECTION 01730

SECTION 01740

WARRANTIES/GUARANTIES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. All Contract Documents shall be reviewed for applicable provisions related to the provisions in this document, and provisions in the General Conditions and other Division 1 Specification Sections shall apply to this Section without limitation.

1.2 RELATED DOCUMENTS SPECIFIED IN OTHER SECTIONS

- A. Section 01010 – “Summary of Work”
- B. Section 01770 – “Contract Closeout Procedures”
- C. Section 01780 – “Project Record Documents”
- D. Section 01820 – “Demonstration and Training Procedures”
- E. Divisions 2 through 33 Sections for Warranties/Guaranties requirements for the Work in those Sections.

1.3 SUMMARY OF WORK

- A. Contractor hereby warrants and guaranties to District all Work performed on this Project, including all material and equipment incorporated therein, as set forth below:
- B. Pursuant to the requirements of this Section and other sections of the Contract Documents, Contractor agrees to unconditionally warranty and guaranty the quality and adequacy of all of Work provided under this Contract including, without limitation, all labor, materials and equipment provided by the Contractor and Subcontractors of all tiers in connection with the Work.
- C. Contractor’s Warranty and/or Guaranty shall become effective on the first day following District’s issuance of a written Notice of Substantial Completion or on such other date as may be specified elsewhere in the Contract Documents, and once effective, the Warranties and/or Guaranties shall remain operative and shall bind Contractor as further described herein for a period of one (1) year, and/or more as specified in the Contract Documents.
- D. All Contractor Warranties and/or Guaranties must be reviewed and accepted by District.
- E. Neither final payment nor use or occupancy of the Work performed by the Contractor shall constitute an acceptance of Work not done in accordance with Contract Documents, nor relieve Contractor of liability in respect to any express warranties and/or guaranties or responsibilities for faulty materials or workmanship.
- F. Contractor shall remedy any defects in the Work and repair any associated damage resulting therefrom, and pay all costs for any such Work which shall become evident within any Project Warranty and/or Guaranty period. If any Work is found to be defective within any Project

- Warranty and/or Guaranty period, Contractor shall, without cost to District, promptly correct such defective Work.
- G. Contractor shall remove any defective Work rejected by District and replace it with Work that complies in all respects to the requirements of the Contract Documents. Remove and replace any damage to other Work or the Work of others resulting therefrom.
 - H. If Contractor fails to promptly comply with the terms of such instructions, or in an emergency where delay would cause serious risk of loss or damage, District may have the defective Work corrected or the rejected Work removed and replaced. Contractor shall pay for all costs, losses and damages caused by or resulting from such removal and replacement within the Warranty and/or Guaranty period.
 - I. Where Contractor fails to correct defective Work, or defects are discovered outside the Warranty and/or Guaranty period, District shall have all rights and remedies granted by law.
 - J. Inspection of the Work shall not relieve Contractor of any of its obligations under the Contract Documents. Even though equipment, materials, or Work required to be provided under the Contract Documents have been inspected, accepted, and paid for, Contractor shall, at its own expense, replace or repair any such equipment, material, or Work found to be defective or otherwise not to comply with the requirements of the Contract Documents up to the end of the guaranty period.
 - K. These Warranties and/or Guaranties are in addition to any other warranty or guaranty requirements contained in the Contract Documents, and not in lieu of any other liability imposed on Contractor under the Contract Documents and governing laws with respect to Contractor's duties, obligations, and performance under the Contract Documents.

1.4 FORMAT

- A. Contractor shall separate each warranty and/or guaranty with index tab sheets keyed to a Table of Contents listing, providing full information and using separate typed sheets as necessary. Contractor shall list each applicable and/or responsible subcontractor, supplier, and/or manufacturer, with name, address, telephone number, fax number, and e-mail of each responsible principal.
 - 1. Bind warranties and guaranties and bonds in heavy-duty, 3-ring vinyl-covered, loose-leaf binders, thickness as necessary to accommodate contents, and sized to receive 8 ½-by 11-inch paper.
 - 2. Provide heavy paper dividers with plastic-covered tabs for each separate warranty and/or guaranty. Mark tab to identify the product or installation. Provide a typed description of the product or installation, including the name of the product and the name, address, and telephone number, fax number, and e-mail of installer.
 - 3. Identify each binder on the front and spine with the typed or printed title "WARRANTIES".
 - a. Project name and number
 - b. Architect's name
 - c. Contractor's name
- B. Contractor shall provide two (2) sets of binders for all Warranties/Guaranties and shall include:
 - 1. Contractor, subcontractor, and equipment supplier shall provide Warranties and Guaranties on their original company letterhead with original signature.

2. Contractor shall provide original Warranties and Guaranties. Photo copies, fax and e-mail copies are not acceptable.
- C. Contractor shall organize warranty and guaranty documents into an orderly sequence based on the table of contents of the Project Manual.

1.5 PREPARATION

- A. Contractor shall obtain warranties and guaranties, executed in duplicate by each applicable and/or responsible subcontractor(s), supplier(s), and manufacturer(s), within fifteen (15) days after Substantial Completion. Except for items put into use with District's permission, Contractor shall leave date of beginning of time of warranty or guaranty blank until the date of completion is determined by District.
- B. Contractor shall verify that documents are in proper original form, contain full information, and are notarized, when required.
- C. Contractor shall co-sign and co-execute all Warranties and Guaranties.
- D. Contractor, subcontractor, and equipment supplier must provide warranties/guaranties on their original company letterhead with original authorized principal charge signature. (Fax copy and e-mail will not be acceptable.)
- E. Contractor shall provide additional copies of each warranty and/or guaranty to include in operation and maintenance manual. Photocopies are acceptable for this purpose.
- F. For items of work delayed beyond date of Substantial Completion, Contractor shall provide updated submittal within ten (10) days after acceptance, listing the date of acceptance by District as start of the warranty and/or guaranty period.
- G. Contractor must complete all warranty and guaranty submittals as required by the Contract Documents prior to District approval of Contractor's final application for Payment.

1.6 WARRANTY AND GUARANY MANAGEMENT

- A. Warranty and Guaranty Management Plan
 1. Develop a warranty and guaranty management plan which contains information relevant to Specification Section 01740, Warranties/Guaranties. At least 30 days before the planned Substantial Completion date, conduct a pre-warranty conference and, submit the warranty and guaranty management plan for District approval. Include within the warranty and guaranty management plan all required actions and documents to assure that the District receives all warranties and guaranties to which it is entitled. The plan must be in narrative form and contain sufficient detail to render it suitable for use by future maintenance and repair personnel, whether tradesmen, or of engineering background, not necessarily familiar with this contract. The term "status" as indicated below must include due date and whether item has been submitted or was accomplished. Warranty and guaranty information made available during the construction phase must be submitted to the District for approval prior to each monthly pay estimate. Assemble approved information in a binder and submit to the District upon acceptance of the Work. The construction warranty and guaranty period will begin on the date of Substantial Completion and continue for the full product warranty and guaranty period. A joint 4 month and 9 month warranty and guaranty inspection will be conducted, measured from Substantial Completion, by the Contractor, District, and the Campus Representative. Include within the warranty and guaranty management plan, but not limited to, the following:

WARRANTIES/GUARANTIES

01740- 3

- a. Roles and responsibilities of all personnel associated with the warranty and guaranty process, including points of contact and telephone numbers within the organizations of the Contractors, subcontractors, manufacturers or suppliers involved.
- b. Listing and status of delivery of all Certificates of Warranty and Guaranty for extended warranty and guaranty items, to include roofs, HVAC balancing, pumps, motors, transformers, and for all commissioned systems such as fire protection and alarm systems, sprinkler systems, lightning protection systems, etc.
- c. A list for each warranted equipment, item, feature of construction or system indicating:
 - i) Name of item.
 - ii) Model and serial numbers.
 - iii) Location where installed.
 - iv) Name and phone numbers of manufacturers or suppliers.
 - v) Names, addresses and telephone numbers of sources of spare parts.
 - vi) Warranties and Guaranties and terms of warranty and/or guaranty. Include one-year overall warranty of construction. Items which have extended warranties or guaranties must be indicated with separate warranty and guaranty expiration dates.
 - vii) Cross-reference to warranty and guaranty certificates as applicable.
 - viii) Starting point and duration of warranty and guaranty period.
 - ix) Summary of maintenance procedures required to continue the warranty and guaranty in force.
 - x) Cross-reference to specific pertinent Operation and Maintenance manuals.
 - xi) Organization, names and phone numbers of persons to call for warranty and guaranty service.
 - xii) Typical response time and repair time expected for various warranted equipment.
- d. The Contractor's plans for attendance at the 4th and 9th month post-construction warranty and guaranty inspections conducted by the District.
- e. Procedure and status of tagging of all equipment covered by extended warranties and guaranties.
- f. Copies of instructions to be posted near selected pieces of equipment where operation is critical for warranty and guaranty and/or safety reasons.

B. Pre-Warranty Conference

- 1. At least thirty calendar days prior to Contract Substantial Completion, and at a time designated by the District, meet with the District Representatives to develop a mutual understanding with respect to the requirements of this section. Communication procedures for Contractor notification of construction warranty and guaranty defects, priorities with respect to the type of defect, reasonable time required for Contractor response, and other details deemed necessary by the District for the execution of the construction warranty and guaranty will be established/reviewed at this meeting. In connection with these requirements and at the time of the Contractor's quality control completion inspection, furnish the name, telephone number and address of a licensed and bonded company which is authorized to

initiate and pursue construction warranty and guaranty work action on behalf of the Contractor. This point of contact will be located within the local service area of the warranted construction, be continuously available, and be responsive to District inquiry on warranty and guaranty work action and status.

2. This requirement does not relieve the Contractor of any of its responsibilities in connection with other portions of this provision.

C. Contractor's Response to Construction Warranty and Guaranty Service Requirements

1. Following oral or written notification by the District, respond to construction warranty and guaranty service requirements in accordance with the "Construction Warranty And Guaranty Service Priority List" and the three categories of priorities listed below. Submit a report on any warranty and guaranty item that has been repaired during the warranty and/or guaranty period. Include within the report the cause of the problem, date reported, corrective action taken, and when the repair was completed. If the Contractor does not perform the construction warranty and/or guaranty within the timeframes specified, the District will perform the work and back-charge Contractor.
 - a. First Priority Code 1. Perform onsite inspection to evaluate situation, and determine course of action within 4 hours, initiate work within 6 hours and work continuously to completion or relief.
 - b. Second Priority Code 2. Perform onsite inspection to evaluate situation, and determine course of action within 8 hours, initiate work within 24 hours and work continuously to completion or relief.
 - c. Third Priority Code 3. All other work to be initiated within 3 work days and work continuously to completion or relief.

D. Warranty and/or Guaranty Tags

1. At the time of installation, tag each warranted or guaranteed item with a durable, oil and water resistant tag approved by the District. Attach each tag with a copper wire and spray with a silicone waterproof coating. The date of Substantial Completion and the Contractor Authorized signature must remain blank until the date the District makes a determination of Substantial Completion. Show the following information on the tag:

WARRANTY/GUARANTY INFORMATION

- a. Type of product/material _____
- b. Model number _____
- c. Serial number _____
- d. Contract number _____
- e. Warranty/Guaranty period _____ (months) from _____ to _____
- f. Inspector's signature _____
- g. Construction Contractor _____
 Address _____
 Telephone number _____
- h. Warranty or Guaranty contact _____
 Address _____
 Telephone number _____
- i. Warranty or Guaranty response time priority code _____
- j. WARNING - PROJECT PERSONNEL TO PERFORM ONLY OPERATIONAL
 MAINTENANCE DURING THE WARRANTY PERIOD.

PART 2 - PRODUCTS

Not Used.

PART 3 - EXECUTION

Not Used.

END OF SECTION 01740

SECTION 01770

CONTRACT CLOSEOUT PROCEDURES

PART 1 – GENERAL

1.1 RELATED DOCUMENTS

- A. All Contract Documents shall be reviewed for applicable provisions related to the provisions in this document, and provisions in the General Conditions and other Division 1 Specification Sections shall apply to this Section without limitation.

1.2 RELATED REQUIREMENTS SPECIFIED IN OTHER SECTIONS

- A. Section 01010 – “Summary of Work”
- B. Section 01290 – “Payment Procedures”
- C. Section 01310 – “Construction Scheduling”
- D. Section 01321 – “Photographic Documentation”
- E. Section 01330 – “Submittal Procedures”
- F. Section 01410 – “Regulatory Requirements”
- G. Section 01710 – “Cleaning Requirements”
- H. Section 01722 – “Execution Requirements”
- I. Section 01740 – “Warranties and Guaranties”
- J. Section 01780 – “Project Record Documents”
- K. Divisions 2 through 33 Sections for Contract Closeout Procedure requirements for the work in those Sections

1.3 SUMMARY

- A. This section specifies administrative and procedural requirements for Contract closeout.

1.4 CONTRACT CLOSEOUT SUBMITTALS

- A. Color prints of full size contractor Marked-up Contract Drawings
- B. Color prints of full size contractor marked-up Shop Drawings
- C. Professionally Drafted As-Built Record Drawings
- D. Dated marked-up copies of Conformed Specifications
- E. Marked-up Project Data submittals
- F. Record Samples
- G. Field records for variable and concealed conditions
- H. Project Record Documents (See Section 01780)
- I. Operating and maintenance manuals and data
- J. Warranties and bonds
- K. Warranty Management Plan
- L. Warranty Tags

- M. Spare Parts Data
- N. Service and maintenance contracts

1.5 REMOVAL OF TEMPORARY CONSTRUCTION FACILITIES

- A. Remove temporary materials, equipment, services, and construction prior to Initial Inspection, unless otherwise noted in other Contract Documents for a removal period subsequent to Initial Inspection but prior to Final Completion
- B. Comply with requirements of Section 01500, Temporary Facilities and Controls

1.6 INITIAL PUNCH LIST AND INSPECTION

- A. When Contractor considers Work to be Substantially Complete, submit written notice to District's Representative requesting an Initial Inspection and listing items remaining to be completed or corrected listed by room number and item number (hereinafter "Initial Punch List"). The Contractor and/or its Subcontractors shall proceed promptly to complete and correct items on the list without waiting for District review of the Initial Punch List and inspection of the Work. Failure to include an item on such list does not alter the responsibility of the Contractor to complete all Work in accordance with the Contract Documents.
- B. In a separate section of the Initial Punch List, include all items which cannot be completed or verified prior to Functional Performance Testing of the entire Work in accordance with Specification Section 01810 General Commissioning and other technical Specifications.
 - 1. The Contractor shall provide the expertise, trades subcontractors, manufacturers' representatives, or others as required to work collaboratively with the District and its representatives to identify all remaining items of Work, including required testing and verification, which cannot be completed or verified prior to Functional Performance Testing of the entire Work in accordance with Specification Section 01810 General Commissioning.
 - 2. The Initial Punch List items identified to remain for subsequent completion shall not be significant enough to prevent beneficial occupancy and full use of the Work by the District.
- C. The Contractor shall not submit a notice requesting an Initial Inspection unless the Work is Substantially Complete.
- D. Should District's Representatives determine that Work is not Substantially Complete, the District will promptly notify Contractor in writing, listing Work that must be completed prior to Substantial Completion. Any inspection list that is submitted to the District that does not result in a District determination of Substantial Completion will not be considered an accepted Initial Punch List. If the Work is determined to not be Substantially Complete, Contractor shall complete all Work as directed prior to requesting an additional Initial Inspection by the District to determine Substantial Completion per this Specification Section.
- E. Upon receipt of the Contractor's Initial Punch List, and not before, the District, Architect, and Project Inspector will make an Initial Inspection to determine whether the Work, is Substantially Complete.
 - 1. All fire and life safety items, manufactured units, equipment and systems that require startup must have been started, run, tested, and operational for periods prescribed by the Contract Documents before a request for Initial Inspection is accepted by the District.
 - 2. All items not completed in accordance with the requirements of the Contract Documents whether identified by the Contractor, District, Architect, Project Inspector, and/or other

District Representatives as a result of the Initial Inspection shall be incorporated by the Contractor into a draft Pre-final Punch List which shall be submitted for District review and revision in accordance with Specification Section 01330, Submittal Procedures, prior to a determination by the District of Substantial Completion.

3. If additional Initial Inspections are required to review Initial Punch List items due to incompleteness of the Work by Contractor, Contractor will reimburse District for all costs associated with these inspections if additional service fees by District consultants are required. The costs of such District additional service fees will be deducted from the Contract Price by Change Order.
- F. District may enlist Consultants to assist with the above activities.

1.7 SUBSTANTIAL COMPLETION

- A. When District determines that the Work is Substantially Complete, District will issue a Certificate of Substantial Completion, accompanied by a Pre-Final Punch List of items to be completed or corrected as verified and/or appended by Architect and District.
- B. When the Work, is Substantially Complete, the District will file a Notice of Completion.
 1. Warranties required by the Contract Documents shall commence on the date of Substantial Completion of the Work, unless otherwise provided in the Notice of Completion.
 2. The Notice of Completion shall be submitted to the Contractor for their written acceptance of responsibilities assigned to them in such Notice prior to District filing the Notice of Completion for purposes of initiating the release of Retention for the Work. The District shall withhold from Contractor payment the value of remaining Work, Work to be corrected, incomplete Work, and an amount identified for Pre-Final Punch List Work, and as otherwise identified in Public Contract Code.
- C. The Contractor shall complete the items listed in the Pre-Final Punch List within ten (10) working days of the Certificate of Substantial Completion, with the exception of the items that must remain incomplete pending final commissioning. The Contractor shall execute the Work such that the District can occupy the Work within seven (7) calendar days of the date of the Certificate of Substantial Completion.

1.8 PRE-FINAL INSPECTION

- A. When Contractor considers the items listed in the Pre-Final Punch List to be complete, with the exception of items which cannot be completed or verified prior to Functional Performance Testing of the entire Work in accordance with Specification Section 01810, General Commissioning, and other specification sections, the Contractor shall submit written notice to District's Representative requesting a Pre-Final Inspection.
- B. Upon receipt of the Contractor's request for Pre-Final Inspection, and not before, the District, Architect, Campus Representatives, and Project Inspector will inspect the Work to determine whether the Work identified on the Pre-Final Punch List is complete, with the exception of items which cannot be completed or verified prior to Functional Performance Testing of the entire Work in accordance with Specification Section 01810, General Commissioning and other specification sections.
- C. Prior to the Pre-Final Inspection, perform final cleaning of the Work, as specified in Section 01710.

1. Inspection Requirements.
 - a. Before calling for Pre-Final Inspection, Contractor shall determine that the following Work has been performed:
 - i) The Work has been completed.
 - ii) All life safety items are completed and in working order.
 - iii) All mechanical and electrical Work complete, fixtures in place, connected and ready for tryout and test.
 - iv) Electrical circuits scheduled in panels and disconnect switches labeled.
 - v) Painting and special finishes are complete.
 - vi) Doors complete with hardware, cleaned of protective film, are relieved of sticking or binding and in working order.
 - vii) Tops and bottoms of doors sealed.
 - viii) Floors waxed and polished as specified.
 - ix) Broken glass replaced and glass cleaned.
 - x) Grounds cleared of Contractor's equipment, raked clean of debris, and trash removed from Site.
 - xi) Work cleaned, free of stains, scratches, and other foreign matter, and damaged and broken material have been replaced.
 - xii) Finishes and decorative work shall have marks, dirt and superfluous labels removed.
 - xiii) All other requirements per the Contract Documents.
 - b. Furnish a letter to District stating that a responsible representative of District [give name and position] has been instructed in working characteristics of mechanical and electrical systems and equipment. See Specification Section 01820, Demonstration and Training Procedures.
2. All items not completed in accordance with the requirements of the Contract Documents whether identified by the Contractor, District, Architect, , Project Inspector, and/or other District Representatives as a result of the Pre-Final Inspection, shall be incorporated by the Contractor into a draft Final Punch List which shall be submitted for District review and revision in accordance with Specification Section 01330, Submittal Procedures, prior to a determination by the District that the Contract is ready for administrative close-out.
3. If additional Pre-final Inspections are required to review the Pre-final Punch List items due to incompleteness of the Work by Contractor, Contractor will reimburse District for all costs associated with these inspections if additional services fees by District consultants are required. The costs of such District additional service fees will be deducted from the Contract Price by Change Order.

1.9 FINAL INSPECTION

- A. When Contractor considers the items listed in the Final Punch List to be complete the Contractor shall submit written notice to District's Representative requesting a Final Inspection.
- B. Upon receipt of the Contractor's request for Final Inspection, and not before, the Contractor, District, Architect, and Project Inspector, shall meet to go over the Contract Documents to identify the administrative requirements for contract close-out.

1. The District will prepare a list of requirements remaining for administrative close-out and shall provide the list to the Contractor.
 2. The Contractor shall complete all items on the administrative close-out list within thirty (30) days
- C. Subsequent to the meeting to identify administrative close-out requirements, District, Architect, Campus Representatives, and Project Inspector will inspect the Work to determine whether the Work identified on the Final Punch List is complete.
- D. If additional Final Inspections are required to review the Final Punch List items due to incompleteness of the Work by Contractor, Contractor will reimburse District for all costs associated with these inspections if additional services fees by District consultants are required. The costs of such District additional service fees will be deducted from the Contract Price by Change Order.
- E. When the Architect determines that all final punch list items have been completed, a final Project Inspection Report will be issued. Any open administrative close-out requirements will be identified and a value for withholding from Progress Payment or Final Payment will be assigned.
- F. The Project Inspector (IOR), the District Representative, and the Contractor shall, at all times, be together during all inspections. The Contractor shall give 24-hour notice to the District for such inspections.

1.10 FINAL COMPLETION

- A. Final Completion occurs when all Work meets all requirements of the Contract Documents. When Contractor considers all Work complete and all close-out requirements have been performed, submitted, and accepted, submit written certification to District that:
1. Contractor has inspected Work for compliance with Contract Documents, and all requirements for Final Completion have been met.
 2. Except for Contractor maintenance and Deferred or Seasonal Testing, after Final Completion, all Work has been completed in accordance with Contract Documents and deficiencies listed with any Certificate of Substantial Completion have been corrected. Equipment and systems have been tested in the presence of Architect, Project Inspector (IOR), and District Representatives and are operative.
- B. Should District determine that the Work is incomplete or defective or that administrative requirements have not been completed:
1. District's Representative will promptly so notify Contractor, in writing, listing the incomplete or defective items.
 2. Contractor shall promptly remedy all incomplete and/or defective Work and notify the District when it is ready for re-inspection. District's Representatives will then re-inspect the Work. If deficiencies previously noted are found not to be corrected, Contractor shall pay all District costs for the re-inspection.
 3. When District determines that all Work and requirements are complete under the Contract Documents, District will request Contractor to make a request for Final Payment.

1.11 FINAL ADJUSTMENTS OF ACCOUNTS

- A. Submit a final statement of accounting to District, showing all adjustments to the Contract Price. See also Section 01290 Payment Procedures, Final Payment, et al.

- B. If required, District shall prepare a final Change Order showing an adjustment to the Contract Price that was not included in previous Change Orders.

1.12 FINAL CLEANING

Contractor shall comply with all applicable requirements in Section 01710, Cleaning Requirements.

1.13 PROJECT RECORD DOCUMENTS

Contractor shall comply with all applicable requirements in Section 01780, Project Record Documents.

1.14 PROJECT WARRANTY

- A. Requirements for Contractor's Warranty of completed Work are included in the General Conditions and Section 01740, Warranties and Guaranties
- B. Recording of Final Completion, final certificate for payment, or partial or entire occupancy of the Work by District shall not constitute acceptance of Work not done in accordance with Contract Documents, and do not relieve the Contractor of liability in respect to express warranties, latent defects, or responsibility for faulty materials or workmanship.
- C. District may make repairs to defective Work as set forth in Contract General Conditions.
- D. If, after installation, operation, or use of materials or equipment to be provided under Contract proves to be unsatisfactory to District, District shall have right to operate and use materials or equipment until said materials and equipment can, without damage to District, be taken out of service for correction or replacement. Period of use of defective materials or equipment pending correction or replacement shall in no way decrease guarantee period required for acceptable corrected or replaced items of materials or equipment.
- E. Nothing in this Section shall be construed to limit, relieve, or release Contractor's, subcontractors', and equipment suppliers' liability to District for damages sustained as result of latent defects in equipment caused by negligence of suppliers' agents, employees, or subcontractors. Stated in another manner, warranty contained in the Contract Documents shall not amount to, nor shall it be deemed to be, waiver by District of any rights or remedies (or time limits in which to enforce such rights or remedies) it may have for defective workmanship or defective materials under laws of this state pertaining to acts of negligence.

1.15 WARRANTIES

- A. Execute Contractor's submittals and assemble warranty documents as described in Section 01330 Submittal Procedures and Section 01740 Warranties and Guaranties.

1.16 RETURN OF DISTRICT KEYS, PARKING PERMITS AND IDENTIFICATION

Contract Documents will not be closed out and final payment will not be made until all personnel identification media, vehicle permits, and keys issued to Contractor during prosecution of Work are returned to the District Representative.

1.17 RELEASE OF CLAIMS

- A. Contract Documents will not be closed out and final payment will not be made until Agreement and Release of Any and All Claims is completed and executed by Contractor and District.

1.18 FIRE INSPECTION COORDINATION

- A. Coordinate required fire inspection(s) with governing agencies having jurisdiction and provide sufficient notice to District to permit convenient scheduling (if applicable.)

1.19 BUILDING INSPECTION COORDINATION

- A. Coordinate with District, Architect, and Project Inspector final inspection for the purpose of obtaining any occupancy certificate (if applicable.)

1.20 MAINTENANCE OF DOCUMENTS AND SAMPLES

- A. Store Project Record Documents and samples in the Contractor's field office apart from Contract Documents used for construction.
- B. Do not permit Project Record Documents to be used for construction purposes.
- C. Maintain Project Record Documents in good order, and in a clean, dry, legible condition.
- D. Make documents and samples available for weekly inspections by District, Architect, and Project Inspector.

1.21 RECORD CONSTRUCTION SCHEDULE

- A. Using the latest progress schedule required by Section 01330, submittal Procedures as a reference, submit a Record Baseline CPM Schedule showing the actual dates and duration of all construction activities.
- B. Sign and date the completed Record Baseline CPM Schedule and deliver to the District prior to Final Completion.

1.22 PROJECT RECORD DRAWINGS

- A. Comply with requirements of Section 01780, Project Record Documents.

1.23 PROJECT RECORD SPECIFICATIONS

- A. Comply with requirements of Section 01780 Project Record Documents.

1.24 PRODUCT DATA

- A. Comply with requirements of Section 01780, Project Record Documents.

1.25 OPERATION TESTS

- A. Conduct operational tests as required to demonstrate that all systems have been completed and are in compliance with all requirements.
- B. Furnish a written record of test results using recording type instruments where applicable and as directed.

1.26 OPERATION AND MAINTENANCE MANUALS

- A. Comply with requirements of Section 01780, Project Record Documents.

1.27 MATERIALS, EQUIPMENT AND FINISHES MANUAL

- A. Comply with requirements of Section 01780, Project Record Documents.

1.28 SERVICE AND MAINTENANCE CONTRACTS

- A. Compile, review, and submit specified service and maintenance contracts as specified for warranties and bonds.

1.29 MISCELLANEOUS PROJECT RECORD SUBMITTALS

- A. Refer to other specification sections for miscellaneous record keeping requirements and submittals. Immediately prior to Final Completion, complete miscellaneous records and place them in good order, properly identified and bound or filed, ready for District use and reference. Submit to the Architect for review and approval.
 - 1. Miscellaneous records include, but are not limited to the following:
 - a. Authorized measurements utilizing unit prices
 - b. Records of plant treatment
 - c. Certifications received in lieu of labels on bulk products
 - d. Batch mixing and bulk delivery records
 - e. Testing and qualification of tradespersons
 - f. Installation firm's qualification documents
 - g. Load and performance testing
 - h. Inspections and certifications by governing authorities
 - i. Leakage and water-penetration tests
 - j. Fire resistance and flame spread test results
 - k. Final inspection and correction procedures

1.30 EXTRA MATERIALS

- A. Where specified, provide extra materials in the quantities and manner specified.
- B. Delivery and certification of extra materials shall be prerequisite to Substantial Completion.

PART 2 – PRODUCTS (Not Used)

PART 3 – EXECUTION (Not Used)

END OF SECTION 01770

SECTION 01780

PROJECT RECORD DOCUMENTS

PART 1 – GENERAL

1.1 RELATED DOCUMENTS

- A. All Contract Documents shall be reviewed for applicable provisions related to the provisions in this document, and provisions in the General Conditions and other Division 1 Specification Sections shall apply to this Section without limitation.

1.2 RELATED REQUIREMENTS SPECIFIED IN OTHER SECTIONS

- A. Section 01010 – “Summary of Work”
- B. Section 01250 – “Contract Modification Procedures”
- C. Section 01310 – “Construction Scheduling”
- D. Section 01311 – “Project Management and Coordination”
- E. Section 01330 – “Submittal Procedures”
- F. Section 01740 – “Warranties and Guaranties”
- G. Section 01770 – “Contract Closeout Procedures”
- H. Section 01785 – “Operation and Maintenance Data”
- I. Divisions 2 through 33 Sections for Project Record Documents requirements for the work in those Sections.

1.3 SUMMARY

- A. This section includes administrative and procedural requirements for Project Record Documents, including but not limited to the following:
 - 1. Record Drawings
 - 2. Record Specifications
 - 3. Record Product Data
 - 4. Record MEP & Structural coordination documents
- B. Project Record Documents requirements include, but are not limited to, the following:
 - 1. Marked-up copies of Drawings
 - 2. Marked-up copies of Shop Drawings
 - 3. Newly prepared Drawings
 - 4. Marked-up Product Data submittals
 - 5. Field records, such as photographs, for variable and concealed conditions
 - 6. Record information for Work that is only schematically shown
 - 7. Maintenance forms for equipment
- C. Other Project closeout requirements are included in Section 01770, Contract Closeout Procedures.
- D. Contractor shall maintain Documents and Samples as follows:

1. Contractor shall provide and store all required Project Record Documents and Samples in the Contractor field office apart from Contract Documents used for Construction. These materials shall be available at any time upon request by the District, Architect and Project Inspector.
 2. Project Record Documents shall not to be used for construction purposes.
 3. Maintain Project Record Documents in good order, and in a clean, dry, legible condition.
- E. Contractor shall dedicate one complete full size set of the Contract Drawings and one complete Project Manual for use in recording as-built conditions.
- F. The Contractor shall update the Record Drawings and Annotated Specifications as often as necessary to keep them current, but no less often than weekly.
- G. The Record Drawings and Annotated Specifications shall be kept at the Site and available for review and inspection by the District and the Architect.

1.4 PROJECT RECORD DRAWINGS

- A. Mark-up Procedure: During the construction period, maintain a complete, current set of Contract Drawings and Shop Drawings uploaded and updated within the BLUEBEAM program for Project Record Documents purposes. Label each document "AS-BUILT RECORD". Keep all record documents current.
- B. On completion of the Work and prior to Application for Final Payment, the Contractor will provide one complete set of AS-BUILT RECORD Drawings in AutoCAD (drawing) file format and one complete set in Adobe PDF file format.
- C. A reference by number to a Change Order, CCD, RFI, RFQ, RFP, Field Order or other such document is not acceptable as sufficient record information on any record document. Do not conceal any Work until required record information has been recorded.
1. Contractor shall mark AS-BUILT Record Drawings to indicate the actual installation where the installation varies appreciably from the installation shown originally. Give particular attention to information on concealed elements that would be difficult to identify or measure and record later. Items required to be marked include, but are not limited to:
 - a. Dimensional changes to the Contract Drawings (horizontal and/or vertical)
 - b. Revisions or any modification to details shown on the Contract Drawings
 - c. Depths of various elements of foundations in relation to main floor level or survey datum.
 - d. Horizontal and vertical location of underground utilities and appurtenances referenced to permanent surface improvements.
 - e. Location of internal utilities and appurtenances concealed in construction referenced to visible and accessible features of structure.
 - f. Locations of underground work, points of connection with existing utilities, changes in direction, valves, manholes, catch basins, capped stub outs, invert elevations and similar items
 - g. Final, actual numbering of each electrical circuit
 - h. Revisions to routing of piping and conduits
 - i. Revisions to electrical circuitry, including legends at electrical panels
 - j. Actual equipment locations
 - k. Duct size and routing

1. Changes made by Change Order, CCD, ASI, or any other directive
 - m. Details not on original Contract Drawings
 2. Contractor shall mark completely and accurately AS-BUILT Record Drawing prints of Contract Drawings or Shop Drawings, whichever is the most capable of showing actual physical conditions. Where Shop Drawings are marked, show cross-reference on Contract Drawings location.
 3. Contractor shall mark AS-BUILT Record Drawing sets within BLUEBEAM with red markings; use other colors to distinguish between changes for different categories of the Work at the same location.
 4. Contractor shall mark important additional information that was either shown schematically or omitted from original Drawings.
 5. Contractor shall note Contractor Change Directive numbers; Bid Alternate numbers, if any, Change Order numbers, and similar identification.
 6. Contractor shall be responsible for Mark-up: Where feasible, the individual or entity who obtained Project Record Drawing data, whether the individual or entity is the installer, Subcontractor or similar entity, is required to prepare the mark-up on AS-BUILT Record Drawings.
 - a. Accurately record information in an understandable and legible drawing technique.
 - b. Record data as soon as possible after it has been obtained. In the case of concealed installations, record and check the mark-up prior to concealment.
 - c. The District, Architect, and Project Inspector will review all record documents each month prior to approval of Contractor's Application for Payment.
- D. Contractor shall prepare Record Drawings: Immediately prior to inspection for Certification of Substantial Completion of the Work, review completed marked-up AS-BUILT Record Drawings with District, Project Inspector and Architect to ensure accuracy of information. Once accuracy of information is confirmed, prepare and submit a full electronic set, professionally drafted in AutoCAD format, of as-built Contract Drawings and Shop Drawings.
1. Incorporate changes and additional information previously marked on print sets. Delete, redraw, and/or add details and notations where applicable. Identify and date each Drawing; include the printed designation "AS-BUILT RECORD DRAWING" and the date prepared in a prominent location on each Drawing.
 2. Distribution: Whether or not changes and additional information were recorded, organize the original marked-up set of drawings that were maintained during the construction period within BLUEBEAM into manageable sets. The sets should be labeled with all appropriate identification, including titles, dates and other information on cover sheets and submit to District.
- E. In addition to requirements of this Section, comply with supplemental requirements of other specification sections.
1. Section 01330, Submittal Procedures, requires the preparation of large scale, detailed layout drawings of the Work in Divisions 2 through 33. These layout drawings are not Shop Drawings as defined by Section 01330, but together with Shop Drawings or layout drawings of all other affected Sections are used to check, coordinate and integrate the work of the various Sections.
 2. Contractor shall include required layout drawings as part of the Project Record Documents.

1.5 PROJECT RECORD SPECIFICATION

- A. Contractor shall, during the construction period, maintain one copy of the Project Specifications, including all addenda and all other modifications issued for Project Record Documents purposes.
- B. Contractor shall mark the Project Record specifications to indicate the actual installation where the installation varies substantially from that indicated in Specifications and/or modifications issued. Note related Project Record Drawing information, where applicable. Give particular attention to substitutions, selection of product options, Change Order and Construction Change Directive Work, and information on concealed installation that would be difficult to identify, measure, and record later.
 - 1. In each Specification Section where products, materials or units of equipment are specified or scheduled, mark the Record copy with the proprietary name and model number of the product furnished.
 - 2. Where a specification allows Contractor to elect one of several brands, makes, or types of material or equipment, the annotations shall show which of the allowable items the Contractor has furnished.
 - 3. Record the name of the manufacturer, catalog number, supplier and installer and other information necessary to provide an accurate record of selections made, and coordinate documentation with Project Record Data submittals and maintenance manuals.
 - 4. Note any related Project Record Product Data that was submitted in maintenance manuals instead of Product Data submittals.
 - 5. Upon completion of mark-up, submit Project Record Specifications to District for District's records.

1.6 ADDITIONAL REQUIREMENTS FOR FINAL PROJECT AS-BUILT RECORD DOCUMENTS

- A. Using a distinct Auto CAD layer, clearly indicate at each affected plan, detail, schedule, or other drawing as necessary, a full description of changes made during construction along with the actual location of specified items.
- B. "Cloud" all changes made using a distinct AutoCAD layer.
- C. Submit duplicate electronic files of all drawings in both Auto CAD and Adobe PDF Format.

1.7 PROJECT RECORD PRODUCT DATA

- A. Contractor shall, during the construction period, maintain one copy of each Project Record Product Data submittal for "Project Record Document" purposes.
 - 1. Mark Project Record Product Data to indicate the actual product installation where the installation varies substantially from that indicated in Project Record Product Data submitted. Include any significant changes in the product as delivered and/or installed including any departures from the manufacturer's instructions and/or recommendations for installation.
 - 2. Give particular attention to information on concealed products and installations that cannot be readily identified and recorded later.
 - 3. Note related Change Orders and mark-up of Project Record Drawings, where applicable.
 - 4. Upon completion of mark-up, submit a complete set of Project Record Product Data to District for District's records.

5. Where Project Record Product Data is required as part of maintenance manuals, submit marked-up Project Record Product Data as an insert in the manual, instead of submittal as Project Record Product Data.
 6. Contractor is responsible for mark-up and submittal of Project Record Product Data for its own Work.
- B. Material, Equipment and Finish Data:
1. General: Provide one (1) preliminary review copy and two (2) final copies each of a "Materials, Equipment and Finishes Manual" listing all finish materials, equipment (not provided under Divisions 15 and 16), and finishes installed in the Work.
 2. Submit the preliminary manuals to the Architect a minimum of two (2) weeks prior to Substantial Completion. The preliminary copies must comply with all of the requirements, except the hardboard covers.
 3. Obtain approval of preliminary copies prior to producing final copies.
 4. Deliver final manuals to the Architect prior to final acceptance and final payment. Architect will deliver manuals to the District.
 5. Format of Manual: Provide bound manuals with printed covers and spines. Title "Materials, Equipment and Finishes Manual". Organize data sequentially by Specification Section number on type written 8-1/2 by 11 inch pages. Provide each copy with a typewritten index and tabbed dividers between each separate Section. Mark each tab to indicate contents.
 6. Contents of Manual: Manuals shall contain all information needed to identify, maintain, and replace/duplicate any finish materials, equipment, and finishes installed in the Work for this Project. Where materials and product information has been described and likewise indicated in the "Operation and Maintenance Manuals", cross referencing to where they can be found may be done in lieu of duplication of the information. The information provided shall include, but not be limited to, the following:
 - a. Manufacturer's names and model numbers or product name; supplier's and subcontractor's name, address and phone and fax numbers; and all other pertinent information that might be required for replacement ordering or duplication at a later date.
 - b. For custom-fabricated products that do not have model numbers or names, reference Project shop drawing submittal number and indicate "Fabricated per shop drawing submittal Number _____".
 - c. Proportions of mixes.
 - d. Color formula list for each paint color used.
 - e. For power operated equipment, include complete and legible wiring diagrams together with cuts of repair parts and part numbers listed and instructions relative to care, adjustment and operation of the equipment.
 - f. For moisture protection and weather exposed products, include complete manufacturer's data with instructions on inspection, maintenance and repair.
 - g. Where applicable, provide information on care and maintenance, including manufacturer's recommendations for types of cleaning agents to be used and methods of cleaning. Provide information regarding cleaning agents and methods that could prove detrimental to the product.

- C. Contractor shall arrange Project Record Product Data by Specification Section number, and provide names, addresses, fax numbers, emails addresses, and telephone number of Subcontractors and suppliers. Information to be provided includes:

1. Trade Names
2. Model or type numbers
3. Assembly diagrams
4. Operating instructions
5. Cleaning instructions
6. Maintenance instructions
7. Recommended spare parts
8. Product data

1.8 MISCELLANEOUS PROJECT RECORD SUBMITTALS

- A. Refer to other Specification Sections for miscellaneous record keeping requirements and submittals. Immediately prior to Substantial Completion of the Work, complete all miscellaneous records and place in good order, properly identified, and readied for use and reference. Submit to the District for District's records, in Adobe PDF format. Categories of miscellaneous records include, but are not limited to, the following:

1. Field records on excavations and foundations
2. Field records on underground construction and similar work
3. Survey showing locations and elevations of underground lines
4. Invert elevations of drainage piping
5. Surveys establishing building lines and levels
6. Authorized measurements utilizing unit prices or allowances
7. Records of plant treatment
8. Ambient and substrate condition tests
9. Certifications received in lieu of labels on bulk products
10. Batch mixing and bulk delivery records
11. Testing and qualification of tradespersons
12. Documented qualification of installation firms
13. Load and performance testing
14. Inspections and certifications by governing authorities
15. Leakage and water-penetration tests
16. Fire resistance and flame spread test results
17. Final inspection and correction procedures
18. Final As-Built Construction Schedule
19. Project Record Drawing Mark-ups
20. Other

1.9 INSTALLATION, OPERATION, AND MAINTENANCE MANUALS

- A. Submit Installation, Operation, and Maintenance Manuals in accordance with this Section, Section 01330, Submittal Procedures and Section 01785, Operation and Maintenance Data.

1.10 ELECTRONIC MEDIA FORMAT

- A. Electronic Media Formats: Electronic media formats shall be Adobe PDF and AutoCAD.
 - 1. Adobe PDF files shall have chapter markers and/or bookmarks inserted in place of the equivalent hard copy section tabs. Adobe PDF copy shall include all Project Record Drawings, updated Specification Manuals, tables, charts, drawings, codes and all other matters reflected in hard copies. Adobe PDF files shall be delivered on unique CD-ROMs containing Adobe PDF files of each completed project AS-BUILT Record Drawing and the complete Specifications Manual with all changes made during the Project.
 - 2. In addition to the Adobe PDF file copies, professionally drafted AutoCAD project AS-BUILT Record Drawing DWG files shall be delivered showing both design and as-built information. AutoCAD layouts shall be provided allowing for the reproduction of a complete set of plans as needed.

1.11 DISTRICT'S RECOURSE

- A. If Contractor is not able to provide Project Record Documents in specified formats, District has the right to complete the Work using other resources. Contractor agrees that any and all costs associated with District completion of this Work shall be deducted from the Contract Price by Change Order.

PART 2 – PRODUCTS (Not Used)

PART 3 – EXECUTION

3.1 RECORDING

- A. Post changes and modifications to the Contract Documents as they occur. Do not wait until the end of the Project. District may periodically review Project Record Documents to assure compliance with this requirement.

3.2 SUBMITTALS

- A. At completion of Project, deliver all Project Record Documents to District, per Section 01330 (Submittal Procedures.)
- B. Accompany submittal with transmittal letter containing:
 - 1. Date
 - 2. Project title and number
 - 3. Contractor's name and address
 - 4. Number and title of each Project Record Document
 - 5. Certification that each document as submitted is complete and accurate and signature of Contractor or Contractor's authorized representative.

END OF SECTION 01780

SECTION 024100 - SELECTIVE SITE DEMOLITION

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Work required to demolish, modify, salvage, relocate, and dispose existing structures, pavements, utilities, fencing, and miscellaneous items as required for the construction of the improvements as shown on the Drawings and as specified.
2. Protect all on-site personnel and the public at all areas of demolition.
3. Complete erosion and dust control measures as specified in Section 31 25 13.
4. Protect, support, and maintain adjoining structure, utilities, site work facilities, and miscellaneous items surrounding the demolition work from damage or harmful effects.
5. In accordance with all applicable state and local laws, properly dispose of all hazardous materials as required, obtain EPA generator number from the OWNER, and prepare safety plans.

B. Related Sections. See Related Sections for additional requirements applicable to this Section (typical).

1. Section 01 10 00 – Summary of Work
2. Section 01 51 00 – Temporary Facilities and Controls.

1.2 SELECTIVE SITE DEMOLITION WORK

A. Selective demolition work includes, but is not limited to:

1. General site work: Asphalt and concrete paving and slabs, fencing, storm drainage structures, sidewalks, curbs, gutters, concrete walls and slabs, signs, bollards, utilities, irrigation systems, and landscaping. Demolition of existing site work structures that conflict with the new Work shown on the Drawings.
2. Partial demolition of pavements to allow new work to connect, for conduit penetrations, or otherwise modify existing structures.

1.3 PROTECTION

- A. Maintain free and safe passage for all on-site personnel at all times.
- B. Prevent movement or settlement of structures or surrounding areas to demolition work. Provide bracing, shoring, and debris barriers as required and assume responsibility for the safety and support of affected structures.
- C. Protect existing finishes, equipment, and adjacent work which remains from damage. Cut finish surfaces such as masonry, tile, plaster, wood, gypsum wallboard, concrete, or metals by methods which will terminate or join work in a straight line at an appropriate point of division.
- D. Protect existing vegetation, landscaping and irrigation systems to remain.
- E. Cease operations and notify the ENGINEER immediately if the safety of any structure or utility appears to be endangered. Take additional precautions to properly support such structure(s) and do not resume demolition operations until safety is restored.
- F. Utility locations shown on the Drawings are approximate and may vary from where they are shown. The CONTRACTOR shall contact Underground Service Alert (800-642-2444) and obtain field marking to determine the exact locations of utilities owned by agencies. Record, preserve and protect the field markings.
- G. Blasting and the use of explosives shall not be permitted for any demolition work.
- H. Promptly repair any damage caused to facilities or landscaping by demolition operations as directed by the ENGINEER and at no additional cost to the OWNER. The minimum quality of repair shall be equal to that which existed prior to the start of the CONTRACTOR's work.

1.4 SCHEDULING

- A. Schedule all demolition work to meet the requirements of Section 01 32 16 and minimize disruption to the work of OWNER staff and the public. Exercise due concern and procedures for maintaining plant operation and diligently direct all activities towards maintaining continuous operation of the existing plant and minimizing operation inconvenience.

1.5 CONDITION OF STRUCTURES

- A. Conditions existing at the structures and areas to be demolished at the time of the bid period shall be maintained by the OWNER insofar as practical. Minor variations in small piping, electrical equipment, and miscellaneous materials shall be expected by the CONTRACTOR and this work shall be completed at no additional cost to the OWNER.

1.6 DISPOSAL OF MATERIAL REMOVED BY DEMOLITION WORK

- A. All materials removed by demolition work shall become the property of the CONTRACTOR as soon as actual demolition is initiated. The CONTRACTOR shall remove demolition materials as soon as possible but in no case shall store materials removed by demolition on the project site longer than 5 working days. Demolition materials other than concrete and soil shall be properly contained in covered waste disposal bins. Concrete and soil shall be tightly stockpiled until removal.

1.7 SUBMITTALS

- A. All submittals shall be in accordance with Section 01 32 19.
- B. Submit letters to the ENGINEER showing proposed start and finish dates, times, and detailed descriptions of demolition work a minimum of 14 days in advance of such work. See also Section 01 32 16.

PART 2 PRODUCTS

2.1 PATCHING MATERIALS

- A. See Section 32 13 13 for patching materials.

PART 3 EXECUTION

3.1 SEQUENCE OF WORK

- A. The sequence of demolition and the modifications of existing facilities shall be in accordance with Section 01 32 16.
- B. The CONTRACTOR shall mark all facility components to be demolished in advance of demolition to permit ENGINEER review. The purpose of this requirement is to provide an opportunity to avoid unnecessary or erroneous demolition. The CONTRACTOR remains responsible for demolition as shown and specified in the Contract Documents.
- C. The CONTRACTOR shall schedule a meeting and meet with the ENGINEER at the site of the proposed demolition in advance of the start of demolition. CONTRACTOR shall ensure that subcontractors are present if necessary or requested by the ENGINEER.

3.2 REMOVAL OF STRUCTURES

- A. CONTRACTOR shall remove all components of structures shown or required to be removed.

3.3 REMOVAL AND ABANDONMENT OF BURIED PIPING

- A. Unless specifically noted on the Drawings to be abandoned-in-place, all abandoned buried piping shall be excavated and removed from the site.
- B. Piping specifically noted to be abandoned-in-place shall have each open end filled with concrete grout to a minimum distance of 5 feet or 5 pipe diameters, whichever is greater, unless otherwise specified or shown.

3.4 DEMOLITION OF AND ADJOINING TO ARCHITECTURAL FINISHES

- A. Demolition of finishes where adjoining finishes are to remain shall be carefully completed. Such special finishes include terrazzo, tile, stone, concrete, plaster, wood paneling, metal paneling, and drywall. Cuts shall be even, straight, and parallel to surrounding building lines. Over cuts shall not be permitted unless approved by the ENGINEER.

3.5 CLEAN-UP

- A. The CONTRACTOR shall remove from the site all debris resulting from the demolition operations as it accumulates and at least 2 times a week. Upon completion of the immediate demolition work, the CONTRACTOR shall thoroughly clean each area, including dusting, vacuuming, sweeping, and window cleaning.

END OF SECTION 024100

SECTION 024119

SELECTIVE DEMOLITION

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Demolition and removal of selected portions of building or structure.
2. Demolition and removal of selected site elements.
3. Salvage of existing items to be reused or recycled.

B. Related Requirements:

- | | | |
|-----|----------------|----------------------------------|
| 1. | Section 01010 | Summary |
| 2. | Section 01050 | Field Engineering |
| 3. | Section 01140 | Work Restrictions |
| 4. | Section 01412 | Hazardous Materials |
| 5. | Section 01416 | Special Procedures |
| 6. | Section 01500 | Temporary Facilities Controls |
| 7. | Section 01505 | Construction Waste Management |
| 8. | Section 01572 | Storm Water Pollution Prevention |
| 9. | Section 01710 | Cleaning Requirements |
| 10. | Section 01730 | Cutting and Patching |
| 11. | Section 311000 | Site Clearing |

1.2 DEFINITIONS

- A. Remove: Detach items from existing construction and dispose of them off-site unless indicated to be salvaged or reinstalled.
- B. Remove and Salvage: Detach items from existing construction, in a manner to prevent damage, and deliver to Owner ready for reuse or store.
- C. Remove and Reinstall: Detach items from existing construction, in a manner to prevent damage, prepare for reuse, and reinstall where indicated.
- D. Existing to Remain: Leave existing items that are not to be removed and that are not otherwise indicated to be salvaged or reinstalled.
- E. Dismantle: To remove by disassembling or detaching an item from a surface, using gentle methods and equipment to prevent damage to the item and surfaces; disposing of items unless indicated to be salvaged or reinstalled.

1.3 MATERIALS OWNERSHIP

- A. Unless otherwise indicated, demolition waste becomes property of Contractor.
- B. Historic items, relics, antiques, and similar objects including, but not limited to, cornerstones and their contents, commemorative plaques and tablets, and other items of interest or value to Owner that may be uncovered during demolition remain the property of Owner.
 - 1. Carefully salvage in a manner to prevent damage and promptly return to Owner.

1.4 PREINSTALLATION MEETINGS

- A. Predemolition Conference: Conduct conference at Project site.
 - 1. Inspect and discuss condition of construction to be selectively demolished.
 - 2. Review structural load limitations of existing structure.
 - 3. Review and finalize selective demolition schedule and verify availability of materials, demolition personnel, equipment, and facilities needed to make progress and avoid delays.
 - 4. Review requirements of work performed by other trades that rely on substrates exposed by selective demolition operations.
 - 5. Review areas where existing construction is to remain and requires protection.

1.5 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For refrigerant recovery technician.
- B. Engineering Survey: Submit engineering survey of condition of building.
- C. Proposed Protection Measures: Submit report, including Drawings, that indicates the measures proposed for protecting individuals and property, for environmental protection, for dust control and, for noise control. Indicate proposed locations and construction of barriers.
- D. Schedule of Selective Demolition Activities: Indicate the following:
 - 1. Detailed sequence of selective demolition and removal work, with starting and ending dates for each activity. Ensure Owner's on-site operations are uninterrupted.
 - 2. Interruption of utility services. Indicate how long utility services will be interrupted.
 - 3. Coordination for shutoff, capping, and continuation of utility services.
 - 4. Use of elevator and stairs.
 - 5. Coordination of Owner's continuing occupancy of portions of existing building and of Owner's partial occupancy of completed Work.
- E. Predemolition Photographs or Video: Show existing conditions of adjoining construction, including finish surfaces, that might be misconstrued as damage caused by salvage and demolition operations. Submit Photographic Documentation before Work begins.

SELECTIVE DEMOLITION

024119 - 2

- F. Statement of Refrigerant Recovery: Signed by refrigerant recovery technician responsible for recovering refrigerant, stating that all refrigerant that was present was recovered and that recovery was performed according to EPA regulations. Include name and address of technician and date refrigerant was recovered.
- G. Warranties: Documentation indicating that existing warranties are still in effect after completion of selective demolition.

1.6 CLOSEOUT SUBMITTALS

- A. Inventory: Submit a list of items that have been removed and salvaged.

1.7 QUALITY ASSURANCE

- A. Refrigerant Recovery Technician Qualifications: Certified by an EPA-approved certification program.

1.8 FIELD CONDITIONS

- A. Owner will occupy portions of building immediately adjacent to selective demolition area. Conduct selective demolition so Owner's operations will not be disrupted.
- B. Conditions existing at time of inspection for bidding purpose will be maintained by Owner as far as practical.
- C. Notify Architect of discrepancies between existing conditions and Drawings before proceeding with selective demolition.
- D. Storage or sale of removed items or materials on-site is not permitted.
- E. Utility Service: Maintain existing utilities indicated to remain in service and protect them against damage during selective demolition operations.
 - 1. Maintain fire-protection facilities in service during selective demolition operations.

1.9 WARRANTY

- A. Existing Warranties: Remove, replace, patch, and repair materials and surfaces cut or damaged during selective demolition, by methods and with materials and using approved contractors so as not to void existing warranties. Notify warrantor before proceeding. Existing warranties include the following:
 - 1. Roof system.
- B. Notify warrantor on completion of selective demolition and obtain documentation verifying that existing system has been inspected and warranty remains in effect. Submit documentation at Project closeout.

SELECTIVE DEMOLITION

024119 - 3

1.10 COORDINATION

- A. Arrange selective demolition schedule so as not to interfere with Owner's operations.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Regulatory Requirements: Comply with governing EPA notification regulations before beginning selective demolition. Comply with hauling and disposal regulations of authorities having jurisdiction.
- B. Standards: Comply with ANSI/ASSP A10.6 and NFPA 241.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Verify that utilities have been disconnected and capped before starting selective demolition operations.
- B. Review Project Record Documents of existing construction or other existing condition and hazardous material information provided by Owner. Owner does not guarantee that existing conditions are same as those indicated in Project Record Documents.
- C. Engage a professional engineer to perform an engineering survey of condition of building to determine whether removing any element might result in structural deficiency or unplanned collapse of any portion of structure or adjacent structures during selective building demolition operations.
 - 1. Perform surveys as the Work progresses to detect hazards resulting from selective demolition activities.
- D. Steel Tendons: Locate tensioned steel tendons and include recommendations for de-tensioning.
- E. Verify that hazardous materials have been remediated before proceeding with building demolition operations.
- F. Survey of Existing Conditions: Record existing conditions by use of preconstruction photographs or video.
 - 1. Inventory and record the condition of items to be removed and salvaged.
 - 2. Before selective demolition or removal of existing building elements that will be reproduced or duplicated in final Work, make permanent record of measurements, materials, and construction details required to make exact reproduction.

SELECTIVE DEMOLITION

024119 - 4

3.2 PREPARATION

- A. Refrigerant: Before starting demolition, remove refrigerant from mechanical equipment according to 40 CFR 82 and regulations of authorities having jurisdiction.

3.3 UTILITY SERVICES AND MECHANICAL/ELECTRICAL SYSTEMS

- A. Existing Services/Systems to Remain: Maintain services/systems indicated to remain and protect them against damage.
- B. Existing Services/Systems to Be Removed, Relocated, or Abandoned: Locate, identify, disconnect, and seal or cap off utility services and mechanical/electrical systems serving areas to be selectively demolished.
 - 1. Owner will arrange to shut off indicated services/systems when requested by Contractor.
 - 2. Arrange to shut off utilities with utility companies.
 - 3. If services/systems are required to be removed, relocated, or abandoned, provide temporary services/systems that bypass area of selective demolition and that maintain continuity of services/systems to other parts of building.
 - 4. Disconnect, demolish, and remove fire-suppression systems, plumbing, and HVAC systems, equipment, and components indicated on Drawings to be removed.
 - a. Piping to Be Removed: Remove portion of piping indicated to be removed and cap or plug remaining piping with same or compatible piping material.
 - b. Piping to Be Abandoned in Place: Drain piping and cap or plug piping with same or compatible piping material and leave in place.
 - c. Equipment to Be Removed: Disconnect and cap services and remove equipment.
 - d. Equipment to Be Removed and Reinstalled: Disconnect and cap services and remove, clean, and store equipment; when appropriate, reinstall, reconnect, and make equipment operational.
 - e. Equipment to Be Removed and Salvaged: Disconnect and cap services and remove equipment and deliver to Owner.
 - f. Ducts to Be Removed: Remove portion of ducts indicated to be removed and plug remaining ducts with same or compatible ductwork material.
 - g. Ducts to Be Abandoned in Place: Cap or plug ducts with same or compatible ductwork material and leave in place.

3.4 PROTECTION

- A. Temporary Protection: Provide temporary barricades and other protection required to prevent injury to people and damage to adjacent buildings and facilities to remain.
 - 1. Provide protection to ensure safe passage of people around selective demolition area and to and from occupied portions of building.
 - 2. Provide temporary weather protection, during interval between selective demolition of existing construction on exterior surfaces and new construction, to prevent water leakage and damage to structure and interior areas.

SELECTIVE DEMOLITION

024119 - 5

3. Protect walls, ceilings, floors, and other existing finish work that are to remain or that are exposed during selective demolition operations.
 4. Cover and protect furniture, furnishings, and equipment that have not been removed.
 5. Comply with requirements for temporary enclosures, dust control, heating, and cooling specified in Section 01500 "Temporary Facilities and Controls."
- B. Temporary Shoring: Design, provide, and maintain shoring, bracing, and structural supports as required to preserve stability and prevent movement, settlement, or collapse of construction and finishes to remain, and to prevent unexpected or uncontrolled movement or collapse of construction being demolished.
1. Strengthen or add new supports when required during progress of selective demolition.
- C. Remove temporary barricades and protections where hazards no longer exist.

3.5 SELECTIVE DEMOLITION, GENERAL

- A. General: Demolish and remove existing construction only to the extent required by new construction and as indicated. Use methods required to complete the Work within limitations of governing regulations and as follows:
1. Proceed with selective demolition systematically, from higher to lower level. Complete selective demolition operations above each floor or tier before disturbing supporting members on the next lower level.
 2. Neatly cut openings and holes plumb, square, and true to dimensions required. Use cutting methods least likely to damage construction to remain or adjoining construction. Use hand tools or small power tools designed for sawing or grinding, not hammering, and chopping. Temporarily cover openings to remain.
 3. Cut or drill from the exposed or finished side into concealed surfaces to avoid marring existing finished surfaces.
 4. Do not use cutting torches until work area is cleared of flammable materials. At concealed spaces, such as duct and pipe interiors, verify condition and contents of hidden space before starting flame-cutting operations. Maintain portable fire-suppression devices during flame-cutting operations.
 5. Maintain fire watch during and for at least two hours after flame-cutting operations.
 6. Maintain adequate ventilation when using cutting torches.
 7. Remove decayed, vermin-infested, or otherwise dangerous or unsuitable materials and promptly dispose of off-site.
 8. Remove structural framing members and lower to ground by method suitable to avoid free fall and to prevent ground impact or dust generation.
 9. Locate selective demolition equipment and remove debris and materials so as not to impose excessive loads on supporting walls, floors, or framing.
 10. Dispose of demolished items and materials promptly. Comply with requirements in Section 01505 "Construction Waste Management."

- B. Site Access and Temporary Controls: Conduct selective demolition and debris-removal operations to ensure minimum interference with roads, streets, walks, walkways, and other adjacent occupied and used facilities.
- C. Removed and Salvaged Items:
 - 1. Clean salvaged items.
 - 2. Pack or crate items after cleaning. Identify contents of containers.
 - 3. Store items in a secure area until delivery to Owner.
 - 4. Transport items to Owner's storage area designated by Owner
 - 5. Protect items from damage during transport and storage.
 - 6. Items to be salvaged and coordinated with Facilities/Grounds include but are not limited to the following:
 - a. Restroom Grab Bars
 - b. Door Locksets
 - c. Door Closers
 - d. Von Duprin Door Hardware
- D. Removed and Reinstalled Items:
 - 1. Clean and repair items to functional condition adequate for intended reuse.
 - 2. Pack or crate items after cleaning and repairing. Identify contents of containers.
 - 3. Protect items from damage during transport and storage.
 - 4. Reinstall items in locations indicated. Comply with installation requirements for new materials and equipment. Provide connections, supports, and miscellaneous materials necessary to make item functional for use indicated.
- E. Existing Items to Remain: Protect construction indicated to remain against damage and soiling during selective demolition. When permitted by Architect, items may be removed to a suitable, protected storage location during selective demolition and cleaned and reinstalled in their original locations after selective demolition operations are complete.

3.6 SELECTIVE DEMOLITION PROCEDURES FOR SPECIFIC MATERIALS

- A. Concrete: Demolish in small sections. Using power-driven saw, cut concrete to a depth of at least 3/4 inch at junctures with construction to remain. Dislodge concrete from reinforcement at perimeter of areas being demolished, cut reinforcement, and then remove remainder of concrete. Neatly trim openings to dimensions indicated.
- B. Concrete: Demolish in sections. Cut concrete full depth at junctures with construction to remain and at regular intervals using power-driven saw, and then remove concrete between saw cuts.
- C. Masonry: Demolish in small sections. Cut masonry at junctures with construction to remain, using power-driven saw, and then remove masonry between saw cuts.

- D. Concrete Slabs-on-Grade: Saw-cut perimeter of area to be demolished, and then break up and remove.
- E. Resilient Floor Coverings: Remove floor coverings and adhesive according to recommendations in RFCI's "Recommended Work Practices for the Removal of Resilient Floor Coverings." Do not use methods requiring solvent-based adhesive strippers.
- F. Roofing: Remove no more existing roofing than what can be covered in one day by new roofing and so that building interior remains watertight and weathertight.

3.7 DISPOSAL OF DEMOLISHED MATERIALS

- A. Remove demolition waste materials from Project site and recycle or dispose of them according to Section 01505 "Construction Waste Management and Disposal."
 - 1. Do not allow demolished materials to accumulate on-site.
 - 2. Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and areas.
 - 3. Remove debris from elevated portions of building by chute, hoist, or other device that will convey debris to grade level in a controlled descent.
 - 4. Comply with requirements specified in Section 01505 "Construction Waste Management and Disposal."
- B. Burning: Do not burn demolished materials.

3.8 CLEANING

- A. Clean adjacent structures and improvements of dust, dirt, and debris caused by selective demolition operations. Return adjacent areas to condition existing before selective demolition operations began.

3.9 SELECTIVE DEMOLITION SCHEDULE

- A. Remove: As indicated on the Demolition plans
- B. Remove and Salvage: As indicated on the Demo Plans and salvage designated by the Owner.
- C. Remove and Reinstall: As indicated on the Demo Plans and reinstall as designated by the Owner.
- D. Existing to Remain: As shown on the Drawings.
- E. Dismantle: As indicated on the Drawings.

END OF SECTION 024119

SECTION 061053

MISCELLANEOUS ROUGH CARPENTRY

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section Includes:
 - 1. Framing with dimension lumber.
 - 2. Rooftop equipment bases and support curbs.
 - 3. Wood blocking
 - 4. Wood furring
 - 5. Wood sleepers
 - 6. Utility shelving
 - 7. Plywood backing panels

1.3 DEFINITIONS

- A. Boards or Strips: Lumber of less than 2 inches nominal size in least dimension.
- B. Dimension Lumber: Lumber of 2 inches nominal or greater size but less than 5 inches nominal size in least dimension.

1.4 ACTION SUBMITTALS

- A. Product Data: For each type of process and factory-fabricated product. Indicate component materials and dimensions and include construction and application details.
 - 1. Include data for wood-preservative treatment from chemical treatment manufacturer and certification by treating plant that treated materials comply with requirements. Indicate type of preservative used and net amount of preservative retained.
 - 2. Include data for fire-retardant treatment from chemical treatment manufacturer and certification by treating plant that treated materials comply with requirements. Include physical properties of treated materials based on testing by a qualified independent testing agency.

3. For fire-retardant treatments, include physical properties of treated lumber both before and after exposure to elevated temperatures, based on testing by a qualified independent testing agency according to ASTM D5664.
4. For products receiving a waterborne treatment, include statement that moisture content of treated materials was reduced to levels specified before shipment to Project site.

1.5 INFORMATIONAL SUBMITTALS

A. Evaluation Reports: For the following, from ICC-ES:

1. Preservative-treated wood.
2. Fire-retardant-treated wood.
3. Power-driven fasteners.
4. Post-installed anchors.
5. Metal framing anchors.

1.6 QUALITY ASSURANCE

- A. Testing Agency Qualifications: For testing agency providing classification marking for fire-retardant-treated material, an inspection agency acceptable to authorities having jurisdiction that periodically performs inspections to verify that the material bearing the classification marking is representative of the material tested.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Stack lumber flat with spacers beneath and between each bundle to provide air circulation. Protect lumber from weather by covering with waterproof sheeting, securely anchored. Provide for air circulation around stacks and under coverings.

PART 2 - PRODUCTS

2.1 WOOD PRODUCTS, GENERAL

- A. Lumber: DOC PS 20 and applicable rules of grading agencies indicated. If no grading agency is indicated, provide lumber that complies with the applicable rules of any rules-writing agency certified by the ALSC Board of Review. Provide lumber graded by an agency certified by the ALSC Board of Review to inspect and grade lumber under the rules indicated.
1. Factory mark each piece of lumber with grade stamp of grading agency.
 2. Dress lumber, S4S, unless otherwise indicated.
- B. Maximum Moisture Content of Lumber: 15 percent for 2-inch nominal thickness or less, 19 percent for more than 2-inch nominal thickness unless otherwise indicated.

2.2 WOOD-PRESERVATIVE-TREATED MATERIALS

- A. Preservative Treatment by Pressure Process: AWP A U1; Use Category UC2 for interior construction not in contact with ground, Use Category UC3b for exterior construction not in contact with ground, and Use Category UC4a for items in contact with ground.
 - 1. Preservative Chemicals: Acceptable to authorities having jurisdiction and containing no arsenic or chromium.
- B. Kiln-dry lumber after treatment to a maximum moisture content of 19 percent. Do not use material that is warped or does not comply with requirements for untreated material.
- C. Mark lumber with treatment quality mark of an inspection agency approved by the ALSC Board of Review.
- D. Application: Treat items indicated on Drawings, and the following:
 - 1. Wood cants, equipment support bases, blocking, stripping, and similar members in connection with roofing, flashing, vapor barriers, and waterproofing.
 - 2. Wood sills, sleepers, blocking, and similar concealed members in contact with masonry or concrete.
 - 3. Wood floor plates that are installed over concrete slabs-on-grade.

2.3 FIRE-RETARDANT-TREATED MATERIALS

- A. General: Where fire-retardant-treated materials are indicated, materials shall comply with requirements in this article, that are acceptable to authorities having jurisdiction, and with fire-test-response characteristics specified as determined by testing identical products per test method indicated by a qualified testing agency.
- B. Fire-Retardant-Treated Lumber and Plywood by Pressure Process: Products with a flame-spread index of 25 or less when tested according to ASTM E84, and with no evidence of significant progressive combustion when the test is extended an additional 20 minutes, and with the flame front not extending more than 10.5 feet beyond the centerline of the burners at any time during the test.
 - 1. Treatment shall not promote corrosion of metal fasteners.
 - 2. Interior Type A: Treated materials shall have a moisture content of 28 percent or less when tested according to ASTM D3201 at 92 percent relative humidity. Use where exterior type is not indicated.
- C. Kiln-dry lumber after treatment to a maximum moisture content of 19 percent. Kiln-dry plywood after treatment to a maximum moisture content of 15 percent.
- D. Identify fire-retardant-treated wood with appropriate classification marking of qualified testing agency.
- E. Application: Treat items indicated on Drawings, and the following:

1. Concealed blocking where indicated on drawings.
2. Wood cants
3. Plywood backing panels.

2.4 MISCELLANEOUS LUMBER

- A. General: Provide miscellaneous lumber indicated and lumber for support or attachment of other construction, including but not limited to the following:
 1. Blocking.
- B. Dimension Lumber Items: Construction or No. 2 grade lumber of any species.
- C. Concealed Boards: 15 percent maximum moisture content of any species.
- D. For blocking not used for attachment of other construction, Utility, Stud, or No. 3 grade lumber of any species may be used provided that it is cut and selected to eliminate defects that will interfere with its attachment and purpose.
- E. For blocking and nailers used for attachment of other construction, select and cut lumber to eliminate knots and other defects that will interfere with attachment of other work.

2.5 PLYWOOD BACKING PANELS

- A. Equipment Backing Panels: Plywood, DOC PS 1, Exterior, A-C, fire-retardant treated, in thickness indicated or, if not indicated, not less than 1/2-inch nominal thickness.

2.6 FASTENERS

- A. General: Provide fasteners of size and type indicated that comply with requirements specified in this article for material and manufacture.
 1. Where carpentry is exposed to weather, in ground contact, pressure-preservative treated, fire-retardant-treated, or in area of high relative humidity, provide fasteners with hot-dip zinc coating complying with ASTM A153/A153M.
- B. Screws for Fastening to Metal Framing: ASTM C1002 or ASTM C954 as appropriate, length as recommended by screw manufacturer for material being fastened.
- C. Power-Driven Fasteners: Fastener systems with an evaluation report acceptable to authorities having jurisdiction, based on ICC-ES AC70.
- D. Post-Installed Anchors: Fastener systems with an evaluation report acceptable to authorities having jurisdiction, based on ICC-ES AC58 or ICC-ES AC308 as appropriate for the substrate.

1. Material: Stainless steel with bolts and nuts complying with ASTM F593 and ASTM F594, Alloy Group 1 or 2.

2.7 MISCELLANEOUS MATERIALS

- A. Flexible Flashing: Composite, self-adhesive, flashing product consisting of a pliable, butyl rubber or rubberized-asphalt compound, bonded to a high-density polyethylene film, aluminum foil, or spunbonded polyolefin to produce an overall thickness of not less than 0.025 inch.

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

- A. Set carpentry to required levels and lines, with members plumb, true to line, cut, and fitted. Fit carpentry accurately to other construction. Locate nailers, blocking, and similar supports to comply with requirements for attaching other construction.
- B. Install plywood backing panels by fastening to studs; coordinate locations with utilities requiring backing panels. Install fire-retardant-treated plywood backing panels with classification marking of testing agency exposed to view.
- C. Do not splice structural members between supports unless otherwise indicated.
- D. Provide blocking and framing as indicated and as required to support facing materials, fixtures, specialty items, and trim.
- E. Sort and select lumber so that natural characteristics do not interfere with installation or with fastening other materials to lumber. Do not use materials with defects that interfere with function of member or pieces that are too small to use with minimum number of joints or optimum joint arrangement.
- F. Comply with AWWA M4 for applying field treatment to cut surfaces of preservative-treated lumber.
 1. Use inorganic boron for items that are continuously protected from liquid water.
 2. Use copper naphthenate for items not continuously protected from liquid water.
- G. Where wood-preservative-treated lumber is installed adjacent to metal decking, install continuous flexible flashing separator between wood and metal decking.
- H. Securely attach carpentry work to substrate by anchoring and fastening as indicated, complying with the following:
 1. Table 2304.9.1, "Fastening Schedule," in ICC's International Building Code.

2. Table R602.3(1), "Fastener Schedule for Structural Members," and Table R602.3(2), "Alternate Attachments," in ICC's International Residential Code for One- and Two-Family Dwellings.
 3. ICC-ES evaluation report for fastener.
- I. Select fasteners of size that will not fully penetrate members where opposite side will be exposed to view or will receive finish materials. Make tight connections between members. Install fasteners without splitting wood. Drive nails snug but do not countersink nail heads unless otherwise indicated.

3.2 INSTALLATION OF WOOD BLOCKING AND NAILER

- A. Install where indicated and where required for attaching other work. Form to shapes indicated and cut as required for true line and level of attached work. Coordinate locations with other work involved.
- B. Attach items to substrates to support applied loading. Recess bolts and nuts flush with surfaces unless otherwise indicated.

3.3 PROTECTION

- A. Protect wood that has been treated with inorganic boron (SBX) from weather. If, despite protection, inorganic boron-treated wood becomes wet, apply EPA-registered borate treatment. Apply borate solution by spraying to comply with EPA-registered label.
- B. Protect miscellaneous rough carpentry from weather. If, despite protection, miscellaneous rough carpentry becomes wet, apply EPA-registered borate treatment. Apply borate solution by spraying to comply with EPA-registered label.

END OF SECTION 061053

SECTION 064116

PLASTIC-LAMINATE-CLAD ARCHITECTURAL CABINETS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section Includes:
 - 1. Plastic-laminate-clad architectural cabinets.
 - 2. Cabinet hardware and accessories.
 - 3. Wood furring, blocking, shims, and hanging strips for installing plastic-laminate-clad architectural cabinets that are not concealed within other construction.
- B. Related Requirements:
 - 1. Section 061000 Rough Carpentry
 - 2. Section 064119 Solid Phenolic Architectural Cabinets
 - 3. Section 123661.16 Solid Surfacing Countertops.

1.3 COORDINATION

- A. Coordinate sizes and locations of framing, blocking, furring, reinforcements, and other related units of Work specified in other Sections to support loads imposed by installed and fully loaded cabinets.

1.4 PREINSTALLATION MEETINGS

- A. Preinstallation Conference: Conduct conference at Project site.

1.5 ACTION SUBMITTALS

- A. Product Data: For each type of product.
 - 1. Include data for fire-retardant treatment from chemical-treatment manufacturer and certification by treating plant that treated materials comply with requirements.

B. Shop Drawings:

1. Include plans, elevations, sections, and attachment details.
2. Show large-scale details.
3. Show locations and sizes of furring, blocking, and hanging strips, including concealed blocking and reinforcement specified in other Sections.
4. Show locations and sizes of cutouts and holes for items installed in plastic-laminate architectural cabinets.
5. Apply WI Certified Compliance Program label to Shop Drawings.

C. Samples: For each exposed product and for each color and texture specified, in manufacturer's or manufacturer's standard size.

D. Samples for Initial Selection: For each type of exposed finish.

1.6 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For manufacturer and Installer.
- B. Product Certificates: For each type of product.
- C. Field quality-control reports.

1.7 CLOSEOUT SUBMITTALS

- A. Quality Standard Compliance Certificates: WI Certified Compliance Program certificates.

1.8 QUALITY ASSURANCE

- A. Manufacturer's Qualifications: Employs skilled workers who custom fabricate products similar to those required for this Project and whose products have a record of successful in-service performance.
 1. Manufacturer's Certification: Licensed participant in WI's Certified Compliance Program.
- B. Installer Qualifications: Manufacturer of products.

1.9 DELIVERY, STORAGE, AND HANDLING

- A. Do not deliver cabinets until painting and similar finish operations that might damage architectural cabinets have been completed in installation areas. Store cabinets in installation areas or in areas where environmental conditions comply with requirements specified in "Field Conditions" Article.

1.10 FIELD CONDITIONS

- A. Environmental Limitations without Humidity Control: Do not deliver or install cabinets until building is enclosed, wet-work is complete, and HVAC system is operating and maintaining temperature and relative humidity at levels planned for building occupants during the remainder of the construction period.
- B. Field Measurements: Where cabinets are indicated to fit to other construction, verify dimensions of other construction by field measurements before fabrication, and indicate measurements on Shop Drawings. Coordinate fabrication schedule with construction progress to avoid delaying the Work.
 - 1. Locate concealed framing, blocking, and reinforcements that support cabinets by field measurements before being enclosed/concealed by construction, and indicate measurements on Shop Drawings.

PART 2 - PRODUCTS

2.1 REGULATORY REQUIREMENTS

- A. Wall hung cabinets and floor supported cabinets over 5 feet high shall be braced and anchored in accordance with the California Building Code (CBC) 2019, Table 1607A.1.
- B. Requirements for Physically Disabled: Provide products meeting requirements of CBC 2019, Chapter 11B and 2010 ADA Accessibility Standards
 - 1. Operable parts for all accessible casework shall comply with CBC Section 11B-309 Operable Parts.
 - 2. Pull hardware shall be U-shaped wire pulls or equally accessible at all accessible casework; CBC 11B-811.4 Operable Parts.

2.2 PLASTIC-LAMINATE-CLAD ARCHITECTURAL CABINETS

- A. Quality Standard: Unless otherwise indicated, comply with the Architectural Woodwork Standards for grades of cabinets indicated for construction, finishes, installation, and other requirements.
 - 1. Provide labels and certificates from WI certification program indicating that woodwork and installation complies with requirements of grades specified.
 - 2. The Contract Documents contain requirements that are more stringent than the referenced quality standard. Comply with requirements of Contract Documents in addition to those of the referenced quality standard.
- B. Architectural Woodwork Standards Grade: Custom.
- C. Type of Construction: Frameless.

PLASTIC-LAMINATE-CLAD ARCHITECTURAL CABINETS

064116- 3

- D. Door and Drawer-Front Style: Flush overlay.
 - 1. Reveal Dimension: As indicated on the drawings.
- E. High-Pressure Decorative Laminate: NEMA LD 3, grades as indicated or if not indicated, as required by quality standard.
 - 1. Basis-of-Design Product PL-01, PL02: As indicated on Sheet A12.00 Finish Schedule.
- F. Laminate Cladding for Exposed Surfaces:
 - 1. Horizontal Surfaces: Grade HGS.
 - 2. Postformed Surfaces: Grade HGP.
 - 3. Vertical Surfaces: Grade VGS.
 - 4. Edges: Grade HGS.
- G. Materials for Semi exposed Surfaces:
 - 1. Surfaces Other Than Drawer Bodies: High-pressure decorative laminate, NEMA LD 3, Grade VGS.
 - a. Edges of Plastic-Laminate Shelves: PVC tape, 0.018-inch minimum thickness, matching laminate in color, pattern, and finish.
 - b. For semi exposed backs of panels with exposed plastic-laminate surfaces, provide surface of high-pressure decorative laminate, NEMA LD 3, Grade VGS.
 - 2. Drawer Sides and Backs: Solid-hardwood lumber.
 - 3. Drawer Bottoms: Hardwood plywood.
- H. Dust Panels: 1/4-inch plywood or tempered hardboard above compartments and drawers unless located directly under tops.
- I. Concealed Backs of Panels with Exposed Plastic-Laminate Surfaces: High-pressure decorative laminate, NEMA LD 3, Grade BKL.
- J. Drawer Construction: Fabricate with exposed fronts fastened to subfront with mounting screws from interior of body.
 - 1. Join subfronts, backs, and sides with glued rabbeted joints supplemented by mechanical fasteners or glued dovetail joints.
- K. Colors, Patterns, and Finishes: Provide materials and products that result in colors and textures of exposed laminate surfaces complying with the following requirements:
 - 1. As indicated on Sheet A12.00 Finish Schedule, or approved equal.

2.3 WOOD MATERIALS

- A. Wood Products: Provide materials that comply with requirements of referenced quality standard for each type of architectural cabinet and quality grade specified unless otherwise indicated.
 - 1. Wood Moisture Content: 5 to 10 percent.
- B. Composite Wood Products: Provide materials that comply with requirements of referenced quality standard for each type of architectural cabinet and quality grade specified unless otherwise indicated.
 - 1. Medium-Density Fiberboard (MDF): ANSI A208.2, Grade 130.
 - a. Locations: Typical unless otherwise noted.
 - 2. Softwood Plywood: DOC PS 1.
 - a. Locations: Wet areas, Refer to Drawings for location of cabinets with sinks.

2.4 CABINET HARDWARE AND ACCESSORIES

- A. Frameless Concealed Hinges (European Type): ANSI/BHMA A156.9, B01602, 165 degrees of opening, self-closing.
 - 1. Basis-of-Design Product: Subject to compliance with requirements, provide Rockford Process Control Institutional Hinge, or Blum European Design Hinge.
- B. Wire Pulls: Back mounted, solid metal, 4 inches long, 5/16 inch in diameter.
- C. Shelf Rests: ANSI/BHMA A156.9, B04013; metal.
- D. Drawer Slides: ANSI/BHMA A156.9.
 - 1. Basis-of-Design Product: Subject to compliance with requirements, provide Accuride Glides, or approved equal.
 - 2. Grade 1 and Grade 2: Side mounted.
 - a. Type: Full extension.
 - b. Material: Zinc-plated steel with polymer rollers.
 - 3. Grade 1HD-100 and Grade 1HD-200: Side mounted; full-extension type; zinc-plated-steel ball-bearing slides.
 - 4. For drawers not more than 3 inches high and not more than 24 inches wide, provide Grade 1.
 - 5. For drawers more than 3 inches high, but not more than 6 inches high and not more than 24 inches wide, provide Grade 1HD-100.
 - 6. For drawers more than 6 inches high or more than 24 inches wide, provide Grade 1HD-200.
 - 7. For computer keyboard shelves, provide Grade 1HD-100.

PLASTIC-LAMINATE-CLAD ARCHITECTURAL CABINETS

064116- 5

8. For trash bins not more than 20 inches high and 16 inches wide, provide Grade 1HD-200.
- E. Door Locks: ANSI/BHMA A156.11, E07121.
 1. Location: Typical all cabinets.
- F. Drawer Locks: ANSI/BHMA A156.11, E07041.
 1. Location: Typical all cabinets.
- G. Door and Drawer Silencers: ANSI/BHMA A156.16, L03011.
- H. Exposed Hardware Finishes: For exposed hardware, provide finish that complies with ANSI/BHMA A156.18 for ANSI/BHMA finish number indicated.
 1. Satin Stainless Steel: ANSI/BHMA 630.
- I. For concealed hardware, provide manufacturer's standard finish that complies with product class requirements in ANSI/BHMA A156.9.

2.5 MISCELLANEOUS MATERIALS

- A. Furring, Blocking, Shims, and Hanging Strips: Softwood or hardwood lumber, kiln-dried to less than 15 percent moisture content.
- B. Anchors: Select material, type, size, and finish required for each substrate for secure anchorage. Provide metal expansion sleeves or expansion bolts for post-installed anchors. Use nonferrous-metal or hot-dip galvanized anchors and inserts at inside face of exterior walls and at floors.

2.6 FABRICATION

- A. Fabricate architectural cabinets to dimensions, profiles, and details indicated.
- B. Complete fabrication, including assembly and hardware application, to maximum extent possible before shipment to Project site. Disassemble components only as necessary for shipment and installation. Where necessary for fitting at site, provide ample allowance for scribing, trimming, and fitting.
 1. Notify Architect seven days in advance of the dates and times architectural cabinet fabrication will be complete.
 2. Trial fit assemblies at manufacturer's shop that cannot be shipped completely assembled. Install dowels, screws, bolted connectors, and other fastening devices that can be removed after trial fitting. Verify that various parts fit as intended and check measurements of assemblies against field measurements before disassembling for shipment.
- C. Shop-cut openings to maximum extent possible to receive hardware, appliances, electrical work, and similar items. Locate openings accurately and use templates or roughing-in diagrams to

produce accurately sized and shaped openings. Sand edges of cutouts to remove splinters and burrs.

PART 3 - EXECUTION

3.1 PREPARATION

- A. Before installation, condition cabinets to humidity conditions in installation areas for not less than 72 hours.

3.2 INSTALLATION

- A. Architectural Woodwork Standards Grade: Install cabinets to comply with quality standard grade of item to be installed.
- B. Assemble cabinets and complete fabrication at Project site to extent that it was not completed in the shop.
- C. Anchor cabinets to anchors or blocking built in or directly attached to substrates. Secure with wafer-head cabinet installation screws.
- D. Install cabinets level, plumb, and true in line to a tolerance of 1/8 inch in 96 inches using concealed shims.
 - 1. Scribe and cut cabinets to fit adjoining work, refinish cut surfaces, and repair damaged finish at cuts.
 - 2. Install cabinets without distortion so doors and drawers fit openings and are accurately aligned. Adjust hardware to center doors and drawers in openings and to provide unencumbered operation. Complete installation of hardware and accessory items as indicated.

3.3 FIELD QUALITY CONTROL

- A. Inspections: Provide inspection of installed Work through WI's Certified Compliance Program certifying that woodwork, including installation, complies with requirements of the Architectural Woodwork Standards for the specified grade.
 - 1. Inspection entity shall prepare and submit report of inspection.

3.4 ADJUSTING AND CLEANING

- A. Repair damaged and defective cabinets, where possible, to eliminate functional and visual defects. Where not possible to repair, replace architectural cabinets. Adjust joinery for uniform appearance.

- B. Clean, lubricate, and adjust hardware.
- C. Clean cabinets on exposed and semiexposed surfaces.

END OF SECTION 064116

SECTION 064119

SOLID PHENOLIC ARCHITECTURAL CABINETS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section Includes:
1. Solid phenolic architectural cabinets.
 2. Cabinet hardware and accessories.
 3. Wood furring, blocking, shims, and hanging strips for installing plastic-laminate-clad architectural cabinets that are not concealed within other construction.
- B. Related Requirements:
1. Section 061000 Rough Carpentry
 2. Section 064116 Plastic-Laminate-Clad Architectural Cabinets
 3. Section 123661.16 Solid Surfacing Countertops
- C. COORDINATION
1. Coordinate sizes and locations of framing, blocking, furring, reinforcements, and other related units of Work specified in other Sections to support loads imposed by installed and fully loaded cabinets.

1.3 PREINSTALLATION MEETINGS

- A. Preinstallation Conference: Conduct conference at Project site.

1.4 ACTION SUBMITTALS

- A. Product Data: For each type of product.
1. Include data for fire-retardant treatment from chemical-treatment manufacturer and certification by treating plant that treated materials comply with requirements.

B. Shop Drawings:

1. Include plans, elevations, sections, and attachment details.
2. Show large-scale details.
3. Show locations and sizes of furring, blocking, and hanging strips, including concealed blocking and reinforcement specified in other Sections.
4. Show locations and sizes of cutouts and holes for items installed in plastic-laminate architectural cabinets.
5. Apply WI Certified Compliance Program label to Shop Drawings.

C. Samples: For each exposed product and for each color and texture specified, in manufacturer's or manufacturer's standard size.

D. Samples for Initial Selection: For each type of exposed finish.

1.5 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For manufacturer and Installer.
- B. Product Certificates: For each type of product.
- C. Field quality-control reports.

1.6 CLOSEOUT SUBMITTALS

- A. Quality Standard Compliance Certificates: WI Certified Compliance Program certificates.

1.7 QUALITY ASSURANCE

- A. Manufacturer's Qualifications: Employs skilled workers who custom fabricate products similar to those required for this Project and whose products have a record of successful in-service performance.
 1. Manufacturer's Certification: Licensed participant in WI's Certified Compliance Program.
- B. Installer Qualifications: Manufacturer of products.

1.8 DELIVERY, STORAGE, AND HANDLING

- A. Do not deliver cabinets until painting and similar finish operations that might damage architectural cabinets have been completed in installation areas. Store cabinets in installation areas or in areas where environmental conditions comply with requirements specified in "Field Conditions" Article.

1.9 FIELD CONDITIONS

- A. Environmental Limitations without Humidity Control: Do not deliver or install cabinets until building is enclosed, wet-work is complete, and HVAC system is operating and maintaining temperature and relative humidity at levels planned for building occupants during the remainder of the construction period.
- B. Field Measurements: Where cabinets are indicated to fit to other construction, verify dimensions of other construction by field measurements before fabrication, and indicate measurements on Shop Drawings. Coordinate fabrication schedule with construction progress to avoid delaying the Work.
 - 1. Locate concealed framing, blocking, and reinforcements that support cabinets by field measurements before being enclosed/concealed by construction, and indicate measurements on Shop Drawings.

PART 2 - PRODUCTS

2.1 REGULATORY REQUIREMENTS

- A. Wall hung cabinets and floor supported cabinets over 5 feet high shall be braced and anchored in accordance with the California Building Code (CBC) 2019, Table 1607A.1.
- B. Requirements for Physically Disabled: Provide products meeting requirements of CBC 2019, Chapter 11B and 2010 ADA Accessibility Standards for Buildings and Facilities, latest amendment.
 - 1. Operable parts for all accessible casework shall comply with CBC Section 11B-309 Operable Parts.
 - 2. Pull hardware shall be U-shaped wire pulls or equally accessible at all accessible casework; CBC 11B-811.4 Operable Parts.

2.2 SOLID PHENOLIC ARCHITECTURAL CABINETS

- A. Quality Standard: Unless otherwise indicated, comply with the Architectural Woodwork Standards for grades of cabinets indicated for construction, finishes, installation, and other requirements.
 - 1. Provide labels and certificates from WI certification program indicating that woodwork and installation complies with requirements of grades specified.
 - 2. The Contract Documents contain requirements that are more stringent than the referenced quality standard. Comply with requirements of Contract Documents in addition to those of the referenced quality standard.
- B. Architectural Woodwork Standards Grade: Custom.
- C. Type of Construction: Frameless.

SOLID PHENOLIC ARCHITECTURAL CABINETS

064119- 3

- D. Door and Drawer-Front Style: Flush overlay.
 - 1. Reveal Dimension: As indicated on the Drawings
- E. Solid Phenolic Panel:
 - 1. Basis-of-Design Product HPL-1: As indicated on Sheet A12.00 Finish Schedule, or approved equal.
- F. Finish: Double-sided decorative.
 - 1. Color: As indicated on Sheet A12.00 Finish Schedule, or approved equal.
- G. Dust Panels: 1/4-inch plywood or tempered hardboard above compartments and drawers unless located directly under tops.
- H. Concealed Backs of Panels with Exposed Plastic-Laminate Surfaces: Solid phenolic panel; single-sided decorative, color to match cabinet face finish.
- I. Drawer Construction: Fabricate with exposed fronts fastened to subfront with mounting screws from interior of body.
 - 1. Join subfronts, backs, and sides with glued rabbeted joints supplemented by mechanical fasteners or glued dovetail joints.
- J. Colors, Patterns, and Finishes: Provide materials and products that result in colors and textures of exposed laminate surfaces complying with the following requirements:
 - 1. As indicated on Sheet A12.00 Finish Schedule, or approved equal

2.3 CABINET HARDWARE AND ACCESSORIES

- A. Frameless Concealed Hinges (European Type): ANSI/BHMA A156.9, B01602, 165 degrees of opening, self-closing.
 - 1. Basis-of-Design Product: Subject to compliance with requirements, provide Rockford Process Control Institutional Hinge, or Blum European Design Hinge.
- B. Wire Pulls: Back mounted, solid metal, 4 inches long, 5/16 inch in diameter.
- C. Shelf Rests: ANSI/BHMA A156.9, B04013; metal.
- D. Drawer Slides: ANSI/BHMA A156.9.
 - 1. Basis-of-Design Product: Subject to compliance with requirements, provide Accuride Glides, or approved equal.
 - 2. Grade 1 and Grade 2: Side mounted.
 - a. Type: Full extension.
 - b. Material: Zinc-plated steel with polymer rollers.

3. Grade 1HD-100 and Grade 1HD-200: Side mounted; full-extension type; zinc-plated-steel ball-bearing slides.
 4. For drawers not more than 3 inches high and not more than 24 inches wide, provide Grade 1.
 5. For drawers more than 3 inches high, but not more than 6 inches high and not more than 24 inches wide, provide Grade 1HD-100.
 6. For drawers more than 6 inches high or more than 24 inches wide, provide Grade 1HD-200.
 7. For computer keyboard shelves, provide Grade 1HD-100.
- E. Door Locks: ANSI/BHMA A156.11, E07121.
1. Location: Typical all cabinets.
- F. Drawer Locks: ANSI/BHMA A156.11, E07041.
1. Location: Typical all cabinets.
- G. Door and Drawer Silencers: ANSI/BHMA A156.16, L03011.
- H. Exposed Hardware Finishes: For exposed hardware, provide finish that complies with ANSI/BHMA A156.18 for ANSI/BHMA finish number indicated.
1. Satin Stainless Steel: ANSI/BHMA 630.
- I. For concealed hardware, provide manufacturer's standard finish that complies with product class requirements in ANSI/BHMA A156.9.

2.4 MISCELLANEOUS MATERIALS

- A. Furring, Blocking, Shims, and Hanging Strips: Softwood or hardwood lumber, kiln-dried to less than 15 percent moisture content.
- B. Anchors: Select material, type, size, and finish required for each substrate for secure anchorage. Provide metal expansion sleeves or expansion bolts for post-installed anchors. Use nonferrous-metal or hot-dip galvanized anchors and inserts at inside face of exterior walls and at floors.

2.5 FABRICATION

- A. Fabricate architectural cabinets to dimensions, profiles, and details indicated.
- B. Complete fabrication, including assembly and hardware application, to maximum extent possible before shipment to Project site. Disassemble components only as necessary for shipment and installation. Where necessary for fitting at site, provide ample allowance for scribing, trimming, and fitting.

1. Notify Architect seven days in advance of the dates and times architectural cabinet fabrication will be complete.
 2. Trial fit assemblies at manufacturer's shop that cannot be shipped completely assembled. Install dowels, screws, bolted connectors, and other fastening devices that can be removed after trial fitting. Verify that various parts fit as intended and check measurements of assemblies against field measurements before disassembling for shipment.
- C. Shop-cut openings to maximum extent possible to receive hardware, appliances, electrical work, and similar items. Locate openings accurately and use templates or roughing-in diagrams to produce accurately sized and shaped openings. Sand edges of cutouts to remove splinters and burrs.

PART 3 - EXECUTION

3.1 PREPARATION

- A. Before installation, condition cabinets to humidity conditions in installation areas for not less than 72 hours.

3.2 INSTALLATION

- A. Architectural Woodwork Standards Grade: Install cabinets to comply with quality standard grade of item to be installed.
- B. Assemble cabinets and complete fabrication at Project site to extent that it was not completed in the shop.
- C. Anchor cabinets to anchors or blocking built in or directly attached to substrates. Secure with wafer-head cabinet installation screws.
- D. Install cabinets level, plumb, and true in line to a tolerance of 1/8 inch in 96 inches using concealed shims.
1. Scribe and cut cabinets to fit adjoining work, refinish cut surfaces, and repair damaged finish at cuts.
 2. Install cabinets without distortion so doors and drawers fit openings and are accurately aligned. Adjust hardware to center doors and drawers in openings and to provide unencumbered operation. Complete installation of hardware and accessory items as indicated.

3.3 FIELD QUALITY CONTROL

- A. Inspections: Provide inspection of installed Work through WI's Certified Compliance Program certifying that woodwork, including installation, complies with requirements of the Architectural Woodwork Standards for the specified grade.

1. Inspection entity shall prepare and submit report of inspection.

3.4 ADJUSTING AND CLEANING

- A. Repair damaged and defective cabinets, where possible, to eliminate functional and visual defects. Where not possible to repair, replace architectural cabinets. Adjust joinery for uniform appearance.
- B. Clean, lubricate, and adjust hardware.
- C. Clean cabinets on exposed and semiexposed surfaces.

END OF SECTION 064119

SECTION 078413

PENETRATION FIRESTOPPING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section Includes:

- 1. Penetrations in fire-resistance-rated walls.
- 2. Penetrations in horizontal assemblies.

B. Related Requirements:

- 1. Section 078443 "Joint Firestopping" for joints in or between fire-resistance-rated construction, at exterior curtain-wall/floor intersections, and in smoke barriers.

1.3 PREINSTALLATION MEETINGS

- A. Preinstallation Conference: Conduct conference at Project site

1.4 ACTION SUBMITTALS

- A. Product Data: For each type of product.

- B. Product Schedule: For each penetration firestopping system. Include location, illustration of firestopping system, and design designation of qualified testing and inspecting agency.

- 1. Engineering Judgments: Where Project conditions require modification to a qualified testing and inspecting agency's illustration for a particular penetration firestopping system, submit illustration, with modifications marked, approved by penetration firestopping system manufacturer's fire-protection engineer as an engineering judgment or equivalent fire-resistance-rated assembly developed in accordance with current International Firestop Council (IFC) guidelines. Obtain approval of authorities having jurisdiction prior to submittal.

1.5 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For Installer.
- B. Listed System Designs: For each penetration firestopping system, for tests performed by a qualified testing agency.

1.6 CLOSEOUT SUBMITTALS

- A. Installer Certificates: From Installer indicating that penetration firestopping systems have been installed in compliance with requirements and manufacturer's written instructions.

1.7 QUALITY ASSURANCE

- A. Installer Qualifications: A firm that has been approved by FM Approvals according to FM Approvals 4991, "Approval Standard for Firestop Contractors," or been evaluated by UL and found to comply with its "Qualified Firestop Contractor Program Requirements."

1.8 PROJECT CONDITIONS

- A. Environmental Limitations: Do not install penetration firestopping system when ambient or substrate temperatures are outside limits permitted by penetration firestopping system manufacturers or when substrates are wet because of rain, frost, condensation, or other causes.
- B. Install and cure penetration firestopping materials per manufacturer's written instructions using natural means of ventilations or, where this is inadequate, forced-air circulation.

1.9 COORDINATION

- A. Coordinate construction of openings and penetrating items to ensure that penetration firestopping systems can be installed according to specified firestopping system design.
- B. Coordinate sizing of sleeves, openings, core-drilled holes, or cut openings to accommodate penetration firestopping systems.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Fire-Test-Response Characteristics:
 - 1. Perform penetration firestopping system tests by a qualified testing agency acceptable to authorities having jurisdiction.

PENETRATION FIRESTOPPING

078413 - 2

2. Test per testing standards referenced in "Penetration Firestopping Systems" Article. Provide rated systems complying with the following requirements:
 - a. Penetration firestopping systems shall bear classification marking of a qualified testing agency.
 - 1) UL in its "Fire Resistance Directory."
 - 2) Intertek Group in its "Directory of Listed Building Products."
 - 3) FM Approvals in its "Approval Guide."

2.2 PENETRATION FIRESTOPPING SYSTEMS

- A. Penetration Firestopping Systems: Systems that resist spread of fire, passage of smoke and other gases, and maintain original fire-resistance rating of construction penetrated. Penetration firestopping systems are to be compatible with one another, with the substrates forming openings, and with penetrating items if any.
 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. 3M Fire Protection Products
 - b. Hilti, Inc.
 - c. Tremco, Inc.
- B. Penetrations in Fire-Resistance-Rated Walls: Penetration firestopping systems with ratings determined per ASTM E814 or UL 1479, based on testing at a positive pressure differential of 0.01-inch wg.
 1. F-Rating: Not less than the fire-resistance rating of the wall penetrated.
- C. Penetrations in Horizontal Assemblies: Penetration firestopping systems with ratings determined per ASTM E814 or UL 1479, based on testing at a positive pressure differential of 0.01-inch wg.
 1. F-Rating: At least one hour, but not less than the fire-resistance rating of the floor penetrated.
 2. T-Rating: At least one hour, but not less than the fire-resistance rating of constructions penetrated except for floor penetrations within the cavity of a wall.
 3. W-Rating: Provide penetration firestopping systems showing no evidence of water leakage when tested according to UL 1479.
- D. Exposed Penetration Firestopping Systems: Flame-spread and smoke-developed indexes of less than 25 and 450, respectively, per ASTM E84.
- E. Manufactured Piping Penetration Firestopping System: Penetration firestopping systems with ratings determined per ASTM E814 or UL 1479, based on testing at a positive pressure differential of 0.01-inch wg.

1. F-Rating: At least one hour, but not less than the fire-resistance rating of constructions penetrated.
 2. T-Rating: At least one hour, but not less than the fire-resistance rating of constructions penetrated except for floor penetrations within the cavity of a wall.
 3. W-Rating: Provide penetration firestopping systems showing no evidence of water leakage when tested according to UL 1479.
 4. Sleeve: Molded-PVC plastic, of length to match slab thickness and with integral nailing flange on one end for installation in cast-in-place concrete slabs.
 5. Stack Fitting: ASTM A48/A48M, gray-iron, hubless-pattern wye branch with neoprene O-ring at base and gray-iron plug in thermal-release harness. Include PVC protective cap for plug.
 6. Special Coating: Corrosion resistant on interior of fittings.
- F. Accessories: Provide components for each penetration firestopping system that are needed to install fill materials and to maintain ratings required. Use only those components specified by penetration firestopping system manufacturer and approved by qualified testing and inspecting agency for conditions indicated.
1. Permanent forming/damming/backing materials.
 2. Substrate primers.
 3. Collars.
 4. Steel sleeves.

2.3 FILL MATERIALS

- A. Cast-in-Place Firestop Devices: Factory-assembled devices for use in cast-in-place concrete floors and consisting of an outer sleeve lined with an intumescent strip, a flange attached to one end of the sleeve for fastening to concrete formwork, and a neoprene gasket.
- B. Latex Sealants: Single-component latex formulations that do not re-emulsify after cure during exposure to moisture.
- C. Firestop Devices: Factory-assembled collars formed from galvanized steel and lined with intumescent material sized to fit specific diameter of penetrant.
- D. Intumescent Composite Sheets: Rigid panels consisting of aluminum-foil-faced intumescent elastomeric sheet bonded to galvanized-steel sheet.
- E. Intumescent Putties: Nonhardening, water-resistant, intumescent putties containing no solvents or inorganic fibers.
- F. Intumescent Wrap Strips: Single-component intumescent elastomeric sheets with aluminum foil on one side.
- G. Mortars: Prepackaged dry mixes consisting of a blend of inorganic binders, hydraulic cement, fillers and lightweight aggregate formulated for mixing with water at Project site to form a nonshrinking, homogeneous mortar.

- H. Pillows/Bags: Reusable heat-expanding pillows/bags consisting of glass-fiber cloth cases filled with a combination of mineral-fiber, water-insoluble expansion agents, and fire-retardant additives. Where exposed, cover openings with steel-reinforcing wire mesh to protect pillows/bags from being easily removed.
- I. Silicone Foams: Multicomponent, silicone-based liquid elastomers that, when mixed, expand and cure in place to produce a flexible, nonshrinking foam.
- J. Silicone Sealants: Single-component, silicone-based, neutral-curing elastomeric sealants.

2.4 MIXING

- A. Penetration Firestopping Materials: For those products requiring mixing before application, comply with penetration firestopping system manufacturer's written instructions for accurate proportioning of materials, water (if required), type of mixing equipment, selection of mixer speeds, mixing containers, mixing time, and other items or procedures needed to produce products of uniform quality with optimum performance characteristics for application indicated.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates and conditions, with Installer present, for compliance with requirements for opening configurations, penetrating items, substrates, and other conditions affecting performance of the Work.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Surface Cleaning: Before installing penetration firestopping systems, clean out openings immediately to comply with manufacturer's written instructions and with the following requirements:
 - 1. Remove from surfaces of opening substrates and from penetrating items foreign materials that could interfere with adhesion of penetration firestopping materials.
 - 2. Clean opening substrates and penetrating items to produce clean, sound surfaces capable of developing optimum bond with penetration firestopping materials. Remove loose particles remaining from cleaning operation.
 - 3. Remove laitance and form-release agents from concrete.
- B. Prime substrates where recommended in writing by manufacturer using that manufacturer's recommended products and methods. Confine primers to areas of bond; do not allow spillage and migration onto exposed surfaces.

PENETRATION FIRESTOPPING

078413 - 5

3.3 INSTALLATION OF PENETRATION FIRESTOPPING SYSTEMS

- A. General: Install penetration firestopping systems to comply with manufacturer's written installation instructions and published drawings for products and applications.
- B. Install forming materials and other accessories of types required to support fill materials during their application and in the position needed to produce cross-sectional shapes and depths required to achieve fire ratings.
 - 1. After installing fill materials and allowing them to fully cure, remove combustible forming materials and other accessories not forming permanent components of firestopping.
- C. Install fill materials by proven techniques to produce the following results:
 - 1. Fill voids and cavities formed by openings, forming materials, accessories and penetrating items to achieve required fire-resistance ratings.
 - 2. Apply materials so they contact and adhere to substrates formed by openings and penetrating items.
 - 3. For fill materials that will remain exposed after completing the Work, finish to produce smooth, uniform surfaces that are flush with adjoining finishes.

3.4 IDENTIFICATION

- A. Wall Identification: Permanently label walls containing penetration firestopping systems with the words "FIRE AND/OR SMOKE BARRIER - PROTECT ALL OPENINGS," using lettering not less than 3 inches (76 mm) high and with minimum 0.375-inch (9.5-mm) strokes.
 - 1. Locate in accessible concealed floor, floor-ceiling, or attic space at 15 feet (4.57 m) from end of wall and at intervals not exceeding 30 feet (9.14 m).
- B. Penetration Identification: Identify each penetration firestopping system with legible metal or plastic labels. Attach labels permanently to surfaces adjacent to and within 6 inches (150 mm) of penetration firestopping system edge so labels are visible to anyone seeking to remove penetrating items or firestopping systems. Use mechanical fasteners or self-adhering-type labels with adhesives capable of permanently bonding labels to surfaces on which labels are placed. Include the following information on labels:
 - 1. The words "Warning - Penetration Firestopping - Do Not Disturb. Notify Building Management of Any Damage."
 - 2. Contractor's name, address, and phone number.
 - 3. Designation of applicable testing and inspecting agency.
 - 4. Date of installation.
 - 5. Manufacturer's name.
 - 6. Installer's name.

3.5 FIELD QUALITY CONTROL

- A. Owner will engage a qualified testing agency to perform tests and inspections according to ASTM E2174.
- B. Where deficiencies are found or penetration firestopping system is damaged or removed because of testing, repair or replace penetration firestopping system to comply with requirements.
- C. Proceed with enclosing penetration firestopping systems with other construction only after inspection reports are issued and installations comply with requirements.

3.6 CLEANING AND PROTECTION

- A. Clean off excess fill materials adjacent to openings as the Work progresses by methods and with cleaning materials that are approved in writing by penetration firestopping system manufacturers and that do not damage materials in which openings occur.
- B. Provide final protection and maintain conditions during and after installation that ensure that penetration firestopping systems are without damage or deterioration at time of Substantial Completion. If, despite such protection, damage or deterioration occurs, immediately cut out and remove damaged or deteriorated penetration firestopping material and install new materials to produce systems complying with specified requirements.

END OF SECTION 078413

SECTION 078443 - JOINT FIRESTOPPING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section Includes:

- 1. Joints in or between fire-resistance-rated constructions.
 - 2. Joints at exterior curtain-wall/floor intersections.

- B. Related Requirements:

- 1. Section 078413 "Penetration Firestopping" for penetrations in fire-resistance-rated walls, horizontal assemblies, and smoke barriers and for wall identification.
 - 2. Section 092216 "Non-Structural Metal Framing" for firestop tracks for metal-framed partition heads.

1.3 PREINSTALLATION MEETINGS

- A. Preinstallation Conference: Conduct conference at Project site.

1.4 ACTION SUBMITTALS

- A. Product Data: For each type of product.
- B. Sustainable Design Submittals required by Section 018113.14 applicable to this Section.
- C. Product Schedule: For each joint firestopping system. Include location, illustration of firestopping system, and design designation of qualified testing agency.
 - 1. Engineering Judgments: Where Project conditions require modification to a qualified testing agency's illustration for a particular joint firestopping system condition, submit illustration, with modifications marked, approved by joint firestopping system manufacturer's fire-protection engineer as an engineering judgment or equivalent fire-resistance-rated assembly.

1.5 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For Installer.
- B. Product Test Reports: For each joint firestopping system, for tests performed by a qualified testing agency.

1.6 CLOSEOUT SUBMITTALS

- A. Installer Certificates: From Installer indicating that joint firestopping systems have been installed in compliance with requirements and manufacturer's written instructions.

1.7 QUALITY ASSURANCE

- A. Installer Qualifications: A firm that has been approved by FM Approvals according to FM Approvals 4991, "Approval of Firestop Contractors," or been evaluated by UL and found to comply with UL's "Qualified Firestop Contractor Program Requirements."

1.8 PROJECT CONDITIONS

- A. Environmental Limitations: Do not install joint firestopping systems when ambient or substrate temperatures are outside limits permitted by joint firestopping system manufacturers or when substrates are wet due to rain, frost, condensation, or other causes.
- B. Install and cure joint firestopping systems per manufacturer's written instructions using natural means of ventilation or, where this is inadequate, forced-air circulation.

1.9 COORDINATION

- A. Coordinate construction of joints to ensure that joint firestopping systems can be installed according to specified firestopping system design.
- B. Coordinate sizing of joints to accommodate joint firestopping systems.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Fire-Test-Response Characteristics:
 - 1. Perform joint firestopping system tests by a qualified testing agency acceptable to authorities having jurisdiction.
 - 2. Test per testing standards referenced in "Joint Firestopping Systems" Article. Provide rated systems complying with the following requirements:

JOINT FIRESTOPPING

078443 - 2

- a. Joint firestopping systems shall bear classification marking of a qualified testing agency.
 - 1) UL in its "Fire Resistance Directory."
 - 2) Intertek Group in its "Directory of Listed Building Products."

2.2 JOINT FIRESTOPPING SYSTEMS

- A. Joint Firestopping Systems: Systems that resist spread of fire, passage of smoke and other gases, and maintain original fire-resistance rating of assemblies in or between which joint firestopping systems are installed. Joint firestopping systems shall accommodate building movements without impairing their ability to resist the passage of fire and hot gases.
- B. Joints in or between Fire-Resistance-Rated Construction: Provide joint firestopping systems with ratings determined per ASTM E1966 or UL 2079.
 1. Fire-Resistance Rating: Equal to or exceeding the fire-resistance rating of the wall, floor, or roof in or between which it is installed.
- C. Exposed Joint Firestopping Systems: Flame-spread and smoke-developed indexes of less than 25 and 450, respectively, as determined per ASTM E84.
- D. Accessories: Provide components of joint firestopping systems, including primers and forming materials, that are needed to install elastomeric fill materials and to maintain ratings required. Use only components specified by joint firestopping system manufacturer and approved by the qualified testing agency for conditions indicated.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates and conditions, with Installer present, for compliance with requirements for joint configurations, substrates, and other conditions affecting performance of the Work.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Surface Cleaning: Before installing joint firestopping systems, clean joints immediately to comply with fire-resistive joint system manufacturer's written instructions and the following requirements:
 1. Remove from surfaces of joint substrates foreign materials that could interfere with adhesion of elastomeric fill materials or compromise fire-resistive rating.

2. Clean joint substrates to produce clean, sound surfaces capable of developing optimum bond with elastomeric fill materials. Remove loose particles remaining from cleaning operation.
 3. Remove laitance and form-release agents from concrete.
- B. Prime substrates where recommended in writing by joint firestopping system manufacturer using that manufacturer's recommended products and methods. Confine primers to areas of bond; do not allow spillage and migration onto exposed surfaces.

3.3 INSTALLATION

- A. General: Install joint firestopping systems to comply with manufacturer's written installation instructions and published drawings for products and applications indicated.
- B. Install forming materials and other accessories of types required to support elastomeric fill materials during their application and in position needed to produce cross-sectional shapes and depths required to achieve fire ratings indicated.
1. After installing elastomeric fill materials and allowing them to fully cure, remove combustible forming materials and other accessories not indicated as permanent components of fire-resistive joint system.
- C. Install elastomeric fill materials for joint firestopping systems by proven techniques to produce the following results:
1. Elastomeric fill voids and cavities formed by joints and forming materials as required to achieve fire-resistance ratings indicated.
 2. Apply elastomeric fill materials so they contact and adhere to substrates formed by joints.
 3. For elastomeric fill materials that will remain exposed after completing the Work, finish to produce smooth, uniform surfaces that are flush with adjoining finishes.

3.4 IDENTIFICATION

- A. Joint Identification: Identify joint firestopping systems with legible metal or plastic labels. Attach labels permanently to surfaces adjacent to and within 6 inches of joint edge so labels are visible to anyone seeking to remove or joint firestopping system. Use mechanical fasteners or self-adhering-type labels with adhesives capable of permanently bonding labels to surfaces on which labels are placed. Include the following information on labels:
1. The words "Warning - Joint Firestopping - Do Not Disturb. Notify Building Management of Any Damage."
 2. Contractor's name, address, and phone number.
 3. Designation of applicable testing agency.
 4. Date of installation.
 5. Manufacturer's name.
 6. Installer's name.

3.5 FIELD QUALITY CONTROL

- A. Inspecting Agency: Owner will engage a qualified testing agency to perform tests and inspections according to ASTM E2393.
- B. Where deficiencies are found or joint firestopping systems are damaged or removed due to testing, repair or replace joint firestopping systems so they comply with requirements.
- C. Proceed with enclosing joint firestopping systems with other construction only after inspection reports are issued and installations comply with requirements.

3.6 CLEANING AND PROTECTION

- A. Clean off excess elastomeric fill materials adjacent to joints as the Work progresses by methods and with cleaning materials that are approved in writing by joint firestopping system manufacturers and that do not damage materials in which joints occur.
- B. Provide final protection and maintain conditions during and after installation that ensure joint firestopping systems are without damage or deterioration at time of Substantial Completion. If damage or deterioration occurs despite such protection, cut out and remove damaged or deteriorated joint firestopping systems immediately and install new materials to produce joint firestopping systems complying with specified requirements.

END OF SECTION 078443

SECTION 079200

JOINT SEALANTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section Includes:
 - 1. Silicone joint sealants.
 - 2. Urethane joint sealants.
 - 3. Mildew-resistant joint sealants.
 - 4. Butyl joint sealants.
 - 5. Latex joint sealants.
- B. Related Requirements:
 - 1. Section 079219 Acoustical Joint Sealants
 - 2. Section 092216 Non-Structural Metal Framing

1.3 PREINSTALLATION MEETINGS

- A. Preinstallation Conference: Conduct conference at Project site.

1.4 ACTION SUBMITTALS

- A. Product Data: For each joint-sealant product.
- B. Samples for Initial Selection: Manufacturer's color charts consisting of strips of cured sealants showing the full range of colors available for each product exposed to view.
- C. Joint-Sealant Schedule: Include the following information:
 - 1. Joint-sealant application, joint location, and designation.
 - 2. Joint-sealant manufacturer and product name.
 - 3. Joint-sealant formulation.
 - 4. Joint-sealant color.

1.5 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For qualified testing agency.
- B. Product Test Reports: For each kind of joint sealant, for tests performed by a qualified testing agency.
- C. Statement of Compatibility: Provide confirmation from laminated glass manufacturer that selected butt-glazing sealant is compatible with polyvinyl butyral interlayer.
- D. Preconstruction Field-Adhesion-Test Reports: Indicate which sealants and joint preparation methods resulted in optimum adhesion to joint substrates based on testing specified in "Preconstruction Testing" Article.
- E. Field-Adhesion-Test Reports: For each sealant application tested.
- F. Sample Warranties: For special warranties.

1.6 QUALITY ASSURANCE

- A. Installer Qualifications: An authorized representative who is trained and approved by manufacturer.
- B. Product Testing: Test joint sealants using a qualified testing agency.
 - 1. Testing Agency Qualifications: Qualified according to ASTM C1021 to conduct the testing indicated.

1.7 PRECONSTRUCTION TESTING

- A. Preconstruction Field-Adhesion Testing: Before installing sealants, field test their adhesion to Project joint substrates as follows:
 - 1. Locate test joints where indicated on Project or, if not indicated, as directed by Architect.
 - 2. Conduct field tests for each kind of sealant and joint substrate.
 - 3. Notify Architect seven days in advance of dates and times when test joints will be erected.
 - 4. Arrange for tests to take place with joint-sealant manufacturer's technical representative present.
 - a. Test Method: Test joint sealants according to Method A, Field-Applied Sealant Joint Hand Pull Tab, in Appendix X1.1 in ASTM C1193 or Method A, Tail Procedure, in ASTM C1521.
 - 1) For joints with dissimilar substrates, verify adhesion to each substrate separately; extend cut along one side, verifying adhesion to opposite side. Repeat procedure for opposite side.

5. Report whether sealant failed to adhere to joint substrates or tore cohesively. Include data on pull distance used to test each kind of product and joint substrate. For sealants that fail adhesively, retest until satisfactory adhesion is obtained.
6. Evaluation of Preconstruction Field-Adhesion-Test Results: Sealants not evidencing adhesive failure from testing, in absence of other indications of noncompliance with requirements, will be considered satisfactory. Do not use sealants that fail to adhere to joint substrates during testing.

1.8 FIELD CONDITIONS

- A. Do not proceed with installation of joint sealants under the following conditions:
1. When ambient and substrate temperature conditions are outside limits permitted by joint-sealant manufacturer or are below 40 deg F.
 2. When joint substrates are wet.
 3. Where joint widths are less than those allowed by joint-sealant manufacturer for applications indicated.
 4. Where contaminants capable of interfering with adhesion have not yet been removed from joint substrates.

1.9 WARRANTY

- A. Special Installer's Warranty: Installer agrees to repair or replace joint sealants that do not comply with performance and other requirements specified in this Section within specified warranty period.
1. Warranty Period: Two years from date of Substantial Completion.
- B. Special Manufacturer's Warranty: Manufacturer agrees to furnish joint sealants to repair or replace those joint sealants that do not comply with performance and other requirements specified in this Section within specified warranty period.
1. Warranty Period: Five years from date of Substantial Completion.
- C. Special warranties specified in this article exclude deterioration or failure of joint sealants from the following:
1. Movement of the structure caused by stresses on the sealant exceeding sealant manufacturer's written specifications for sealant elongation and compression.
 2. Disintegration of joint substrates from causes exceeding design specifications.
 3. Mechanical damage caused by individuals, tools, or other outside agents.
 4. Changes in sealant appearance caused by accumulation of dirt or other atmospheric contaminants.

PART 2 - PRODUCTS

2.1 JOINT SEALANTS, GENERAL

- A. Compatibility: Provide joint sealants, backings, and other related materials that are compatible with one another and with joint substrates under conditions of service and application, as demonstrated by joint-sealant manufacturer, based on testing and field experience.
- B. Colors of Exposed Joint Sealants: As selected by Architect from manufacturer's full range.

2.2 SILICONE JOINT SEALANTS

- A. Silicone, S, NS, 50, NT: Single-component, nonsag, plus 50 percent and minus 50 percent movement capability, nontraffic-use, neutral-curing silicone joint sealant; ASTM C920, Type S, Grade NS, Class 50, Use NT.
 - 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. Dow Corning Corporation; 795, 790, 756 SM.
 - b. GE Construction Sealants; Momentive Performance Materials Inc.; Silpruf, Silpruf LM, Silpruf NB.
- B. Single-Component, Nonsag, Acid-Curing Silicone Joint Sealant: ASTM C920, Type S, Grade NS, Class 25, for Uses NT, G, and A.
 - 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. GE Construction Sealants; Momentive Performance Materials Inc.
 - b. Pecora Corporation.
 - c. The Dow Chemical Company.

2.3 URETHANE JOINT SEALANTS

- A. Urethane, S, NS, 25, NT: Single-component, nonsag, nontraffic-use, plus 25 percent and minus 25 percent movement capability, urethane joint sealant; ASTM C920, Type S, Grade NS, Class 25, Use NT.
 - 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. BASF Corp. - Construction Chemicals.
 - b. Sherwin-Williams Company (The).
 - c. Sika Corporation; Joint Sealants.
- B. Urethane, M, P, 25, T, NT: Multicomponent, pourable, plus 25 percent and minus 25 percent movement capability, traffic- and nontraffic-use, urethane joint sealant; ASTM C920, Type M, Grade P, Class 25, Uses T and NT.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. Pecora Corporation; Urexpan NR-200.
 - b. Sika Corporation; Joint Sealants; Sikaflex 1CSL.
 - c. Tremco Incorporated; THC-900 or Vulkem 245.

2.4 MILDEW-RESISTANT JOINT SEALANTS

- A. Mildew-Resistant Joint Sealants: Formulated for prolonged exposure to humidity with fungicide to prevent mold and mildew growth.
- B. Silicone, Mildew Resistant, Acid Curing, S, NS, 25, NT: Mildew-resistant, single-component, nonsag, plus 25 percent and minus 25 percent movement capability, nontraffic-use, acid-curing silicone joint sealant; ASTM C920, Type S, Grade NS, Class 25, Use NT.
 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. Dow Corning Corporation; 786.
 - b. GE Construction Sealants; Momentive Performance Materials Inc.; 1700
 - c. Pecora Corporation; 898.

2.5 BUTYL JOINT SEALANTS

- A. Butyl-Rubber-Based Joint Sealants: ASTM C1311.

2.6 LATEX JOINT SEALANTS

- A. Acrylic Latex: Acrylic latex or siliconized acrylic latex, ASTM C834, Type OP, Grade NF.
 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. Pecora Corporation.
 - b. Schnee-Morehead, Incl; SM 8200.
 - c. Sonneborn, Division of ChemRex Inc.; Sonolac
 - d. Tremco Incorporated; Tremflex 834 or Acrylic Latex 384.

2.7 JOINT-SEALANT BACKING

- A. Sealant Backing Material, General: Nonstaining; compatible with joint substrates, sealants, primers, and other joint fillers; and approved for applications indicated by sealant manufacturer based on field experience and laboratory testing.
- B. Cylindrical Sealant Backings: ASTM C1330, Type C (closed-cell material with a surface skin), and of size and density to control sealant depth and otherwise contribute to producing optimum sealant performance.

- C. Bond-Breaker Tape: Polyethylene tape or other plastic tape recommended by sealant manufacturer for preventing sealant from adhering to rigid, inflexible joint-filler materials or joint surfaces at back of joint. Provide self-adhesive tape where applicable.

2.8 MISCELLANEOUS MATERIALS

- A. Primer: Material recommended by joint-sealant manufacturer where required for adhesion of sealant to joint substrates indicated, as determined from preconstruction joint-sealant-substrate tests and field tests.
- B. Cleaners for Nonporous Surfaces: Chemical cleaners acceptable to manufacturers of sealants and sealant backing materials, free of oily residues or other substances capable of staining or harming joint substrates and adjacent nonporous surfaces in any way, and formulated to promote optimum adhesion of sealants to joint substrates.
- C. Masking Tape: Nonstaining, nonabsorbent material compatible with joint sealants and surfaces adjacent to joints.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine joints indicated to receive joint sealants, with Installer present, for compliance with requirements for joint configuration, installation tolerances, and other conditions affecting performance of the Work.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Surface Cleaning of Joints: Clean out joints immediately before installing joint sealants to comply with joint-sealant manufacturer's written instructions and the following requirements:
 - 1. Remove all foreign material from joint substrates that could interfere with adhesion of joint sealant, including dust, paints (except for permanent, protective coatings tested and approved for sealant adhesion and compatibility by sealant manufacturer), old joint sealants, oil, grease, waterproofing, water repellents, water, surface dirt, and frost.
 - 2. Clean, porous joint substrate surfaces by brushing, grinding, mechanical abrading, or a combination of these methods to produce a clean, sound substrate capable of developing optimum bond with joint sealants. Remove loose particles remaining after cleaning operations above by vacuuming or blowing out joints with oil-free compressed air. Porous joint substrates include but are not limited to the following:
 - a. Concrete.
 - b. Unglazed surfaces of ceramic tile.
 - 3. Remove laitance and form-release agents from concrete.

4. Clean nonporous joint substrate surfaces with chemical cleaners or other means that do not stain, harm substrates, or leave residues capable of interfering with adhesion of joint sealants. Nonporous joint substrates include the following:
 - a. Metal.
 - b. Glass.
 - c. Glazed surfaces of ceramic tile.
- B. Joint Priming: Prime joint substrates where recommended by joint-sealant manufacturer or as indicated by preconstruction joint-sealant-substrate tests or prior experience. Apply primer to comply with joint-sealant manufacturer's written instructions. Confine primers to areas of joint-sealant bond; do not allow spillage or migration onto adjoining surfaces.
- C. Masking Tape: Use masking tape where required to prevent contact of sealant or primer with adjoining surfaces that otherwise would be permanently stained or damaged by such contact or by cleaning methods required to remove sealant smears. Remove tape immediately after tooling without disturbing joint seal.

3.3 INSTALLATION OF JOINT SEALANTS

- A. General: Comply with joint-sealant manufacturer's written installation instructions for products and applications indicated, unless more stringent requirements apply.
- B. Sealant Installation Standard: Comply with recommendations in ASTM C1193 for use of joint sealants as applicable to materials, applications, and conditions indicated.
- C. Install sealant backings of kind indicated to support sealants during application and at position required to produce cross-sectional shapes and depths of installed sealants relative to joint widths that allow optimum sealant movement capability.
 1. Do not leave gaps between ends of sealant backings.
 2. Do not stretch, twist, puncture, or tear sealant backings.
 3. Remove absorbent sealant backings that have become wet before sealant application and replace them with dry materials.
- D. Install bond-breaker tape behind sealants where sealant backings are not used between sealants and backs of joints.
- E. Install sealants using proven techniques that comply with the following and at the same time backings are installed:
 1. Place sealants so they directly contact and fully wet joint substrates.
 2. Completely fill recesses in each joint configuration.
 3. Produce uniform, cross-sectional shapes and depths relative to joint widths that allow optimum sealant movement capability.
- F. Tooling of Nonsag Sealants: Immediately after sealant application and before skinning or curing begins, tool sealants according to requirements specified in subparagraphs below to form smooth, uniform beads of configuration indicated; to eliminate air pockets; and to ensure contact and adhesion of sealant with sides of joint.

1. Remove excess sealant from surfaces adjacent to joints.
2. Use tooling agents that are approved in writing by sealant manufacturer and that do not discolor sealants or adjacent surfaces.
3. Provide concave joint profile per Figure 8A in ASTM C1193 unless otherwise indicated.

3.4 CLEANING

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

3.5 PROTECTION

- A. Protect joint sealants during and after curing period from contact with contaminating substances and from damage resulting from construction operations or other causes so sealants are without deterioration or damage at time of Substantial Completion. If, despite such protection, damage or deterioration occurs, cut out, remove, and repair damaged or deteriorated joint sealants immediately so installations with repaired areas are indistinguishable from original work.

3.6 JOINT-SEALANT SCHEDULE

- A. Joint-Sealant Application: Exterior joints in horizontal traffic surfaces.
 1. Joint Locations:
 - a. Isolation and contraction joints in cast-in-place concrete slabs.
 - b. Tile control and expansion joints.
 - c. Joints between different materials listed above.
 - d. Other joints as indicated on Drawings.
 2. Joint Sealant: Urethane, M, P, 25, T, NT.
 3. Joint-Sealant Color: As selected by Architect from manufacturer's full range of colors.
- B. Joint-Sealant Application: Exterior joints in vertical surfaces and horizontal nontraffic surfaces.
 1. Joint Locations:
 - a. Joints between different materials listed above.
 - b. Perimeter joints between materials listed above and frames of doors, windows, and louvers.
 - c. Control and expansion joints in ceilings and other overhead surfaces.
 - d. Other joints as indicated on Drawings.
 2. Joint Sealant: Silicone, S, NS, 50, NT.
 3. Joint-Sealant Color: As selected by Architect from manufacturer's full range of colors.
- C. Joint-Sealant Application: Interior joints in horizontal traffic surfaces.
 1. Joint Locations:

- a. Isolation joints in cast-in-place concrete slabs.
 - b. Control and expansion joints in tile flooring.
 - c. Other joints as indicated on Drawings.
 2. Joint Sealant: Urethane, M, P, 25, T, NT.
 3. Joint-Sealant Color: As selected by Architect from manufacturer's full range of colors.
- D. Joint-Sealant Application: Interior joints in vertical surfaces and horizontal nontraffic surfaces.
 1. Joint Locations:
 - a. Control and expansion joints on exposed interior surfaces of exterior walls.
 - b. Tile control and expansion joints.
 - c. Vertical joints on exposed surfaces of walls.
 - d. Other joints as indicated on Drawings.
 2. Joint Sealant: Urethane, S, NS, 25, NT.
 3. Joint-Sealant Color: As selected by Architect from manufacturer's full range of colors.
- E. Joint-Sealant Application: Interior joints in vertical surfaces and horizontal nontraffic surfaces not subject to significant movement.
 1. Joint Locations:
 - a. Control joints on exposed interior surfaces of exterior walls.
 - b. Perimeter joints between interior wall surfaces and frames of interior doors and windows.
 - c. Other joints as indicated on Drawings.
 2. Joint Sealant: Acrylic latex.
 3. Joint-Sealant Color: As selected by Architect from manufacturer's full range of colors.
- F. Joint-Sealant Application: Mildew-resistant interior joints in vertical surfaces and horizontal nontraffic surfaces.
 1. Joint Locations:
 - a. Joints between plumbing fixtures and adjoining walls, floors, and counters.
 - b. Tile control and expansion joints where indicated.
 - c. Other joints as indicated on Drawings.
 2. Joint Sealant: Silicone, mildew resistant, acid curing, S, NS, 25, NT.
 3. Joint-Sealant Color: As selected by Architect from manufacturer's full range of colors.
- G. Joint-Sealant Application: Concealed mastics.
 1. Joint Locations:
 - a. Aluminum thresholds.
 - b. Other joints as indicated on Drawings.
 2. Joint Sealant: Butyl-rubber based.

3. Joint-Sealant Color: As selected by Architect from manufacturer's full range of colors.
- H. Joint-Sealant Application: Interior butt-glazing.
1. Joint Locations:
 - a. Butt-glazing at interior laminated glass.
 2. Joint Sealant: Single-component, nonsag, acid-curing silicone.
 3. Joint-Sealant Color: Clear.

END OF SECTION 079200

SECTION 079219

ACOUSTICAL JOINT SEALANTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section includes acoustical joint sealants.
- B. Related Requirements:
 - 1. Section 079200 Joint Sealants
 - 2. Section 092216 Non-Structural Metal Framing

1.3 ACTION SUBMITTALS

- A. Product Data: For each acoustical joint sealant.
- B. Samples for Initial Selection: Manufacturer's color charts consisting of strips of cured sealants showing the full range of colors available for each product exposed to view.
- C. Acoustical-Joint-Sealant Schedule: Include the following information:
 - 1. Joint-sealant application, joint location, and designation.
 - 2. Joint-sealant manufacturer and product name.
 - 3. Joint-sealant formulation.
 - 4. Joint-sealant color.

1.4 INFORMATIONAL SUBMITTALS

- A. Sample Warranties: For special warranties.

1.5 WARRANTY

- A. Special Manufacturer's Warranty: Manufacturer agrees to furnish acoustical joint sealants to repair or replace those joint sealants that do not comply with performance and other requirements specified in this Section within specified warranty period.
 - 1. Warranty Period: Five years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Provide acoustical joint-sealant products that effectively reduce airborne sound transmission through perimeter joints and openings in building construction, as demonstrated by testing representative assemblies according to ASTM E90.

2.2 ACOUSTICAL JOINT SEALANTS

- A. Acoustical Sealant for Exposed Joints: Manufacturer's standard nonsag, paintable, nonstaining latex acoustical sealant complying with ASTM C834.
 - 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. GE Construction Sealants; Momentive Performance Materials Inc.
 - b. Pecora Corporation.
 - c. Tremco Incorporated.
 - 2. Colors of Exposed Acoustical Joint Sealants: As selected by Architect from manufacturer's full range of colors.
- B. Acoustical Sealant for Concealed Joints: Manufacturer's standard nonsag, nondrying, nonhardening, nonskinning, nonstaining, gunnable, synthetic-rubber acoustical sealant.
 - 1. Manufacturers: Subject to compliance with requirements, provide products by the following:
 - a. Pecora Corporation.

2.3 MISCELLANEOUS MATERIALS

- A. Primer: Material recommended by acoustical-joint-sealant manufacturer where required for adhesion of sealant to joint substrates.
- B. Cleaners for Nonporous Surfaces: Chemical cleaners acceptable to manufacturers of sealants and sealants backing materials, free of oily residues or other substances capable of staining or harming joint substrates and adjacent nonporous surfaces in any way and formulated to promote optimum adhesion of sealants to joint substrates.
- C. Masking Tape: Nonstaining, nonabsorbent material compatible with joint sealants and surfaces adjacent to joints.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine joints indicated to receive acoustical joint sealants, with Installer present, for compliance with requirements for joint configuration, installation tolerances, and other conditions affecting performance of the Work.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Surface Cleaning of Joints: Clean out joints immediately before installing acoustical joint sealants to comply with joint-sealant manufacturer's written instructions.
- B. Joint Priming: Prime joint substrates where recommended by acoustical-joint-sealant manufacturer. Apply primer to comply with joint-sealant manufacturer's written instructions. Confine primers to areas of joint-sealant bond; do not allow spillage or migration onto adjoining surfaces.
- C. Masking Tape: Use masking tape where required to prevent contact of sealant or primer with adjoining surfaces that otherwise would be permanently stained or damaged by such contact or by cleaning methods required to remove sealant smears. Remove tape immediately after tooling without disturbing joint seal.

3.3 INSTALLATION OF ACOUSTICAL JOINT SEALANTS

- A. Comply with acoustical joint-sealant manufacturer's written installation instructions unless more stringent requirements apply.
- B. STC-Rated Assemblies: Seal construction at perimeters, behind control joints, and at openings and penetrations with a continuous bead of acoustical joint sealant. Install acoustical joint sealants at both faces of partitions, at perimeters, and through penetrations. Comply with ASTM C919, ASTM C1193, and manufacturer's written recommendations for closing off sound-flanking paths around or through assemblies, including sealing partitions to underside of floor slabs above acoustical ceilings.
- C. Acoustical Ceiling Areas: Apply acoustical joint sealant at perimeter edge moldings of acoustical ceiling areas in a continuous ribbon concealed on back of vertical legs of moldings before they are installed.

3.4 CLEANING

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

3.5 PROTECTION

- A. Protect acoustical joint sealants during and after curing period from contact with contaminating substances and from damage resulting from construction operations or other causes so sealants are without deterioration or damage at time of Substantial Completion. If, despite such protection, damage or deterioration occurs, cut out, remove, and repair damaged or deteriorated acoustical joint sealants immediately so installations with repaired areas are indistinguishable from original work.

END OF SECTION 079219

SECTION 081113

HOLLOW METAL DOORS AND FRAMES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section includes:
 - 1. Interior standard steel doors and frames.
 - 2. Interior custom hollow-metal doors and frames.
- B. Related Requirements:
 - 1. Section 081416 "Flush Wood Doors" for wood doors at selected hollow metal frames.
 - 2. Section 087100 "Door Hardware" for door hardware for hollow-metal doors.

1.3 DEFINITIONS

- A. Minimum Thickness: Minimum thickness of base metal without coatings according to NAAMM-HMMA 803 or ANSI/SDI A250.8.

1.4 COORDINATION

- A. Coordinate anchorage installation for hollow-metal frames. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, and items with integral anchors. Deliver such items to Project site in time for installation.
- B. Coordinate requirements for installation of door hardware, electrified door hardware, and access control and security systems.

1.5 PREINSTALLATION MEETINGS

- A. Preinstallation Conference: Conduct conference at Project site.

1.6 ACTION SUBMITTALS

- A. Product Data: For each type of product.

1. Include construction details, material descriptions, core descriptions, fire-resistance ratings, and finishes.
- B. Shop Drawings: Include the following:
1. Elevations of each door type.
 2. Details of doors, including vertical- and horizontal-edge details and metal thicknesses.
 3. Frame details for each frame type, including dimensioned profiles and metal thicknesses.
 4. Locations of reinforcement and preparations for hardware.
 5. Details of each different wall opening condition.
 6. Details of electrical raceway and preparation for electrified hardware, access control systems, and security systems.
 7. Details of anchorages, joints, field splices, and connections.
 8. Details of accessories.
 9. Details of moldings, removable stops, and glazing.
- C. Samples for Initial Selection: For hollow-metal doors and frames with factory-applied color finishes.
- D. Product Schedule: For hollow-metal doors and frames, prepared by or under the supervision of supplier, using same reference numbers for details and openings as those on Drawings. Coordinate with final door hardware schedule.

1.7 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For door inspector.
1. Fire-Rated Door Inspector: Submit documentation of compliance with NFPA 80, Section 5.2.3.1.
 2. Egress Door Inspector: Submit documentation of compliance with NFPA 101, Section 7.2.1.15.4.
 3. Submit copy of DHI Fire and Egress Door Assembly Inspector (FDAI) certificate.
- B. Product Test Reports: For each type of fire-rated hollow-metal door and frame assembly and thermally rated door assemblies for tests performed by a qualified testing agency indicating compliance with performance requirements.

1.8 CLOSEOUT SUBMITTALS

- A. Record Documents: For fire-rated doors, list of door numbers and applicable room name and number to which door accesses.

1.9 QUALITY ASSURANCE

- A. Fire-Rated Door Inspector Qualifications: Inspector for field quality control inspections of fire-rated door assemblies shall meet the qualifications set forth in NFPA 80, section 5.2.3.1 and the following:

1. Door and Hardware Institute Fire and Egress Door Assembly Inspector (FDAI) certification.
- B. Egress Door Inspector Qualifications: Inspector for field quality control inspections of egress door assemblies shall meet the qualifications set forth in NFPA 101, Section 7.2.1.15.4 and the following:
 1. Door and Hardware Institute Fire and Egress Door Assembly Inspector (FDAI) certification.

1.10 DELIVERY, STORAGE, AND HANDLING

- A. Deliver hollow-metal doors and frames palletized, packaged, or crated to provide protection during transit and Project-site storage. Do not use nonvented plastic.
 1. Provide additional protection to prevent damage to factory-finished units.
- B. Deliver welded frames with two removable spreader bars across bottom of frames, tack welded to jambs and mullions.
- C. Store hollow-metal doors and frames vertically under cover at Project site with head up. Place on minimum 4-inch- high wood blocking. Provide minimum 1/4-inch space between each stacked door to permit air circulation.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 1. Ceco Door; ASSA ABLOY.
 2. Curries Company; ASSA ABLOY.
 3. Republic Doors and Frames.
 4. Steelcraft; an Allegion brand.

2.2 PERFORMANCE REQUIREMENTS

- A. Fire-Rated Door Assemblies: Assemblies complying with NFPA 80 that are listed and labeled by a qualified testing agency acceptable to authorities having jurisdiction for fire-protection ratings and temperature-rise limits indicated on Drawings, based on testing at positive pressure according to NFPA 252 or UL 10C.
 1. Smoke- and Draft-Control Door Assemblies: Listed and labeled for smoke and draft control by a qualified testing agency acceptable to authorities having jurisdiction, based on testing according to UL 1784 and installed in compliance with NFPA 105.

- B. Fire-Rated, Borrowed-Lite Assemblies: Assemblies complying with NFPA 80 and listed and labeled by a qualified testing agency acceptable to authorities having jurisdiction, for fire-protection ratings indicated, based on testing according to NFPA 257 or UL 9.

2.3 INTERIOR STANDARD STEEL DOORS AND FRAMES

- A. Construct hollow-metal doors and frames to comply with standards indicated for materials, fabrication, hardware locations, hardware reinforcement, tolerances, and clearances, and as specified.
- B. Maximum-Duty Doors and Frames: ANSI/SDI A250.8, Level 4; ANSI/SDI A250.4, Level A.
 - 1. Doors:
 - a. Type: As indicated in the Door and Frame Schedule.
 - b. Thickness: 1-3/4 inches.
 - c. Face: Uncoated steel sheet, minimum thickness of 0.067 inch.
 - d. Edge Construction: Model 2, Seamless.
 - e. Edge Bevel: Bevel lock and hinge edges 1/8 inch in 2 inches.
 - f. Core: Manufacturer's standard
 - g. Fire-Rated Core: Manufacturer's standard. Vertical steel stiffener core for fire-rated doors.
 - 2. Frames:
 - a. Materials: Uncoated steel sheet, minimum thickness of 0.067 inch.
 - b. Construction: Full profile welded.
 - 3. Exposed Finish: Prime.

2.4 BORROWED LITES

- A. Fabricate of uncoated steel sheet, minimum thickness of 0.053 inch.
- B. Construction: Full profile welded.
- C. Fabricate in one piece except where handling and shipping limitations require multiple sections. Where frames are fabricated in sections due to shipping or handling limitations, provide alignment plates or angles at each joint, fabricated of metal of same or greater thickness as metal as frames.
- D. Provide countersunk, flat- or oval-head exposed screws and bolts for exposed fasteners unless otherwise indicated.

2.5 HOLLOW-METAL PANELS

- A. Provide hollow-metal panels of same materials, construction, and finish as adjacent door assemblies.

2.6 FRAME ANCHORS

A. Jamb Anchors:

1. Type: Anchors of minimum size and type required by applicable door and frame standard, and suitable for performance level indicated.
2. Quantity: Minimum of three anchors per jamb, with one additional anchor for frames with no floor anchor. Provide one additional anchor for each 24 inches of frame height above 7 feet.
 - a. Provide jamb anchors at 24 inches on center maximum.
3. Post installed Expansion Anchor: Minimum 3/8-inch- diameter bolts with expansion shields or inserts, with manufacturer's standard pipe spacer.

B. Floor Anchors: Provide floor anchors for each jamb and mullion that extends to floor.

C. Head Anchors:

1. Provide two anchors per head frame minimum.
2. Provide three anchors per head frame for widths greater than 42 inches.

D. Material: ASTM A879/A879M, Commercial Steel (CS), 04Z coating designation; mill phosphatized.

1. For anchors built into exterior walls, steel sheet complying with ASTM A1008/A1008M or ASTM A1011/A1011M; hot-dip galvanized according to ASTM A153/A153M, Class B.

2.7 MATERIALS

- A. Cold-Rolled Steel Sheet: ASTM A1008/A1008M, Commercial Steel (CS), Type B; suitable for exposed applications.
- B. Metallic-Coated Steel Sheet: ASTM A653/A653M, Commercial Steel (CS), Type B.
- C. Inserts, Bolts, and Fasteners: Hot-dip galvanized according to ASTM A153/A153M.
- D. Power-Actuated Fasteners in Concrete: Fastener system of type suitable for application indicated, fabricated from corrosion-resistant materials, with clips or other accessory devices for attaching hollow-metal frames of type indicated.
- E. Mineral-Fiber Insulation: ASTM C665, Type I (blankets without membrane facing); consisting of fibers manufactured from slag or rock wool; with maximum flame-spread and smoke-developed indexes of 25 and 50, respectively; passing ASTM E136 for combustion characteristics.
- F. Glazing: Comply with requirements in Section 088000 "Glazing."

2.8 FABRICATION

- A. Door Astragals: Provide overlapping astragal on one leaf of pairs of doors where required by NFPA 80 for fire-performance rating or where indicated. Extend minimum 3/4 inch beyond edge of door on which astragal is mounted or as required to comply with published listing of qualified testing agency.
- B. Hollow-Metal Frames: Fabricate in one piece except where handling and shipping limitations require multiple sections. Where frames are fabricated in sections, provide alignment plates or angles at each joint, fabricated of metal of same or greater thickness as frames.
 - 1. Provide countersunk, flat- or oval-head exposed screws and bolts for exposed fasteners unless otherwise indicated.
 - 2. Door Silencers: Except on weather-stripped frames, drill stops to receive door silencers as follows. Keep holes clear during construction.
 - a. Single-Door Frames: Drill stop in strike jamb to receive three door silencers.
 - b. Double-Door Frames: Drill stop in head jamb to receive two door silencers.
- C. Hardware Preparation: Factory prepare hollow-metal doors and frames to receive templated mortised hardware, and electrical wiring; include cutouts, reinforcement, mortising, drilling, and tapping according to ANSI/SDI A250.6, the Door Hardware Schedule, and templates.
 - 1. Reinforce doors and frames to receive non-templated, mortised, and surface-mounted door hardware.
 - 2. Comply with BHMA A156.115 for preparing hollow-metal doors and frames for hardware.
- D. Glazed Lites: Provide stops and moldings around glazed lites where indicated. Form corners of stops and moldings with butted or mitered hairline joints.
 - 1. Provide stops and moldings flush with face of door, and with square stops unless otherwise indicated.
 - 2. Multiple Glazed Lites: Provide fixed and removable stops and moldings so that each glazed lite is capable of being removed independently.
 - 3. Provide fixed frame moldings on outside of exterior and on secure side of interior doors and frames. Provide loose stops and moldings on inside of hollow-metal doors and frames.
 - 4. Coordinate rabbet width between fixed and removable stops with glazing and installation types indicated.
 - 5. Provide stops for installation with countersunk flat- or oval-head machine screws spaced uniformly not more than 9 inches o.c. and not more than 2 inches o.c. from each corner.

2.9 STEEL FINISHES

- A. Prime Finish: Clean, pretreat, and apply manufacturer's standard primer.
 - 1. Shop Primer: Manufacturer's standard, fast-curing, lead- and chromate-free primer complying with ANSI/SDI A250.10; recommended by primer manufacturer for substrate; compatible with substrate and field-applied coatings despite prolonged exposure.

PART 3 - EXECUTION

3.1 PREPARATION

- A. Remove welded-in shipping spreaders installed at factory. Restore exposed finish by grinding, filling, and dressing, as required to make repaired area smooth, flush, and invisible on exposed faces. Touch up factory-applied finishes where spreaders are removed.
- B. Drill and tap doors and frames to receive nontemplated, mortised, and surface-mounted door hardware.

3.2 INSTALLATION

- A. Install hollow-metal doors and frames plumb, rigid, properly aligned, and securely fastened in place. Comply with approved Shop Drawings and with manufacturer's written instructions.
- B. Hollow-Metal Frames: Comply with ANSI/SDI A250.11.
 - 1. Set frames accurately in position; plumbed, aligned, and braced securely until permanent anchors are set. After wall construction is complete, remove temporary braces without damage to completed Work.
 - a. Where frames are fabricated in sections, field splice at approved locations by welding face joint continuously; grind, fill, dress, and make splice smooth, flush, and invisible on exposed faces. Touch-up finishes.
 - b. Install frames with removable stops located on secure side of opening.
 - 2. Fire-Rated Openings: Install frames according to NFPA 80.
 - 3. Floor Anchors: Secure with postinstalled expansion anchors.
 - a. Floor anchors may be set with power-actuated fasteners instead of postinstalled expansion anchors if so indicated and approved on Shop Drawings.
 - 4. Solidly pack mineral-fiber insulation inside frames.
 - 5. Installation Tolerances: Adjust hollow-metal frames to the following tolerances:
 - a. Squareness: Plus, or minus 1/16 inch, measured at door rabbet on a line 90 degrees from jamb perpendicular to frame head.
 - b. Alignment: Plus, or minus 1/16 inch, measured at jambs on a horizontal line parallel to plane of wall.
 - c. Twist: Plus, or minus 1/16 inch, measured at opposite face corners of jambs on parallel lines, and perpendicular to plane of wall.
 - d. Plumbness: Plus, or minus 1/16 inch, measured at jambs at floor.
- C. Hollow-Metal Doors: Fit and adjust hollow-metal doors accurately in frames, within clearances specified below.
 - 1. Non-Fire-Rated Steel Doors: Comply with ANSI/SDI A250.8.
 - 2. Fire-Rated Doors: Install doors with clearances according to NFPA 80.
 - 3. Smoke-Control Doors: Install doors according to NFPA 105.

- D. Glazing: Comply with installation requirements in Section 088000 "Glazing" and with hollow-metal manufacturer's written instructions.

3.3 FIELD QUALITY CONTROL

- A. Inspection Agency: Engage a qualified inspector to perform inspections and to furnish reports to Architect.
- B. Inspections:
 - 1. Fire-Rated Door Inspections: Inspect each fire-rated door according to NFPA 80, Section 5.2.
 - 2. Egress Door Inspections: Inspect each door equipped with panic hardware, each door equipped with fire exit hardware, each door located in an exit enclosure, each electrically controlled egress door, and each door equipped with special locking arrangements according to NFPA 101, Section 7.2.1.15.
- C. Repair or remove and replace installations where inspections indicate that they do not comply with specified requirements.
- D. Reinspect repaired or replaced installations to determine if replaced or repaired door assembly installations comply with specified requirements.
- E. Prepare and submit separate inspection report for each fire-rated door assembly indicating compliance with each item listed in NFPA 80 and NFPA 101.

3.4 REPAIR

- A. Prime-Coat Touchup: Immediately after erection, sand smooth rusted or damaged areas of prime coat and apply touchup of compatible air-drying, rust-inhibitive primer.

END OF SECTION 081113

SECTION 081216

ALUMINUM FRAMES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section Includes:
 - 1. Interior aluminum frames for doors installed in gypsum board partitions.
 - 2. Interior aluminum frames for glazing installed in gypsum board partitions.
 - 3. Interior aluminum doors.

1.3 PREINSTALLATION MEETINGS

- A. Preinstallation Conference: Conduct conference at Project site.

1.4 ACTION SUBMITTALS

- A. Product Data: For each type of product.
 - 1. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes.
- B. Shop Drawings: For aluminum frames:
 - 1. Include elevations, sections, and installation details for each wall-opening condition.
 - 2. Include details for each frame type, including dimensioned profiles and metal thicknesses.
 - 3. Include locations of reinforcements and preparations for hardware.
 - 4. Include details of anchorages, joints, field splices, connections, and accessories.
 - 5. Include details of moldings, removable stops, and glazing.
- C. Samples: For each exposed product and for each color and texture specified, in manufacturer's standard sizes.
- D. Product Schedule: For aluminum frames. Coordinate with door hardware schedule and glazing.

1.5 CLOSEOUT SUBMITTALS

- A. Maintenance Data: For aluminum frames to include in maintenance manuals.

1.6 QUALITY ASSURANCE

- A. Mockups: Build mockups to verify selections made under Sample submittals and to demonstrate aesthetic effects and to set quality standards for fabrication and installation.
 - 1. Build mockup of each type of aluminum frame and door in typical wall area as shown on Drawings.
 - 2. Approval of mockups does not constitute approval of deviations from the Contract Documents contained in mockups unless Architect specifically approves such deviations in writing.
 - 3. Subject to compliance with requirements, approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Basis-of-Design Product ISF-1: Subject to compliance with requirements, provide Western Integrated Materials Frames with 304RM Trim, or comparable product by one of the following:
 - 1. C.R. Laurence Co, Inc.; 487 Series Office Partitions.
 - 2. Special-Lite; Omega Interior Aluminum Framing.
- B. Source Limitations: Obtain aluminum frames and frame-manufacturer's doors from single source from single manufacturer.

2.2 COMPONENTS

- A. Aluminum Framing: ASTM B221, with alloy and temper required to suit structural and finish requirements, and not less than 0.062 inch thick.
- B. Door Frames: Extruded aluminum, reinforced for hinges, strikes, and closers.
- C. Glazing Frames: Extruded aluminum, for indicated glass thickness.
- D. Trim: Extruded aluminum, not less than 0.062 inch thick; removable, snap-in casing trim, without exposed fasteners.
 - 1. Trim Style: 1-1/2 inch flush.
- E. Doors: Manufacturer's standard, factory-assembled, 1-3/4-inch-thick, aluminum-framed door construction.
 - 1. Door Operation: Swinging.

2. Stiles: As indicated on drawings.
3. Rails: As indicated on drawings.

F. Door Finish: Match frame and trim finish.

G. Frame and Trim Finish: Clear-anodized aluminum. Unless otherwise noted on the Drawings

1. Color: As indicated on the Drawings

2.3 ACCESSORIES

- A. Fasteners: Aluminum, nonmagnetic, stainless-steel or other noncorrosive metal fasteners compatible with frames, stops, panels, reinforcement plates, hardware, anchors, and other items being fastened.
- B. Door Silencers: Manufacturer's standard continuous mohair, wool pile, or vinyl seals in black color.
- C. Glazing Gaskets: Manufacturer's standard extruded or molded rubber or plastic, to accommodate glazing thickness indicated; in black.
- D. Glass: As specified in Section 088000 "Glazing."
- E. Door Hardware: As specified in Section 087100 "Door Hardware."

2.4 FABRICATION

- A. Provide concealed corner reinforcements and alignment clips for accurately fitted hairline joints at butted and mitered connections.
- B. Factory prepare aluminum frames to receive templated mortised hardware; include cutouts, reinforcements, mortising, drilling, and tapping, according to the Door Hardware Schedule and templates furnished as specified in Section 087100 "Door Hardware."
- C. Fabricate frames for glazing with removable stops to allow glazing replacement without dismantling frame.
 1. Locate removable stops on the inside of spaces accessed by keyed doors.
- D. Fabricate components to allow secure installation without exposed fasteners.

2.5 GENERAL FINISH REQUIREMENTS

- A. Appearance of Finished Work: Noticeable variations in same piece are not acceptable. Variations in appearance of adjoining components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.

2.6 ALUMINUM FINISHES

- A. Clear Anodic Finish: AAMA 611, AA-M12C22A31, Class II, 0.010 mm or thicker.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.
- B. Verify that wall thickness does not exceed standard tolerances allowed by throat size of indicated aluminum frame.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

- A. Install aluminum frames plumb, rigid, properly aligned, and securely fastened in place; according to manufacturer's written instructions.
- B. Install frame components in the longest possible lengths with no piece less than 48 inches; components 96 inches or shorter shall be one piece.
 - 1. Use concealed installation clips to produce tightly fitted and aligned splices and connections.
 - 2. Secure clips to extruded main-frame components and not to snap-in or trim members.
 - 3. Do not leave screws or other fasteners exposed to view when installation is complete.
- C. Glass: Install glass according to Section 088000 "Glazing" and aluminum-frame manufacturer's written instructions.
 - 1. If required for specified glass thickness, rip aluminum frame material to allow for silicone wet glaze installation.
- D. Doors: Install doors aligned with frames and fitted with required hardware.
- E. Door Hardware: Install according to Section 087100 "Door Hardware" and aluminum-frame manufacturer's written instructions.

3.3 ADJUSTING

- A. Inspect installation, correct misalignments, and tighten loose connections.
- B. Doors: Adjust doors to operate smoothly and easily, without binding or warping. Adjust hardware to function smoothly and lubricate as recommended by manufacturer.

- C. Clean exposed frame surfaces promptly after installation, using cleaning methods recommended in writing by frame manufacturer and according to AAMA 609 & 610.
- D. Touch Up: Repair marred frame surfaces to blend inconspicuously with adjacent unrepaired surface so touchup is not visible from a distance of 48 inches as viewed by Architect. Remove and replace frames with damaged finish that cannot be satisfactorily repaired.

END OF SECTION 081216

SECTION 087100 - DOOR HARDWARE

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. This Section includes commercial door hardware for the following:
 - 1. Swinging doors.
 - 2. Sliding doors.
 - 3. Other doors to the extent indicated.
- B. Door hardware includes, but is not necessarily limited to, the following:
 - 1. Mechanical door hardware.
 - 2. Electromechanical door hardware.
 - 3. Cylinders specified for doors in other sections.
- C. Related Sections:
 - 1. Division 08 Section "Hollow Metal Doors and Frames".
 - 2. Division 08 Section "Flush Wood Doors".
 - 3. Division 08 Section "Aluminum-Framed Entrances and Storefronts".
- D. Codes and References: Comply with the version year adopted by the Authority Having Jurisdiction.
 - 1. ANSI A117.1 - Accessible and Usable Buildings and Facilities.
 - 2. ICC/IBC - International Building Code.
 - 3. NFPA 70 - National Electrical Code.
 - 4. NFPA 80 - Fire Doors and Windows.
 - 5. NFPA 101 - Life Safety Code.
 - 6. NFPA 105 - Installation of Smoke Door Assemblies.
 - 7. State Building Codes, Local Amendments.
- E. Standards: All hardware specified herein shall comply with the following industry standards as applicable. Any undated reference to a standard shall be interpreted as referring to the latest edition of that standard:

1. ANSI/BHMA Certified Product Standards - A156 Series.
2. UL10C - Positive Pressure Fire Tests of Door Assemblies.
3. ANSI/UL 294 - Access Control System Units.
4. UL 305 - Panic Hardware.
5. ANSI/UL 437- Key Locks.

1.3 SUBMITTALS

- A. Product Data: Manufacturer's product data sheets including installation details, material descriptions, dimensions of individual components and profiles, operational descriptions and finishes.
- B. Door Hardware Schedule: Prepared by or under the supervision of supplier, detailing fabrication and assembly of door hardware, as well as procedures and diagrams. Coordinate the final Door Hardware Schedule with doors, frames, and related work to ensure proper size, thickness, hand, function, and finish of door hardware.
 1. Format: Comply with scheduling sequence and vertical format in DHI's "Sequence and Format for the Hardware Schedule."
 2. Organization: Organize the Door Hardware Schedule into door hardware sets indicating complete designations of every item required for each door or opening. Organize door hardware sets in same order as in the Door Hardware Sets at the end of Part 3. Submittals that do not follow the same format and order as the Door Hardware Sets will be rejected and subject to resubmission.
 3. Content: Include the following information:
 - a. Type, style, function, size, label, hand, and finish of each door hardware item.
 - b. Manufacturer of each item.
 - c. Fastenings and other pertinent information.
 - d. Location of door hardware set, cross-referenced to Drawings, both on floor plans and in door and frame schedule.
 - e. Explanation of abbreviations, symbols, and codes contained in schedule.
 - f. Mounting locations for door hardware.
 - g. Door and frame sizes and materials.
 - h. Warranty information for each product.
 4. Submittal Sequence: Submit the final Door Hardware Schedule at earliest possible date, particularly where approval of the Door Hardware Schedule must precede fabrication of other work that is critical in the Project construction schedule. Include Product Data, Samples, Shop Drawings of other work affected by door hardware, and other information essential to the coordinated review of the Door Hardware Schedule.
- C. Shop Drawings: Details of electrified access control hardware indicating the following:
 1. Wiring Diagrams: Upon receipt of approved schedules, submit detailed system wiring diagrams for power, signaling, monitoring, communication, and control of the access

control system electrified hardware. Differentiate between manufacturer-installed and field-installed wiring. Include the following:

- a. Elevation diagram of each unique access controlled opening showing location and interconnection of major system components with respect to their placement in the respective door openings.
 - b. Complete (risers, point-to-point) access control system block wiring diagrams.
 - c. Wiring instructions for each electronic component scheduled herein.
2. Electrical Coordination: Coordinate with related sections the voltages and wiring details required at electrically controlled and operated hardware openings.
- D. Keying Schedule: After a keying meeting with the owner has taken place prepare a separate keying schedule detailing final instructions. Submit the keying schedule in electronic format. Include keying system explanation, door numbers, key set symbols, hardware set numbers and special instructions. Owner must approve submitted keying schedule prior to the ordering of permanent cylinders/cores.
- E. Informational Submittals:
1. Product Test Reports: Indicating compliance with cycle testing requirements, based on evaluation of comprehensive tests performed by manufacturer and witnessed by a qualified independent testing agency.
- F. Operating and Maintenance Manuals: Provide manufacturers operating and maintenance manuals for each item comprising the complete door hardware installation in quantity as required in Division 01, Closeout Procedures.

1.4 QUALITY ASSURANCE

- A. Manufacturers Qualifications: Engage qualified manufacturers with a minimum 5 years of documented experience in producing hardware and equipment similar to that indicated for this Project and that have a proven record of successful in-service performance.
- B. Certified Products: Where specified, products must maintain a current listing in the Builders Hardware Manufacturers Association (BHMA) Certified Products Directory (CPD).
- C. Installer Qualifications: A minimum 3 years documented experience installing both standard and electrified door hardware 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.
- D. Door Hardware Supplier Qualifications: Experienced commercial door hardware distributors with a minimum 5 years documented experience supplying both mechanical and electromechanical hardware installations comparable in material, design, and extent to that indicated for this Project. Supplier recognized as a factory direct distributor by the manufacturers of the primary materials with a warehousing facility in Project's vicinity. Supplier to have on staff a certified Architectural Hardware Consultant (AHC) available during

the course of the Work to consult with Contractor, Architect, and Owner concerning both standard and electromechanical door hardware and keying.

- E. Source Limitations: Obtain each type and variety of door hardware specified in this section from a single source unless otherwise indicated.
 - 1. Electrified modifications or enhancements made to a source manufacturer's product line by a secondary or third party source will not be accepted.
 - 2. Provide electromechanical door hardware from the same manufacturer as mechanical door hardware, unless otherwise indicated.
- F. Each unit to bear third party permanent label demonstrating compliance with the referenced standards.
- G. Keying Conference: Conduct conference to comply with requirements in Division 01 Section "Project Meetings." Keying conference to incorporate the following criteria into the final keying schedule document:
 - 1. Function of building, purpose of each area and degree of security required.
 - 2. Plans for existing and future key system expansion.
 - 3. Requirements for key control storage and software.
 - 4. Installation of permanent keys, cylinder cores and software.
 - 5. Address and requirements for delivery of keys.
- H. Pre-Submittal Conference: Conduct coordination conference in compliance with requirements in Division 01 Section "Project Meetings" with attendance by representatives of Supplier(s), Installer(s), and Contractor(s) to review proper methods and the procedures for receiving, handling, and installing door hardware.
 - 1. Prior to installation of door hardware, conduct a project specific training meeting to instruct the installing contractors' personnel on the proper installation and adjustment of their respective products. Product training to be attended by installers of door hardware (including electromechanical hardware) for aluminum, hollow metal and wood doors. Training will include the use of installation manuals, hardware schedules, templates and physical product samples as required.
 - 2. Inspect and discuss electrical roughing-in, power supply connections, and other preparatory work performed by other trades.
 - 3. Review sequence of operation narratives for each unique access controlled opening.
 - 4. Review and finalize construction schedule and verify availability of materials.
 - 5. Review the required inspecting, testing, commissioning, and demonstration procedures
- I. At completion of installation, provide written documentation that components were applied to manufacturer's instructions and recommendations and according to approved schedule.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Inventory door hardware on receipt and provide secure lock-up and shelving for door hardware delivered to Project site. Do not store electronic access control hardware, software or accessories at Project site without prior authorization.
- B. Tag each item or package separately with identification related to the final Door Hardware Schedule, and include basic installation instructions with each item or package.
- C. Deliver, as applicable, permanent keys, cylinders, cores, access control credentials, software and related accessories directly to Owner via registered mail or overnight package service. Instructions for delivery to the Owner shall be established at the "Keying Conference".

1.6 COORDINATION

- A. Templates: Obtain and distribute to the parties involved templates for doors, frames, and other work specified to be factory prepared for installing standard and electrified hardware. Check Shop Drawings of other work to confirm that adequate provisions are made for locating and installing hardware to comply with indicated requirements.
- B. Door and Frame Preparation: Doors and corresponding frames are to be prepared, reinforced and pre-wired (if applicable) to receive the installation of the specified electrified, monitoring, signaling and access control system hardware without additional in-field modifications.

1.7 WARRANTY

- A. General Warranty: Reference Division 01, General Requirements. Special warranties specified in this Article shall not deprive Owner of other rights Owner may have under other provisions of the Contract Documents and shall be in addition to, and run concurrent with, other warranties made by Contractor under requirements of the Contract Documents.
- B. Warranty Period: Written warranty, executed by manufacturer(s), agreeing to repair or replace components of standard and electrified door hardware that fails in materials or workmanship within specified warranty period after final acceptance by the Owner. Failures include, but are not limited to, the following:
 - 1. Structural failures including excessive deflection, cracking, or breakage.
 - 2. Faulty operation of the hardware.
 - 3. Deterioration of metals, metal finishes, and other materials beyond normal weathering.
 - 4. Electrical component defects and failures within the systems operation.
- C. Standard Warranty Period: One year from date of Substantial Completion, unless otherwise indicated.
- D. Special Warranty Periods:
 - 1. Ten years for mortise locks and latches.
 - 2. Five years for exit hardware.

3. Twenty five years for manual overhead door closer bodies.
4. Two years for electromechanical door hardware, unless noted otherwise.

1.8 MAINTENANCE SERVICE

- A. Maintenance Tools and Instructions: Furnish a complete set of specialized tools and maintenance instructions as needed for Owner's continued adjustment, maintenance, and removal and replacement of door hardware.

PART 2 - PRODUCTS

2.1 SCHEDULED DOOR HARDWARE

- A. General: Provide door hardware for each door to comply with requirements in Door Hardware Sets and each referenced section that products are to be supplied under.
- B. Designations: Requirements for quantity, item, size, finish or color, grade, function, and other distinctive qualities of each type of door hardware are indicated in the Door Hardware Sets at the end of Part 3. Products are identified by using door hardware designations, as follows:
 1. Named Manufacturer's Products: Product designation and manufacturer are listed for each door hardware type required for the purpose of establishing requirements. Manufacturers' names are abbreviated in the Door Hardware Schedule.
- C. Substitutions: Requests for substitution and product approval for inclusive mechanical and electromechanical door hardware in compliance with the specifications must be submitted in writing and in accordance with the procedures and time frames outlined in Division 01, Substitution Procedures. Approval of requests is at the discretion of the architect, owner, and their designated consultants.

2.2 HANGING DEVICES

- A. Hinges: ANSI/BHMA A156.1 certified butt hinges with number of hinge knuckles and other options as specified in the Door Hardware Sets.
 1. Quantity: Provide the following hinge quantity:
 - a. Two Hinges: For doors with heights up to 60 inches.
 - b. Three Hinges: For doors with heights 61 to 90 inches.
 - c. Four Hinges: For doors with heights 91 to 120 inches.
 - d. For doors with heights more than 120 inches, provide 4 hinges, plus 1 hinge for every 30 inches of door height greater than 120 inches.
 2. Hinge Size: Provide the following, unless otherwise indicated, with hinge widths sized for door thickness and clearances required:

- a. Widths up to 3'0": 4-1/2" standard or heavy weight as specified.
 - b. Sizes from 3'1" to 4'0": 5" standard or heavy weight as specified.
 3. Hinge Weight and Base Material: Unless otherwise indicated, provide the following:
 - a. Exterior Doors: Heavy weight, non-ferrous, ball bearing or oil impregnated bearing hinges unless Hardware Sets indicate standard weight.
 - b. Interior Doors: Standard weight, steel, ball bearing or oil impregnated bearing hinges unless Hardware Sets indicate heavy weight.
 4. Hinge Options: Comply with the following:
 - a. Non-removable Pins: With the exception of electric through wire hinges, provide set screw in hinge barrel that, when tightened into a groove in hinge pin, prevents removal of pin while door is closed; for the all out-swinging lockable doors.
 5. Manufacturers:
 - a. Hager Companies (HA).
 - b. Ives (IV).
 - c. McKinney Products; ASSA ABLOY Architectural Door Accessories (MK).
 - d. Stanley Hardware (ST).
- B. Continuous Geared Hinges: ANSI/BHMA A156.26 Grade 1-600 certified continuous geared hinge. with minimum 0.120-inch thick extruded 6060 T6 aluminum alloy hinge leaves and a minimum overall width of 4 inches. Hinges are non-handed, reversible and fabricated to template screw locations. Factory trim hinges to suit door height and prepare for electrical cut-outs.
1. Manufacturers:
 - a. Hager Companies (HA).
 - b. Ives (IV).
 - c. Pemko (PE).
 - d. Stanley Hardware (ST).

2.3 DOOR OPERATING TRIM

- A. Door Push Plates and Pulls: ANSI/BHMA A156.6 certified door pushes and pulls of type and design specified in the Hardware Sets. Coordinate and provide proper width and height as required where conflicting hardware dictates.
1. Push/Pull Plates: Minimum .050 inch thick, size as indicated in hardware sets, with beveled edges, secured with exposed screws unless otherwise indicated.
 2. Door Pull and Push Bar Design: Size, shape, and material as indicated in the hardware sets. Minimum clearance of 2 1/2-inches from face of door unless otherwise indicated.
 3. Offset Pull Design: Size, shape, and material as indicated in the hardware sets. Minimum clearance of 2 1/2-inches from face of door and offset of 90 degrees unless otherwise indicated.

DOOR HARDWARE

087100- 7

4. Fasteners: Provide manufacturer's designated fastener type as indicated in Hardware Sets.
5. Manufacturers:
 - a. Ives (IV).
 - b. Rockwood (RO).
 - c. Trimco (TC).

2.4 CYLINDERS AND KEYING

- A. General: Cylinder manufacturer to have minimum (10) years experience designing secured master key systems and have on record a published security keying system policy.
- B. Source Limitations: Obtain each type of keyed cylinder and keys from the same source manufacturer as locksets and exit devices, unless otherwise indicated.
 1. Manufacturers:
 - a. Corbin Russwin Hardware (RU).
- C. Cylinder Types: Original manufacturer cylinders able to supply the following cylinder formats and types:
 1. Threaded mortise cylinders with rings and cams to suit hardware application.
 2. Rim cylinders with back plate, flat-type vertical or horizontal tailpiece, and raised trim ring.
 3. Bored or cylindrical lock cylinders with tailpieces as required to suit locks.
 4. Tubular deadlocks and other auxiliary locks.
 5. Mortise and rim cylinder collars to be solid and recessed to allow the cylinder face to be flush and be free spinning with matching finishes.
 6. Keyway: Match Facility Standard.
- D. Removable Cores: Provide removable cores as specified, core insert, removable by use of a special key, and for use with only the core manufacturer's cylinder and door hardware.
- E. Keying System: Each type of lock and cylinders to be factory keyed.
 1. Supplier shall conduct a "Keying Conference" to define and document keying system instructions and requirements.
 2. Furnish factory cut, nickel-silver large bow permanently inscribed with a visual key control number as directed by Owner.
 3. Existing System: Field verify and key cylinders to match Owner's existing system.
- F. Key Quantity: Provide the following minimum number of keys:
 1. Change Keys per Cylinder: Two (2)

2.5 MECHANICAL LOCKS AND LATCHING DEVICES

- A. Mortise Locksets, Grade 1 (Heavy Duty): ANSI/BHMA A156.13, Series 1000, Operational Grade 1 Certified Products Directory (CPD) listed. Locksets are to be manufactured with a corrosion resistant steel case and be field-reversible for handing without disassembly of the lock body.
 - 1. Manufacturers:
 - a. Corbin Russwin Hardware (RU) - ML2000 Series.
 - b. No Substitution.

2.6 LOCK AND LATCH STRIKES

- A. Strikes: Provide manufacturer's standard strike with strike box for each latch or lock bolt, with curved lip extended to protect frame, finished to match door hardware set, unless otherwise indicated, and as follows:
 - 1. Flat-Lip Strikes: For locks with three-piece antifriction latchbolts, as recommended by manufacturer.
 - 2. Extra-Long-Lip Strikes: For locks used on frames with applied wood casing trim.
 - 3. Aluminum-Frame Strike Box: Provide manufacturer's special strike box fabricated for aluminum framing.
 - 4. Double-lipped strikes: For locks at double acting doors. Furnish with retractable stop for rescue hardware applications.
- B. Standards: Comply with the following:
 - 1. Strikes for Mortise Locks and Latches: BHMA A156.13.
 - 2. Strikes for Bored Locks and Latches: BHMA A156.2.
 - 3. Strikes for Auxiliary Deadlocks: BHMA A156.36.
 - 4. Dustproof Strikes: BHMA A156.16.

2.7 CONVENTIONAL EXIT DEVICES

- A. General Requirements: All exit devices specified herein shall meet or exceed the following criteria:
 - 1. At doors not requiring a fire rating, provide devices complying with NFPA 101 and listed and labeled for "Panic Hardware" according to UL305. Provide proper fasteners as required by manufacturer including sex nuts and bolts at openings specified in the Hardware Sets.
 - 2. Where exit devices are required on fire rated doors, provide devices complying with NFPA 80 and with UL labeling indicating "Fire Exit Hardware". Provide devices with the proper fasteners for installation as tested and listed by UL. Consult manufacturer's catalog and template book for specific requirements.

3. Except on fire rated doors, provide exit devices with hex key dogging device to hold the pushbar and latch in a retracted position. Provide optional keyed cylinder dogging on devices where specified in Hardware Sets.
 4. Devices must fit flat against the door face with no gap that permits unauthorized dogging of the push bar. The addition of filler strips is required in any case where the door light extends behind the device as in a full glass configuration.
 5. Lever Operating Trim: Where exit devices require lever trim, furnish manufacturer's heavy duty escutcheon trim with threaded studs for thru-bolts.
 - a. Lock Trim Design: As indicated in Hardware Sets, provide finishes and designs to match that of the specified locksets.
 - b. Where function of exit device requires a cylinder, provide a cylinder (Rim or Mortise) as specified in Hardware Sets.
 6. Vertical Rod Exit Devices: Where surface or concealed vertical rod exit devices are used at interior openings, provide as less bottom rod (LBR) unless otherwise indicated. Provide dust proof strikes where thermal pins are required to project into the floor.
 7. Narrow Stile Applications: At doors constructed with narrow stiles, or as specified in Hardware Sets, provide devices designed for maximum 2" wide stiles.
 8. Dummy Push Bar: Nonfunctioning push bar matching functional push bar.
 9. Rail Sizing: Provide exit device rails factory sized for proper door width application.
 10. Through Bolt Installation: For exit devices and trim as indicated in Door Hardware Sets.
- B. Conventional Push Rail Exit Devices (Heavy Duty): ANSI/BHMA A156.3, Grade 1 Certified Products Directory (CPD) listed panic and fire exit hardware devices furnished in the functions specified in the Hardware Sets. Exit device latch to be stainless steel, pullman type, with deadlock feature.
1. Manufacturers:
 - a. Von Duprin

2.8 DOOR CLOSERS

- A. All door closers specified herein shall meet or exceed the following criteria:
1. General: Door closers to be from one manufacturer, matching in design and style, with the same type door preparations and templates regardless of application or spring size. Closers to be non-handed with full sized covers.
 2. Standards: Closers to comply with UL-10C for Positive Pressure Fire Test and be U.L. listed for use of fire rated doors.

DOOR HARDWARE

087100- 10

3. Size of Units: Comply with manufacturer's written recommendations for sizing of door closers depending on size of door, exposure to weather, and anticipated frequency of use. Where closers are indicated for doors required to be accessible to the Americans with Disabilities Act, provide units complying with ANSI ICC/A117.1.
 4. Closer Arms: Provide heavy duty, forged steel closer arms unless otherwise indicated in Hardware Sets.
 5. Closers shall not be installed on exterior or corridor side of doors; where possible install closers on door for optimum aesthetics.
 6. Closer Accessories: Provide door closer accessories including custom templates, special mounting brackets, spacers and drop plates as required for proper installation. Provide through-bolt and security type fasteners as specified in the hardware sets.
- B. Door Closers, Surface Mounted (Heavy Duty): ANSI/BHMA A156.4, Grade 1 Certified Products Directory (CPD) listed surface mounted, heavy duty door closers with complete spring power adjustment, sizes 1 thru 6; and fully operational adjustable according to door size, frequency of use, and opening force. Closers to be rack and pinion type, one piece cast iron or aluminum alloy body construction, with adjustable backcheck and separate non-critical valves for closing sweep and latch speed control. Provide non-handed units standard.
1. Manufacturers:
 - a. Norton Rixson (NO) - 7500 Series.

2.9 ARCHITECTURAL TRIM

A. Door Protective Trim

1. General: Door protective trim units to be of type and design as specified below or in the Hardware Sets.
2. Size: Fabricate protection plates (kick, armor, or mop) not more than 2" less than door width (LDW) on stop side of single doors and 1" LDW on stop side of pairs of doors, and not more than 1" less than door width on pull side. Coordinate and provide proper width and height as required where conflicting hardware dictates. Height to be as specified in the Hardware Sets.
3. Where plates are applied to fire rated doors with the top of the plate more than 16" above the bottom of the door, provide plates complying with NFPA 80. Consult manufacturer's catalog and template book for specific requirements for size and applications.
4. Protection Plates: ANSI/BHMA A156.6 certified protection plates (kick, armor, or mop), fabricated from the following:
 - a. Stainless Steel: 300 grade, .050-inch thick.

5. Options and fasteners: Provide manufacturer's designated fastener type as specified in the Hardware Sets. Provide countersunk screw holes.
6. Manufacturers:
 - a. Ives (IV).
 - b. Rockwood (RO).
 - c. Trimco (TC).

2.10 DOOR STOPS AND HOLDERS

- A. General: Door stops and holders to be of type and design as specified below or in the Hardware Sets.
- B. Door Stops and Bumpers: ANSI/BHMA A156.16, Grade 1 certified door stops and wall bumpers. Provide wall bumpers, either convex or concave types with anchorage as indicated, unless floor or other types of door stops are specified in Hardware Sets. Do not mount floor stops where they will impede traffic. Where floor or wall bumpers are not appropriate, provide overhead type stops and holders.
 1. Manufacturers:
 - a. Ives (IV).
 - b. Rockwood (RO).
 - c. Trimco (TC).

2.11 ARCHITECTURAL SEALS

- A. General: Thresholds, weatherstripping, and gasket seals to be of type and design as specified below or in the Hardware Sets. Provide continuous weatherstrip gasketing on exterior doors and provide smoke, light, or sound gasketing on interior doors where indicated. At exterior applications provide non-corrosive fasteners and elsewhere where indicated.
- B. Smoke Labeled Gasketing: Assemblies complying with NFPA 105 that are listed and labeled by a testing and inspecting agency acceptable to authorities having jurisdiction, for smoke control ratings indicated, based on testing according to UL 1784.
 1. Provide smoke labeled perimeter gasketing at all smoke labeled openings.
- C. Fire Labeled Gasketing: Assemblies complying with NFPA 80 that are listed and labeled by a testing and inspecting agency acceptable to authorities having jurisdiction, for fire ratings indicated, based on testing according to UL-10C.
 1. Provide intumescent seals as indicated to meet UL10C Standard for Positive Pressure Fire Tests of Door Assemblies, and NFPA 252, Standard Methods of Fire Tests of Door Assemblies.

- D. Sound-Rated Gasketing: Assemblies that are listed and labeled by a testing and inspecting agency, for sound ratings indicated.
- E. Replaceable Seal Strips: Provide only those units where resilient or flexible seal strips are easily replaceable and readily available from stocks maintained by manufacturer.
- F. Manufacturers:
 - 1. National Guard Products (NG).
 - 2. Pemko (PE).
 - 3. Zero (ZE).

2.12 FABRICATION

- A. Fasteners: Provide door hardware manufactured to comply with published templates generally prepared for machine, wood, and sheet metal screws. Provide screws according to manufacturers recognized installation standards for application intended.

2.13 FINISHES

- A. Standard: Designations used in the Hardware Sets and elsewhere indicate hardware finishes complying with ANSI/BHMA A156.18, including coordination with traditional U.S. finishes indicated by certain manufacturers for their products.
- B. Provide quality of finish, including thickness of plating or coating (if any), composition, hardness, and other qualities complying with manufacturer's standards, but in no case less than specified by referenced standards for the applicable units of hardware
- C. Protect mechanical finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine scheduled openings, with Installer present, for compliance with requirements for installation tolerances, labeled fire door assembly construction, wall and floor construction, and other conditions affecting performance.
- B. Notify architect of any discrepancies or conflicts between the door schedule, door types, drawings and scheduled hardware. Proceed only after such discrepancies or conflicts have been resolved in writing.

3.2 PREPARATION

- A. Hollow Metal Doors and Frames: Comply with ANSI/DHI A115 series.
- B. Wood Doors: Comply with ANSI/DHI A115-W series.

3.3 INSTALLATION

- A. Install each item of mechanical and electromechanical hardware and access control equipment to comply with manufacturer's written instructions and according to specifications.
 - 1. Installers are to be trained and certified by the manufacturer on the proper installation and adjustment of fire, life safety, and security products including: hanging devices; locking devices; closing devices; and seals.
- B. Mounting Heights: Mount door hardware units at heights indicated in following applicable publications, unless specifically indicated or required to comply with governing regulations:
 - 1. Standard Steel Doors and Frames: DHI's "Recommended Locations for Architectural Hardware for Standard Steel Doors and Frames."
 - 2. DHI TDH-007-20: Installation Guide for Doors and Hardware.
 - 3. Where indicated to comply with accessibility requirements, comply with ANSI A117.1 "Accessibility Guidelines for Buildings and Facilities."
 - 4. Provide blocking in drywall partitions where wall stops or other wall mounted hardware is located.
- C. Retrofitting: Install door hardware to comply with manufacturer's published templates and written instructions. Where cutting and fitting are required to install door hardware onto or into surfaces that are later to be painted or finished in another way, coordinate removal, storage, and reinstallation of surface protective trim units with finishing work specified in Division 9 Sections. Do not install surface-mounted items until finishes have been completed on substrates involved.
- D. Thresholds: Set thresholds for exterior and acoustical doors in full bed of sealant complying with requirements specified in Division 7 Section "Joint Sealants."
- E. Storage: Provide a secure lock up for hardware delivered to the project but not yet installed. Control the handling and installation of hardware items so that the completion of the work will not be delayed by hardware losses before and after installation.

3.4 FIELD QUALITY CONTROL

- A. Field Inspection (Punch Report): Reference Division 01 Sections "Closeout Procedures". Produce project punch report for each installed door opening indicating compliance with approved submittals and verification hardware is properly installed, operating and adjusted. Include list of items to be completed and corrected, indicating the reasons or deficiencies causing the Work to be incomplete or rejected.

1. Organization of List: Include separate Door Opening and Deficiencies and Corrective Action Lists organized by Mark, Opening Remarks and Comments, and related Opening Images and Video Recordings.

3.5 ADJUSTING

- A. Initial Adjustment: Adjust and check each operating item of door hardware and each door to ensure proper operation or function of every unit. Replace units that cannot be adjusted to operate as intended. Adjust door control devices to compensate for final operation of heating and ventilating equipment and to comply with referenced accessibility requirements.

3.6 CLEANING AND PROTECTION

- A. Protect all hardware stored on construction site in a covered and dry place. Protect exposed hardware installed on doors during the construction phase. Install any and all hardware at the latest possible time frame.
- B. Clean adjacent surfaces soiled by door hardware installation.
- C. Clean operating items as necessary to restore proper finish. Provide final protection and maintain conditions that ensure door hardware is without damage or deterioration at time of owner occupancy.

3.7 DEMONSTRATION

- A. Instruct Owner's maintenance personnel to adjust, operate, and maintain mechanical and electromechanical door hardware.

3.8 DOOR HARDWARE SETS

- A. The hardware sets represent the design intent and direction of the owner and architect. They are a guideline only and should not be considered a detailed hardware schedule. Discrepancies, conflicting hardware and missing items should be brought to the attention of the architect with corrections made prior to the bidding process. Omitted items not included in a hardware set should be scheduled with the appropriate additional hardware required for proper application and functionality.
 1. Quantities listed are for each pair of doors, or for each single door.
 2. The supplier is responsible for handing and sizing all products.
 3. Where multiple options for a piece of hardware are given in a single line item, the supplier shall provide the appropriate application for the opening.

4. At existing openings with new hardware the supplier shall field inspect existing conditions prior to the submittal stage to verify the specified hardware will work as required. Provide alternate solutions and proposals as needed.

B. Manufacturer's Abbreviations:

1. MK – McKinney
2. PE – Pemko
3. SU – Securitron
4. RU – Corbin Russwin
5. VD – Von Duprin
6. RO - Rockwood
7. NO – Norton

Hardware Sets

Verify all compatibility with the Owner and Architect prior to Final Selection

Set: 1.0

Doors: BFL107, BFL109, PAC106

| | | | |
|--------------------|------------------------|-----|----|
| 1 Continuous Hinge | CFM SLF-HD1 PT | | PE |
| 1 Entrance Lock | ML2051(F04) NSA CT6D | 626 | RU |
| 1 Permanent Core | Match existing system. | 626 | RU |
| 1 Surface Closer | CPS7500 | 689 | NO |
| 1 Threshold | 271A | | PE |
| 1 Gasketing | by door mfg. | | |
| 1 Sweep | 57AV | | PE |

Set: 2.0

Doors: P002

| | | | |
|--------------------|----------------------------|-------|----|
| 1 Continuous Hinge | CFM SLF-HD1 | | PE |
| 1 Store Door Lock | ML2022 NSA CT6D | 626 | RU |
| 2 Permanent Core | Match existing C/R system. | 626 | RU |
| 1 Stop | 400/403/441H (as required) | US26D | RO |
| 1 Gasketing | by door mfg. | | |
| 1 Door Bottom | 420APKL | | PE |
| 1 Floor Plate | 14/1AKJ37400 | | PE |

Set: 3.0

Doors: PAC101

| | | | |
|--------------------|----------------------------|-------|----|
| 2 Continuous Hinge | CFM SLF-HD1 | | PE |
| 2 Push Plate | 70RCC | US32D | RO |
| 2 Surface Closer | UNI7500 (7788 as required) | 689 | NO |
| 1 Gasketing | by door mfg. | | |
| 1 Threshold | 14/1AKJ37400 | | PE |

Set: 4.0

Doors: LC105

| | | | |
|-------------------|----------------------------|-------|----|
| 6 Hinge | T4A3786 | US26D | MK |
| 1 Exit Device | PA-AX-9849-EO-F-LBL | US32D | VD |
| 1 Exit Device | PA-AX-9849-L-F-2SI-06-LBL | US32D | VD |
| 1 Mortise Housing | CR1070-114 | 626 | RU |
| 1 Permanent Core | Match existing C/R system. | 626 | RU |
| 2 Surface Closer | PR 7500 | 689 | NO |
| 2 Stop | 400/403/441H (as required) | US26D | RO |
| 1 Gasketing | S44BL | | PE |
| 1 Astragal | S771C | | PE |

Notes: Specified hardware based on using Curries 767 20 min door.

Set: 5.0

Doors: H116

| | | | |
|------------------|----------------------------|-------|----|
| 3 Hinge | TA2714 | US26D | MK |
| 1 Storeroom Lock | ML2057 NSA CT6D | 626 | RU |
| 1 Permanent Core | Match existing C/R system. | 626 | RU |
| 1 Stop | 400/403/441H (as required) | US26D | RO |
| 3 Silencer | 608 | | RO |

Set: 6.0

Doors: B202, B204

| | | | |
|------------------|----------------------------|-------|----|
| 3 Hinge | T4A3786 | US26D | MK |
| 1 Entrance Lock | ML2053 NSA M34 CT6D | 626 | RU |
| 1 Permanent Core | Match existing C/R system. | 626 | RU |
| 1 Surface Closer | 7500 | 689 | NO |
| 1 Kick Plate | K1050 10" | US32D | RO |
| 1 Stop | 400/403/441H (as required) | US26D | RO |
| 1 Gasketing | S44BL | | PE |

Set: 7.0

Doors: H113

| | | | |
|---------------------------|----------------------------|-------|----|
| 3 Hinge | T4A3786 | US26D | MK |
| 1 Classroom Intruder Lock | ML2052 NSA CT6D | 626 | RU |
| 2 Permanent Core | Match existing C/R system. | 626 | RU |
| 1 Surface Closer | 7500 | 689 | NO |
| 1 Kick Plate | K1050 10" | US32D | RO |
| 1 Stop | 400/403/441H (as required) | US26D | RO |
| 1 Gasketing | S44BL | | PE |

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SERVICES RENOVATION

75-21809-00
MARCH 28, 2022
BID SET

Set: 8.0

Doors: B222

| | | | |
|------------------|----------------------------|-------|----|
| 3 Hinge | T4A3786 | US26D | MK |
| 1 Pull Plate | BF 111x70C | US32D | RO |
| 1 Push Plate | 70RCF | US32D | RO |
| 1 Surface Closer | PR 7500 | 689 | NO |
| 1 Kick Plate | K1050 10" | US32D | RO |
| 1 Stop | 400/403/441H (as required) | US26D | RO |
| 1 Gasketing | S44BL | | PE |

END OF SECTION 087100

DOOR HARDWARE

087100- 18

SECTION 088813

FIRE-RESISTANT GLAZING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section Includes:
 - 1. Fire-protection-rated glazing.
 - 2. Fire-resistance-rated glazing.
- B. Related Requirements:
 - 1. Section 081113 Hollow Metal Doors And Frames.

1.3 DEFINITIONS

- A. Glass Manufacturers: Firms that produce primary glass, fabricated glass, or both, as defined in referenced glazing publications.
- B. Glass Thicknesses: Indicated by thickness designations in millimeters according to ASTM C1036.

1.4 COORDINATION

- A. Coordinate glazing channel dimensions to provide necessary bite on glass, minimum edge and face clearances, with reasonable tolerances.

1.5 ACTION SUBMITTALS

- A. Product Data: For each type of product.
- B. Glass Samples: For each type of glass product; 12 inches square.
- C. Glazing Schedule: List glass types and thicknesses for each size opening and location. Use same designations indicated on Drawings.

1.6 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For installers and glass testing agency.
- B. Product Certificates: For each type of glass and glazing product, from manufacturer.
- C. Sample Warranties: For special warranties.

1.7 QUALITY ASSURANCE

- A. Installer Qualifications: A qualified installer who employs glass installers for this Project who are certified under the National Glass Association's Certified Glass Installer Program.

1.8 DELIVERY, STORAGE, AND HANDLING

- A. Protect glazing materials according to manufacturer's written instructions. Prevent damage to glass and glazing materials from condensation, temperature changes, direct exposure to sun, or other causes.

1.9 FIELD CONDITIONS

- A. Environmental Limitations: Do not deliver or install fire-resistant glazing until spaces are enclosed and weathertight and temporary HVAC system is operating and maintaining ambient temperature conditions at occupancy levels during the remainder of the construction period.

1.10 WARRANTY

- A. Manufacturer's Special Warranty on Laminated Glass: Manufacturer agrees to replace laminated-glass units that deteriorate within specified warranty period. Deterioration of laminated glass is defined as defects developed from normal use that are not attributed to glass breakage or to maintaining and cleaning laminated glass contrary to manufacturer's written instructions. Defects include edge separation, delamination materially obstructing vision through glass, and blemishes exceeding those allowed by referenced laminated-glass standard.

- 1. Warranty Period: Five years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Source Limitations for Glass: Obtain from single source from single manufacturer for each glass type.
- B. Source Limitations for Glazing Accessories: Obtain from single source from single manufacturer for each product and installation method.

2.2 PERFORMANCE REQUIREMENTS

- A. General: Installed glazing systems shall withstand normal thermal movement and impact loads (where applicable) without failure, including loss or glass breakage attributable to the following: defective manufacture, fabrication, or installation; deterioration of glazing materials; or other defects in construction.

2.3 GLASS PRODUCTS, GENERAL

- A. Glazing Publications: Comply with published recommendations of glass product manufacturers and organization below unless more stringent requirements are indicated. Refer to these publications for glazing terms not otherwise defined in this Section or in referenced standards.
 - 1. GANA Publications: "Laminated Glazing Reference Manual" and "Glazing Manual."
- B. Safety Glazing Labeling: Permanently mark glazing with certification label of the Safety Glazing Certification Council or another certification agency acceptable to authorities having jurisdiction. Label shall indicate manufacturer's name, type of glass, glass thickness, and safety glazing standard with which glass complies.

2.4 GLASS PRODUCTS

- A. Ultraclear Float Glass: ASTM C1036, Type I, Quality-Q3, Class I (clear), with visible light transmission not less than 91 percent.

2.5 FIRE-RESISTANCE-RATED GLAZING

- A. Laminated Glass with Intumescent Interlayers: Laminated glass made from multiple plies of uncoated, ultraclear float glass; with intumescent interlayers; and complying with 16 CFR 1201, Category II.
 - 1. Basis-of-Design Product: IGL-02 20 Min, Subject to compliance with requirements, provide Pilkington North America; Pyrostop or comparable product by one of the following:
 - a. Technical Glass Products.
 - b. Vetrotech Saint-Gobain.

2.6 GLAZING ACCESSORIES

- A. Provide glazing gaskets, glazing tapes, setting blocks, spacers, edge blocks, and other glazing accessories that are compatible with glazing products and each other and are approved by testing agencies that listed and labeled fire-resistant glazing products with which products are used for applications and fire-protection ratings indicated.
- B. Expanded Cellular Glazing Tapes: Closed-cell, PVC foam tapes; factory coated with adhesive on both surfaces; and complying with AAMA 800 for the following types:

1. AAMA 810.1, Type 1, for glazing applications in which tape acts as the primary sealant.
2. AAMA 810.1, Type 2, for glazing applications in which tape is used in combination with a full bead of liquid sealant.

2.7 MISCELLANEOUS GLAZING MATERIALS

- A. General: Provide products of material, size, and shape complying with referenced glazing standard, requirements of manufacturers of glass and other glazing materials for application indicated, and with a proven record of compatibility with surfaces contacted in installation.
- B. Perimeter Insulation for Fire-Resistive Glazing: Product that is approved by testing agency that listed and labeled fire-resistant glazing product with which it is used for application and fire-protection rating indicated.

2.8 FABRICATION OF GLAZING UNITS

- A. Fabricate glazing units in sizes required to fit openings indicated for Project, with edge and face clearances, edge and surface conditions, and bite complying with written instructions of product manufacturer and referenced glazing publications, to comply with system performance requirements.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine framing, glazing channels, and stops, with Installer present, for compliance with manufacturing and installation tolerances, including those for size, squareness, and offsets at corners, and for compliance with minimum required face and edge clearances.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Clean glazing channels and other framing members receiving glass immediately before glazing. Remove coatings not firmly bonded to substrates.
- B. Examine glazing units to locate fire side and protected side. Label or mark units as needed so that fire side and protected side are readily identifiable. Do not use materials that leave visible marks in the completed work.

3.3 GLAZING, GENERAL

- A. Use methods approved by testing agencies that listed and labeled fire-resistant glazing products.

- B. Comply with combined written instructions of manufacturers of glass, sealants, gaskets, and other glazing materials unless more stringent requirements are indicated, including those in referenced glazing publications.
- C. Protect glass edges from damage during handling and installation. Remove damaged glass from Project site and legally dispose of off Project site. Damaged glass is glass with edge damage or other imperfections that, when installed, could weaken glass and impair performance and appearance.
- D. Install setting blocks in sill rabbets, sized and located to comply with referenced glazing publications unless otherwise required by glass manufacturer. Set blocks in thin course of compatible sealant suitable for heel bead.
- E. Do not exceed edge pressures stipulated by glass manufacturers for installing glass lites.
- F. Provide spacers for glass lites where length plus width is larger than 50 inches.
 - 1. Locate spacers directly opposite each other on both inside and outside faces of glass. Install correct size and spacing to preserve required face clearances unless gaskets and glazing tapes are used that have demonstrated ability to maintain required face clearances and to comply with system performance requirements.
 - 2. Provide 1/8-inch minimum bite of spacers on glass and use thickness equal to sealant width. With glazing tape, use thickness slightly less than final compressed thickness of tape.
- G. Provide edge blocking where indicated or needed to prevent glass lites from moving sideways in glazing channel, as recommended in writing by glass manufacturer and according to requirements in referenced glazing publications.
- H. Set glass lites with proper orientation so that coatings face fire side or protected side as specified.

3.4 TAPE GLAZING

- A. Position tapes on fixed stops so that, when compressed by glass, their exposed edges are flush with or protrude slightly above sightline of stops.
- B. Install tapes continuously, but not necessarily in one continuous length. Do not stretch tapes to make them fit opening.
- C. Cover vertical framing joints by applying tapes to heads and sills first and then to jambs. Cover horizontal framing joints by applying tapes to jambs and then to heads and sills.
- D. Place joints in tapes at corners of opening with adjoining lengths butted together, not lapped. Seal joints in tapes with compatible sealant approved by tape manufacturer.
- E. Do not remove release paper from tape until right before each glazing unit is installed.
- F. Apply heel bead of elastomeric sealant.

- G. Center glass lites in openings on setting blocks and press firmly against tape by inserting dense compression gaskets formed and installed to lock in place against faces of removable stops. Start gasket applications at corners and work toward centers of openings.
- H. Apply cap bead of elastomeric sealant over exposed edge of tape.

3.5 GASKET GLAZING (DRY)

- A. Cut compression gaskets to lengths recommended by gasket manufacturer to fit openings exactly, with allowance for stretch during installation.
- B. Insert soft compression gasket between glass and frame or fixed stop, so it is securely in place with joints miter cut and bonded together at corners.
- C. Install gaskets so they protrude past face of glazing stops.

3.6 CLEANING AND PROTECTION

- A. Immediately after installation, remove nonpermanent labels and clean surfaces.
- B. Protect glass from contact with contaminating substances resulting from construction operations. Examine glass surfaces adjacent to or below exterior concrete and other masonry surfaces at frequent intervals during construction, but not less than once a month, for buildup of dirt, scum, alkaline deposits, or stains.
 - 1. If, despite such protection, contaminating substances do come into contact with glass, remove substances immediately as recommended in writing by glass manufacturer.
- C. Remove and replace glass that is damaged during construction period.
- D. Wash glass on both exposed surfaces in each area of Project not more than four days before date scheduled for inspections that establish date of Substantial Completion. Wash glass as recommended in writing by glass manufacturer.

END OF SECTION 088813

SECTION 092216

NON-STRUCTURAL METAL FRAMING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section Includes:
 - 1. Non-load-bearing steel framing systems for interior partitions.
 - 2. Suspension systems for interior ceilings and soffits.
 - 3. Grid suspension systems for gypsum board ceilings.
- B. Related Requirements:

1.3 ACTION SUBMITTALS

- A. Product Data: For each type of product.

1.4 INFORMATIONAL SUBMITTALS

- A. Product Certificates: For each type of code-compliance certification for studs and tracks.
- B. Evaluation Reports: For embossed, high-strength steel studs and tracks post-installed anchors and power-actuated fasteners, from ICC-ES or other qualified testing agency acceptable to authorities having jurisdiction.

1.5 QUALITY ASSURANCE

- A. Code-Compliance Certification of Studs and Tracks: Provide documentation that framing members are certified according to the product-certification program of the Steel Stud Manufacturers Association.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Fire-Test-Response Characteristics: For fire-resistance-rated assemblies that incorporate non-load-bearing steel framing, provide materials and construction identical to those tested in assembly indicated, according to ASTM E119 by an independent testing agency.
- B. STC-Rated Assemblies: For STC-rated assemblies, provide materials and construction identical to those tested in assembly indicated on Drawings, according to ASTM E90 and classified according to ASTM E413 by an independent testing agency.
- C. Horizontal Deflection: For composite wall assemblies, limited to 1/360 of the wall height based on horizontal loading of 5 lbf/sq. ft. unless otherwise noted.
 - 1. For wall assemblies with rigid finish materials, including but not limited to tile, horizontal deflection shall be limited to 1/360 of the wall height based on horizontal loading of 5 lbf/sq. ft.

2.2 FRAMING SYSTEMS

- A. Framing Members, General: Comply with ASTM C754 for conditions indicated.
 - 1. Steel Sheet Components: Comply with ASTM C645 requirements for steel unless otherwise indicated.
 - 2. Protective Coating: Coating with equivalent corrosion resistance of ASTM A653/A653M, G40, hot dip galvanized unless otherwise indicated.
- B. Studs and Tracks: ASTM C645. Use either conventional steel studs and tracks or embossed, high-strength steel studs and tracks.
 - 1. Steel Studs and Tracks:
 - a. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - 1) CEMCO; California Expanded Metal Products Co.
 - 2) ClarkDietrich.
 - 3) MarinoWARE.
 - 4) Telling Industries.
 - b. Minimum Base-Steel Thickness: As indicated on the drawings.
 - c. Depth: As indicated on Drawings.
 - 2. Embossed, High Strength Steel Studs and Tracks: Roll-formed and embossed with surface deformations to stiffen the framing members so that they are structurally comparable to conventional ASTM C645 steel studs and tracks.

- a. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - 1) CEMCO; California Expanded Metal Products Co.
 - 2) ClarkDietrich.
 - 3) MarinoWARE.
 - 4) Telling Industries.
- b. Minimum Base-Steel Thickness: As required by horizontal deflection performance requirements.
- c. Depth: As indicated on Drawings.

C. Slip-Type Head Joints: Where indicated, provide one of the following:

1. Clip System: Clips designed for use in head-of-wall deflection conditions that provide a positive attachment of studs to tracks while allowing 1-inch minimum vertical movement.
2. Single Long-Leg Track System: ASTM C645 top track with 2-inch- deep flanges in thickness not less than indicated for studs, installed with studs friction fit into top track and with continuous bridging located within 12 inches of the top of studs to provide lateral bracing.
3. Double-Track System: ASTM C645 top outer tracks, inside track with 2-inch- deep flanges in thickness not less than indicated for studs and fastened to studs, and outer track sized to friction-fit over inner track.
4. Deflection Track: Steel sheet top track manufactured to prevent cracking of finishes applied to interior partition framing resulting from deflection of structure above; in thickness not less than indicated for studs and in width to accommodate depth of studs.

D. Firestop Tracks: Top track manufactured to allow partition heads to expand and contract with movement of structure while maintaining continuity of fire-resistance-rated assembly indicated; in thickness not less than indicated for studs and in width to accommodate depth of studs.

E. Flat Strap and Backing Plate: Steel sheet for blocking and bracing in length and width indicated.

1. Minimum Base-Steel Thickness: As indicated on Drawings.

F. Cold-Rolled Channel Bridging: Steel, 0.0538-inch minimum base-steel thickness, with minimum 1/2-inch- wide flanges.

1. Depth: 1-1/2 inches.
2. Clip Angle: Not less than 1-1/2 by 1-1/2 inches, 0.068-inch- thick, galvanized steel.

G. Hat-Shaped, Rigid Furring Channels: ASTM C645.

2.3 SUSPENSION SYSTEMS

- A. Tie Wire: ASTM A641/A641M, Class 1 zinc coating, soft temper, 0.062-inch- diameter wire, or double strand of 0.048-inch- diameter wire.

NON-STRUCTURAL METAL FRAMING

092216 - 3

B. Hanger Attachments to Concrete:

1. Post-Installed Anchors: Fastener systems with an evaluation report acceptable to authorities having jurisdiction, based on ICC-ES as appropriate for the substrate.
 - a. Uses: Securing hangers to structure.
 - b. Type: As indicated on the Drawings.
 - c. Material for Interior Locations: Carbon-steel components zinc-plated to comply with ASTM B633 or ASTM F1941, Class Fe/Zn 5, unless otherwise indicated.
 - d. Material for Exterior or Interior Locations and Where Stainless Steel Is Indicated: Alloy stainless-steel bolts, ASTM F593, and nuts, ASTM F594.
2. Power-Actuated Anchors: Fastener systems with an evaluation report acceptable to authorities having jurisdiction, based on ICC-ES AC70.

C. Wire Hangers: ASTM A641/A641M, Class 1 zinc coating, soft temper, 0.16 inch in diameter.

D. Carrying Channels (Main Runners): Cold-rolled, commercial-steel sheet with a base-steel thickness of 0.0538 inch and minimum 1/2-inch- wide flanges.

1. Depth: As indicated on Drawings.

E. Furring Channels (Furring Members):

1. Cold-Rolled Channels: 0.0538-inch uncoated-steel thickness, with minimum 1/2-inch-wide flanges, 3/4 inch deep.
2. Steel Studs and Tracks: ASTM C645.
 - a. Minimum Base-Steel Thickness: As indicated on Drawings
 - b. Depth: As indicated on Drawings
3. Embossed, High-Strength Steel Studs and Tracks: ASTM C645.
4. Minimum Base-Steel Thickness: As indicated on Drawings Depth: [As indicated on Drawings] Hat-Shaped, Rigid Furring Channels: ASTM C645, 7/8 inch deep.
 - a. Minimum Base-Steel Thickness: As indicated on Drawings
5. Resilient Furring Channels: 1/2-inch- deep members designed to reduce sound transmission.
 - a. Configuration: hat shaped.

F. Grid Suspension System for Gypsum Board Ceilings: ASTM C645, direct-hung system composed of main beams and cross-furring members that interlock.

2.4 AUXILIARY MATERIALS

A. General: Provide auxiliary materials that comply with referenced installation standards.

1. Fasteners for Steel Framing: Of type, material, size, corrosion resistance, holding power, and other properties required to fasten steel members to substrates.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine areas and substrates, with Installer present, and including welded hollow-metal frames, cast-in anchors, and structural framing, for compliance with requirements and other conditions affecting performance of the Work.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Suspended Assemblies: Coordinate installation of suspension systems with installation of overhead structure to ensure that inserts and other provisions for anchorages to building structure have been installed to receive hangers at spacing required to support the Work and that hangers will develop their full strength.

3.3 INSTALLATION, GENERAL

- A. Installation Standard: ASTM C754.
 1. Gypsum Board Assemblies: Also comply with requirements in ASTM C840 that apply to framing installation.
- B. Install framing and accessories plumb, square, and true to line, with connections securely fastened.
- C. Install supplementary framing, and blocking to support fixtures, equipment services, heavy trim, grab bars, toilet accessories, furnishings, or similar construction.
- D. Install bracing at terminations in assemblies.
- E. Do not bridge building control and expansion joints with non-load-bearing steel framing members. Frame both sides of joints independently.

3.4 INSTALLING FRAMED ASSEMBLIES

- A. Install framing system components according to spacings indicated, but not greater than spacings required by referenced installation standards for assembly types.
- B. Install studs so flanges within framing system point in same direction.

- C. Install tracks at floors and overhead supports. Extend framing full height to structural supports or substrates above suspended ceilings except where partitions are indicated to terminate at suspended ceilings. Continue framing around ducts that penetrate partitions above ceiling.
1. Slip-Type Head Joints: Where framing extends to overhead structural supports, install to produce joints at tops of framing systems that prevent axial loading of finished assemblies.
 2. Door Openings: Screw vertical studs at jambs to jamb anchor clips on door frames; install track section (for cripple studs) at head and secure to jamb studs.
 - a. Install two studs at each jamb unless otherwise indicated.
 - b. Install cripple studs at head adjacent to each jamb stud, with a minimum 1/2-inch clearance from jamb stud to allow for installation of control joint in finished assembly.
 - c. Extend jamb studs through suspended ceilings and attach to underside of overhead structure.
 3. Other Framed Openings: Frame openings other than door openings the same as required for door openings unless otherwise indicated. Install framing below sills of openings to match framing required above door heads.
 4. Fire-Resistance-Rated Partitions: Install framing to comply with fire-resistance-rated assembly indicated and support closures and to make partitions continuous from floor to underside of solid structure.
 - a. Firestop Track: Where indicated, install to maintain continuity of fire-resistance-rated assembly indicated.
 5. Sound-Rated Partitions: Install framing to comply with sound-rated assembly indicated.
- D. Installation Tolerance: Install each framing member so fastening surfaces vary not more than 1/8 inch from the plane formed by faces of adjacent framing.

3.5 INSTALLING CEILING SUSPENSION SYSTEMS

- A. Install suspension systems according to seismic design requirements, manufacturer's written instructions and the following:
1. DSA IR 25-3.13.
- B. Install suspension system components according to spacings indicated, but not greater than spacings required by referenced installation standards for assembly types.
1. Hangers: 48 inches o.c.
 2. Carrying Channels (Main Runners): 48 inches o.c.
 3. Furring Channels (Furring Members): 16 inches o.c.
- C. Isolate suspension systems from building structure where they abut or are penetrated by building structure to prevent transfer of loading imposed by structural movement.

D. Suspend hangers from building structure as follows:

1. Install hangers plumb and free from contact with insulation or other objects within ceiling plenum that are not part of supporting structural or suspension system.
 - a. Splay hangers only where required to miss obstructions and offset resulting horizontal forces by bracing, countersplaying, or other equally effective means.
2. Where width of ducts and other construction within ceiling plenum produces hanger spacings that interfere with locations of hangers required to support standard suspension system members, install supplemental suspension members and hangers in the form of trapezes or equivalent devices.
 - a. Size supplemental suspension members and hangers to support ceiling loads within performance limits established by referenced installation standards.
3. Wire Hangers: Secure by looping and wire tying, either directly to structures or to inserts, eye screws, or other devices and fasteners that are secure and appropriate for substrate, and in a manner that will not cause hangers to deteriorate or otherwise fail.
4. Flat Hangers: Secure to structure, including intermediate framing members, by attaching to inserts, eye screws, or other devices and fasteners that are secure and appropriate for structure and hanger, and in a manner that will not cause hangers to deteriorate or otherwise fail.
5. Do not attach hangers to steel roof deck.
6. Do not connect or suspend steel framing from ducts, pipes, or conduit.

E. Seismic Bracing: Sway-brace suspension systems as indicated on drawings and in accordance with 2019 CBC.

F. Grid Suspension Systems: Attach perimeter wall track or angle where grid suspension systems meet vertical surfaces. Mechanically join main beam and cross-furring members to each other and butt-cut to fit into wall track.

G. Installation Tolerances: Install suspension systems that are level to within 1/8 inch in 12 feet measured lengthwise on each member that will receive finishes and transversely between parallel members that will receive finishes.

END OF SECTION 092216

SECTION 092900

GYPSUM BOARD

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section Includes:
 - 1. Interior gypsum board.
 - 2. Tile backing panels.
- B. Related Requirements:
 - 1. Section 079219 "Acoustical Joint Sealants" for acoustical joint sealants installed in gypsum board assemblies.
 - 2. Section 092216 "Non-Structural Metal Framing" for non-structural steel framing and suspension systems that support gypsum board panels.
 - 3. Section 093013 "Ceramic Tiling" for cementitious backer units installed as substrates for ceramic tile.

1.3 ACTION SUBMITTALS

- A. Product Data: For the following:
 - 1. Gypsum board, Type X.
 - 2. Mold-resistant gypsum board.
 - 3. Glass-mat, water-resistant backing board.
 - 4. Interior trim.
 - 5. Joint treatment materials.
 - 6. Sound-attenuation blankets.
 - 7. Acoustical sealant.
- B. Shop Drawings: For type and location of control joints.
- C. Samples: For the following products:

1. Trim Accessories: Full-size Sample in 12-inch- long length for each trim accessory indicated.

1.4 QUALITY ASSURANCE

- A. Mockups: Build mockups of at least 100 sq. ft. in surface area to demonstrate aesthetic effects and to set quality standards for materials and execution.
 1. Build mockups for the following:
 - a. Each level of gypsum board finish indicated for use in exposed locations.
 2. Apply or install final decoration indicated, including painting and wallcoverings, on exposed surfaces for review of mockups.
 3. Simulate finished lighting conditions for review of mockups.
 4. Subject to compliance with requirements, approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

1.5 DELIVERY, STORAGE AND HANDLING

- A. Store materials inside under cover and keep them dry and protected against weather, condensation, direct sunlight, construction traffic, and other potential causes of damage. Stack panels flat and supported on risers on a flat platform to prevent sagging.

1.6 FIELD CONDITIONS

- A. Environmental Limitations: Comply with ASTM C840 requirements or gypsum board manufacturer's written instructions, whichever are more stringent.
- B. Do not install paper-faced gypsum panels until installation areas are enclosed and conditioned.
- C. Do not install panels that are wet, moisture damaged, and mold damaged.
 1. Indications that panels are wet or moisture damaged include, but are not limited to, discoloration, sagging, or irregular shape.
 2. Indications that panels are mold damaged include, but are not limited to, fuzzy or splotchy surface contamination and discoloration.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Fire-Resistance-Rated Assemblies: For fire-resistance-rated assemblies, provide materials and construction identical to those tested in assembly indicated according to ASTM E119 by an independent testing agency.

- B. STC-Rated Assemblies: For STC-rated assemblies, provide materials and construction identical to those tested in assembly indicated according to ASTM E90 and classified according to ASTM E413 by an independent testing agency.

2.2 GYPSUM BOARD, GENERAL

- A. Size: Provide maximum lengths and widths available that will minimize joints in each area and that correspond with support system indicated.

2.3 INTERIOR GYPSUM BOARD

- A. Gypsum Board, Type X: ASTM C1396/C1396M.
1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. CertainTeed Gypsum.
 - b. Georgia-Pacific Gypsum LLC.
 - c. National Gypsum Company.
 - d. USG Corporation.
 2. Thickness: 5/8 inch. Unless otherwise noted on the Drawings
 3. Long Edges: Tapered.
- B. Mold-Resistant Gypsum Board: ASTM C1396/C1396M. With moisture- and mold-resistant core and paper surfaces.
1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. CertainTeed Gypsum.
 - b. Georgia-Pacific Gypsum LLC.
 - c. National Gypsum Company.
 - d. USG Corporation.
 2. Core: 5/8 inch, Type X. Unless otherwise noted on the Drawings
 3. Long Edges: Tapered.
 4. Mold Resistance: ASTM D3273, score of 10 as rated according to ASTM D3274.

2.4 TILE BACKING PANELS

- A. Glass-Mat, Water-Resistant Backing Board: ASTM C1178/C1178M, with manufacturer's standard edges.
1. Basis-of-Design Product: Subject to compliance with requirements, provide Georgia-Pacific Gypsum LLC; DensShield Tile Backer or comparable product by one of the following:

- a. CertainTeed Corporation; Saint-Gobain North America.
 - b. National Gypsum Company.
 - c. USG Corporation.
2. Core: As indicated on Drawings.
 3. Mold Resistance: ASTM D3273, score of 10 as rated according to ASTM D3274.

2.5 TRIM ACCESSORIES

- A. Interior Trim: ASTM C1047.
 1. Material: Galvanized or aluminum-coated steel sheet or rolled zinc.
 2. Aluminum: Alloy and temper with not less than the strength and durability properties of ASTM B221, Alloy 6063-T5.
 3. Finish: Corrosion-resistant primer compatible with joint compound and finish materials specified.

2.6 JOINT TREATMENT MATERIALS

- A. General: Comply with ASTM C475/C475M.
- B. Joint Tape:
 1. Interior Gypsum Board: Paper.
 2. Tile Backing Panels: As recommended by panel manufacturer.
- C. Joint Compound for Interior Gypsum Board: For each coat, use formulation that is compatible with other compounds applied on previous or for successive coats.
 1. Prefilling: At open joints and damaged surface areas, use setting-type taping compound.
 2. Embedding and First Coat: For embedding tape and first coat on joints, fasteners, and trim flanges, use setting-type taping compound.
 - a. Use setting-type compound for installing paper-faced metal trim accessories.
 3. Fill Coat: For second coat, use setting-type, sandable topping compound.
 4. Finish Coat: For third coat, use drying-type, all-purpose compound.
 5. Skim Coat: For final coat of Level 5 finish, use high-build interior coating product instead of skim coat to produce Level 5 finish.
 - a. Basis-of-Design Product: Subject to compliance with requirements, provide USG Sheetrock Tuff-Hide Primer-Surfacer, or approved equal.
- D. Joint Compound for Tile Backing Panels:
 1. Glass-Mat, Water-Resistant Backing Panel: As recommended by backing panel manufacturer.

2.7 AUXILIARY MATERIALS

- A. Provide auxiliary materials that comply with referenced installation standards and manufacturer's written instructions.
- B. Steel Drill Screws: ASTM C1002 unless otherwise indicated.
 - 1. Use screws complying with ASTM C954 for fastening panels to steel members from 0.033 to 0.112 inch thick.
- C. Sound-Attenuation Blankets: ASTM C665, Type I (blankets without membrane facing) produced by combining thermosetting resins with mineral fibers manufactured from glass, slag wool, or rock wool.
 - 1. Fire-Resistance-Rated Assemblies: Comply with mineral-fiber requirements of assembly.
- D. Acoustical Sealant: As specified in Section 079219 "Acoustical Joint Sealants."

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine areas and substrates including welded hollow-metal frames and support framing, with Installer present, for compliance with requirements and other conditions affecting performance of the Work.
- B. Examine panels before installation. Reject panels that are wet, moisture damaged, and mold damaged.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION AND FINISHING OF PANELS, GENERAL

- A. Comply with ASTM C840, DSA IR 25-3.13 and GA-216.
- B. Install ceiling panels across framing to minimize the number of abutting end joints and to avoid abutting end joints in central area of each ceiling. Stagger abutting end joints of adjacent panels not less than one framing member.
- C. Install panels with face side out. Butt panels together for a light contact at edges and ends with not more than 1/16 inch of open space between panels. Do not force into place.
- D. Locate edge and end joints over supports, except in ceiling applications where intermediate supports or gypsum board back-blocking is provided behind end joints. Do not place tapered edges against cut edges or ends. Stagger vertical joints on opposite sides of partitions. Do not make joints other than control joints at corners of framed openings.

- E. Form control and expansion joints with space between edges of adjoining gypsum panels.
- F. Cover both faces of support framing with gypsum panels in concealed spaces (above ceilings, etc.), except in chases braced internally.
 - 1. Unless concealed application is indicated or required for sound, fire, air, or smoke ratings, coverage may be accomplished with scraps of not less than 8 sq. ft. in area.
 - 2. Fit gypsum panels around ducts, pipes, and conduits.
 - 3. Where partitions intersect structural members projecting below underside of floor/roof slabs and decks, cut gypsum panels to fit profile formed by structural members; allow 1/4- to 3/8-inch- wide joints to install sealant.
- G. Isolate perimeter of gypsum board applied to non-load-bearing partitions at structural abutments. Provide 1/4- to 1/2-inch- wide spaces at these locations and trim edges with edge trim where edges of panels are exposed. Seal joints between edges and abutting structural surfaces with acoustical sealant.
- H. Attachment to Steel Framing: Attach panels so leading edge or end of each panel is attached to open (unsupported) edges of stud flanges first.
- I. Wood Framing: Install gypsum panels over wood framing, with floating internal corner construction. Do not attach gypsum panels across the flat grain of wide-dimension lumber, including floor joists and headers. Float gypsum panels over these members or provide control joints to counteract wood shrinkage.
- J. STC-Rated Assemblies: Seal construction at perimeters, behind control joints, and at openings and penetrations with a continuous bead of acoustical sealant. Install acoustical sealant at both faces of partitions at perimeters and through penetrations. Comply with ASTM C919 and with manufacturer's written instructions for locating edge trim and closing off sound-flanking paths around or through assemblies, including sealing partitions above acoustical ceilings.
- K. Install sound attenuation blankets before installing gypsum panels unless blankets are readily installed after panels have been installed on one side.

3.3 INSTALLATION OF INTERIOR GYPSUM BOARD

- A. Install interior gypsum board in the following locations:
 - 1. Type X: Typical surfaces unless otherwise indicated.
 - 2. Mold-Resistant Type: At painted surfaces within restrooms.
- B. Single-Layer Application:
 - 1. On ceilings, apply gypsum panels before wall/partition board application to greatest extent possible and at right angles to framing unless otherwise indicated.
 - 2. On partitions/walls, apply gypsum panels vertically (parallel to framing) unless otherwise indicated or required by fire-resistance-rated assembly, and minimize end joints.

- a. Stagger abutting end joints not less than one framing member in alternate courses of panels.
 - b. At stairwells and other high walls, install panels horizontally unless otherwise indicated or required by fire-resistance-rated assembly.
 3. Fastening Methods: Apply gypsum panels to supports with steel drill screws.
- C. Multilayer Application:
1. On ceilings, apply gypsum board indicated for base layers before applying base layers on walls/partitions; apply face layers in same sequence. Apply base layers at right angles to framing members and offset face-layer joints one framing member, 16 inches minimum, from parallel base-layer joints, unless otherwise indicated or required by fire-resistance-rated assembly.
 2. On partitions/walls, apply gypsum board indicated for base layers and face layers vertically (parallel to framing) with joints of base layers located over stud or furring member and face-layer joints offset at least one stud or furring member with base-layer joints unless otherwise indicated or required by fire-resistance-rated assembly. Stagger joints on opposite sides of partitions.
 3. Fastening Methods: Fasten base layers and face layers separately to supports with screws.

3.4 INSTALLATION OF TILE BACKING PANELS

- A. Glass-Mat, Water-Resistant Backing Panels: Comply with manufacturer's written installation instructions and install at locations indicated to receive tile. Install with 1/4-inch gap where panels abut other construction or penetrations.
- B. Where tile backing panels abut other types of panels in same plane, shim surfaces to produce a uniform plane across panel surfaces.

3.5 INSTALLATION OF TRIM ACCESSORIES

- A. General: For trim with back flanges intended for fasteners, attach to framing with same fasteners used for panels. Otherwise, attach trim according to manufacturer's written instructions.
- B. Control Joints: Install control joints according to ASTM C840, GA-216, approved shop drawings, and in specific locations approved by Architect for visual effect.
- C. Aluminum Trim: Install in locations indicated on Drawings.

3.6 FINISHING GYPSUM BOARD

- A. General: Treat gypsum board joints, interior angles, edge trim, control joints, penetrations, fastener heads, surface defects, and elsewhere as required to prepare gypsum board surfaces for decoration. Promptly remove residual joint compound from adjacent surfaces.

- B. Prefill open joints and damaged surface areas.
- C. Apply joint tape over gypsum board joints, except for trim products specifically indicated as not intended to receive tape.
- D. Gypsum Board Finish Levels: Finish panels to levels indicated below and according to ASTM C840:
 - 1. Level 4: At panel surfaces that will be exposed to view unless otherwise indicated.
 - a. Primer and its application to surfaces are specified in Section 099123 "Interior Painting."
 - 2. Level 5: Where indicated on Drawings.
 - a. Primer and its application to surfaces are specified in Section 099123 "Interior Painting."

3.7 PROTECTION

- A. Protect adjacent surfaces from drywall compound and promptly remove from floors and other non-drywall surfaces. Repair surfaces stained, marred, or otherwise damaged during drywall application.
- B. Protect installed products from damage from weather, condensation, direct sunlight, construction, and other causes during remainder of the construction period.
- C. Remove and replace panels that are wet, moisture damaged, and mold damaged.
 - 1. Indications that panels are wet or moisture damaged include, but are not limited to, discoloration, sagging, or irregular shape.
 - 2. Indications that panels are mold damaged include, but are not limited to, fuzzy or splotchy surface contamination and discoloration.

END OF SECTION 092900

SECTION 093013
CERAMIC TILING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section Includes:
1. Porcelain tile.
 2. Glazed wall tile.
 3. Waterproof and crack isolation membrane.
 4. Metal edge strips.
- B. Related Requirements:
1. Section 079200 "Joint Sealants" for sealing of expansion, contraction, control, and isolation joints in tile surfaces.
 2. Section 092900 "Gypsum Board" for cementitious backer units.

1.3 DEFINITIONS

- A. General: Definitions in the ANSI A108 series of tile installation standards and in ANSI A137.1 apply to Work of this Section unless otherwise specified.
- B. ANSI A108 Series: ANSI A108.01, ANSI A108.02, ANSI A108.1A, ANSI A108.1B, ANSI A108.1C, ANSI A108.4, ANSI A108.5, ANSI A108.6, ANSI A108.8, ANSI A108.9, ANSI A108.10, ANSI A108.11, ANSI A108.12, ANSI A108.13, ANSI A108.14, ANSI A108.15, ANSI A108.16, and ANSI A108.17, which are contained in its "Specifications for Installation of Ceramic Tile."
- C. Face Size: Actual tile size, excluding spacer lugs.
- D. Module Size: Actual tile size plus joint width indicated.

1.4 PREINSTALLATION MEETINGS

- A. Preinstallation Conference: Conduct conference at Project site.

1. Review requirements in ANSI A108.01 for substrates and for preparation by other trades.

1.5 ACTION SUBMITTALS

- A. Product Data: For each type of product.
- B. Sustainable Design Submittals required by Section 018113.14 applicable to this Section.
- C. Shop Drawings: Show locations of each type of tile and tile pattern. Show widths, details, and locations of expansion, contraction, control, and isolation joints in tile substrates and finished tile surfaces. Show relationship of new tile to existing tile, establishing a datum line for transitions that are accepted by the Owner and Architect. Identify areas that will need to be patched and repaired to match existing conditions.
- D. Samples for Initial Selection: For tile, grout, and accessories involving color selection.
- E. Samples for Verification:
 1. Full-size units of each type and composition of tile and for each color and finish required.
 2. Metal edge strips in 6-inch lengths.

1.6 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For Installer.
- B. Product Test Reports: For tile-setting and -grouting products.

1.7 MAINTENANCE MATERIAL SUBMITTALS

- A. Furnish extra materials that match and are from same production runs as products installed and that are packaged with protective covering for storage and identified with labels describing contents.
 1. Tile and Trim Units: Furnish quantity of full-size units equal to 3 percent of amount installed for each type, composition, color, pattern, and size indicated.
 2. Grout: Furnish quantity of grout equal to 3 percent of amount installed for each type, composition, and color indicated.

1.8 QUALITY ASSURANCE

- A. Installer Qualifications:
 1. Installer is a Five-Star member of the National Tile Contractors Association or a Trowel of Excellence member of the Tile Contractors' Association of America.

1.9 DELIVERY, STORAGE, AND HANDLING

- A. Deliver and store packaged materials in original containers with seals unbroken and labels intact until time of use. Comply with requirements in ANSI A137.1 for labeling tile packages.
- B. Store tile and cementitious materials on elevated platforms, under cover, and in a dry location.
- C. Store aggregates where grading and other required characteristics can be maintained, and contamination can be avoided.
- D. Store liquid materials in unopened containers and protected from freezing.

1.10 FIELD CONDITIONS

- A. Environmental Limitations: Do not install tile until construction in spaces is complete and ambient temperature and humidity conditions are maintained at the levels indicated in referenced standards and manufacturer's written instructions.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Source Limitations for Tile: Obtain tile from single source or producer.
 - 1. Obtain tile of each type and color or finish from same production run and of consistent quality in appearance and physical properties for each contiguous area.
- B. Source Limitations for Setting and Grouting Materials: Obtain ingredients of a uniform quality for each mortar, adhesive, and grout component from single manufacturer and each aggregate from single source or producer.
 - 1. Obtain setting and grouting materials, except for unmodified Portland cement and aggregate, from single manufacturer.
 - 2. Obtain waterproof and crack isolation membrane, except for sheet products, from manufacturer of setting and grouting materials.
 - 3. Metal edge strips.

2.2 PRODUCTS, GENERAL

- A. ANSI Ceramic Tile Standard: Provide tile that complies with ANSI A137.1 for types, compositions, and other characteristics indicated.
 - 1. Provide tile complying with Standard grade requirements.

- B. ANSI Standards for Tile Installation Materials: Provide materials complying with ANSI A108.02, ANSI standards referenced in other Part 2 articles, ANSI standards referenced by TCNA installation methods specified in tile installation schedules, and other requirements specified.
- C. Factory Blending: For tile exhibiting color variations within ranges, blend tile in factory and package so tile units taken from one package show same range in colors as those taken from other packages and match approved Samples.

2.3 TILE PRODUCTS

- A. Ceramic Tile Type: Tiles to match existing, Unless otherwise noted on the Drawings
 - 1. Thickness: Match existing.
 - 2. Face: As indicated on the Drawings.
 - 3. Dynamic Coefficient of Friction: Not less than 0.42.
 - 4. Grout Color: Match existing, Unless otherwise noted on the Drawings
 - 5. Trim Units: Coordinated with sizes and coursing of adjoining flat tile where applicable and matching characteristics of adjoining flat tile. Provide shapes as follows, selected from manufacturer's standard shapes:
 - a. Cove Base: Match existing, Unless otherwise noted on the Drawings.

2.4 WATERPROOF AND CRACK ISOLATION MEMBRANE

- A. General: Manufacturer's standard product, selected from the following, that complies with ANSI A118.10 and is recommended by the manufacturer for the application indicated. Include reinforcement and accessories recommended by manufacturer.
- B. Fluid-Applied Membrane: Liquid-latex rubber or elastomeric polymer.
 - 1. Basis-of-Design Product: Subject to compliance with requirements, provide MAPEI Mapelastic AquaDefense, or comparable product by one of the following:
 - a. Custom Building Products.
 - b. LATICRETE SUPERCAP, LLC.
- C. Reinforcing Fabric: Polyester; provided by fluid-applied membrane manufacturer for use at cracks, coves, corners, and areas around drains as part of waterproofing and crack isolation membrane system.

2.5 SETTING MATERIALS

- A. Mortar Bed: ANSI A108.1: Preblended, cement-based, polymer-modified thick bed mortar.

1. Basis-of-Design Product: Subject to compliance with requirements, provide MAPEI Corporation; Modified Mortar Bed or comparable product by one of the following:

- a. Custom Building Products.
- b. LATICRETE SUPERCAP, LLC.

B. Modified Dry-Set Mortar (Thinset): ANSI A118.4.

1. Basis-of-Design Product: Subject to compliance with requirements, provide MAPEI Corporation; Ultraflex 3 or comparable product by one of the following:

- a. Custom Building Products.
- b. LATICRETE SUPERCAP, LLC.

2. For wall applications, provide mortar that complies with requirements for nonsagging mortar in addition to the other requirements in ANSI A118.4.

2.6 GROUT MATERIALS

A. Epoxy Grout: ANSI A118.3, with a VOC content of 65 g/L or less.

1. Basis-of-Design Product: Subject to compliance with requirements, provide MAPEI Corporation; Kerapoxy CQ or comparable product by one of the following:

- a. Custom Building Products.
- b. LATICRETE SUPERCAP, LLC.

2.7 MISCELLANEOUS MATERIALS

A. Trowelable Underlayments and Patching Compounds: Latex-modified, portland cement-based formulation provided or approved by manufacturer of tile-setting materials for installations indicated.

B. Metal Edge Strips: Profiles as indicated on drawings and as specified below, height to match tile and setting-bed thickness, metallic, designed specifically for flooring applications; polished anodized aluminum exposed-edge material.

1. Basis-of-Design Product: Subject to compliance with requirements, provide Schluter Systems L.P., or comparable products by one of the following:

- a. Blanke Corporation.
- b. Ceramic Tool Company, Inc.

2. Profiles: Schluter RENO-RAMP/-K, Schluter RENO-U, Schluter JOLLY

C. Tile Cleaner: A neutral cleaner capable of removing soil and residue without harming tile and grout surfaces, specifically approved for materials and installations indicated by tile and grout manufacturers.

2.8 MIXING MORTARS AND GROUT

- A. Mix mortars and grouts to comply with referenced standards and mortar and grout manufacturers' written instructions.
- B. Add materials, water, and additives in accurate proportions.
- C. Obtain and use type of mixing equipment, mixer speeds, mixing containers, mixing time, and other procedures to produce mortars and grouts of uniform quality with optimum performance characteristics for installations indicated.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates, areas, and conditions where tile will be installed, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.
 - 1. Verify that substrates for setting tile are firm; dry; clean; free of coatings that are incompatible with tile-setting materials, including curing compounds and other substances that contain soap, wax, oil, or silicone; and comply with flatness tolerances required by ANSI A108.01 for installations indicated.
 - 2. Verify that concrete substrates for tile floors comply with surface finish requirements in ANSI A108.01 for installations indicated.
 - a. Verify that surfaces that received a steel trowel finish have been mechanically scarified.
 - b. Verify that protrusions, bumps, and ridges have been removed by sanding or grinding.
 - 3. Verify that installation of grounds, anchors, recessed frames, electrical and mechanical units of work, and similar items located in or behind tile has been completed.
 - 4. Verify that joints and cracks in tile substrates are coordinated with tile joint locations; if not coordinated, adjust joint locations in consultation with Architect.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Fill cracks, holes, and depressions in concrete substrates for tile floors with trowelable leveling and patching compound specifically recommended by tile-setting material manufacturer.
- B. Blending: For tile exhibiting color variations, verify that tile has been factory blended and packaged so tile units taken from one package show same range of colors as those taken from other packages and match approved Samples. If not factory blended, either return to manufacturer or blend tiles at Project site before installing.

CERAMIC TILING

093013 - 6

3.3 INSTALLATION OF CERAMIC TILE

- A. Comply with TCNA's "Handbook for Ceramic, Glass, and Stone Tile Installation" for TCNA installation methods specified in tile installation schedules. Comply with parts of the ANSI A108 series "Specifications for Installation of Ceramic Tile" that are referenced in TCNA installation methods, specified in tile installation schedules, and apply to types of setting and grouting materials used.
 - 1. For the following installations, follow procedures in the ANSI A108 series of tile installation standards for providing 95 percent mortar coverage:
 - a. Tile floors in wet areas.
 - b. Tile floors consisting of tiles 8 by 8 inches or larger.
 - c. Tile floors consisting of rib-backed tiles.
- B. Extend tile work into recesses and under or behind equipment and fixtures to form complete covering without interruptions unless otherwise indicated. Terminate work neatly at obstructions, edges, and corners without disrupting pattern or joint alignments.
- C. Accurately form intersections and returns. Perform cutting and drilling of tile without marring visible surfaces. Carefully grind cut edges of tile abutting trim, finish, or built-in items for straight aligned joints. Fit tile closely to electrical outlets, piping, fixtures, and other penetrations so plates, collars, or covers overlap tile.
- D. Provide manufacturer's standard trim shapes where necessary to eliminate exposed tile edges.
- E. Jointing Pattern: Lay tile in grid pattern unless otherwise indicated. Lay out tile work and center tile fields in both directions in each space or on each wall area. Lay out tile work to minimize the use of pieces that are less than half of a tile. Provide uniform joint widths unless otherwise indicated.
 - 1. Where adjoining tiles on floor, base, walls, or trim are specified or indicated to be same size, align joints.
 - 2. Where tiles are specified or indicated to be whole integer multiples of adjoining tiles on floor, base, walls, or trim, align joints unless otherwise indicated.
- F. Joint Widths: Unless otherwise indicated, install tile with the following joint widths:
 - 1. Porcelain Tile: Match existing.
- G. Lay out tile wainscots to dimensions indicated or to next full tile beyond dimensions indicated.
- H. Expansion Joints: Provide expansion joints and other sealant-filled joints, including control, contraction, and isolation joints, where indicated. Form joints during installation of setting materials, mortar beds, and tile. Do not saw-cut joints after installing tiles.
 - 1. Where joints occur in concrete substrates, locate joints in tile surfaces directly above them.
- I. Metal Edge Strips: Install at locations indicated.

3.4 INSTALLATION OF WATERPROOF AND CRACK ISOLATION MEMBRANE

- A. Install waterproof and crack isolation membrane to comply with ANSI A108.13, ANSI A108.17, and manufacturer's written instructions to produce waterproof and crack isolation membrane of uniform thickness that is bonded securely to substrate.
- B. Allow waterproof membrane to cure and verify by testing that it is watertight before installing tile or setting materials over it.

3.5 ADJUSTING AND CLEANING

- A. Remove and replace tile that is damaged or that does not match adjoining tile. Provide new matching units, installed as specified and in a manner to eliminate evidence of replacement.
- B. Cleaning: On completion of placement and grouting, clean all ceramic tile surfaces so they are free of foreign matter.
 - 1. Remove grout residue from tile as soon as possible.
 - 2. Clean grout smears and haze from tile according to tile and grout manufacturer's written instructions but no sooner than 10 days after installation. Use only cleaners recommended by tile and grout manufacturers and only after determining that cleaners are safe to use by testing on samples of tile and other surfaces to be cleaned. Protect metal surfaces and plumbing fixtures from effects of cleaning. Flush surfaces with clean water before and after cleaning.

3.6 PROTECTION

- A. Protect installed tile work with kraft paper or other heavy covering during construction period to prevent staining, damage, and wear. If recommended by tile manufacturer, apply coat of neutral protective cleaner to completed tile walls and floors.
- B. Prohibit foot and wheel traffic from tiled floors for at least seven days after grouting is completed.
- C. Before final inspection, remove protective coverings and rinse neutral protective cleaner from tile surfaces.

END OF SECTION 093013

SECTION 095113

ACOUSTICAL PANEL CEILINGS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section includes acoustical panels and exposed suspension systems for interior ceilings.
- B. Products furnished, but not installed under this Section, include anchors, clips, and other ceiling attachment devices to be cast in concrete.

1.3 PREINSTALLATION MEETINGS

- A. Preinstallation Conference: Conduct conference at Project site.

1.4 ACTION SUBMITTALS

- A. Product Data: For each type of product.
- B. Samples: For each exposed product and for each color and texture specified, 6 inches in size.
- C. Samples for Verification: For each component indicated and for each exposed finish required, prepared on Samples of sizes indicated below:
 - 1. Acoustical Panels: Set of 6-inch-square Samples of each type, color, pattern, and texture.
 - 2. Exposed Suspension-System Members, Moldings, and Trim: Set of 6-inch- long Samples of each type, finish, and color.
 - 3. Clips: Full-size seismic clips.

1.5 INFORMATIONAL SUBMITTALS

- A. Coordination Drawings: Reflected ceiling plans, drawn to scale, on which the following items are shown and coordinated with each other, using input from installers of the items involved:
 - 1. Ceiling suspension-system members.
 - 2. Structural members to which suspension systems will be attached.
 - 3. Method of attaching hangers to building structure.

- a. Furnish layouts for cast-in-place anchors, clips, and other ceiling attachment devices whose installation is specified in other Sections.
 4. Carrying channels or other supplemental support for hanger-wire attachment where conditions do not permit installation of hanger wires at required spacing.
 5. Size and location of initial access modules for acoustical panels.
 6. Items penetrating finished ceiling and ceiling-mounted items including the following:
 - a. Lighting fixtures.
 - b. Diffusers.
 - c. Grilles.
 - d. Speakers.
 - e. Sprinklers.
 - f. Perimeter moldings.
 7. Minimum Drawing Scale: 1/4 inch = 1 foot.
- B. Qualification Data: For testing agency.
- C. Field quality-control reports.

1.6 CLOSEOUT SUBMITTALS

- A. Maintenance Data: For finishes to include in maintenance manuals.

1.7 MAINTENANCE MATERIAL SUBMITTALS

- A. Furnish extra materials, from the same product run, that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
1. Acoustical Ceiling Units: Full-size panels equal to 2 percent of quantity installed.
 2. Suspension-System Components: Quantity of each exposed component equal to 2 percent of quantity installed.

1.8 DELIVERY, STORAGE, AND HANDLING

- A. Deliver acoustical panels, suspension-system components, and accessories to Project site and store them in a fully enclosed, conditioned space where they will be protected against damage from moisture, humidity, temperature extremes, direct sunlight, surface contamination, and other causes.
- B. Before installing acoustical panels, permit them to reach room temperature and a stabilized moisture content.

1.9 FIELD CONDITIONS

- A. Environmental Limitations: Do not install acoustical panel ceilings until spaces are enclosed and weathertight, wet-work in spaces is complete and dry, work above ceilings is complete, and ambient temperature and humidity conditions are maintained at the levels indicated for Project when occupied for its intended use.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Source Limitations: Obtain each type of acoustical ceiling panel and its supporting suspension system from single source from single manufacturer.

2.2 PERFORMANCE REQUIREMENTS

- A. Seismic Performance: Suspended ceilings shall withstand the effects of earthquake motions determined according to the following:
 - 1. California Building Code (CBC) requirements, Seismic Design Category D, including the following:
 - a. ASCE 7, "Minimum Design Loads for Buildings and Other Structures," including Section 13, "Seismic Design Requirements for Nonstructural Components."
 - b. Comply with the additional requirements of CBC Section 1617A.1.21.
- B. Surface-Burning Characteristics: Comply with ASTM E84; testing by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.
 - 1. Flame-Spread Index: Class A according to ASTM E1264.
 - 2. Smoke-Developed Index: 50 or less.

2.3 ACOUSTICAL PANELS

- A. Basis-of-Design Product ACT-1: Provide Mars ACT by USG Manufacture, or comparable product by one of the following:
 - 1. Armstrong.
 - 2. CertainTeed.
- B. Acoustical Panel Standard: Provide manufacturer's standard panels according to ASTM E1264 and designated by type, form, pattern, acoustical rating, and light reflectance unless otherwise indicated.
- C. Classification: Provide panels as follows:

1. Type and Form: Type IV, mineral base with membrane-faced overlay; Form 1 and Form 2.
 2. Pattern: E and G.
- D. Color: To Match existing. Unless otherwise noted on the Drawings
- E. Light Reflectance (LR): Not less than 0.90.
- F. Ceiling Attenuation Class (CAC): Not less than 35.
- G. Noise Reduction Coefficient (NRC): Not less than 0.75.
- H. Edge/Joint Detail: Angled tegular.
- I. Thickness: 3/4 inch.
- J. Modular Size: As indicated on Drawings.
- K. Antimicrobial Treatment: Manufacturer's standard broad spectrum, antimicrobial formulation that inhibits fungus, mold, mildew, and gram-positive and gram-negative bacteria and showing no mold, mildew, or bacterial growth when tested according to ASTM D3273, ASTM D3274, or ASTM G21 and evaluated according to ASTM D3274 or ASTM G21.

2.4 METAL SUSPENSION SYSTEM

- A. Basis-of-Design Product: Subject to compliance with requirements, provide USG Donn DX Acoustical Suspension System, or comparable product by one of the following:
1. Armstrong.
 2. CertainTeed.
- B. Metal Suspension-System Standard: Provide manufacturer's standard, direct-hung, metal suspension system and accessories according to ASTM C635/C635M and designated by type, structural classification, and finish indicated.
- C. Wide-Face, Capped, Double-Web, Steel Suspension System: Main and cross runners roll formed from cold-rolled steel sheet; pre-painted, electrolytically zinc coated, or hot-dip galvanized, G30 coating designation; with prefinished 15/16-inch-wide metal caps on flanges.
1. Structural Classification: Heavy-duty system.
 2. End Condition of Cross Runners: Override (stepped) or butt-edge type.
 3. Face Design: Flat, flush.
 4. Cap Material: Cold-rolled steel.
 5. Cap Finish: Painted white.

2.5 ACCESSORIES

- A. Attachment Devices: Size for five times the design load indicated in ASTM C635/C635M, Table 1, "Direct Hung," unless otherwise indicated. Comply with seismic design requirements.
- B. Wire Hangers, Braces, and Ties: Provide wires as follows:
 - 1. Zinc-Coated, Carbon-Steel Wire: ASTM A641/A641M, Class 1 zinc coating, soft temper.
 - 2. Size: Wire diameter sufficient for its stress at three times hanger design load (ASTM C635/C635M, Table 1, "Direct Hung") will be less than yield stress of wire, but not less than 0.106-inch- diameter wire.
- C. Hanger Rods: Mild steel, zinc coated or protected with rust-inhibitive paint.
- D. Angle Hangers: Angles with legs not less than 7/8 inch wide; formed with 0.04-inch-thick, galvanized-steel sheet complying with ASTM A653/A653M, G90 coating designation; with bolted connections and 5/16-inch-diameter bolts.
- E. Seismic Clips: Manufacturer's standard seismic clips designed to secure acoustical panels in place during a seismic event.
- F. Seismic Stabilizer Bars: Manufacturer's standard perimeter stabilizers designed to accommodate seismic forces.
- G. Seismic Struts: Manufacturer's standard compression struts designed to accommodate seismic forces.

2.6 METAL EDGE MOLDINGS AND TRIM

- A. Roll-Formed, Sheet-Metal Edge Moldings and Trim: Type and profile indicated or, if not indicated, manufacturer's standard moldings for edges and penetrations that comply with seismic design requirements; formed from sheet metal of same material, finish, and color as that used for exposed flanges of suspension-system runners.
 - 1. Edge moldings shall fit acoustical panel edge details and suspension systems indicated and match width and configuration of exposed runners unless otherwise indicated.
 - 2. For lay-in panels with reveal edge details, provide stepped edge molding that forms reveal of same depth and width as that formed between edge of panel and flange at exposed suspension member.
 - 3. For circular penetrations of ceiling, provide edge moldings fabricated to diameter required to fit penetration exactly.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates, areas, and conditions, including structural framing to which acoustical panel ceilings attach or abut, with Installer present, for compliance with requirements specified in this and other Sections that affect ceiling installation and anchorage and with requirements for installation tolerances and other conditions affecting performance of acoustical panel ceilings.
- B. Examine acoustical panels before installation. Reject acoustical panels that are wet, moisture damaged, or mold damaged.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Measure each ceiling area and establish layout of acoustical panels to balance border widths at opposite edges of each ceiling. Avoid using less-than-half-width panels at borders unless otherwise indicated and comply with layout shown on reflected ceiling plans.
- B. Layout openings for penetrations centered on the penetrating items.

3.3 INSTALLATION

- A. Install acoustical panel ceilings according to ASTM C 636/C 636M, seismic design requirements, manufacturer's written instructions and the following:
 - 1. DSA IR 25-2.13.
 - 2. DSA IR 25-3.13.
- B. Install acoustical panel ceilings according to ASTM C636/C636M, seismic design requirements, and manufacturer's written instructions.
- C. Suspend ceiling hangers from building's structural members and as follows:
 - 1. Install hangers plumb and free from contact with insulation or other objects within ceiling plenum that are not part of supporting structure or of ceiling suspension system.
 - 2. Splay hangers only where required to miss obstructions; offset resulting horizontal forces by bracing, countersplaying, or other equally effective means.
 - 3. Where width of ducts and other construction within ceiling plenum produces hanger spacings that interfere with location of hangers at spacings required to support standard suspension-system members, install supplemental suspension members and hangers in form of trapezes or equivalent devices.
 - 4. Secure wire hangers to ceiling-suspension members and to supports above with a minimum of three tight turns. Connect hangers directly to structure or to inserts, eye

- screws, or other devices that are secure and appropriate for substrate and that will not deteriorate or otherwise fail due to age, corrosion, or elevated temperatures.
5. Secure flat, angle, channel, and rod hangers to structure, including intermediate framing members, by attaching to inserts, eye screws, or other devices that are secure and appropriate for both the structure to which hangers are attached and the type of hanger involved. Install hangers in a manner that will not cause them to deteriorate or fail due to age, corrosion, or elevated temperatures.
 6. Do not support ceilings directly from permanent metal forms or floor deck. Fasten hangers to cast-in-place hanger inserts, postinstalled mechanical or adhesive anchors, or power-actuated fasteners that extend through forms into concrete.
 7. When steel framing does not permit installation of hanger wires at spacing required, install carrying channels or other supplemental support for attachment of hanger wires.
 8. Do not attach hangers to steel deck tabs.
 9. Do not attach hangers to steel roof deck. Attach hangers to structural members.
 10. Space hangers not more than 48 inches o.c. along each member supported directly from hangers unless otherwise indicated; provide hangers not more than 8 inches from ends of each member.
 11. Size supplemental suspension members and hangers to support ceiling loads within performance limits established by referenced standards.
- D. Secure bracing wires to ceiling suspension members and to supports with a minimum of four tight turns. Suspend bracing from building's structural members as required for hangers, without attaching to permanent metal forms, steel deck, or steel deck tabs. Fasten bracing wires into concrete with cast-in-place or postinstalled anchors.
- E. Install edge moldings and trim of type indicated at perimeter of acoustical ceiling area and where necessary to conceal edges of acoustical panels.
1. Apply acoustical sealant in a continuous ribbon concealed on back of vertical legs of moldings before they are installed.
 2. Screw attach moldings to substrate at intervals not more than 16 inches o.c. and not more than 3 inches from ends. Miter corners accurately and connect securely.
 3. Do not use exposed fasteners, including pop rivets, on moldings and trim.
- F. Install suspension-system runners so they are square and securely interlocked with one another. Remove and replace dented, bent, or kinked members.
- G. Install acoustical panels with undamaged edges and fit accurately into suspension-system runners and edge moldings. Scribe and cut panels at borders and penetrations to provide precise fit.
1. Arrange directionally patterned acoustical panels as follows:
 - a. As indicated on reflected ceiling plans.
 2. For reveal-edged panels on suspension-system runners, install panels with bottom of reveal in firm contact with top surface of runner flanges.

3. Paint cut edges of panel remaining exposed after installation; match color of exposed panel surfaces using coating recommended in writing for this purpose by acoustical panel manufacturer.
4. Install clips in areas indicated; space according to panel manufacturer's written instructions unless otherwise indicated.

3.4 ERECTION TOLERANCES

- A. Suspended Ceilings: Install main and cross runners level to a tolerance of 1/8 inch in 12 feet, non-cumulative.
- B. Moldings and Trim: Install moldings and trim to substrate and level with ceiling suspension system to a tolerance of 1/8 inch in 12 feet, non-cumulative.

3.5 FIELD QUALITY CONTROL

- A. Special Inspections: Engage a qualified special inspector to perform the following special inspections:
 1. Periodic inspection during the installation of suspended ceiling grids according to ASCE/SEI 7.
- B. Testing Agency: Engage a qualified testing agency to perform tests and inspections.
- C. Perform the following tests and inspections of completed installations of acoustical panel ceiling hangers and anchors and fasteners in successive stages and when installation of ceiling suspension systems on each floor has reached 20 percent completion, but no panels have been installed. Do not proceed with installations of acoustical panel ceiling hangers for the next area until test results for previously completed installations of acoustical panel ceiling hangers show compliance with requirements.
 1. Within each test area, testing agency will select one of every 10 power-actuated fasteners and postinstalled anchors used to attach hangers to concrete and will test them for 200 lbf of tension; it will also select one of every two postinstalled anchors used to attach bracing wires to concrete and will test them for 440 lbf of tension.
 2. When testing discovers fasteners and anchors that do not comply with requirements, testing agency will test those anchors not previously tested until 20 pass consecutively and then will resume initial testing frequency.
- D. Acoustical panel ceiling hangers, anchors, and fasteners will be considered defective if they do not pass tests and inspections.
- E. Prepare test and inspection reports.

3.6 CLEANING

- A. Clean exposed surfaces of acoustical panel ceilings, including trim, edge moldings, and suspension-system members. Comply with manufacturer's written instructions for cleaning and touchup of minor finish damage.
- B. Remove and replace ceiling components that cannot be successfully cleaned and repaired to permanently eliminate evidence of damage.

END OF SECTION 095113

SECTION 096513

RESILIENT BASE AND ACCESSORIES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section Includes:
 - 1. Thermoset-rubber base.
 - 2. Rubber molding accessories.

1.3 ACTION SUBMITTALS

- A. Product Data: For each type of product.
- B. Samples: For each exposed product and for each color and texture specified, not less than 12 inches long.
- C. Samples for Initial Selection: For each type of product indicated.
- D. Product Schedule: For resilient base and accessory products. Use same designations indicated on Drawings.

1.4 MAINTENANCE MATERIAL SUBMITTALS

- A. Furnish extra materials that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
 - 1. Furnish not less than 10 linear feet for every 500 linear feet or fraction thereof, of each type, color, pattern, and size of resilient product installed.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Store resilient products and installation materials in dry spaces protected from the weather, with ambient temperatures maintained within range recommended by manufacturer, but not less than 50 deg F or more than 90 deg F.

1.6 FIELD CONDITIONS

- A. Maintain ambient temperatures within range recommended by manufacturer, but not less than 70 deg F or more than 95 deg F, in spaces to receive resilient products during the following periods:
 - 1. 48 hours before installation.
 - 2. During installation.
 - 3. 48 hours after installation.
- B. After installation and until Substantial Completion, maintain ambient temperatures within range recommended by manufacturer, but not less than 55 deg F or more than 95 deg F.
- C. Install resilient products after other finishing operations, including painting, have been completed.

PART 2 - PRODUCTS

2.1 THERMOSET-RUBBER BASE

- A. Basis-of-Design Product RB-01 & RB-02: As indicated on Sheet A12.00 Finish Schedule, or comparable product by one of the following:
 - 1. Roppe.
 - 2. Burke.
 - 3. Johnsonite.
- B. Product Standard: ASTM F1861, Type TS (rubber, vulcanized thermoset), Group I (solid, homogeneous).
 - 1. Style and Location:
 - a. Style A, Straight: Provide in areas with carpet.
 - b. Style B, Cove: Provide in areas with resilient floor coverings.
- C. Thickness: 0.125 inch.
- D. Height: 4"
- E. Lengths: Cut lengths 48 inches long.
- F. Outside Corners: Job formed.
- G. Inside Corners: Job formed.

2.2 RUBBER MOLDING ACCESSORY

- A. Description: Rubber transition and reducer strips.
- B. Profile and Dimensions: As indicated on drawings, and as required to transition between floor finishes of different thickness.
- C. Locations: Provide rubber molding accessories in areas indicated, and where required to transition between floor finishes of different thickness.
- D. Colors and Patterns: As selected by Architect from manufacturer's full range.

2.3 INSTALLATION MATERIALS

- A. Trowelable Leveling and Patching Compounds: Latex-modified, portland-cement-based or blended hydraulic-cement-based formulation provided or approved by resilient-product manufacturer for applications indicated.
- B. Adhesives: Water-resistant type recommended by resilient-product manufacturer for resilient products and substrate conditions indicated.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates, with Installer present, for compliance with requirements for maximum moisture content and other conditions affecting performance of the Work.
 - 1. Verify that finishes of substrates comply with tolerances and other requirements specified in other Sections and that substrates are free of cracks, ridges, depressions, scale, and foreign deposits that might interfere with adhesion of resilient products.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.
 - 1. Installation of resilient products indicates acceptance of surfaces and conditions.

3.2 PREPARATION

- A. Prepare substrates according to manufacturer's written instructions to ensure adhesion of resilient products.
- B. Concrete Substrates for Resilient Stair Accessories: Prepare horizontal surfaces according to ASTM F710.
 - 1. Verify that substrates are dry and free of curing compounds, sealers, and hardeners.

2. Remove substrate coatings and other substances that are incompatible with adhesives and that contain soap, wax, oil, or silicone, using mechanical methods recommended by manufacturer. Do not use solvents.
3. Alkalinity and Adhesion Testing: Perform tests recommended by manufacturer. Proceed with installation only after substrate alkalinity falls within range on pH scale recommended by manufacturer in writing.
4. Moisture Testing: Perform tests so that each test area does not exceed 200 sq. ft., and perform no fewer than three tests in each installation area and with test areas evenly spaced in installation areas.
 - a. Relative Humidity Test: Using in-situ probes, ASTM F2170. Proceed with installation only after substrates have a relative humidity level measurement recommended by manufacturer in writing.
- C. Fill cracks, holes, and depressions in substrates with trowelable leveling and patching compound; remove bumps and ridges to produce a uniform and smooth substrate.
- D. Do not install resilient products until materials are the same temperature as space where they are to be installed.
 1. At least 48 hours in advance of installation, move resilient products and installation materials into spaces where they will be installed.
- E. Immediately before installation, sweep and vacuum clean substrates to be covered by resilient products.

3.3 RESILIENT BASE INSTALLATION

- A. Comply with manufacturer's written instructions for installing resilient base.
- B. Apply resilient base to walls, columns, pilasters, casework and cabinets in toe spaces, and other permanent fixtures in rooms and areas where base is required.
- C. Install resilient base in lengths as long as practical without gaps at seams and with tops of adjacent pieces aligned.
- D. Tightly adhere resilient base to substrate throughout length of each piece, with base in continuous contact with horizontal and vertical substrates.
- E. Do not stretch resilient base during installation.
- F. On masonry surfaces or other similar irregular substrates, fill voids along top edge of resilient base with manufacturer's recommended adhesive filler material.
- G. Job-Formed Corners:
 1. Outside Corners: Use straight pieces of maximum lengths possible and form with returns not less than 3 inches in length.

- a. Form without producing discoloration (whitening) at bends.
- 2. Inside Corners: Use straight pieces of maximum lengths possible and form with returns not less than 3 inches in length.
 - a. Miter or cope corners to minimize open joints.

3.4 RESILIENT ACCESSORY INSTALLATION

- A. Comply with manufacturer's written instructions for installing resilient accessories.
- B. Resilient Molding Accessories: Butt to adjacent materials and tightly adhere to substrates throughout length of each piece. Install reducer strips at edges of floor covering that would otherwise be exposed.

3.5 CLEANING AND PROTECTION

- A. Comply with manufacturer's written instructions for cleaning and protecting resilient products.
- B. Perform the following operations immediately after completing resilient-product installation:
 - 1. Remove adhesive and other blemishes from surfaces.
 - 2. Sweep and vacuum horizontal surfaces thoroughly.
 - 3. Damp-mop horizontal surfaces to remove marks and soil.
- C. Protect resilient products from mars, marks, indentations, and other damage from construction operations and placement of equipment and fixtures during remainder of construction period.
- D. Cover resilient products subject to wear and foot traffic until Substantial Completion.

END OF SECTION 096513

SECTION 096543

LINOLEUM FLOORING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section Includes:
 - 1. Linoleum sheet flooring.

1.3 ACTION SUBMITTALS

- A. Product Data: For each type of product.
- B. Shop Drawings: For each type of linoleum flooring.
 - 1. Include flooring layouts, locations of seams, edges, columns, doorways, enclosing partitions, built-in furniture, cabinets, and cutouts.
 - 2. Show details of special patterns.
- C. Samples: For each exposed product and for each color and pattern specified in manufacturer's standard size, but not less than 6-by-9-inch sections.
 - 1. Heat-Welding Bead: Include manufacturer's standard-size Samples, but not less than 9 inches long, of each color required.
- D. Samples for Initial Selection: For each type of linoleum flooring indicated.
- E. Heat-Welded Seam Samples: For each linoleum flooring product and welding bead color and pattern combination required; with seam running lengthwise and in center of 6-by-9-inch Sample applied to rigid backing and prepared by Installer for this Project.
- F. Product Schedule: For linoleum flooring. Use same designations indicated on Drawings.

1.4 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For Installer.

1.5 CLOSEOUT SUBMITTALS

- A. Maintenance Data: For each type of linoleum flooring to include in maintenance manuals.

1.6 MAINTENANCE MATERIAL SUBMITTALS

- A. Furnish extra materials, from the same product run, that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
 - 1. Sheet Flooring: Furnish not less than 10 linear feet for every 500 linear feet or fraction thereof, in roll form and in full roll width for each type, color, and pattern of sheet flooring installed.

1.7 QUALITY ASSURANCE

- A. Installer Qualifications: An entity that employs installers and supervisors who are competent in techniques required by manufacturer for flooring installation and seaming methods indicated.
 - 1. Engage an installer who employs workers for this Project who are trained or certified by flooring manufacturer for installation techniques required.
- B. Mockups: Build mockups to verify selections made under Sample submittals, to demonstrate aesthetic effects, and to set quality standards for materials and execution.
 - 1. Coordinate mockups in this Section with mockups specified in other Sections.
 - a. Size: Minimum 100 sq. ft. for each type, color, and pattern in locations directed by Architect.
 - 2. Approval of mockups does not constitute approval of deviations from the Contract Documents contained in mockups unless Architect specifically approves such deviations in writing.
 - 3. Subject to compliance with requirements, approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

1.8 DELIVERY, STORAGE, AND HANDLING

- A. Store flooring and installation materials in dry spaces protected from the weather, with ambient temperatures maintained within range recommended by manufacturer, but not less than 65 deg F or more than 90 deg F.
 - 1. Sheet Flooring: Store rolls upright.

1.9 FIELD CONDITIONS

- A. Maintain ambient temperatures within range recommended by manufacturer, but not less than 70 deg F or more than 95 deg F, in spaces to receive flooring during the following periods:

1. 72 hours before installation.
 2. During installation.
 3. 72 hours after installation.
- B. After installation and until Substantial Completion, maintain ambient temperatures within range recommended by manufacturer, but not less than 55 deg F or more than 95 deg F.
- C. Close spaces to traffic during flooring installation.
- D. Close spaces to traffic for 72 hours after flooring installation.
- E. Install flooring after other finishing operations, including painting, have been completed.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Fire-Test-Response Characteristics: For linoleum flooring, as determined by testing identical products according to ASTM E648 or NFPA 253 by a qualified testing agency.
1. Critical Radiant Flux Classification: Class I, not less than 0.45 W/sq. cm.

2.2 LINOLEUM SHEET FLOORING

- A. Basis-of-Design Product RF-01: As indicated on Sheet A12.00 Finish Schedule, or comparable product from one of the following:
1. Forbo.
 2. Armstrong.
- B. Linoleum Sheet Flooring: ASTM F2034, Type I, linoleum sheet with backing.
1. Roll Size: In manufacturer's standard length, but not less than 78 inches wide.
- C. Thickness: 2.5 mm.
- D. Heat-Welding Bead: For seamless installation, solid-strand product of linoleum flooring manufacturer.
1. Colors: Match linoleum flooring.

2.3 INSTALLATION MATERIALS

- A. Trowelable Leveling and Patching Compounds: Latex-modified, portland-cement-based or blended hydraulic-cement-based formulation provided or approved by linoleum flooring manufacturer for applications indicated.

- B. Adhesives: Water-resistant type recommended by flooring and adhesive manufacturers to suit products and substrate conditions indicated.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates, with Installer present, for compliance with requirements for maximum moisture content and other conditions affecting performance of the Work.
 - 1. Verify that finishes of substrates comply with tolerances and other requirements specified in other Sections and that substrates are free of cracks, ridges, depressions, scale, and foreign deposits that might interfere with adhesion of flooring.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Prepare substrates according to linoleum flooring manufacturer's written instructions to ensure adhesion of flooring.
- B. Concrete Substrates: Prepare according to ASTM F710.
 - 1. Verify that substrates are dry and free of curing compounds, sealers, and hardeners.
 - 2. Remove substrate coatings and other substances that are incompatible with flooring adhesives and that contain soap, wax, oil, or silicone, using mechanical methods recommended by linoleum flooring manufacturer. Do not use solvents.
 - 3. Alkalinity and Adhesion Testing: Perform tests recommended by linoleum flooring manufacturer. Proceed with installation only after substrate alkalinity falls within range on pH scale recommended by manufacturer in writing.
 - 4. Moisture Testing: Perform tests so that each test area does not exceed 200 sq. ft., and perform no fewer than three tests in each installation area and with test areas evenly spaced in installation areas.
 - a. Relative Humidity Test: Using in-situ probes, ASTM F2170. Proceed with installation only after substrates have a relative humidity level measurement recommended by manufacturer in writing.
- C. Fill cracks, holes, and depressions in substrates with trowelable leveling and patching compound; remove bumps and ridges to produce a uniform and smooth substrate.
- D. Do not install flooring until materials are the same temperature as space where they are to be installed.
 - 1. At least 72 hours in advance of installation, move flooring and installation materials into spaces where they will be installed.
- E. Immediately before installation, sweep and vacuum clean substrates to be covered by flooring.

3.3 INSTALLATION, GENERAL

- A. Comply with manufacturer's written instructions for installing flooring.
- B. Scribe and cut flooring to butt neatly and tightly to vertical surfaces and permanent fixtures, including built-in furniture, cabinets, pipes, outlets, edgings, thresholds, door frames, and nosings.
- C. Extend flooring into toe spaces, door reveals, closets, and similar openings.
- D. Maintain reference markers, holes, and openings that are in place or marked for future cutting by repeating on flooring as marked on substrates. Use chalk or other nonpermanent marking device.
- E. Install flooring on covers for telephone and electrical ducts and similar items in installation areas. Maintain overall continuity of color and pattern between pieces of flooring installed on covers and adjoining flooring. Tightly adhere flooring edges to substrates that abut covers and to cover perimeters.
- F. Adhere flooring to substrates using a full spread of adhesive applied to substrate to produce a completed installation without open cracks, voids, raising and puckering at joints, telegraphing of adhesive spreader marks, and other surface imperfections.
- G. Heat-Welded Seams: For seamless installation, comply with ASTM F1516. Rout joints and heat weld with welding bead to fuse sections permanently into a seamless flooring installation. Prepare, weld, and finish seams to produce surfaces flush with adjoining flooring surfaces.

3.4 LINOLEUM SHEET FLOORING INSTALLATION

- A. Unroll linoleum sheet flooring and allow it to stabilize before cutting and fitting.
- B. Lay out linoleum sheet flooring as follows:
 - 1. Maintain uniformity of flooring direction.
 - 2. Minimize number of seams; place seams in inconspicuous and low-traffic areas, at least 6 inches away from parallel joints in flooring substrates.
 - 3. Match edges of flooring for color shading at seams.
 - 4. Avoid cross seams.
 - 5. Eliminate deformations that result from hanging method used during drying process (stove bar marks).

3.5 CLEANING AND PROTECTION

- A. Comply with manufacturer's written instructions for cleaning and protecting linoleum flooring.
- B. Perform the following operations immediately after completing linoleum flooring installation:
 - 1. Remove adhesive and other blemishes from surfaces.
 - 2. Sweep and vacuum surfaces thoroughly.
 - 3. Damp-mop surfaces to remove marks and soil.

- C. Protect linoleum flooring from mars, marks, indentations, and other damage from construction operations and placement of equipment and fixtures during remainder of construction period.
- D. After allowing drying room film (yellow film caused by linseed oil oxidation) to disappear, cover linoleum flooring until Substantial Completion.

END OF SECTION 096543

SECTION 096813

TILE CARPETING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section Includes:
 - 1. Modular carpet tile.
- B. Related Requirements:
 - 1. Section 024119 Selective Demolition
 - 2. Section 096513 Resilient Base and Accessories
 - 3. Section 096543 Linoleum Flooring

1.3 PREINSTALLATION MEETINGS

- A. Preinstallation Conference: Conduct conference at Project site.
 - 1. Review methods and procedures related to carpet tile installation including, but not limited to, the following:
 - a. Review delivery, storage, and handling procedures.
 - b. Review ambient conditions and ventilation procedures.
 - c. Review subfloor preparation procedures.

1.4 ACTION SUBMITTALS

- A. Product Data: For each type of product.
 - 1. Include manufacturer's written data on physical characteristics, durability, and fade resistance.
 - 2. Include manufacturer's written installation recommendations for each type of substrate.
- B. Shop Drawings: For carpet tile installation, plans showing the following:
 - 1. Columns, doorways, enclosing walls or partitions, built-in cabinets, and locations where cutouts are required in carpet tiles.

2. Carpet tile type, color, and dye lot.
 3. Type of subfloor.
 4. Type of installation.
 5. Pattern of installation.
 6. Pattern type, location, and direction.
 7. Pile direction.
 8. Type, color, and location of edge, transition, and other accessory strips.
 9. Transition details to other flooring materials.
- C. Samples: For each of the following products and for each color and texture required. Label each Sample with manufacturer's name, material description, color, pattern, and designation indicated on Drawings and in schedules.
1. Carpet Tile: Full-size Sample.
 2. Exposed Edge, Transition, and Other Accessory Stripping: 12-inch-long Samples.
- D. Product Schedule: For carpet tile. Use same designations indicated on Drawings.
- E. Sustainable Product Certification: Provide ANSI/NSF 140 certification for carpet products.

1.5 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For Installer.
- B. Product Test Reports: For carpet tile, for tests performed by a qualified testing agency.
- C. Sample Warranty: For special warranty.

1.6 CLOSEOUT SUBMITTALS

- A. Maintenance Data: For carpet tiles to include in maintenance manuals. Include the following:
1. Methods for maintaining carpet tile, including cleaning and stain-removal products and procedures and manufacturer's recommended maintenance schedule.
 2. Precautions for cleaning materials and methods that could be detrimental to carpet tile.

1.7 MAINTENANCE MATERIAL SUBMITTALS

- A. Furnish extra materials, from the same product run, that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
1. Carpet Tile: Full-size units equal to 5 percent of amount installed for each type indicated, but not less than 10 sq. yd.

1.8 QUALITY ASSURANCE

- A. Installer Qualifications: An experienced installer who is certified by the International Certified Floorcovering Installers Association at the Commercial II certification level.
- B. Mockups: Build mockups to verify selections made under Sample submittals, to demonstrate aesthetic effects, and to set quality standards for fabrication and installation.
 - 1. Build mockups at locations and in sizes shown on Drawings.
 - 2. Subject to compliance with requirements, approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

1.9 DELIVERY, STORAGE, AND HANDLING

- A. Comply with the Carpet and Rug Institute's CRI 104.

1.10 FIELD CONDITIONS

- A. Comply with the Carpet and Rug Institute's CRI 104 for temperature, humidity, and ventilation limitations.
- B. Environmental Limitations: Do not deliver or install carpet tiles until spaces are enclosed and weathertight, wet-work in spaces is complete and dry, and ambient temperature and humidity conditions are maintained at levels planned for building occupants during the remainder of the construction period.
- C. Do not install carpet tiles over concrete slabs until slabs have cured and are sufficiently dry to bond with adhesive and concrete slabs have pH range recommended by carpet tile manufacturer.
- D. Where demountable partitions or other items are indicated for installation on top of carpet tiles, install carpet tiles before installing these items.

1.11 WARRANTY

- A. Special Warranty for Carpet Tiles: Manufacturer agrees to repair or replace components of carpet tile installation that fail in materials or workmanship within specified warranty period.
 - 1. Warranty does not include deterioration or failure of carpet tile due to unusual traffic, failure of substrate, vandalism, or abuse.
 - 2. Failures include, but are not limited to, the following:
 - a. More than 10 percent edge raveling, snags, and runs.
 - b. Dimensional instability.
 - c. Excess static discharge.
 - d. Loss of tuft-bind strength.

- e. Loss of face fiber.
 - f. Delamination.
3. Warranty Period: 10 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 CARPET TILE

- A. Basis-of-Design Product CPT-01 and CPT-02: As indicated on Sheet A12.00 Finish Schedule.
- B. Backing System:
 - 1. CPT-01, CPT-02: Polyester felt cushion, unless otherwise noted on the drawings.
- C. Size:
 - 1. CPT-01: Match Existing, Unless otherwise noted
 - 2. CPT-02: Match Existing, Unless otherwise noted
- D. Applied Treatments:
 - 1. Soil-Resistance Treatment: Manufacturer's standard treatment.
 - 2. Critical Radiant Flux Classification: Not less than 0.45 W/sq. cm according to NFPA 253.
 - 3. Dry Breaking Strength: Not less than 100 lbf according to ASTM D2646.
 - 4. Dimensional Tolerance: Within 1/32 inch of specified size dimensions, as determined by physical measurement.
 - 5. Dimensional Stability: 0.2 percent or less according to ISO 2551 (Aachen Test).
 - 6. Colorfastness to Light: Not less than 4 after 40 AFU (AATCC fading units) according to AATCC 16, Option E.
 - 7. Electrostatic Propensity: Less than 3.5 kV according to AATCC 134.

2.2 INSTALLATION ACCESSORIES

- A. Trowelable Leveling and Patching Compounds: Latex-modified, hydraulic-cement-based formulation provided or recommended by carpet tile manufacturer.
- B. Adhesives: Water-resistant, mildew-resistant, nonstaining, pressure-sensitive type to suit products and subfloor conditions indicated, that comply with flammability requirements for installed carpet tile, and are recommended by carpet tile manufacturer for releasable installation.
- C. Metal Edge/Transition Strips: Extruded aluminum with clear anodized finish of profile and width shown, of height required to protect exposed edge of carpet, and of maximum lengths to minimize running joints.

1. Basis-of-Design Product: Subject to compliance with requirements, provide products by one of the following to suit conditions:
 - a. Progress Profiles.
 - b. Schluter Systems.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for maximum moisture content, alkalinity range, installation tolerances, and other conditions affecting carpet tile performance.
- B. Examine carpet tile for type, color, pattern, and potential defects.
- C. Concrete Slabs: Verify that finishes comply with requirements specified in Section 033000 "Cast-in-Place Concrete" and that surfaces are free of cracks, ridges, depressions, scale, and foreign deposits.
 1. Moisture Testing: Perform tests so that each test area does not exceed 200 sq. ft., and perform no fewer than three tests in each installation area and with test areas evenly spaced in installation areas.
 - a. Relative Humidity Test: Using in situ probes, ASTM F2170. Proceed with installation only after substrates have a relative humidity level measurement recommended in writing by adhesive and carpet tile manufacturers.
 - b. Perform additional moisture tests recommended in writing by adhesive and carpet tile manufacturers. Proceed with installation only after substrates pass testing.
- D. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. General: Comply with the Carpet and Rug Institute's CRI 104 and with carpet tile manufacturer's written installation instructions for preparing substrates indicated to receive carpet tile.
- B. Use trowelable leveling and patching compounds, according to manufacturer's written instructions, to fill cracks, holes, depressions, and protrusions in substrates. Fill or level cracks, holes and depressions 1/8 inch wide or wider, and protrusions more than 1/32 inch unless more stringent requirements are required by manufacturer's written instructions.
- C. Concrete Substrates: Remove coatings, including curing compounds, and other substances that are incompatible with adhesives and that contain soap, wax, oil, or silicone, without using solvents. Use mechanical methods recommended in writing by adhesive and carpet tile manufacturers.

- D. Broom and vacuum clean substrates to be covered immediately before installing carpet tile.

3.3 INSTALLATION

- A. General: Comply with the Carpet and Rug Institute's CRI 104, Section 10, "Carpet Tile," and with carpet tile manufacturer's written installation instructions.
- B. Installation Method: Glue down; install every tile with full-spread, releasable, pressure-sensitive adhesive.
- C. Maintain dye-lot integrity. Do not mix dye lots in same area.
- D. Maintain pile-direction patterns indicated on Drawings, and as recommended in writing by carpet tile manufacturer.
- E. Cut and fit carpet tile to butt tightly to vertical surfaces, permanent fixtures, and built-in furniture including cabinets, pipes, outlets, edgings, thresholds, and nosings. Bind or seal cut edges as recommended by carpet tile manufacturer.
- F. Extend carpet tile into toe spaces, door reveals, closets, open-bottomed obstructions, removable flanges, alcoves, and similar openings.
- G. Maintain reference markers, holes, and openings that are in place or marked for future cutting by repeating on carpet tile as marked on subfloor. Use nonpermanent, nonstaining marking device.
- H. Install pattern parallel to walls and borders.

3.4 CLEANING AND PROTECTION

- A. Perform the following operations immediately after installing carpet tile:
 - 1. Remove excess adhesive and other surface blemishes using cleaner recommended by carpet tile manufacturer.
 - 2. Remove yarns that protrude from carpet tile surface.
 - 3. Vacuum carpet tile using commercial machine with face-beater element.
- B. Protect installed carpet tile to comply with the Carpet and Rug Institute's CRI 104, Section 13.7.
- C. Protect carpet tile against damage from construction operations and placement of equipment and fixtures during the remainder of construction period. Use protection methods indicated or recommended in writing by carpet tile manufacturer.

END OF SECTION 096813

SECTION 099123
INTERIOR PAINTING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section Includes:
 - 1. Primers.
 - 2. Water-based finish coatings.
- B. Related Requirements:
 - 1. Section 092900 Gypsum Board

1.3 ACTION SUBMITTALS

- A. Product Data: For each type of product. Include preparation requirements and application instructions.
 - 1. Include preparation requirements and application instructions.
 - 2. Indicate VOC content.
- B. Samples: For each type of topcoat product.
- C. Product Schedule: Use same designations indicated on Drawings and in the Interior Painting Schedule to cross-reference paint systems specified in this Section. Include color designations.

1.4 MAINTENANCE MATERIAL SUBMITTALS

- A. Furnish extra materials that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
 - 1. Paint Products: 1 gal. of each material and color applied.

1.5 QUALITY ASSURANCE

- A. Mockups: Apply mockups of each paint system indicated and each color and finish selected to verify preliminary selections made under Sample submittals and to demonstrate aesthetic effects and set quality standards for materials and execution.
 - 1. Architect will select one surface to represent surfaces and conditions for application of each paint system.
 - a. Vertical and Horizontal Surfaces: Provide samples of at least 100 sq. ft..
 - b. Other Items: Architect will designate items or areas required.
 - 2. Final approval of color selections will be based on mockups.
 - a. If preliminary color selections are not approved, apply additional mockups of additional colors selected by Architect at no added cost to Owner.
 - 3. Approval of mockups does not constitute approval of deviations from the Contract Documents contained in mockups unless Architect specifically approves such deviations in writing.
 - 4. Subject to compliance with requirements, approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Store materials not in use in tightly covered containers in well-ventilated areas with ambient temperatures continuously maintained at not less than 45 deg F.
 - 1. Maintain containers in clean condition, free of foreign materials and residue.
 - 2. Remove rags and waste from storage areas daily.

1.7 FIELD CONDITIONS

- A. Apply paints only when temperature of surfaces to be painted and ambient air temperatures are between 50 and 95 deg F.
- B. Do not apply paints when relative humidity exceeds 85 percent; at temperatures of less than 5 deg F above the dew point; or to damp or wet surfaces.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Basis-of-Design Product: P-02.1 Subject to compliance with requirements, provide Kelly-Moore Paint Company Inc. as indicated on Sheet A12.00 Finish Schedule, or comparable product by one of the following:

1. Dunn-Edwards Corporation.
2. Sherwin-Williams Company (The).

B. Source Limitations: Obtain each paint product from single source from single manufacturer.

2.2 PAINT PRODUCTS, GENERAL

A. Material Compatibility:

1. Materials for use within each paint system shall be compatible with one another and substrates indicated, under conditions of service and application as demonstrated by manufacturer, based on testing and field experience.
2. For each coat in a paint system, products shall be recommended in writing by topcoat manufacturers for use in paint system and on substrate indicated.

2.3 PRIMERS

A. Interior Latex Primer Sealer: Water-based latex sealer used on new interior plaster, concrete, and gypsum wallboard surfaces.

1. Basis-of-Design Product: Subject to compliance with requirements, provide Kelly-Moore AcryPlex PVA Primer/Sealer, or approved equal.

B. Water-Based Rust-Inhibitive Primer: Corrosion-resistant, water-based-emulsion primer formulated for resistance to flash rusting when applied to cleaned, interior ferrous metals subject to mildly corrosive environments.

1. Basis-of-Design Product: Subject to compliance with requirements, provide Kelly-Moore DTM 5725 Acrylic Primer, or approved equal.

C. Water-Based Bonding Primer: Water-based-emulsion primer formulated to promote adhesion of subsequent specified coatings.

1. Basis-of-Design Product: Subject to compliance with requirements, provide Kelly-Moore Kel-Bond 295 Interior/Exterior Universal Primer, or approved equal.

2.4 WATER-BASED FINISH COATS

A. Interior, Latex, Flat: Pigmented, water-based paint for use on primed/sealed interior plaster and gypsum board, and on primed wood and metals.

1. Basis-of-Design Product: Subject to compliance with requirements, provide Kelly-Moore 550 AcryPlex Interior Flat Paint, or approved equal.

B. Interior, Latex, Semigloss: Pigmented, water-based paint for use on primed/sealed interior plaster and gypsum board, and on primed wood and metals.

1. Basis-of-Design Product: Subject to compliance with requirements, provide Kelly-Moore 1650 AcryPlex Interior Semi-Gloss Enamel, or approved equal.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates and conditions, with Applicator present, for compliance with requirements for maximum moisture content and other conditions affecting performance of the Work.
- B. Maximum Moisture Content of Substrates: When measured with an electronic moisture meter as follows:
 1. Wood: 15 percent.
 2. Gypsum Board: 12 percent.
- C. Gypsum Board Substrates: Verify that finishing compound is sanded smooth.
- D. Verify suitability of substrates, including surface conditions and compatibility, with existing finishes and primers.
- E. Proceed with coating application only after unsatisfactory conditions have been corrected.
 1. Application of coating indicates acceptance of surfaces and conditions.

3.2 PREPARATION

- A. Comply with manufacturer's written instructions and recommendations applicable to substrates and paint systems indicated.
- B. Remove hardware, covers, plates, and similar items already in place that are removable and are not to be painted. If removal is impractical or impossible because of size or weight of item, provide surface-applied protection before surface preparation and painting.
 1. After completing painting operations, use workers skilled in the trades involved to reinstall items that were removed. Remove surface-applied protection if any.
- C. Clean substrates of substances that could impair bond of paints, including dust, dirt, oil, grease, and incompatible paints and encapsulants.
 1. Remove incompatible primers and reprime substrate with compatible primers or apply tie coat as required to produce paint systems indicated.
- D. Steel Substrates: Remove rust, loose mill scale, and shop primer, if any. Clean using methods recommended in writing by paint manufacturer.

- E. Shop-Primed Steel Substrates: Clean field welds, bolted connections, and areas where shop paint is abraded. Paint exposed areas with the same material as used for shop priming to comply with SSPC-PA 1 for touching up shop-primed surfaces.
- F. Galvanized-Metal Substrates: Remove grease and oil residue from galvanized sheet metal by mechanical methods to produce clean, lightly etched surfaces that promote adhesion of subsequently applied paints.
- G. Cotton or Canvas Insulation Covering Substrates: Remove dust, dirt, and other foreign material that might impair bond of paints to substrates.

3.3 INSTALLATION

- A. Apply paints according to manufacturer's written instructions.
 - 1. Use applicators and techniques suited for paint and substrate indicated.
 - 2. Paint surfaces behind movable equipment and furniture same as similar exposed surfaces. Before final installation, paint surfaces behind permanently fixed equipment or furniture with prime coat only.
 - 3. Paint front and backsides of access panels, removable or hinged covers, and similar hinged items to match exposed surfaces.
 - 4. Do not paint over labels of independent testing agencies or equipment name, identification, performance rating, or nomenclature plates.
 - 5. Primers specified in painting schedules may be omitted on items that are factory primed or factory finished if acceptable to topcoat manufacturers.
- B. Tint each undercoat a lighter shade to facilitate identification of each coat if multiple coats of same material are to be applied. Tint undercoats to match color of topcoat but provide sufficient difference in shade of undercoats to distinguish each separate coat.
- C. If undercoats or other conditions show through topcoat, apply additional coats until cured film has a uniform paint finish, color, and appearance.
- D. Apply paints to produce surface films without cloudiness, spotting, holidays, laps, brush marks, roller tracking, runs, sags, ropiness, or other surface imperfections. Cut in sharp lines and color breaks.
- E. Dry-Film Thickness Testing: Owner may engage the services of a qualified testing and inspecting agency to inspect and test paint for dry-film thickness.
 - 1. Contractor shall touch up and restore painted surfaces damaged by testing.
 - 2. If test results show that dry-film thickness of applied paint does not comply with paint manufacturer's written recommendations, Contractor shall pay for testing and apply additional coats as needed to provide dry-film thickness that complies with paint manufacturer's written recommendations.

3.4 CLEANING AND PROTECTION

- A. At end of each workday, remove rubbish, empty cans, rags, and other discarded materials from Project site.
 - 1. Do not clean equipment with free-draining water and prevent solvents, thinners, cleaners, and other contaminants from entering into waterways, sanitary and storm drain systems, and ground.
 - 2. Dispose of contaminants in accordance with requirements of authorities having jurisdiction.
 - 3. Allow empty paint cans to dry before disposal.
 - 4. Collect waste paint by type and deliver to recycling or collection facility.
- B. After completing paint application, clean spattered surfaces. Remove spattered paints by washing, scraping, or other methods. Do not scratch or damage adjacent finished surfaces.
- C. Protect work of other trades against damage from paint application. Correct damage to work of other trades by cleaning, repairing, replacing, and refinishing, as approved by Architect, and leave in an undamaged condition.
- D. At completion of construction activities of other trades, touch up and restore damaged or defaced painted surfaces.

3.5 INTERIOR PAINTING SCHEDULE

- A. Steel Substrates:
 - 1. Prime Coat: Water-Based Rust-Inhibitive Primer.
 - 2. Intermediate Coat: Matching topcoat.
 - 3. Topcoat: Interior, Latex, Semigloss.
- B. Galvanized-Metal Substrates:
 - 1. Prime Coat: Water-Based Rust-Inhibitive Primer.
 - 2. Intermediate Coat: Matching topcoat.
 - 3. Topcoat: Interior, Latex, Semigloss.
- C. Wood and Plywood Substrates:
 - 1. Prime Coat: Water-Based Bonding Primer.
 - 2. Intermediate Coat: Matching topcoat.
 - 3. Topcoat: Interior, Latex, Flat.
- D. Finish Carpentry: Doors
 - 1. Prime Coat: Water-Based Bonding Primer.
 - 2. Intermediate Coat: Matching topcoat.
 - 3. Topcoat: Interior, Latex, Semigloss.

E. Gypsum Board Substrates:

1. Prime Coat: Interior Latex Primer Sealer.
2. Intermediate Coat: Matching topcoat.
3. Topcoat: Interior, Latex, Flat.

END OF SECTION 099123

SECTION 123661.16

SOLID SURFACING COUNTERTOPS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section Includes:
1. Solid surface material countertops.
 2. Solid surface material backsplashes.
 3. Solid surface material end splashes.
 4. Solid surface material apron fronts.
- B. Related Requirements:
1. Section 064116 Plastic-Laminate-Clad Architectural Cabinets
 2. Section 064119 Solid Phenolic Architectural Cabinets
 3. Section 224100 Residential Plumbing Fixtures

1.3 ACTION SUBMITTALS

- A. Product Data: For countertop materials.
- B. Shop Drawings: For countertops. Show materials, finishes, edge and backsplash profiles, methods of joining, and cutouts for plumbing fixtures.
1. Show locations and details of joints.
 2. Show direction of directional pattern, if any.
- C. Samples for Initial Selection: For each type of material exposed to view.
- D. Samples for Verification: For the following products:
1. Countertop material, 6 inches square.
 2. Wood trim, 8 inches long.
 3. One full-size solid surface material countertop, with front edge and backsplash, 8 by 10 inches, of construction and in configuration specified.

1.4 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For fabricator.

1.5 CLOSEOUT SUBMITTALS

- A. Maintenance Data: For solid surface material countertops to include in maintenance manuals. Include Product Data for care products used or recommended by Installer and names, addresses, and telephone numbers of local sources for products.

1.6 QUALITY ASSURANCE

- A. Fabricator Qualifications: Shop that employs skilled workers who custom-fabricate countertops similar to that required for this Project, and whose products have a record of successful in-service performance.
- B. Installer Qualifications: Fabricator of countertops.

1.7 FIELD CONDITIONS

- A. Field Measurements: Verify dimensions of countertops by field measurements after base cabinets are installed but before countertop fabrication is complete.

1.8 COORDINATION

- A. Coordinate locations of utilities that will penetrate countertops or backsplashes.

PART 2 - PRODUCTS

2.1 SOLID SURFACE COUNTERTOP MATERIALS

- A. Solid Surface Material: Homogeneous-filled plastic resin complying with ICPA SS-1.
 - 1. Basis-of-Design Product SS-01: As indicated on Sheet A12.00 Finish Schedule.
 - 2. Type: Provide Standard type unless Special Purpose type is indicated.
- B. Plywood: Exterior softwood plywood complying with DOC PS 1, Grade C-C Plugged, touch sanded.

2.2 ACCESSORIES

- A. Countertop Support Bracket: Surface mounted, 6363-T6 extruded aluminum, TIG welded along both 45-degree mitered sides and across back; sharp edges ground and deburred.
 - 1. Basis-of-Design Product: Subject to compliance with requirements, provide Rakks EH-1818, or approved equal.
 - 2. Size: 18-inch x 18 inch.
 - 3. Finish: Factory prime.

2.3 COUNTERTOP FABRICATION

- A. Fabricate countertops according to solid surface material manufacturer's written instructions and to the AWI/AWMAC/WT's "Architectural Woodwork Standards."
 - 1. Grade: Premium.
- B. Configuration:
 - 1. Front: Straight, slightly eased at top.
 - 2. Backsplash: Straight, slightly eased at corner.
- C. Countertops: 3/4-inch- thick, solid surface material with front edge built up with same material.
- D. Backsplashes: 3/4-inch- thick, solid surface material.
- E. Fabricate tops with shop-applied edges unless otherwise indicated. Comply with solid surface material manufacturer's written instructions for adhesives, sealers, fabrication, and finishing.
 - 1. Fabricate with loose backsplashes for field assembly.
- F. Joints: Fabricate countertops without joints.
- G. Cutouts and Holes:
 - 1. Undercounter Plumbing Fixtures: Make cutouts for fixtures in shop using template or pattern furnished by fixture manufacturer. Form cutouts to smooth, even curves.
 - a. Provide vertical edges, slightly eased at juncture of cutout edges with top and bottom surfaces of countertop and projecting 3/16 inch into fixture opening.
 - 2. Fittings: Drill countertops in shop for plumbing fittings, undercounter soap dispensers, and similar items.

2.4 INSTALLATION MATERIALS

- A. Adhesive: Product recommended by solid surface material manufacturer.

SOLID SURFACING COUNTERTOPS

123661.16- 3

- B. Sealant for Countertops: Comply with applicable requirements in Section 079200 "Joint Sealants."

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates to receive solid surface material countertops and conditions under which countertops will be installed, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of countertops.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

- A. Install countertops level to a tolerance of 1/8 inch in 8 feet, 1/4 inch maximum. Do not exceed 1/64-inch difference between planes of adjacent units.
- B. Fasten subtops to cabinets by screwing through subtops into cornerblocks of base cabinets. Shim as needed to align subtops in a level plane.
- C. Secure countertops to subtops with adhesive according to solid surface material manufacturer's written instructions. Align adjacent surfaces and, using adhesive in color to match countertop, form seams to comply with manufacturer's written instructions. Carefully dress joints smooth, remove surface scratches, and clean entire surface.
- D. Install backsplashes and end splashes by adhering to wall and countertops with adhesive. Mask areas of countertops and splashes adjacent to joints to prevent adhesive smears.
- E. Install aprons to backing and countertops with adhesive. Mask areas of countertops and splashes adjacent to joints to prevent adhesive smears. Fasten by screwing through backing. Predrill holes for screws as recommended by manufacturer.
- F. Complete cutouts not finished in shop. Mask areas of countertops adjacent to cutouts to prevent damage while cutting. Make cutouts to accurately fit items to be installed, and at right angles to finished surfaces unless beveling is required for clearance. Ease edges slightly to prevent snipping.
- G. Apply sealant to gaps at walls; comply with Section 079200 "Joint Sealants."

END OF SECTION 123661.16

SECTION 26 05 00 – COMMON WORK RESULTS FOR ELECTRICAL

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. This Section covers and applies to all work specified in Division 26 (and 27 & 28).
- B. Work Included: Materials, equipment, fabrication, installation and tests for fully operational and safe systems, including all necessary materials, appurtenances and features whether specified or shown on drawings or not, in conformity with applicable codes and authorities having jurisdiction for the following:
 - 1. Electrical work specified in all sections within Division 26 (and 27 & 28) of these specifications, including, but not limited to:
 - a. Existing medium voltage service feeders to be extended from existing medium voltage campus switchgear to new medium voltage switchgear and transformer at the existing fine arts building main electrical room. New secondary low voltage main switchboard.
 - b. Equipment for serving agency facilities is existing and is to be utilized in this project. Existing medium voltage cables are to be extended to new medium voltage switchgear. New transformers, and utilization equipment will be furnished and installed by the contractor.
 - c. Lighting and power distribution facilities, including main switchboards with metering, transformers, distribution boards, panelboards with feeders, branch circuit wiring, connections to outlets, and wiring devices. Existing panelboards as shown on plans are to be relocated as described on demolition plans.
 - d. Lighting fixtures, lamps and drivers.
 - e. New motor and other new power-consuming equipment connections from distribution apparatus to equipment.
 - f. Telephone and Data conduit system, including underground service facilities, riser and lateral extension conduits, and facilities required in terminal room in accordance with the requirements of the Telephone Utility.
 - g. Elevator feeders.
 - h. Control, alarm and interlock wiring for mechanical equipment, where indicated.
 - i. Electrical grounding system.

- j. Emergency lighting system via diesel-engine generator.
- k. Vibration and seismic controls for electrical systems.
- l. Life safety system including ADA requirements.
- m. Cable tray system.
- n. Low voltage system (PA, CATV, Security, etc.)
- o. Adjustment and testing of the Electrical Work.
- p. Examine the drawings and specifications of other Divisions and provide electrical service for all equipment, devices and controls noted therein, unless work specifically is not included.
- q. Lighting control system.
- r. Dimming system.
- s. Uninterruptable power supply (UPS) system.
- t. Sleeves for raceways and cables.
- u. Fire Rated Sleeves for cables.
- v. Grout.
- w. Common electrical installation requirements.
- x. Utility company coordination requirements.

1.3 REFERENCES

A. Abbreviations and Acronyms for Electrical Terms and Units of Measure:

- 1. A: Ampere, unit of electrical current.
- 2. AC or ac: Alternating current.
- 3. AF : Amp Frame
- 4. AFCI: Arc-fault circuit interrupter.
- 5. AIC: Ampere interrupting capacity.
- 6. AL, Al, or ALUM: Aluminum.
- 7. AP: Wireless access point
- 8. ASD: Adjustable-speed drive.
- 9. AT: Amp Trip
- 10. ATS: Automatic transfer switch.
- 11. AV: Audio-Video, audio-visual
- 12. AWG: American wire gauge; see ASTM B258.
- 13. BAS: Building automation system.
- 14. BIL: Basic impulse insulation level.
- 15. BIM: Building information modeling.
- 16. BJ: Bonding jumper
- 17. BKR: Breaker
- 18. BMS: Building Management System
- 19. C: Conduit
- 20. CAD: Computer-aided design or drafting.
- 21. CATV: Community antenna television, Cable Television
- 22. CB: Circuit breaker.
- 23. CCTV: Closed circuit television
- 24. CFCI: Contractor furnished contractor installed
- 25. CKT: Circuit
- 26. CU or Cu: Copper.
- 27. CU-AL or AL-CU: Copper-aluminum.
- 28. dB or DB: Decibel, a unitless logarithmic ratio of two electrical, acoustical, or optical

- power values.
- 29. DC or dc: Direct current.
 - 30. DDC: Direct digital control (HVAC).
 - 31. DISC: Disconnect
 - 32. DP: Distribution Panelboard
 - 33. DW: Dishwasher
 - 34. ECS: Emergency communication system
 - 35. EGB: Electrical grounding busbar
 - 36. EGC: Equipment grounding conductor.
 - 37. EMD: Estimated maximum demand.
 - 38. EMGB: Electrical main grounding busbar
 - 39. EMI: Electromagnetic interference.
 - 40. EP: Explosion proof
 - 41. EPM: Electrical preventive maintenance.
 - 42. EPS: Emergency power supply.
 - 43. EPSS: Emergency power supply system.
 - 44. ER: Existing to be relocated
 - 45. ERMS: Energy reduction maintenance switch
 - 46. EV: Electric vehicle.
 - 47. EWC: Electric water cooler
 - 48. FA: Fire Alarm
 - 49. FAA: Fire alarm annunciator
 - 50. FACP: Fire alarm control panel
 - 51. FC or fc: Footcandle, a unit of illuminance equal to one lumen per square foot.
 - 52. FLA: Full load amps
 - 53. FLC: Full-load current.
 - 54. FS: Flow Switch
 - 55. FSD: Fire smoke damper
 - 56. ft.: Foot.
 - 57. G or GND: Equipment grounding conductor
 - 58. GEC: Grounding electrode conductor.
 - 59. GEN: Generator
 - 60. GFI or GFCI: Ground-fault circuit interrupter.
 - 61. GFPE: Ground-fault protection of equipment.
 - 62. GND: Ground.
 - 63. HACR: Heating, air conditioning, and refrigeration.
 - 64. HDPE: High-density polyethylene.
 - 65. HID: High-intensity discharge.
 - 66. HH: Handhole
 - 67. HOA: Hand-off-automatic
 - 68. HP or hp: Horsepower.
 - 69. HVAC: Heating, ventilating, and air conditioning.
 - 70. Hz: Hertz.
 - 71. IBT: Intersystem bonding termination.
 - 72. IC: Intercom
 - 73. IG: Isolated ground.
 - 74. inch: Inch. To avoid confusion, the abbreviation "in." is not used.
 - 75. IP: Ingress protection rating (enclosures); Internet protocol (communications).
 - 76. IR: Infrared.
 - 77. IS: Intrinsically safe.

- 78. IT&R: Inspecting, testing, and repair.
- 79. ITE: Information technology equipment.
- 80. JB: Junction Box
- 81. KAIC or kAIC: Kiloampere interrupting capacity.
- 82. kcmil or MCM: One thousand circular mils.
- 83. KV or kV: Kilovolt.
- 84. KVA or kVA: Kilovolt-ampere.
- 85. kVAr or kVAR: Kilovolt-ampere reactive.
- 86. KW or kW: Kilowatt.
- 87. kWh: Kilowatt-hour.
- 88. LAN: Local area network.
- 89. LT: Light
- 90. LTG: Lighting
- 91. lb: Pound (weight).
- 92. LCD: Liquid-crystal display.
- 93. LED: Light-emitting diode.
- 94. LRC: Locked-rotor current.
- 95. MCA: Minimum circuit ampacity
- 96. MCB: Main circuit breaker
- 97. MCC: Motor-control center.
- 98. MH: Manhole
- 99. MLO: Main lugs only.
- 100. MOCP: Maximum overcurrent protection
- 101. MRTS: Motor rated toggle switch
- 102. MSB: Main switchboard
- 103. MTD: Mounted
- 104. MTG: Mounting
- 105. MTS: Main transfer switch
- 106. MVA: Megavolt-ampere.
- 107. N: Neutral
- 108. N.C. or NC: Normally closed.
- 109. NF: Non-fused
- 110. NiCd: Nickel cadmium.
- 111. NIU: Network interface unit.
- 112. NL: Night light.
- 113. N.O. or NO: Normally open.
- 114. OCPD: Overcurrent protective device.
- 115. OFCI: Owner furnished contractor installed.
- 116. ONT: Optical network terminal.
- 117. P: Pole – referring to an electrical position in a panel
- 118. PA: Public address
- 119. PB: Pull box
- 120. PC: Personal computer.
- 121. PF or pf: Power factor.
- 122. PH or ph: Phase
- 123. PHEV: Plug-in hybrid electric vehicle.
- 124. PIV: Post indicator valve.
- 125. PLFA: Power-limited fire alarm.
- 126. PoE: Power over Ethernet.
- 127. PV: Photovoltaic.

- 128. PVC: Polyvinyl chloride.
- 129. PWR: Power.
- 130. RCP: Reflected ceiling plan.
- 131. RECPT: Receptacle.
- 132. REF: Reference.
- 133. RFI: Radio-frequency interference (electrical); Request for interpretation (contract).
- 134. RMS or rms: Root-mean-square.
- 135. RPM or rpm: Revolutions per minute.
- 136. SCCR: Short circuit current rating.
- 137. SD: Smoke damper.
- 138. SEC: Secondary.
- 139. SPD: Surge protective device.
- 140. sq.: Square.
- 141. SWD: Switching duty.
- 142. SWBD: Switchboard.
- 143. TBB: Telecommunications bonding backbone.
- 144. TC: Time clock.
- 145. TCP/IP: Transmission control protocol/Internet protocol.
- 146. TEFC: Totally enclosed fan cooled.
- 147. TGB: Telecommunications grounding busbar.
- 148. TMGB: Telecommunications main grounding busbar.
- 149. TO: Telecommunications outlet.
- 150. TR: Telecommunications room.
- 151. TR: Tamper resistant.
- 152. TS: Tamper switch.
- 153. TV: Television.
- 154. TVSS: Transient voltage surge suppressor.
- 155. UG : Underground.
- 156. UL: Underwriters Laboratories, Inc. (standards) or UL LLC (services).
- 157. UPS: Uninterruptible power supply.
- 158. USB: Universal serial bus.
- 159. UV: Ultraviolet.
- 160. V: Volt, unit of electromotive force.
- 161. Vac or V(ac): Volt, alternating current.
- 162. Vdc or V(dc): Volt, direct current.
- 163. VA: Volt-ampere, unit of complex electrical power.
- 164. VAR or VAR: Volt-ampere reactive, unit of reactive electrical power.
- 165. VFC: Variable-frequency controller.
- 166. VFD: Variable-frequency drive.
- 167. VRLA: Valve-regulated lead acid.
- 168. W: Watt, unit of real electrical power or Wire.
- 169. WG: Wire guard.
- 170. Wh: Watt-hour, unit of electrical energy usage.
- 171. WP: Weatherproof.
- 172. WR: Weather resistant.
- 173. XFMR: Transformer.

1.4 DESCRIPTION OF BID DOCUMENTS

A. Specifications:

1. Specifications, in general, describe quality and character of materials and equipment.
2. Specifications are of simplified form and include incomplete sentences.
3. Words or phrases such as "The Contractor shall," "shall be," "furnish," provide," "a," "an," "the," and "all" etc. have been omitted for brevity.

B. Drawings:

1. Electrical layouts are generally diagrammatic and, although size and location of equipment is drawn to scale wherever possible, Contractor shall make use of all data in Contract Documents and verify this information at building site.
2. Locations of items on the drawings may be distorted for purposes of clearness and legibility. Actual locations of architectural and mechanical items are shown on architectural and mechanical drawings.
3. Contractor shall adjust locations of light fixtures in mechanical rooms to compensate for changes in duct routing, to provide reasonably uniform lighting in work areas.
4. Outlets shall be located in accordance with architectural design, and specific locations may be determined by Owner's representative at jobsite prior to installation.
5. Outlets located on architectural plans by dimension shall be held. Additional outlets may be shown on electrical plans and shall be installed as close as practical to the location shown.
6. Manufacturers' drawings and instructions shall be followed in all cases where the makers of devices and equipment furnish directions, where details are not shown on the drawings, or where described in the specifications.
7. Work installed in a manner contrary to that shown in the contract documents shall be removed and reinstalled when so directed by the Architect. Discrepancies and questionable points shall be immediately reported to the Architect for clarification.
8. The Owner and the Architect reserve the right to make reasonable changes in outlet locations in each area prior to roughing-in at no additional cost to the Owner.

- C. If any part of specifications or drawings appears unclear or contradictory, apply to Architect for his interpretation and decision as early as possible, including during bidding period. Do not proceed with such work without Architect's decision.

1.5 JOB CONDITIONS

- A. Examine all drawings and specifications in a manner to be fully cognizant of all work required under this Division.
- B. Adjoining work of other Divisions shall be examined for interferences and conditions affecting this Division.
- C. Examine site related work and surfaces before starting work of any Section.
 1. Report to Architect, in writing, conditions which will prevent proper provision of this work.

2. Beginning work of any Section without reporting unsuitable conditions to Architect constitutes acceptance of conditions by Contractor.
 3. Perform any required removal, repair or replacement of this work caused by unsuitable conditions at no additional cost to Owner.
- D. Connections to existing work:
1. Verification of existing: Before submitting bid, become thoroughly familiar with actual existing conditions and of the existing installations to which connections must be made, including any necessary alterations, and existing building engineering practices and requirements. The intent of the work is shown on the drawings and described herein, and no consideration will be granted by reason of lack of familiarity on the part of the contractor with actual physical conditions, requirements, and practices at the site.
 2. Install new work and connect to existing work with minimum interference to existing facilities.
 3. Temporary shutdowns of existing services: Indicate dates of proposed electrical power shutdowns required to perform the installation. Notify the college a minimum of 14 days prior to each shutdown. All shutdown coordination meeting shall be arranged by the contractor for each shut down.
 4. Power shutdowns shall occur between the hours of 12:00 a.m. and 4:00 a.m.
 5. Investigate and list all affected loads that will be switched off during a power shutdown.
 6. Maintain continuous operation of existing facilities as required with necessary temporary connections between new and existing work. Do not interrupt alarm and emergency systems.
 7. Connect new work to existing work in neat and acceptable manner. Restore existing disturbed work to original condition including maintenance of wiring continuity as required.

1.6 DEFINITIONS

- A. "Provide": To furnish, install and connect complete and ready for safe and regular operation of particular work referred to unless specifically otherwise noted.
- B. "Install": To erect, mount and connect complete with related accessories.
- C. "Furnish" or "Supply": To purchase, procure, acquire and deliver complete with related accessories.
- D. "Work": Labor, materials, equipment, apparatus, controls, accessories and other items required for proper and complete installation.
- E. "Wiring": Raceway, fittings, wire, boxes and related items.
- F. "Concealed": Embedded in masonry or other construction, installed in furred spaces, within double partitions or hung ceilings, in trenches, in crawl spaces or in enclosures.
- G. "Exposed": Not installed underground or "concealed" as defined above.

- H. "Indicated" "Shown" or "Noted": As indicated, shown or noted on drawings or specifications.
- I. "Equal": Equal in quality, workmanship, materials, weight, size, design and efficiency of specified product, conforming with "Manufacturers".
- J. "Reviewed," "Satisfactory," "Accepted," or "Directed": As reviewed, satisfactory, accepted or directed by or to Architect.
- K. "Motor Controllers": Manual or magnetic starters (with or without switches), individual pushbuttons, or hand-off-automatic (HOA) switches controlling the operation of motors.
- L. "Control Devices": Automatic sensing and switching devices such as thermostats, pressure, float, electro-pneumatic switches and electrodes controlling operation of equipment.

1.7 UTILITY CONNECTIONS

- A. Finalize electrical service arrangements including verification of locations and details with the Serving Agency.
- B. Verify locations of facilities and details with the Telephone Utility.
 - 1. Final telephone service arrangements will be made by the Owner.
- C. In addition to the requirements shown on the drawings and stated herein, the work shall comply with the following:
 - 1. Construction Standards and Service Requirements of the respective utilities including any supplementary drawings issued by the utilities.
 - 2. Be subjected to inspection approval of these utilities.
- D. Electrical service facilities shall consist of furnishing and installing concrete encased primary conduits, electrical equipment yard appurtenances and secondary service including utility meter in accordance with the arrangement, details, and locations shown on the drawings and described herein and as required by the utility company.

1.8 ELECTRICAL SYSTEM CHARACTERISTICS

- A. Service: 480/277 volts, 3 phase, 4 wire with grounded neutral.
- B. LED Lighting: 277 volts.
- C. Motors ½ horsepower and above: 480 volts, 3 phase.
- D. Fractional horsepower motors less than ½ horsepower: 120 volts single phase.
- E. General receptacles will be supplied at 120 volts.

1.9 MOUNTING HEIGHTS

- A. Mounting heights of devices and equipment shown on the architectural drawings shall govern, but in the absence of such indications, the following centerline heights above the finished floor shall be maintained.

- | | | |
|----|-------------------------------------|--|
| 1. | Wall switches | 3 feet - 6 inches (or as directed by architect). |
| 2. | Wall lights (interior) | 7 feet - 0 inches (or as directed by architect). |
| 3. | Pendant or chain hung fixture | 10 feet - 0 inches (or as directed by architect). |
| 4. | Convenience receptacles | 1 foot - 3 inches except in Toilets and over cabinets or -counters where devices shall be mounted at 4 feet - 0 inches (9 inches above counter). |
| 5. | Fire alarm stations | 4 feet - 0 inches. |
| 6. | Telephone and communication outlets | 1 foot - 3 inches. |
| 7. | Clock outlets | 1 foot - 6 inches below finished ceiling. |
| 8. | Panelboard cabinets | Shall be installed with the top 6 feet - 6 inches above the floor for cabinets more than 2 feet - 6 inches high and 6 feet - 0 inches for cabinets less than 2 feet - 6 inches high. |
| 9. | Motor controllers | 5 feet-0 inches. |

1.10 COORDINATION

- A. Trade Coordination: Include physical characteristics, electrical characteristics, device layout plans, wiring diagrams, and connections as required per Division 26, Electrical Coordination Documents. For equipment with electrical connections, furnish copy of approved submittal for inclusion in Division 26, Electrical submittal.

- B. Location of electrical outlets and equipment:
1. Location of electrical outlets and equipment shown on electrical drawings are diagrammatic. Unless indicated otherwise do not use electrical drawings to locate electrical outlets and equipment.
 2. Luminaires and outlets:
 - a. Ceiling mounted luminaires and outlets: use architectural reflected ceiling plans and details to determine location unless indicated otherwise.
 - b. Wall mounted luminaires and outlets:
 - 1) Use architectural elevation and section drawings to determine location unless indicated otherwise.
 - 2) Where architectural elevation and section drawings do not indicate location of wall outlets then locate the outlet within 12 inches of location shown on electrical drawings considering field conditions.
 - 3) Coordinate location with consideration of owner provided equipment such as wall mounted televisions, white boards, furniture, cabinets and the like.
 - c. Floor mounted outlets: use architectural drawings to determine location unless indicated otherwise. If not clearly indicated, then send request for information to Architect.
 - d. Cabinet mounted luminaires and outlets: use cabinet details and shop drawings to determine location unless indicated otherwise.
 - e. Exterior luminaire poles and bollards: use locations indicated on civil plans and landscape plans unless indicated otherwise
 - f. Landscape luminaires: use locations indicated on landscape drawings unless indicated otherwise.
 - g. Kitchen Equipment outlets: use location indicated on kitchen drawings unless indicated otherwise.
 3. Electrical equipment: Utilize approved manufacturer's shop drawing dimensions to determine location of equipment in space. Comply with CEC 110.26 access, working space and dedicated equipment space requirements. Maintain manufacturer requirements for maintenance access.
 4. Electrical handholes and manholes: use location shown on civil plans unless indicated otherwise.
 5. Outdoor Electrical equipment: use location shown on civil plans unless indicated otherwise.
- C. Shop Drawings: Provide coordinated shop drawings which include physical characteristics of all systems, device layout plans, and control wiring diagrams. Reference individual Division 26, Electrical specification sections for additional requirements for shop drawings outside of these requirements.
- D. Electrical connections to equipment supplied by owner or other trades:
1. Prior to procurement of electrical equipment and field work coordinate with shop drawings and/or manufacturer's installation instructions the actual electrical characteristics of the equipment to be connected.
 2. Notify engineer of significant deviations or conflicts between the shop drawings and/or the manufacturer's installation instructions and information in the contract documents.
- E. Coordinate arrangement, mounting, and support of electrical equipment:

1. To allow maximum possible headroom unless specific mounting heights that reduce headroom are indicated.
 2. To provide for ease of disconnecting the equipment with minimum interference to other installations.
 3. To allow right of way for piping and conduit installed at required slope so connecting raceways, cables, wireways, cable trays, and busways will be clear of obstructions and of the working and access space of other equipment.
- F. Coordinate location of access panels and doors for electrical items that are behind finished surfaces or otherwise concealed. Access doors and panels are specified in Division 08 Section "Access Doors and Frames."
- G. Coordinate sleeve selection and application with selection and application of firestopping specified in Division 07 Section "Penetration Firestopping."
- H. Coordinate and install wiring for appliances and systems furnished under other specification Divisions or furnished by the Owner. Install electrical wiring in accordance with manufacturer's instructions.:
1. Motorized door operators.
 2. Gymnasium scoreboard and controller.
 3. Gymnasium equipment.
 4. Therapeutic whirlpools.
 5. Kitchen equipment including walk-in freezer and coolers.
 6. Electric water coolers.
 7. Medical equipment such as x-ray equipment, CT scanners, MRI scanner,
 8. Fabrication shop equipment.
 9. Exterior signage.
 10. Owner provided equipment

PART 2 - PRODUCTS

2.1 GROUT

- A. Nonmetallic, Shrinkage-Resistant Grout: ASTM C 1107, factory-packaged, nonmetallic aggregate grout, noncorrosive, nonstaining, mixed with water to consistency suitable for application and a 30-minute working time.

PART 3 - EXECUTION

3.1 COMMON REQUIREMENTS FOR ELECTRICAL INSTALLATION

- A. Comply with NECA 1.
- B. Measure indicated mounting heights to bottom of unit for suspended items and to center of unit for wall-mounting items.

- C. Headroom Maintenance: If mounting heights or other location criteria are not indicated, arrange and install components and equipment to provide maximum possible headroom consistent with these requirements.
- D. Equipment: Install to facilitate service, maintenance, and repair or replacement of components of both electrical equipment and other nearby installations. Connect in such a way as to facilitate future disconnecting with minimum interference with other items in the vicinity.
- E. Right of Way: Give to piping systems installed at a required slope.
- F. Layout and installation of electrical work shall be coordinated with the overall construction schedule and work schedules of various trades, to prevent delay in completion of the Project.
 - 1. Complete drawings and specifications for the entire project will be available at the Project site.
 - 2. It shall be obligatory to thoroughly check these drawings before organizing the electrical work schedule or installing material and equipment.
- G. Dimensions and information regarding accurate locations of equipment, and structural limitations and finish shall be coordinated and verified with other Division of Work. Be prepared to promptly furnish dimensions and information regarding electrical Work to other trades and cooperate with them to secure harmony and the best progress of the Project.
- H. The drawings do not show off-sets, bends, and special fittings, or junction or pull boxes necessary to meet job conditions. These items shall be provided as required at no additional cost to the Owner.
- I. Accessibility and Clearance:
 - 1. Electrical equipment, outlets, junction and pull boxes shall be installed in accessible locations, avoiding obstructions, preserving headroom, and keeping openings and passageways clear.
 - 2. Minor adjustments in the locations of equipment shall be made where necessary, providing such adjustments do not adversely affect functioning of the equipment.
- J. Scaffolds and staging for installation of electrical work shall be provided under the work of this Division.

3.2 SLEEVE INSTALLATION FOR ELECTRICAL PENETRATIONS

- A. Electrical penetrations occur when raceways, cables, wireways, cable trays, or busways penetrate concrete slabs, concrete or masonry walls, or fire-rated floor and wall assemblies.

- B. Concrete Slabs and Walls: Install sleeves for penetrations unless core-drilled holes or formed openings are used. Install sleeves during erection of slabs and walls.
- C. Use pipe sleeves unless penetration arrangement requires rectangular sleeved opening.
- D. Fire-Rated Assemblies: Install sleeves for penetrations of fire-rated floor and wall assemblies unless openings compatible with firestop system used are fabricated during construction of floor or wall.
- E. Cut sleeves to length for mounting flush with both surfaces of walls.
- F. Extend sleeves installed in floors 2 inches above finished floor level.
- G. Size pipe sleeves to provide 1/4-inch annular clear space between sleeve and raceway or cable, unless indicated otherwise.
- H. Seal space outside of sleeves with grout for penetrations of concrete and masonry
 - 1. Promptly pack grout solidly between sleeve and wall so no voids remain. Tool exposed surfaces smooth; protect grout while curing.
- I. Interior Penetrations of Non-Fire-Rated Walls and Floors: Seal annular space between sleeve and raceway or cable, using joint sealant appropriate for size, depth, and location of joint. Comply with requirements in Division 07 Section "Joint Sealants".
- J. Fire-Rated-Assembly Penetrations: Maintain indicated fire rating of walls, partitions, ceilings, and floors at raceway and cable penetrations. Install sleeves and seal raceway and cable penetration sleeves with firestop materials. Comply with requirements in Division 07 Section "Penetration Firestopping."
- K. Roof-Penetration Sleeves: Seal penetration of individual raceways and cables with flexible boot-type flashing units applied in coordination with roofing work.
- L. Aboveground, Exterior-Wall Penetrations: Seal penetrations using steel pipe sleeves and mechanical sleeve seals. Select sleeve size to allow for 1-inch annular clear space between pipe and sleeve for installing mechanical sleeve seals.
- M. Underground, Exterior-Wall Penetrations: Install cast-iron pipe sleeves. Size sleeves to allow for 1-inch annular clear space between raceway or cable and sleeve for installing mechanical sleeve seals.

3.3 SLEEVE-SEAL INSTALLATION

- A. Install to seal exterior wall penetrations.
- B. Use type and number of sealing elements recommended by manufacturer for raceway or cable material and size. Position raceway or cable in center of sleeve. Assemble mechanical sleeve seals and install in annular space between raceway or cable and

sleeve. Tighten bolts against pressure plates that cause sealing elements to expand and make watertight seal.

3.4 FIRESTOPPING

- A. Apply firestopping to penetrations of fire-rated floor and wall assemblies for electrical installations to restore original fire-resistance rating of assembly. Firestopping materials and installation requirements are specified in Division 07 Section "Penetration Firestopping."

3.5 WEATHERPROOF EQUIPMENT

- A. Electrical devices or equipment located in damp, semi-exposed areas shall be weather-resistant. Enclosure shall comply with NEMA Type 3R requirements.
- B. Surface mounted outlet boxes shall be cast metal with threaded hubs. Pull or junction boxes shall be cast metal with bolted and gasketed covers.
- C. Outlet box covers shall be of a suitable weatherproof type with gaskets, packing glands, weatherproof doors, or other required means to prevent entry of moisture.
- D. Lighting fixtures shall be installed with suitable gasket, and UL labeled for location.

3.6 HOUSEKEEPING PADS AND FOUNDATIONS

- A. Concrete work required for housekeeping pads and foundations will be provided by General Construction Work. Comply with the requirement for concrete base specified in Division 03 section.
 - 1. Use 3000-psi, 28-day compressive-strength concrete and reinforcement as specified in Division 03 Section "Cast-in-Place Concrete."
 - 2. Install dowel rods to connect concrete base to concrete floor. Unless otherwise indicated, install dowel rods on 18-inch centers around the full perimeter of the base.
 - 3. Install epoxy-coated anchor bolts for anchoring equipment to the concrete base.
 - 4. Place and secure anchorage devices. Use supported equipment manufacturer's setting drawings, templates, diagrams, instructions, and directions furnished with items to be embedded.
 - 5. Bolt equipment to channel-iron sills embedded in concrete bases. Install sills level and grout flush with floor or base.
 - 6. Refinish damaged or scratched surfaces.
 - 7. Provide 24-inch-wide insulating mat in front of operable electrical equipment and in front and rear of free standing ones.
 - 8. Tighten all bolted connections prior to energizing.
 - 9. Provide fuse cabinet with specified number of fuses of each type.
 - 10. Provide special tools as required for routing maintenance and inspection.

- B. Furnish required dimensional drawings and specify locations. Minimum height of housekeeping pads shall be 3 inches and shall extend out 6 inches from the footprint of the equipment.
- C. Furnish anchor bolts and sleeves and verify accuracy of installation.
- D. Provide for:
 - 1. Switchboards and switchgears.
 - 2. Floor mounted transformers.
 - 3. Outdoor light fixture standards.
 - 4. MDF/IDF Equipment room racks.
 - 5. All other floor mounted equipment.

END OF SECTION 260500

SECTION 260503 – DEMOLITION OF ELECTRICAL SYSTEMS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section includes:
 - 1. Demolition and removal of selected portion of electrical systems.
 - 2. Salvage of existing items to be reused.
 - 3. Salvage of existing items to be delivered to the Owner.

1.3 DEFINITIONS

- A. Remove: Detach items from existing construction and legally dispose of them off-site unless indicated to be removed and salvaged or removed and reinstalled.
- B. Remove and Salvage: Carefully detach from existing construction, in a manner to prevent damage, and deliver to Owner.
- C. Remove and Reinstall: Detach items from existing construction, prepare for reuse, and reinstall where indicated.
- D. Existing to Remain: Existing items of construction that are not to be permanently removed and that are not otherwise indicated to be removed, removed and salvaged, or removed and reinstalled.

1.4 MATERIALS OWNERSHIP

- A. Unless otherwise indicated, demolition waste becomes property of Contractor.
- B. Remove and salvage items noted as 'salvage', 'return to Owner' or similar manner on the Drawings.
- C. Remove and salvage items as requested by the Owner. Conduct a meeting with the Owner prior to commencing demolition to determine items that the Owner wishes to retain.

1.5 PRE-TESTING

- A. Prior to commencing work, perform testing of devices and systems to verify devices and systems to remain are in good working condition. Devices shall include wiring devices and lighting control devices. Systems shall include, but is not limited to, fire alarm, intercom, clocks, sound reinforcement systems, and security systems.
- B. Prepare a type written report documenting any items found to be damaged or in a non-working condition. Submit report to the Owner and Architect prior to commencing work. All devices and systems shall be considered in good working conditions if a report is not submitted and acknowledged by the Owner prior to commencing work.
- C. Arrange a time to perform testing with the Owner with at least two weeks advanced notice.
- D. Provide tests as follows on existing feeders to remain and notify engineer of any abnormalities:
 - 1. Megger testing.
 - 2. Infrared scanning at terminations.
- E. Provide tests as follows on existing branch panels, switchboards, switchgear, motor control centers, and other electrical distribution equipment:
 - 1. Infrared scanning.
 - 2. Grounding/bonding continuity.
- F. Existing Branch Circuits that Remain: Trace and ring-out existing branch circuits. Update panel schedules and relabel outlets, disconnect switches, boxes, and the like with actual branch circuit designations. Include such information in record drawings.
- G. Where infrared scanning results indicate excessive heat, tighten the mechanical lugs and retest after 24 hours.
- H. Include testing reports for above in closeout documentation. Record measurements and actions taken.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION

3.1 ELECTRICAL SYSTEMS DEMOLITION

- A. Remove items depicted or denoted for demolition on the Drawings. Unless noted otherwise, removal of the items shall include devices, boxes, cable, supporting elements, raceway, etc. associated with the item back to the panelboard or nearest j-box or device to remain.

- B. Drawings are intended to indicate the general scope of demolition work. Visit the Project site to verify existing conditions prior to bidding. Determine means and methods for performing work. Identify existing building finishes, ceiling types, access, and fire walls. Determine locations, routings, and distances as necessary. Coordinate with the Owner to gain access to the facility.
 - 1. Wherever walls, ceilings, structures, or electric-powered equipment are indicated as being removed on the Drawings (including architectural demolition plans and mechanical demolition plans) remove associated electrical system components, equipment, devices, fixtures, raceways, and wiring. Remove, relocate, and extend existing installations, as necessary, to accommodate demolition work, new work, and to maintain the existing electrical installations that shall remain operational. Repair adjacent construction and finishes damaged during demolition and extension work. Patch openings to match existing surrounding finishes.
 - 2. Disconnect and remove electrical devices and equipment serving utilization equipment that has been removed.
 - 3. Disconnect and remove abandoned luminaires. Remove brackets, stems, hangers, and other accessories
- C. Verify that abandoned wiring and equipment serve only abandoned equipment or facilities. Extend conduit and wire to loads that remain in operation (i.e., facilities, luminaires, wiring devices, equipment, etc.). Extension of conduit and wire to equipment shall be compatible with the surrounding area.
 - 1. Maintain access to existing electrical installations that remain active. Modify installation or provide access panel and/or junction boxes where appropriate.
 - 2. Remove exposed abandoned raceway, including abandoned raceway above accessible ceiling finishes. Cut raceway flush with walls and floors, and patch surfaces. Remove all associated clamps, hangers, supports, etc. associated with raceway removal.
- D. Where existing conduits and/or cables, which remain in service, pass through areas to be renovated and where such conduits and/or cables interfere with new work, reroute these conduits and/or cables to avoid new construction. Provide necessary boxes, cables, splicing and fittings for the rerouting of the circuits. Field-verify to determine complete scope of work prior to bidding.
- E. Existing conduit may remain if all the following are true:
 - 1. Conduit will be reused to feed items installed under this contract.
 - 2. Conduit does not interfere with other trades.
 - 3. Conduit was originally installed meeting specifications related to this project.
 - 4. Conduit will not be exposed in a finished area (unless noted otherwise).
- F. Provide plugs on boxes to remain where conduits have been removed.
- G. Conduits concealed in masonry walls or under concrete slabs may be cut back, sealed and abandoned.

- H. Provide blank cover-plates on all abandoned boxes to remain in existing masonry or stud walls. Plate color and material shall match wiring devices plates specified for the project. In the absence of such specification, match the color and material of existing wiring devices in the area.
- I. Maintain power to end-of-line or downstream devices to remain. Provide raceways, boxes, conductors and all other necessary materials as required to re-establish damaged or interrupted feeders and branch circuits. Intercept existing feeders or branch circuits at nearest accessible space or device and reconnect to original feeder or branch circuit source.
- J. Repair or replace ceilings, ceiling tiles, and ceiling-grids that are damaged by this contractor.
- K. Electrical installations that remain shall be concealed, unless otherwise indicated or unless located within unfinished utility-type spaces. Cut and patch existing walls and ceilings as required. Exposed conduits and raceways will be rejected, unless prior approval has been obtained. Confirm scope of work and specific requirements for all such work directly with the Owner and the Architect.
- L. Prior to drilling existing precast concrete walls, detect and locate existing structural members imbedded within the precast panels to ensure they are not damaged.

3.2 SPECIAL SYSTEMS DEMOLITION

- A. Remove items depicted or denoted for demolition on the Drawings. Unless noted otherwise, removal of the items shall include devices, boxes, cable, supporting elements, etc. associated with the item back to the control panel, terminal block, punch block, patch panel, or similar type of termination point.

3.3 REMOVED MATERIALS

- A. Existing wiring and transformers removed shall be regarded as scrap materials to be recycled by this contractor. Scrap value shall be determined by the contractor and accounted for in the contractor's bid.
 - 1. All other demolished electrical items (e.g., power panels, transformers, luminaires, receptacles, switches, controllers, system devices, etc.) shall be regarded as the Owner's property. The Owner reserves the right to identify which items shall be salvaged—and, thus, carefully removed by this contractor and placed in storage on site as directed by the Owner. The contractor shall be responsible for the proper disposal of all demolished materials that the Owner does not want to salvage. Coordinate specific requirements directly with Owner.

- B. Regulatory Requirements: Comply with governing EPA notification regulations before beginning demolition. Comply with hauling and disposal regulations of authorities having jurisdiction.
1. Ballasts in luminaires installed prior to 1980 shall be incinerated in EPA approved incinerator or disposed of in EPA certified containers and deposited in an EPA landfill certified for PCB disposal or recycled by permitted ballast recycler. Punctured or leaking ballasts must be disposed of according to Federal Regulations under the Toxic Substance Control Act. Provide to Owner and architect/engineer with a Certificate of Destruction to verify proper disposal.
 2. HID and fluorescent lamps, determined by the Toxicity Characteristic Leachate procedure (TCLP), to be hazardous waste shall be disposed of in a permitted hazardous waste disposal facility or by a permitted lamp recycler.

END OF SECTION 260503

SECTION 260529 - HANGERS AND SUPPORTS FOR ELECTRICAL SYSTEMS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section Includes:

1. Steel slotted support systems.
2. Aluminum slotted support systems.
3. Conduit and cable support devices.
4. Support for conductors in vertical conduit.
5. Structural steel for fabricated supports and restraints.
6. Mounting, anchoring, and attachment components, including powder-actuated fasteners, mechanical expansion anchors, concrete inserts, clamps, through bolts, toggle bolts, and hanger rods.
7. Fabricated metal equipment support assemblies.

1.3 ACTION SUBMITTALS

- A. Product Data: For each type of product.

1. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for the following:
 - a. Slotted support systems, hardware, and accessories.
 - b. Clamps.
 - c. Hangers.
 - d. Sockets.
 - e. Eye nuts.
 - f. Fasteners.
 - g. Anchors.
 - h. Saddles.
 - i. Brackets.

2. Include rated capacities and furnished specialties and accessories.

- B. Shop Drawings: Signed and sealed by a qualified professional engineer. For fabrication and installation details for electrical hangers and support systems.

1. Hangers. Include product data for components.
2. Slotted support systems.
3. Equipment supports.

4. Vibration Isolation Base Details: Detail fabrication including anchorages and attachments to structure and to supported equipment. Include adjustable motor bases, rails, and frames for equipment mounting.

1.4 INFORMATIONAL SUBMITTALS

- A. Coordination Drawings: Reflected ceiling plan(s) and other details, drawn to scale, on which the following items are shown and coordinated with each other, using input from installers of the items involved:
 1. Suspended ceiling components.
 2. Ductwork, piping, fittings, and supports.
 3. Structural members to which hangers and supports will be attached.
 4. Size and location of initial access modules for acoustical tile.
 5. Items penetrating finished ceiling, including the following:
 - a. Luminaires.
 - b. Air outlets and inlets.
 - c. Speakers.
 - d. Sprinklers.
 - e. Access panels.
 - f. Projectors.
 - B. Seismic Qualification Data: Certificates, for hangers and supports for electrical equipment and systems, accessories, and components, from manufacturer.
 1. Basis for Certification: Indicate whether withstand certification is based on actual test of assembled components or on calculation.
 2. Dimensioned Outline Drawings of Equipment Unit: Identify center of gravity and locate and describe mounting and anchorage provisions.
 3. Detailed description of equipment anchorage devices on which the certification is based and their installation requirements.
 - C. Welding certificates.
- #### 1.5 QUALITY ASSURANCE

- A. Welding Qualifications: Qualify procedures and personnel according to the following:
 1. AWS D1.1/D1.1M – Structural Welding Code - Steel.
 2. AWS D1.2/D1.2M – Structural Welding Code - Aluminum.

PART 2 - PRODUCTS

- A. Seismic Performance: Hangers and supports shall withstand the effects of earthquake motions determined according to ASCE/SEI 7.
 1. The term "withstand" means "the supported equipment and systems will remain in place without separation of any parts when subjected to the seismic forces

specified and the supported equipment and systems will be fully operational after the seismic event."

2. Component Importance Factor: 1.5.

- B. Surface-Burning Characteristics: Comply with ASTM E84; testing by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.

1. Flame Rating: Class 1.
2. Self-extinguishing according to ASTM D635.

2.1 SUPPORT, ANCHORAGE, AND ATTACHMENT COMPONENTS

- A. Steel Slotted Support Systems: Preformed steel channels and angles with minimum 13/32-inch- (10-mm-) diameter holes at a maximum of 8 inches (200 mm) o.c. in at least one surface.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

- a. Allied Tube & Conduit; a part of Atkore International.
- b. B-line, an Eaton business.
- c. CADDY; a brand of nVent.
- d. Flex-Strut Inc.
- e. Gripple Inc.
- f. GS Metals Corp.
- g. G-Strut.
- h. Haydon Corporation.
- i. Metal Ties Innovation.
- j. MIRO Industries.
- k. Thomas & Betts Corporation; A Member of the ABB Group.
- l. Unistrut; Part of Atkore International.
- m. Wesanco, Inc.

2. Standard: Comply with MFMA-4 factory-fabricated components for field assembly.
3. Material for Channel, Fittings, and Accessories: Galvanized steel.
4. Channel Width: Selected for applicable load criteria.
5. Metallic Coatings: Hot-dip galvanized after fabrication and applied according to MFMA-4.
6. Nonmetallic Coatings: Manufacturer's standard PVC, polyurethane, or polyester coating applied according to MFMA-4.
7. Painted Coatings: Manufacturer's standard painted coating applied according to MFMA-4.
8. Protect finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.

- B. Aluminum Slotted Support Systems: Extruded-aluminum channels and angles with minimum 13/32-inch- (10-mm-) diameter holes at a maximum of 8 inches (200 mm) o.c. in at least one surface.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. Cooper Industries, Inc.
 - b. Flex-Strut Inc.
 - c. Haydon Corporation.
 - d. MKT Metal Manufacturing.
 - e. Thomas & Betts Corporation; A Member of the ABB Group.
 - f. Unistrut; Part of Atkore International.
2. Standard: Comply with MFMA-4 factory-fabricated components for field assembly.
3. Channel Material: 6063-T5 aluminum alloy.
4. Fittings and Accessories Material: 5052-H32 aluminum alloy.
5. Channel Width: Selected for applicable load criteria.
6. Nonmetallic Coatings: Manufacturer's standard PVC, polyurethane, or polyester coating applied according to MFMA-4.
7. Painted Coatings: Manufacturer's standard painted coating applied according to MFMA-4.
8. Protect finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.

- C. Nonmetallic Slotted Support Systems: Structural-grade, factory-formed, glass-fiber-resin channels and angles with minimum 13/32-inch- (10-mm-) diameter holes at a maximum of 8 inches (200 mm) o.c., in at least one surface.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. Allied Tube & Conduit; Atkore International.
 - b. B-line; Eaton, Electrical Sector.
 - c. Champion Fiberglass, Inc.
 - d. Fabco Plastics Wholesale Limited.
 - e. G-Strut.
 - f. Haydon Corporation.
 - g. Seasafe, Inc.; AMICO, a Gibraltar Industries Company.
2. Standard: Comply with MFMA-4 factory-fabricated components for field assembly.
3. Channel Width: Selected for applicable load criteria.
4. Fittings and Accessories: Products provided by channel and angle manufacturer and designed for use with those items.
5. Fitting and Accessory Materials: Same as those for channels and angles: 5052-H32 aluminum alloy.
6. Rated Strength: Selected to suit applicable load criteria.
7. Protect finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.

- D. Conduit and Cable Support Devices: Steel hangers, clamps, and associated fittings, designed for types and sizes of raceway or cable to be supported.
- E. Support for Conductors in Vertical Conduit: Factory-fabricated assembly consisting of threaded body and insulating wedging plug or plugs for nonarmored electrical conductors or cables in riser conduits. Plugs shall have number, size, and shape of conductor gripping pieces as required to suit individual conductors or cables supported. Body shall be made of malleable iron.
- F. Structural Steel for Fabricated Supports and Restraints: ASTM A36/A36M steel plates, shapes, and bars; black and galvanized.
- G. Mounting, Anchoring, and Attachment Components: Items for fastening electrical items or their supports to building surfaces include the following:
 - 1. Powder-Actuated Fasteners: Threaded-steel stud, for use in hardened portland cement concrete, steel, or wood, with tension, shear, and pullout capacities appropriate for supported loads and building materials where used.
 - a. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 - 1) Hilti, Inc.
 - 2) ITW Ramset/Red Head; Illinois Tool Works, Inc.
 - 3) MKT Fastening, LLC.
 - 4) Simpson Strong-Tie Co., Inc.
 - 2. Mechanical-Expansion Anchors: Insert-wedge-type, stainless steel, for use in hardened portland cement concrete, with tension, shear, and pullout capacities appropriate for supported loads and building materials where used.
 - a. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 - 1) Hilti, Inc.
 - 2) B-line, an Eaton business.
 - 3) Empire Tool and Manufacturing Co., Inc.
 - 4) ITW Ramset/Red Head; Illinois Tool Works, Inc.
 - 5) MKT Fastening, LLC.
 - 3. Concrete Inserts: Steel or malleable-iron, slotted support system units are similar to MSS Type 18 units and comply with MFMA-4 or MSS SP-58.
 - 4. Clamps for Attachment to Steel Structural Elements: MSS SP-58 units are suitable for attached structural element.
 - 5. Through Bolts: Structural type, hex head, and high strength. Comply with ASTM F3125/F3125M, Grade A325 (Grade A325M).
 - 6. Toggle Bolts: All-steel springhead type.
 - 7. Hanger Rods: Threaded steel.

2.2 FABRICATED METAL EQUIPMENT SUPPORT ASSEMBLIES

- A. Description: Welded or bolted structural-steel shapes, shop or field fabricated to fit dimensions of supported equipment.
- B. Materials: Comply with requirements in Section 055000 "Metal Fabrications" for steel shapes and plates.

PART 3 - EXECUTION

3.1 APPLICATION

- A. Comply with the following standards for application and installation requirements of hangers and supports, except where requirements on Drawings or in this Section are stricter:
 - 1. NECA 1.
 - 2. NECA 101
- B. Comply with requirements in Section 078413 "Penetration Firestopping" for firestopping materials and installation for penetrations through fire-rated walls, ceilings, and assemblies.
- C. Comply with requirements for raceways and boxes specified in Section 260533 "Raceways and Boxes for Electrical Systems."
- D. Maximum Support Spacing and Minimum Hanger Rod Size for Raceways: Space supports for EMT, IMC, and RMC as required by the CEC. Minimum rod size shall be 1/4 inch (6 mm) in diameter.
- E. Multiple Raceways or Cables: Install trapeze-type supports fabricated with steel slotted or other support system, sized so capacity can be increased by at least 25 percent in future without exceeding specified design load limits.
 - 1. Secure raceways and cables to these supports with two-bolt conduit clamps.
- F. Spring-steel clamps designed for supporting single conduits without bolts may be used for 1-1/2-inch (38-mm) and smaller raceways serving branch circuits and communication systems above suspended ceilings, and for fastening raceways to trapeze supports.

3.2 SUPPORT INSTALLATION

- A. Comply with NECA 1 and NECA 101 for installation requirements except as specified in this article.

- B. Raceway Support Methods: In addition to methods described in NECA 1, EMT, and RMC may be supported by openings through structure members, according to the CEC .
- C. Strength of Support Assemblies: Where not indicated, select sizes of components so strength will be adequate to carry present and future static loads within specified loading limits. Minimum static design load used for strength determination shall be weight of supported components plus 200 lb (90 kg).
- D. Mounting and Anchorage of Surface-Mounted Equipment and Components: Anchor and fasten electrical items and their supports to building structural elements by the following methods unless otherwise indicated by code:
 - 1. To Wood: Fasten with lag screws or through bolts.
 - 2. To New Concrete: Bolt to concrete inserts.
 - 3. To Masonry: Approved toggle-type bolts on hollow masonry units and expansion anchor fasteners on solid masonry units.
 - 4. To Existing Concrete: Expansion anchor fasteners.
 - 5. Instead of expansion anchors, powder-actuated driven threaded studs provided with lock washers and nuts may be used in existing standard-weight concrete 4 inches (100 mm) thick or greater. Do not use for anchorage to lightweight-aggregate concrete or for slabs less than 4 inches (100 mm) thick.
 - 6. To Steel: Beam clamps (MSS SP-58, Type 19, 21, 23, 25, or 27), complying with MSS SP-69.
 - 7. To Light Steel: Sheet metal screws.
 - 8. Items Mounted on Hollow Walls and Nonstructural Building Surfaces: Mount cabinets, panelboards, disconnect switches, control enclosures, pull and junction boxes, transformers, and other devices on slotted-channel racks attached to substrate by means that comply with seismic-restraint strength and anchorage requirements.
- E. Drill holes for expansion anchors in concrete at locations and to depths that avoid the need for reinforcing bars.

3.3 INSTALLATION OF FABRICATED METAL SUPPORTS

- A. Comply with installation requirements in Section 055000 "Metal Fabrications" for site-fabricated metal supports.
- B. Cut, fit, and place miscellaneous metal supports accurately in location, alignment, and elevation to support and anchor electrical materials and equipment.
- C. Field Welding: Comply with AWS D1.1/D1.1M.

3.4 CONCRETE BASES

- A. Construct concrete bases of dimensions indicated, but not less than 4 inches (100 mm) larger in both directions than supported unit, and so anchors will be a minimum of 10 bolt diameters from edge of the base.
- B. Use 3000-psi (20.68-MPa) , 28-day compressive-strength concrete. Concrete materials, reinforcement, and placement requirements are specified in Section 033000 "Cast-in-Place Concrete."
- C. Anchor equipment to concrete base as follows:
 - 1. Place and secure anchorage devices. Use supported equipment manufacturer's setting drawings, templates, diagrams, instructions, and directions furnished with items to be embedded.
 - 2. Install anchor bolts to elevations required for proper attachment to supported equipment.
 - 3. Install anchor bolts according to anchor-bolt manufacturer's written instructions.

3.5 PAINTING

- A. Touchup: Clean field welds and abraded areas of shop paint. Paint exposed areas immediately after erecting hangers and supports. Use same materials as used for shop painting. Comply with SSPC-PA 1 requirements for touching up field-painted surfaces.
 - 1. Apply paint by brush or spray to provide minimum dry film thickness of 2.0 mils (0.05 mm).
- B. Touchup: Comply with requirements in Section 099100 "Painting" for cleaning and touchup painting of field welds, bolted connections, and abraded areas of shop paint on miscellaneous metal.
- C. Galvanized Surfaces: Clean welds, bolted connections, and abraded areas and apply galvanizing-repair paint to comply with ASTM A780.

END OF SECTION 260529

SECTION 260533 - RACEWAYS AND BOXES FOR ELECTRICAL SYSTEMS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section Includes:

- 1. Metal conduits and fittings.
- 2. Nonmetallic conduits and fittings.
- 3. Metal wireways and auxiliary gutters.
- 4. Nonmetal wireways and auxiliary gutters.
- 5. Surface raceways.
- 6. Boxes, enclosures, and cabinets.
- 7. Handholes and boxes for exterior underground cabling.
- 8. System color distinguishment.

- B. Related Requirements:

- 1. Section 078413 "Penetration Firestopping" for firestopping at conduit and box entrances.

1.3 DEFINITIONS

- A. GRC: Galvanized rigid steel conduit.
- B. IMC: Intermediate metal conduit.
- C. EMT: Electrical metal tubing

1.4 ACTION SUBMITTALS

- A. Product Data: For surface raceways, wireways and fittings, floor boxes, hinged-cover enclosures, and cabinets.
- B. Shop Drawings: For custom enclosures and cabinets. Include plans, elevations, sections, and attachment details.

1.5 INFORMATIONAL SUBMITTALS

- A. Coordination Drawings: Conduit routing plans, drawn to scale, on which the following items are shown and coordinated with each other, using input from installers of items involved:
 - 1. Structural members in paths of conduit groups with common supports.
 - 2. HVAC and plumbing items and architectural features in paths of conduit groups with common supports.
- B. Qualification Data: For professional engineer.
- C. Seismic Qualification Data: Certificates, for enclosures, cabinets, and conduit racks and their mounting provisions, including those for internal components, from manufacturer.
 - 1. Basis for Certification: Indicate whether withstand certification is based on actual test of assembled components or on calculation.
 - 2. Dimensioned Outline Drawings of Equipment Unit: Identify center of gravity and locate and describe mounting and anchorage provisions.
 - 3. Detailed description of equipment anchorage devices on which the certification is based and their installation requirements.
 - 4. Detailed description of conduit support devices and interconnections on which the certification is based and their installation requirements.
- D. Source quality-control reports.

PART 2 - PRODUCTS

2.1 METAL CONDUITS AND FITTINGS

- A. Metal Conduit:
 - 1. Listing and Labeling: Listed and labeled as defined in the CEC, by a qualified testing agency, and marked for intended location and application.
 - 2. GRC: Comply with ANSI C80.1 and UL 6.
 - 3. IMC: Comply with ANSI C80.6 and UL 1242.
 - 4. PVC-Coated Steel Conduit: PVC-coated rigid steel conduit.
 - a. Comply with NEMA RN 1.
 - b. Coating Thickness: 0.040 inch (1 mm), minimum.
 - 5. EMT: Comply with ANSI C80.3 and UL 797.
 - 6. FMC: Comply with UL 1; zinc-coated steel.
 - 7. LFMC: Flexible steel conduit with PVC jacket and complying with UL 360.
- B. Metal Fittings:
 - 1. Comply with NEMA FB 1 and UL 514B.
 - 2. Listing and Labeling: Listed and labeled as defined in the CEC, by a qualified testing agency, and marked for intended location and application.
 - 3. Fittings, General: Listed and labeled for type of conduit, location, and use.

4. Conduit Fittings for Hazardous (Classified) Locations: Comply with UL 1203 and the CEC.
 5. Fittings for EMT:
 - a. Material: Steel.
 - b. Type: compression.
 6. Expansion Fittings: PVC or steel to match conduit type, complying with UL 651, rated for environmental conditions were installed, and including flexible external bonding jumper.
 7. Coating for Fittings for PVC-Coated Conduit: Minimum thickness of 0.040 inch (1 mm), with overlapping sleeves protecting threaded joints.
- C. Joint Compound for IMC, GRC, or ARC: Approved, as defined in the CEC, by authorities having jurisdiction for use in conduit assemblies, and compounded for use to lubricate and protect threaded conduit joints from corrosion and to enhance their conductivity.

2.2 NONMETALLIC CONDUITS AND FITTINGS

- A. Nonmetallic Conduit:
1. Listing and Labeling: Nonmetallic conduit shall be listed and labeled as defined in the CEC, by a qualified testing agency, and marked for intended location and application.
 2. RNC: Type EPC-40-PVC, complying with NEMA TC 2 and UL 651 unless otherwise indicated.
 3. LFNC: Comply with UL 1660.
- B. Nonmetallic Fittings:
1. Fittings, General: Listed and labeled for type of conduit, location, and use.
 2. Fittings for ENT and RNC: Comply with NEMA TC 3; match to conduit or tubing type and material.
 - a. Fittings for LFNC: Comply with UL 514B.
 3. Below Grade Long Radius Elbows:
 - a. Conduits 2 inches to 2.5 inches: use minimum 24-inch radius, GRC or Elbow.
 - b. Conduits larger than 2.5 inches: use minimum 36-inch radius GRC or Elbow.
 4. Solvents and Adhesives: As recommended by conduit manufacturer.

2.3 METAL WIREWAYS AND AUXILIARY GUTTERS

- A. Description: Sheet metal, complying with UL 870 and NEMA 250, Type 1 and Type 3R unless otherwise indicated, and sized according to the CEC.

1. Metal wireways installed outdoors shall be listed and labeled as defined in the CEC, by a qualified testing agency, and marked for intended location and application.
- B. Fittings and Accessories: Include covers, couplings, offsets, elbows, expansion joints, adapters, hold-down straps, end caps, and other fittings to match and mate with wireways as required for complete system.
- C. Wireway Covers: Screw-cover type and Flanged-and-gasketed type unless otherwise indicated.
- D. Finish: Manufacturer's standard enamel finish.

PART 3 - EXECUTION

3.1 RACEWAY APPLICATION

- A. Outdoors: Apply raceway products as specified below unless otherwise indicated:
 - B. Exterior conduit size shall be 1-inch minimum.
 1. Above Grade Exposed Conduit: GRC.
 2. Concealed Conduit, Aboveground: EMT.
 3. In slab above grade: provide PVC Sch. 80.
 4. Underground Conduit:
 - a. Under footprint of building: RNC, Type EPC-80-PVC, or as indicated on the drawings.
 - b. Outside of the building footprint: RNC, Type EPC-40-PVC
 - 1) More than 5 feet of foundation wall: PVC Sch. 40 or PVC-coated rigid steel.
 - 2) Within 5 feet of foundation wall: rigid steel conduit wrapped in corrosion protective 10 mil tape, or PVC coated rigid steel.
 5. Connection to Vibrating Equipment (Including Transformers and Hydraulic, Pneumatic, Electric Solenoid, or Motor-Driven Equipment): LFMC.
 6. Boxes and Enclosures, Aboveground: NEMA 250, Type 3R.
 - C. Indoors: Apply raceway products as specified below unless otherwise indicated:
 1. Exposed, Not Subject to Physical Damage: GRC, EMT may be used in areas 10 feet above finished grade or floor.
 2. Exposed, Not Subject to Severe Physical Damage: GRC, EMT may be used in areas 10 feet above finished grade or floor EMT.
 3. Exposed and Subject to Severe Physical Damage: GRC. Raceway locations include the following:
 - a. Loading dock.
 - b. Corridors used for traffic of mechanized carts, forklifts, and pallet-handling units.
 - c. Mechanical rooms.
 - d. Gymnasiums.

4. Concealed in Ceilings and Interior Walls and Partitions: EMT.
 - a. Raceways and junction box systems color distinguishment:
 - 1) Distribution – Galvanized
 - 2) Lighting – Yellow
 - 3) Fire Alarm – Red
 - 4) Mechanical Equipment – Purple
 - 5) Telecom – Orange
 - 6) Specialty system color shall be submitted and approved by the Owner prior to ordering any raceway.
 - 7) Exposed junction boxes and raceways in architectural open ceiling areas shall be painted per Architects direction. Boxes shall be provided with pre-printed label indication system.
 5. Connection to Vibrating Equipment (Including Transformers and Hydraulic, Pneumatic, Electric Solenoid, or Motor-Driven Equipment): FMC, except use LFMC in damp or wet locations.
 6. Damp or Wet Locations: GRC.
 7. Boxes and Enclosures: NEMA 250, Type 1, except use NEMA 250, Type 4 stainless steel in institutional and commercial kitchens and damp or wet locations.
- D. Minimum Raceway Size: 3/4-inch (21-mm) trade size.
- E. Raceway Fittings: Compatible with raceways and suitable for use and location.
1. Rigid and Intermediate Steel Conduit: Use threaded rigid steel conduit fittings unless otherwise indicated. Comply with NEMA FB 2.10.
 2. PVC Externally Coated, Rigid Steel Conduits: Use only fittings listed for use with this type of conduit. Patch and seal all joints, nicks, and scrapes in PVC coating after installing conduits and fittings. Use sealant recommended by fitting manufacturer and apply in thickness and number of coats recommended by manufacturer.
 3. EMT: Use compression, cast-metal fittings. Comply with NEMA FB 2.10.
 4. Flexible Conduit: Use only fittings listed for use with flexible conduit. Comply with NEMA FB 2.20.
- F. Install surface raceways only where indicated on Drawings.
- G. Provide (5) spare 3/4" conduits stubbed to accessible ceiling space where electrical panels are recessed in walls.
- H. Do not install nonmetallic conduit where ambient temperature exceeds 120 deg F (49 deg C).
- I. Other Applications: Unique applications of conduit types and/or other requirements shall be as specifically noted on the drawings or in other sections of these specifications.
1. Refer to the audio system notes on the Special Systems Plans for the application of PVC-coated rigid steel conduit below floor or in concrete slab.

3.2 INSTALLATION

- A. Comply with requirements in Section 260529 "Hangers and Supports for Electrical Systems" for hangers and supports.
- B. Comply with NECA 1 and NECA 101 for installation requirements except where requirements on Drawings or in this article are stricter. Comply with NECA 102 for aluminum conduits. Comply with the CEC limitations for types of raceways allowed in specific occupancies and number of floors.
- C. Do not fasten conduits onto the bottom side of a metal deck roof.
- D. Keep raceways at least 6 inches (150 mm) away from parallel runs of flues and steam or hot-water pipes. Install horizontal raceway runs above water and steam piping.
- E. Complete raceway installation before starting conductor installation.
- F. Arrange stub-ups so curved portions of bends are not visible above finished slab.
- G. Install no more than the equivalent of three 90-degree bends in any conduit run except for control wiring conduits, for which fewer bends are allowed. Support within 12 inches (300 mm) of changes in direction.
- H. Make bends in raceway using large-radius preformed ells. Field bending shall be according to the CEC minimum radii requirements. Use only equipment specifically designed for material and size involved.
- I. Conceal conduit within finished walls, ceilings, and floors unless otherwise indicated. Install conduits parallel or perpendicular to building lines. The following are exceptions for concealing conduits:
 - 1. Where specifically noted or indicated on the drawings
 - 2. Electrical rooms with surface mounted panels
 - 3. Mechanical rooms
 - 4. In open ceilings with exposed structure
- J. Do not install conduits exposed to solar heat gain such as roof tops unless indicated on the drawings.
- K. Support conduit within 12 inches (300 mm) of enclosures to which attached.
- L. Raceways Embedded in Slabs:
 - 1. Run conduit larger than 1-inch (27-mm) trade size, parallel or at right angles to main reinforcement. Where at right angles to reinforcement, place conduit close to slab support. Secure raceways to reinforcement at maximum 10-foot (3-m) intervals.
 - 2. Arrange raceways to cross building expansion joints at right angles with expansion fittings.

3. Arrange raceways to keep a minimum of 2 inches (50 mm) of concrete cover in all directions.
 4. Do not embed threadless fittings in concrete unless specifically approved by Architect for each specific location.
 5. Change from ENT to GRC before rising above floor.
- M. Stub-Ups to Above Recessed Ceilings:
1. Use EMT, IMC, or RMC for raceways.
 2. Use a conduit bushing or insulated fitting to terminate stub-ups not terminated in hubs or in an enclosure.
- N. Threaded Conduit Joints, Exposed to Wet, Damp, Corrosive, or Outdoor Conditions: Apply listed compound to threads of raceway and fittings before making up joints. Follow compound manufacturer's written instructions.
- O. Coat field-cut threads on PVC-coated raceway with a corrosion-preventing conductive compound prior to assembly.
- P. Raceway Terminations at Locations Subject to Moisture or Vibration: Use insulating bushings to protect conductors including conductors smaller than No. 4 AWG.
- Q. Terminate threaded conduits into threaded hubs or with locknuts on inside and outside of boxes or cabinets. Install bushings on conduits up to 1-1/4-inch (35mm) trade size and insulated throat metal bushings on 1-1/2-inch (41-mm) trade size and larger conduits terminated with locknuts. Install insulated throat metal grounding bushings on service conduits.
- R. Install raceways square to the enclosure and terminate at enclosures with locknuts. Install locknuts hand tight plus 1/4 turn more.
- S. Do not rely on locknuts to penetrate nonconductive coatings on enclosures. Remove coatings in the locknut area prior to assembling conduit to enclosure to assure a continuous ground path.
- T. Cut conduit perpendicular to the length. For conduits 2-inch (53-mm) trade size and larger, use roll cutter or a guide to make cut straight and perpendicular to the length.
- U. Install pull wires in empty raceways. Use polypropylene or monofilament plastic line with not less than 200-lb (90-kg) tensile strength. Leave at least 12 inches (300 mm) of slack at each end of pull wire. Cap underground raceways designated as spare above grade alongside raceways in use.
- V. Surface Raceways:
1. Install surface raceway with a minimum 2-inch (50-mm) radius control at bend points.

2. Secure surface raceway with screws or other anchor-type devices at intervals not exceeding 48 inches (1200 mm) and with no less than two supports per straight raceway section. Support surface raceway according to manufacturer's written instructions. Tape and glue are not acceptable support methods.
- W. Install raceway sealing fittings at accessible locations according to the CEC and fill them with listed sealing compound. For concealed raceways, install each fitting in a flush steel box with a blank cover plate having a finish similar to that of adjacent plates or surfaces. Install raceway sealing fittings according to the CEC.
- X. Install devices to seal raceway interiors at accessible locations. Locate seals so no fittings or boxes are between the seal and the following changes of environments. Seal the interior of all raceways at the following points:
 1. Where conduits pass from warm to cold locations, such as boundaries of refrigerated spaces.
 2. Where an underground service raceway enters a building or structure.
 3. Conduit extending from interior to exterior of building.
 4. Conduit extending into pressurized duct and equipment.
 5. Conduit extending into pressurized zones that are automatically controlled to maintain different pressure set points.
 6. Where otherwise required by the CEC.
- Y. Comply with manufacturer's written instructions for solvent welding RNC and fittings.
- Z. Expansion-Joint Fittings:
 1. Install in each run of aboveground RNC that is located where environmental temperature change may exceed 30 deg F (17 deg C) and that has straight-run length that exceeds 25 feet (7.6 m). Install in each run of aboveground RMC and EMT conduit that is located where environmental temperature change may exceed 100 deg F (55 deg C) and that has straight-run length that exceeds 100 feet (30 m).
 2. Install type and quantity of fittings that accommodate temperature change listed for each of the following locations:
 - a. Outdoor Locations Not Exposed to Direct Sunlight: 125 deg F (70 deg C) temperature change.
 - b. Outdoor Locations Exposed to Direct Sunlight: 155 deg F (86 deg C) temperature change.
 - c. Indoor Spaces Connected with Outdoors without Physical Separation: 125 deg F (70 deg C) temperature change.
 - d. Attics: 135 deg F (75 deg C) temperature change.
 3. Install fitting(s) that provide expansion and contraction for at least 0.00041 inch per foot of length of straight run per deg F (0.06 mm per meter of length of straight run per deg C) of temperature change for PVC conduits. Install fitting(s) that provide expansion and contraction for at least 0.000078 inch per foot of length of straight run per deg F (0.0115 mm per meter of length of straight run per deg C) of temperature change for metal conduits.

4. Install expansion fittings at all locations where conduits cross building or structure expansion joints.
 5. Install each expansion-joint fitting with position, mounting, and piston setting selected according to manufacturer's written instructions for conditions at specific location at time of installation. Install conduit supports to allow for expansion movement.
- AA. Flexible Conduit Connections: Comply with NEMA RV 3. Use a maximum of 36 inches (915 mm) of flexible conduit for recessed and semi-recessed luminaires, equipment subject to vibration, noise transmission, or movement; and for transformers and motors.
1. Use LFMC in damp or wet locations subject to severe physical damage.
 2. Use LFMC or LFNC in damp or wet locations not subject to severe physical damage.
- BB. Mount boxes at heights indicated on Drawings. If mounting heights of boxes are not individually indicated, give priority to ADA requirements. Install boxes with height measured to center of box unless otherwise indicated.
- CC. Recessed Boxes in Masonry Walls: Saw-cut opening for box in center of cell of masonry block and install box flush with surface of wall. Prepare block surfaces to provide a flat surface for a raintight connection between box and cover plate or supported equipment and box.
- DD. Horizontally separate boxes mounted on opposite sides of walls, so they are not in the same vertical channel.
- EE. Locate boxes so that cover or plate will not span different building finishes.
- FF. Support boxes of three gangs or more from more than one side by spanning two framing members or mounting on brackets specifically designed for the purpose.
- GG. Fasten junction and pull boxes to or support from building structure. Do not support boxes by conduits.
- HH. Set metal floor boxes level and flush with finished floor surface.
- II. Set nonmetallic floor boxes level. Trim after installation to fit flush with finished floor surface.
- 3.3 INSTALLATION OF UNDERGROUND CONDUIT
- A. Direct-Buried Conduit:
1. Excavate trench bottom to provide firm and uniform support for conduit. Prepare trench bottom as specified in Section 312315 "Site Earthwork and Building Excavation" for pipe less than 6 inches (150 mm) in nominal diameter.
 2. Install backfill as specified in Section 312323 "Backfilling".

3. After installing conduit, backfill and compact. Start at tie-in point, and work toward end of conduit run, leaving conduit at end of run free to move with expansion and contraction as temperature changes during this process. Firmly hand tamp backfill around conduit to provide maximum supporting strength. After placing controlled backfill to within 12 inches (300 mm) of finished grade, make final conduit connection at end of run and complete backfilling with normal compaction as specified in Section 312323 "Backfilling".
4. Install manufactured rigid steel conduit elbows for stub-ups at poles and equipment, horizontal directional changes and at building entrances through floor.
 - a. Couple steel conduits to ducts with adapters designed for this purpose and encase coupling with 3 inches (75 mm) of concrete for a minimum of 12 inches (300 mm) on each side of the coupling.
 - b. For stub-ups at equipment mounted on outdoor concrete bases and where conduits penetrate building foundations, extend steel conduit horizontally a minimum of 60 inches (1500 mm) from edge of foundation or equipment base. Install insulated grounding bushings on terminations at equipment.
5. Underground Warning Tape: Comply with requirements in Section 260553 "Identification for Electrical Systems."

3.4 INSTALLATION OF UNDERGROUND HANDHOLES AND BOXES

- A. Install handholes and boxes level and plumb and with orientation and depth coordinated with connecting conduits to minimize bends and deflections required for proper entrances.
- B. Unless otherwise indicated, support units on a level bed of crushed stone or gravel, graded from 1/2-inch (12.5-mm) sieve to No. 4 (4.75-mm) sieve and compacted to same density as adjacent undisturbed earth. Provide 12 inches depth of crushed stone or gravel under the handhole.
- C. Elevation: In paved areas, set so cover surface will be flush with finished grade. Set covers of other enclosures 1 inch (25 mm) above finished grade.
- D. Install removable hardware, including pulling eyes, cable stanchions, cable arms, and insulators, as required for installation and support of cables and conductors and as indicated. Select arm lengths to be long enough to provide spare space for future cables but short enough to preserve adequate working clearances in enclosure.
- E. For enclosures installed in asphalt paving and concrete paving and subject to occasional, nondeliberate, heavy vehicle loading, form and pour a concrete ring encircling, and in contact with, enclosure and with top surface screeded to top of box cover frame. Bottom of ring shall rest on compacted earth.
 1. Concrete: 3000 psi (20 kPa), 28-day strength, complying with Section 033000 "Cast-in-Place Concrete," with a troweled finish.
 2. Dimensions: 10 inches wide by 12 inches deep (250 mm wide by 300 mm deep).
- F. Grass area: Provide 8-inch thick by 12-inch wide concrete around handhole.

3.5 SLEEVE AND SLEEVE-SEAL INSTALLATION FOR ELECTRICAL PENETRATIONS

- A. Install sleeves and sleeve seals at penetrations of exterior floor and wall assemblies. Comply with requirements in Section 260544 "Sleeves and Sleeve Seals for Electrical Raceways and Cabling."

3.6 FIRESTOPPING

- A. Install firestopping at penetrations of fire-rated floor and wall assemblies. Comply with requirements in Section 078413 "Penetration Firestopping."

3.7 PROTECTION

- A. Protect coatings, finishes, and cabinets from damage and deterioration.
 - 1. Repair damage to galvanized finishes with zinc-rich paint recommended by manufacturer.
 - 2. Repair damage to PVC coatings or paint finishes with matching touchup coating recommended by manufacturer.

END OF SECTION 260533

SECTION 260553 - IDENTIFICATION FOR ELECTRICAL SYSTEMS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section Includes:

1. Color and legend requirements for raceways, conductors, and warning labels and signs.
2. Labels.
3. Bands and tubes.
4. Tapes and stencils.
5. Tags.
6. Signs.
7. Cable ties.
8. Paint for identification.
9. Fasteners for labels and signs.

1.3 ACTION SUBMITTALS

- A. Product Data: For each type of product.

1. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for electrical identification products.

- B. Identification Schedule: For each piece of electrical equipment and electrical system components to be an index of nomenclature for electrical equipment and system components used in identification signs and labels. Use same designations indicated on Drawings.

- C.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Comply with ASME A13.1 and IEEE C2.

- B. Comply with the CEC.
- C. Comply with 29 CFR 1910.144 and 29 CFR 1910.145.
- D. Comply with ANSI Z535.4 for safety signs and labels.
- E. Comply with CEC and Section 260573.19 "Arc-Flash Hazard Analysis" requirements for arc-flash warning labels.
- F. Adhesive-attached labeling materials, including label stocks, laminating adhesives, and inks used by label printers, shall comply with UL 969.
- G. Thermal Movements: Allow for thermal movements from ambient and surface temperature changes.
 - 1. Temperature Change: 120 deg F, ambient; 180 deg F, material surfaces.

2.2 COLOR AND LEGEND REQUIREMENTS

- A. Raceways and Cables Carrying Circuits at 600 V or Less:
 - 1. Black letters on an orange field.
 - 2. Legend: Indicate voltage and system or service type.
- B. Color-Coding for Phase- and Voltage-Level Identification, 600 V or Less: Use colors listed below for ungrounded service feeder and branch-circuit conductors.
 - 1. Color shall be factory applied or field applied for sizes larger than No. 8 AWG if authorities having jurisdiction permit.
 - 2. Colors for 208/120-V Circuits:
 - a. Phase A: Black.
 - b. Phase B: Red.
 - c. Phase C: Blue.
 - 3. Colors for 240-V Circuits:
 - a. Phase A: Black.
 - b. Phase B: Red.
 - 4. Colors for 480/277-V Circuits:
 - a. Phase A: Brown.
 - b. Phase B: Orange.
 - c. Phase C: Yellow.
 - 5. Color for Neutral: White.
 - 6. Color for Equipment Grounds: Green.
 - 7. Colors for Isolated Grounds: Green with two or more yellow stripes.

C. Raceways and Cables Carrying Circuits at More Than 600 V:

1. Black letters on an orange field.
2. Adhesive labels and warning tape for underground lines.
3. Legend: "DANGER - CONCEALED HIGH VOLTAGE WIRING."

D. Warning Label Colors:

1. Identify system voltage with black letters on an orange background.

E. Warning labels and signs shall include, but are not limited to, the following legends:

1. Multiple Power Source Warning: "DANGER - ELECTRICAL SHOCK HAZARD - EQUIPMENT HAS MULTIPLE POWER SOURCES."
2. Workspace Clearance Warning: "WARNING - OSHA REGULATION - AREA IN FRONT OF ELECTRICAL EQUIPMENT MUST BE KEPT CLEAR FOR 36 INCHES."

F. Equipment Identification Labels:

1. Black letters on a white field.
2. Engraved plastic attached with rivets or screwed on.
3. Warning Signs:
 - a. Baked enamel and metal butyrate.
4. Instruction signs:
 - a. Engraved, laminated acrylic or melamine plastic.

2.3 LABELS

A. Vinyl Wraparound Labels: Preprinted, flexible labels laminated with a clear, weather- and chemical-resistant coating and matching wraparound clear adhesive tape for securing label ends.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. Brady Corporation.
 - b. Champion America.
 - c. emedco.

B. Snap-around Labels: Slit, pretensioned, flexible, preprinted, color-coded acrylic sleeves, with diameters sized to suit diameters and that stay in place by gripping action.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. Brady Corporation.
 - b. HellermannTyton.
 - c. Marking Services, Inc.
- C. Self-Adhesive Wraparound Labels: Preprinted, 3-mil-thick, vinyl flexible label with acrylic pressure-sensitive adhesive.
 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. Brady Corporation.
 - b. A'n D Cable Products.
 - c. Brother International Corporation.
 2. Self-Lamination: Clear; UV-, weather- and chemical-resistant; self-laminating, protective shield over the legend. Labels sized such that the clear shield overlaps the entire printed legend.
 3. Marker for Labels: Machine-printed, permanent, waterproof, black ink recommended by printer manufacturer.
- D. Self-Adhesive Labels: Vinyl, thermal, transfer-printed, 3-mil-thick, multicolor, weather- and UV-resistant, pressure-sensitive adhesive labels, configured for intended use and location.
 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. Brady Corporation.
 - b. Brother International Corporation.
 - c. emedco.
 2. Minimum Nominal Size:
 - a. 1-1/2 by 6 inches for raceway and conductors.
 - b. 3-1/2 by 5 inches for equipment.
 - c. As required by authorities having jurisdiction.

2.4 BANDS AND TUBES

- A. Snap-around, Color-Coding Bands: Slit, pretensioned, flexible, solid-colored acrylic sleeves, 2 inches long, with diameters sized to suit diameters and that stay in place by gripping action.
 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. Brady Corporation.
 - b. HellermannTyton.

- c. Marking Services, Inc.
- d. Panduit Corp.

B. Heat-Shrink Preprinted Tubes: Flame-retardant polyolefin tubes with machine-printed identification labels, sized to suit diameter and shrunk to fit firmly. Full shrink recovery occurs at a maximum of 200 deg F. Comply with UL 224.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

- a. Brady Corporation.
- b. Panduit Corp.

2.5 TAPES AND STENCILS

A. Marker Tapes: Vinyl or vinyl-cloth, self-adhesive wraparound type, with circuit identification legend machine printed by thermal transfer or equivalent process.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

- a. Carlton Industries, LP.
- b. Champion America.
- c. HellermannTyton.

B. Self-Adhesive Vinyl Tape: Colored, heavy duty, waterproof, fade resistant; not less than 3 mils thick by 1 to 2 inches wide; compounded for outdoor use.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

- a. Brady Corporation.
- b. Carlton Industries, LP.
- c. emedco.
- d. Marking Services, Inc.

C. Tape and Stencil: 4-inch-wide black stripes on 10-inch centers placed diagonally over orange background and are 12 inches wide. Stop stripes at legends.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

- a. HellermannTyton.
- b. LEM Products Inc.
- c. Marking Services, Inc.
- d. Seton Identification Products.

D. Floor Marking Tape: 2-inch-wide, 5-mil pressure-sensitive vinyl tape, with yellow and black stripes and clear vinyl overlay.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

- a. Carlton Industries, LP.
- b. Seton Identification Products.

E. Underground-Line Warning Tape:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

- a. Brady Corporation.
- b. Ideal Industries, Inc.
- c. LEM Products Inc.

2. Tape:

- a. Recommended by manufacturer for the method of installation and suitable to identify and locate underground electrical and communications utility lines.
- b. Printing on tape shall be permanent and shall not be damaged by burial operations.
- c. Tape material and ink shall be chemically inert and not subject to degradation when exposed to acids, alkalis, and other destructive substances commonly found in soils.

3. Color and Printing:

- a. Comply with ANSI Z535.1, ANSI Z535.2, ANSI Z535.3, ANSI Z535.4, and ANSI Z535.5.
- b. Inscriptions for Red-Colored Tapes: "ELECTRIC LINE, HIGH VOLTAGE".
- c. Inscriptions for Orange-Colored Tapes: "TELEPHONE CABLE, CATV CABLE, COMMUNICATIONS CABLE, OPTICAL FIBER CABLE".

- F. Stenciled Legend: In nonfading, waterproof, black ink or paint. Minimum letter height shall be 1 inch.

2.6 TAGS

- A. Metal Tags: Brass or aluminum, 2 by 2 by 0.05 inch, with stamped legend, punched for use with self-locking cable tie fastener.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

- a. Brady Corporation.
- b. Carlton Industries, LP.
- c. emedco.

- B. Nonmetallic Preprinted Tags: Polyethylene tags, 0.015 inch thick, color-coded for phase and voltage level, with factory printed permanent designations; punched for use with self-locking cable tie fastener.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. Brady Corporation.
 - b. Carlton Industries, LP.
 - c. emedco.

C. Write-on Tags:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. Carlton Industries, LP.
 - b. LEM Products Inc.
 - c. Seton Identification Products.
2. Polyester Tags: 0.015 inch thick, with corrosion-resistant grommet and cable tie for attachment.
3. Marker for Tags: Machine-printed, permanent, waterproof, black ink marker recommended by printer manufacturer.

D. Medium Voltage Raceway Tags

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. Tech Products Inc. – Fast Tag Miniature Markers.
2. Characteristics:
 - a. Provide tags with highly raised characters, hot stamped with UV stable foil, non-conductive and non-corroding.
 - b. Tags shall be black lettering on yellow background
 - c. Attach tags to raceways with noncorrosive stainless-steel wire.
 - d. Tags shall be provided at minimum where the cable enters and leaves the manhole.

2.7 SIGNS

A. Baked-Enamel Signs:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. Carlton Industries, LP.
 - b. Champion America.
 - c. emedco.

- d. Marking Services, Inc.
 - 2. Preprinted aluminum signs, high-intensity reflective, punched or drilled for fasteners, with colors, legend, and size required for application.
 - 3. 1/4-inch grommets in corners for mounting.
 - 4. Nominal Size: 7 by 10 inches.
- B. Laminated Acrylic or Melamine Plastic Signs:
- 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. Brady Corporation.
 - b. Carlton Industries, LP.
 - c. emedco.
 - d. Marking Services, Inc.
 - 2. Engraved legend.
 - 3. Thickness:
 - a. For signs up to 20 sq. in., minimum 1/16 inch thick.
 - b. For signs larger than 20 sq. in., 1/8 inch thick.
 - c. Engraved legend with black letters on white face.
 - d. Punched or drilled for mechanical fasteners with 1/4-inch grommets in corners for mounting.
 - e. Framed with mitered acrylic molding and arranged for attachment at applicable equipment.

2.8 CABLE TIES

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
- 1. HellermannTyton.
 - 2. Ideal Industries, Inc.
 - 3. Marking Services, Inc.
 - 4. Panduit Corp.
- B. General-Purpose Cable Ties: Fungus inert, self-extinguishing, one piece, self-locking, and Type 6/6 nylon.
- 1. Minimum Width: 3/16 inch.
 - 2. Tensile Strength at 73 Deg F according to ASTM D638: 12,000 psi.
 - 3. Temperature Range: Minus 40 to plus 185 deg F.
 - 4. Color: Black, except where used for color-coding.
- C. UV-Stabilized Cable Ties: Fungus inert, designed for continuous exposure to exterior sunlight, self-extinguishing, one piece, self-locking, and Type 6/6 nylon.

1. Minimum Width: 3/16 inch.
2. Tensile Strength at 73 Deg F according to ASTM D638: 12,000 psi.
3. Temperature Range: Minus 40 to plus 185 deg F.
4. Color: Black.

- D. Plenum-Rated Cable Ties: Self-extinguishing, UV stabilized, one piece, and self-locking.

1. Minimum Width: 3/16 inch.
2. Tensile Strength at 73 Deg F according to ASTM D638: 7000 psi.
3. UL 94 Flame Rating: 94V-0.
4. Temperature Range: Minus 50 to plus 284 deg F.
5. Color: Black.

2.9 MISCELLANEOUS IDENTIFICATION PRODUCTS

- A. Paint: Comply with requirements in painting Sections for paint materials and application requirements. Retain paint system applicable for surface material and location (exterior or interior).
- B. Fasteners for Labels and Signs: Self-tapping, stainless-steel screws or stainless-steel machine screws with nuts and flat and lock washers.

PART 3 - EXECUTION

3.1 PREPARATION

- A. Self-Adhesive Identification Products: Before applying electrical identification products, clean substrates of substances that could impair bond, using materials and methods recommended by manufacturer of identification product.

3.2 INSTALLATION

- A. Verify and coordinate identification names, abbreviations, colors, and other features with requirements in other Sections requiring identification applications, Drawings, Shop Drawings, manufacturer's wiring diagrams, and operation and maintenance manual. Use consistent designations throughout Project.
- B. Install identifying devices before installing acoustical ceilings and similar concealment.
- C. Verify identity of each item before installing identification products.
- D. Coordinate identification with Project Drawings, manufacturer's wiring diagrams, and operation and maintenance manual.
- E. Apply identification devices to surfaces that require finish after completing finish work.

- F. Install signs with approved legend to facilitate proper identification, operation, and maintenance of electrical systems and connected items.
- G. System Identification for Raceways and Cables under 600 V: Identification shall completely encircle cable or conduit. Place identification of two-color markings in contact, side by side.
 - 1. Secure tight to surface of conductor, cable, or raceway.
- H. Auxiliary Electrical Systems Conductor Identification: Identify field-installed alarm, control, and signal connections.
- I. Elevated Components: Increase sizes of labels, signs, and letters to those appropriate for viewing from the floor.
- J. Vinyl Wraparound Labels:
 - 1. Secure tight to surface of raceway or cable at a location with high visibility and accessibility.
 - 2. Attach labels that are not self-adhesive type with clear vinyl tape, with adhesive appropriate to the location and substrate.
- K. Snap-around Labels: Secure tight to surface at a location with high visibility and accessibility.
- L. Self-Adhesive Wraparound Labels: Secure tight to surface at a location with high visibility and accessibility.
- M. Self-Adhesive Labels:
 - 1. On each item, install unique designation label that is consistent with wiring diagrams, schedules, and operation and maintenance manual.
 - 2. Unless otherwise indicated, provide a single line of text with 1/2-inch-high letters on 1-1/2-inch-high label; where two lines of text are required, use labels 2 inches high.
- N. Snap-around Color-Coding Bands: Secure tight to surface at a location with high visibility and accessibility.
- O. Heat-Shrink, Preprinted Tubes: Secure tight to surface at a location with high visibility and accessibility.
- P. Marker Tapes: Secure tight to surface at a location with high visibility and accessibility.
- Q. Self-Adhesive Vinyl Tape: Secure tight to surface at a location with high visibility and accessibility.
 - 1. Field-Applied, Color-Coding Conductor Tape: Apply in half-lapped turns for a minimum distance of 6 inches where splices or taps are made. Apply last two turns of tape with no tension to prevent possible unwinding.

- R. Tape and Stencil: Comply with requirements in painting Sections for surface preparation and paint application.
- S. Floor Marking Tape: Apply stripes to finished surfaces following manufacturer's written instructions.
- T. Underground Line Warning Tape:
 - 1. During backfilling of trenches, install continuous underground-line warning tape directly above cable or raceway at 6 to 8 inches below finished grade. Use multiple tapes where width of multiple lines installed in a common trench or concrete envelope exceeds 16 inches overall.
 - 2. Limit use of underground-line warning tape to direct-buried cables.
 - 3. Install underground-line warning tape for direct-buried cables and cables in raceways.
- U. Metal Tags:
 - 1. Place in a location with high visibility and accessibility.
 - 2. Secure using UV-stabilized cable ties.
- V. Nonmetallic Preprinted Tags:
 - 1. Place in a location with high visibility and accessibility.
 - 2. Secure using plenum-rated cable ties.
- W. Write-on Tags:
 - 1. Place in a location with high visibility and accessibility.
 - 2. Secure using plenum-rated cable ties.
- X. Baked-Enamel Signs:
 - 1. Attach signs that are not self-adhesive type with mechanical fasteners appropriate to the location and substrate.
 - 2. Unless otherwise indicated, provide a single line of text with 1/2-inch-high letters on minimum 1-1/2-inch-high sign; where two lines of text are required, use signs minimum 2 inches high.
- Y. Metal-Backed Butyrate Signs:
 - 1. Attach signs that are not self-adhesive type with mechanical fasteners appropriate to the location and substrate.
 - 2. Unless otherwise indicated, provide a single line of text with 1/2-inch-high letters on 1-1/2-inch-high sign; where two lines of text are required, use labels 2 inches high.
- Z. Laminated Acrylic or Melamine Plastic Signs:

1. Attach signs that are not self-adhesive type with mechanical fasteners appropriate to the location and substrate.
2. Unless otherwise indicated, provide a single line of text with 1/2-inch-high letters on 1-1/2-inch-high sign; where two lines of text are required, use labels 2 inches high.

AA. Cable Ties: General purpose, for attaching tags, except as listed below:

1. Outdoors: UV-stabilized nylon.
2. In Spaces Handling Environmental Air: Plenum rated.

3.3 IDENTIFICATION SCHEDULE

- A. Install identification materials and devices at locations for most convenient viewing without interference with operation and maintenance of equipment. Install access doors or panels to provide view of identifying devices.
- B. Identify conductors, cables, and terminals in enclosures and at junctions, terminals, pull points, and locations of high visibility. Identify by system and circuit designation.
- C. Concealed Raceways, Duct Banks, More Than 600 V, within Buildings: Tape and stencil. Stencil legend "DANGER - CONCEALED HIGH-VOLTAGE WIRING" with 3-inch-high, black letters on 20-inch centers.
 1. Locate identification at changes in direction, at penetrations of walls and floors, and at 10-foot maximum intervals.
- D. Accessible Raceways Armored and Metal-Clad Cables, More Than 600 V: Vinyl wraparound labels.
 1. Locate identification at changes in direction, at penetrations of walls and floors, at 50-foot maximum intervals in straight runs, and at 25-foot maximum intervals in congested areas.
- E. Accessible Raceways and Metal-Clad Cables, 600 V or Less, for Service, Feeder, and Branch Circuits, More Than 30 A and 120 V to Ground: Identify with self-adhesive raceway labels.
 1. Locate identification at changes in direction, at penetrations of walls and floors, at 50-foot maximum intervals in straight runs, and at 25-foot maximum intervals in congested areas.
- F. Power-Circuit Conductor Identification, 600 V or Less: For conductors in vaults, pull and junction boxes, manholes, and handholes, use vinyl wraparound labels to identify the phase.
 1. Locate identification at changes in direction, at penetrations of walls and floors, at 50-foot maximum intervals in straight runs, and at 25-foot maximum intervals in congested areas.

- G. Power-Circuit Conductor Identification, More Than 600 V: For conductors in vaults, pull and junction boxes, manholes, and handholes, use nonmetallic preprinted tags colored and marked to indicate phase, and a separate tag with the circuit designation.
- H. Control-Circuit Conductor Identification: For conductors and cables in pull and junction boxes, manholes, and handholes, use self-adhesive labels with the conductor or cable designation, origin, and destination.
- I. Control-Circuit Conductor Termination Identification: For identification at terminations, provide heat-shrink preprinted tubes with the conductor designation.
- J. Conductors to Be Extended in the Future: Attach marker tape to conductors and list source.
- K. Auxiliary Electrical Systems Conductor Identification: Self-adhesive vinyl tape that is uniform and consistent with system used by manufacturer for factory-installed connections.
 - 1. Identify conductors, cables, and terminals in enclosures and at junctions, terminals, and pull points. Identify by system and circuit designation.
- L. Locations of Underground Lines: Underground-line warning tape for power, lighting, communication, and control wiring and optical-fiber cable.
- M. Concealed Raceways and Duct Banks, More Than 600 V, within Buildings: Apply floor marking tape to the following finished surfaces:
 - 1. Floor surface directly above conduits running beneath and within 12 inches of a floor that is in contact with earth or is framed above unexcavated space.
 - 2. Wall surfaces directly external to raceways concealed within wall.
 - 3. Accessible surfaces of concrete envelope around raceways in vertical shafts, exposed in the building, or concealed above suspended ceilings.
- N. Workspace Indication: Apply floor marking tape or tape and stencil to finished surfaces. Show working clearances in the direction of access to live parts. Workspace shall comply with the CEC and 29 CFR 1926.403 unless otherwise indicated. Do not install at flush-mounted panelboards and similar equipment in finished spaces.
- O. Instructional Signs: Self-adhesive labels, including the color code for grounded and ungrounded conductors.
- P. Warning Labels for Indoor Cabinets, Boxes, and Enclosures for Power and Lighting: Baked-enamel warning signs.
 - 1. Apply to exterior of door, cover, or other access.
- Q. Arc Flash Warning Labeling: Self-adhesive labels.
- R. Operating Instruction Signs: Baked-enamel warning signs.

S. Equipment Identification Labels:

1. Indoor Equipment: Baked-enamel signs.
2. Outdoor Equipment: Laminated acrylic or melamine sign.
3. Equipment to Be Labeled:
 - a. Panelboards: Typewritten directory of circuits in the location provided by panelboard manufacturer. Panelboard identification shall be in the form of a engraved, laminated acrylic or melamine label.
 - b. Enclosures and electrical cabinets.
 - c. Access doors and panels for concealed electrical items.
 - d. Switchgear.
 - e. Switchboards.
 - f. Transformers: Label that includes tag designation indicated on Drawings for the transformer, feeder, and panelboards or equipment supplied by the secondary.
 - g. Substations.
 - h. Enclosed switches.
 - i. Enclosed circuit breakers.
 - j. Push-button stations.
 - k. Contactors.
 - l. Remote-controlled switches, dimmer modules, and control devices.
 - m. Battery-inverter units.
 - n. Monitoring and control equipment.

END OF SECTION 260553

SECTION 26 08 00 - ELECTRICAL SYSTEMS COMMISSIONING

PART 1 - GENERAL

1.1 DESCRIPTION

- A. The purpose of this section is to specify Division 26 responsibilities in the commissioning process which are being directed by the commissioning provider. (Other electrical systems testing not part of the commissioning scope is required under other sections).
- B. Commissioning requires the participation of Division 26 to ensure that all systems are operating in a manner consistent with the Contract Documents. The general commissioning requirements and coordination are detailed in Division 1 and this section. The contractor shall be familiar with all parts of Division 1 and this section and the commissioning plan issued by the commissioning provider and shall execute all commissioning responsibilities assigned to them in the Contract Documents.

1.2 RESPONSIBILITIES

- A. Electrical Contractors, and Lighting Controls contractors. The commissioning responsibilities applicable to the above contractors are as follows (all references apply to commissioned equipment only):
 - 1. Construction and Acceptance Phases
 - a. Attend a commissioning scoping meeting and other necessary meetings scheduled by the commissioning provider to facilitate the Cx process.
 - b. Contractors shall provide normal cut sheets and shop drawing submittals to the commissioning provider of commissioned equipment.
 - c. Provide additional requested documentation, prior to normal O&M manual submittals, to the commissioning provider for development of start-up and functional testing procedures.
 - d. Provide a copy of the O&M manuals submittals of commissioned equipment, through normal channels, to the commissioning provider for review and approval.
 - e. Contractors shall assist (along with the design engineers) in clarifying the operation and control of commissioned equipment in areas where the specifications, control drawings or equipment documentation is not sufficient for writing detailed testing procedures.
 - f. Provide assistance to the commissioning provider in preparation of the specific functional performance test procedures. Subs shall review test procedures to ensure feasibility, safety and equipment protection and provide necessary written alarm limits to be used during the tests.
 - g. During the startup and initial checkout process, execute and document the electrical-related portions of the prefunctional checklists provided by the commissioning provider for all commissioned equipment.
 - h. Address current A/E punch list items before functional testing.
 - i. Provide skilled technicians to execute starting of equipment and to execute the functional performance tests. Ensure that they are available and

- present during the agreed upon schedules and for sufficient duration to complete the necessary tests, adjustments and problem-solving.
 - j. Perform functional performance testing under the direction of the commissioning provider for specified equipment.
 - k. Correct deficiencies identified by the commissioning provider, CM and A/E and retest the equipment. Contractors are not complete with their scope of services until all functional testing is complete, all commissioning documentation is received, and they are verified by both the Commissioning provider and the Owner.
 - l. Prepare O&M manuals according to the Contract Documents, including clarifying and updating the original sequences of operation to as-built conditions.
 - m. Provide training of the Owner's operating personnel as specified.
 - n. Coordinate with equipment manufacturers to determine specific requirements to maintain the validity of the warranty.
2. Warranty Period
- a. Correct deficiencies and make necessary adjustments to O&M manuals and as-built drawings for applicable issues identified in any seasonal testing.

PART 2 - PRODUCTS

2.1 TEST EQUIPMENT

- A. Division 26 contractors shall provide all test equipment necessary to fulfill the testing requirements of this Division.

PART 3 - EXECUTION

3.1 SUBMITTALS

- A. Division 26 contractors shall provide submittal documentation relative to commissioning to the commissioning provider as requested by the commissioning provider.
- B. Contractor shall be familiar with the Part 3 Field Quality Control Section of each Division 26 specification section. Division 26 contractor shall conduct testing and inspection required in each Field Quality Control Section and shall provide a report that documents that the required tests and inspections were conducted and passed. The report shall be delivered one month after the building distribution panels have been energized.

3.2 STARTUP

- A. The contractor has start-up responsibility and is required to complete systems and sub-systems, so they are fully functional, meeting the design objectives of the Contract Documents.

- B. Functional testing is intended to begin upon completion of a system.

3.3 FUNCTIONAL PERFORMANCE TESTS

- A. Testing and Acceptance criteria: Test functionality of this piece of the system or systems in all control strategies with which it is associated.
- B. The electrical and lighting controls contractors are responsible for assisting the commissioning provider throughout the entire commissioning process. The electrical and lighting controls work is not complete until the commissioning provider and the Owner have signed off on the commissioned systems.

3.4 OPERATIONS AND MAINTENANCE (O&M) MANUALS

- A. Division 26 contractors shall compile and prepare applicable documentation for all equipment and systems and deliver to the GC for inclusion in the O&M manuals.
- B. The commissioning provider shall receive a copy of the O&M manuals for review.

3.5 TRAINING OF OWNER PERSONNEL

- A. Electrical and Lighting Controls Contractor. The electrical and Lighting Controls contractor shall have the following training responsibilities:
 - 1. Provide the commissioning provider with a training plan two weeks before the planned training.
 - 2. Provide designated Owner personnel with comprehensive training in the understanding of the systems and the operation and maintenance of each major piece of commissioned electrical equipment or system.
 - 3. During any demonstration, should the system fail to perform in accordance with the requirements of the O&M manual or sequence of operations, the system will be repaired or adjusted as necessary, and the demonstration repeated.
 - 4. The appropriate trade or manufacturer's representative shall provide the instructions on each major piece of equipment. This person may be the start-up technician for the piece of equipment, the installing contractor or manufacturer's representative. Practical building operating expertise as well as in-depth knowledge of all modes of operation of the specific piece of equipment are required. More than one party may be required to execute the training.
 - 5. The training sessions shall follow the outline in the Table of Contents of the operation and maintenance manual and illustrate whenever possible the use of the O&M manuals for reference.
 - 6. Training shall include use of the printed installation, operation and maintenance instruction material included in the O&M manuals.
 - 7. Hands-on training shall include start-up, and operation in all modes possible.
 - 8. Training shall occur after functional testing is complete, unless approved otherwise by the Project Manager.
 - 9. Duration of Training. The contractor shall provide training on each piece of equipment according to the training schedule shall be agreed upon between the Sub-contractor and the General Contractor and as specified.

3.6 WRITTEN WORK PRODUCTS

- A. Written work products of Contractors will consist of the filled-out startup, initial checkout and prefunctional checklists.

END OF SECTION

SECTION 260923 - LIGHTING CONTROL DEVICES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section Includes:
 - 1. Photoelectric switches.
 - 2. Daylight-harvesting switching and dimming controls.
 - 3. Indoor occupancy and vacancy sensors.
 - 4. Switchbox-mounted occupancy sensors.
 - 5. Outdoor motion sensors.
 - 6. Lighting contactors.
 - 7. Emergency shunt relays.
- B. Related Requirements:
 - 1. Section 262726 "Wiring Devices" for wall-box dimmers, non-networkable wall-switch occupancy sensors, and manual light switches.

1.3 ACTION SUBMITTALS

- A. Product Data: For each type of product.
- B. Shop Drawings:
 - 1. Show installation details for the following:
 - a. Occupancy sensors.
 - b. Vacancy sensors.
 - 2. Interconnection diagrams showing field-installed wiring.
 - 3. Include diagrams for power, signal, and control wiring.

1.4 INFORMATIONAL SUBMITTALS

- A. Coordination Drawings: Reflected ceiling plan(s) and elevations, drawn to scale, on which the following items are shown and coordinated with each other, using input from installers of the items involved:
 - 1. Suspended ceiling components.
 - 2. Structural members to which equipment will be attached.
 - 3. Items penetrating finished ceiling, including the following:
 - a. Luminaires.
 - b. Air outlets and inlets.
 - c. Speakers.
 - d. Sprinklers.
 - e. Access panels.
 - f. Control modules.
- B. Field quality-control reports.
- C. Sample Warranty: For manufacturer's warranties.

1.5 CLOSEOUT SUBMITTALS

- A. Operation and Maintenance Data: For each type of lighting control device to include in operation and maintenance manuals.
- B. Software and Firmware Operational Documentation:
 - 1. Software operating and upgrade manuals.
 - 2. Program Software Backup: On USB media. Provide names, versions, and website addresses for locations of installed software.
 - 3. Device address list.
 - 4. Printout of software application and graphic screens.

1.6 WARRANTY

- A. Manufacturer's Warranty: Manufacturer and Installer agree to repair or replace lighting control devices that fail(s) in materials or workmanship within specified warranty period.
 - 1. Failures include, but are not limited to, the following:
 - a. Faulty operation of lighting control software.
 - b. Faulty operation of lighting control devices.
 - 2. Warranty Period: Two year(s) from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 OUTDOOR PHOTOELECTRIC SWITCHES, SOLID STATE, FLEXIBLE MOUNTING

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
1. Lutron
 2. nLight
 3. Cooper Industries, Inc.
 4. Leviton Manufacturing Co., Inc.
- B. Description: Solid state, with DPST dry contacts rated for 1800 VA inductive, to operate connected relay, contactor coils, or microprocessor input; complying with UL 773A, and compatible with ballasts and LED lamps.
1. Listed and labeled as defined in the CEC, by an agency NRTL, and marked for intended location and application.
 2. Light-Level Monitoring Range: 1.5 to 10 fc, with an adjustment for turn-on and turn-off levels within that range, and a directional lens in front of the photocell to prevent fixed light sources from causing turn-off.
 3. Time Delay: Fifteen-second minimum, to prevent false operation.
 4. Surge Protection: Metal-oxide varistor.
 5. Mounting: Twist lock complies with ANSI C136.10, with base-and-stem mounting or stem-and-swivel mounting accessories as required to direct sensor to the north sky exposure from same source and manufacturer as switch.
 6. Failure Mode: Luminaire stays ON.

2.2 DAYLIGHT-HARVESTING DIMMING CONTROLS, DIGITAL

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
1. Lutron
 2. nLight
 3. Cooper Industries, Inc.
 4. Leviton Manufacturing Co., Inc.
- B. Description: Sensing daylight and electrical lighting levels, the system adjusts the indoor electrical lighting levels. As daylight increases, lights are dimmed.
1. Lighting control set point is based on the following two lighting conditions:
 - a. When no daylight is present (target level).
 - b. When significant daylight is present.

2. System programming is done with two hand-held, remote-control tools.
 - a. Initial setup tool.
 - b. Tool for occupants to adjust the target levels by increasing the set point up to 25 percent, or by minimizing the electric lighting level.
- C. Ceiling-Mounted Dimming Controls: Solid-state, light-level sensor unit, with integrated power pack mounted on luminaire, to detect changes in indoor lighting levels that are perceived by the eye.
- D. Electrical Components, Devices, and Accessories:
 1. Listed and labeled as defined in the CEC, by a qualified testing agency, and marked for intended location and application.
 2. Sensor Output: 0- to 10-V dc to operate luminaires. Sensor is powered by controller unit.
 3. Light-Level Sensor Set-Point Adjustment Range: 20 to 60 fc.
- E. Power Pack: Digital controller capable of accepting four RJ45 inputs with two output(s) rated for 20-A incandescent or LED load at 120- and 277-V ac, for 16-A ballast load or LED at 120- and 277-V ac, and for 1 hp at 120-V ac. Sensor has 24-V dc Class 2 power source, as defined by the CEC.
 1. With integral current monitoring.
 2. Compatible with digital addressable lighting interface.
 3. Plenum rated.

2.3 INDOOR OCCUPANCY AND VACANCY SENSORS

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 1. Lutron
 2. nLight
 3. Cooper Industries, Inc.
 4. Leviton Manufacturing Co., Inc.
- B. General Requirements for Sensors:
 1. Wall or Ceiling-mounted, solid-state indoor occupancy and vacancy sensors.
 2. Dual technology.
 3. Integrated power pack.
 4. Hardwired connection to switch.
 5. Listed and labeled as defined in the CEC, by a qualified testing agency, and marked for intended location and application.
 6. Operation:
 - a. Combination Sensor: Unless otherwise indicated, sensor shall be programmed to turn lights on when coverage area is occupied and turn

them off when unoccupied, or to turn off lights that have been manually turned on; with a time delay for turning lights off, adjustable over a minimum range of 1 to 15 minutes.

7. Sensor Output: Contacts rated to operate the connected relay, complying with UL 773A.
 8. Power: Line voltage.
 9. Power Pack: Dry contacts rated for 20-A ballast or LED load at 120- and 277-V ac, for 13-A tungsten at 120-V ac, and for 1 hp at 120-V ac. Sensor has 24-V dc, 150-mA, Class 2 power source, as defined by the CEC.
 10. Mounting:
 - a. Sensor: Suitable for mounting in any position on a standard outlet box.
 - b. Relay: Externally mounted through a 1/2-inch knockout in a standard electrical enclosure.
 - c. Time-Delay and Sensitivity Adjustments: Recessed and concealed behind hinged door.
 11. Indicator: Digital display, to show when motion is detected during testing and normal operation of sensor.
 12. Bypass Switch: Override the "on" function in case of sensor failure.
 13. Automatic Light-Level Sensor: Adjustable from 2 to 200 fc; turn lights off when selected lighting level is present.
- C. PIR Type: Wall or Ceiling mounted; detect occupants in coverage area by their heat and movement.
1. Detector Sensitivity: Detect occurrences of 6-inch-minimum movement of any portion of a human body that presents a target of not less than 36 sq. in..
 2. Detection Coverage (Room, Wall Mounted): Detect occupancy anywhere within a 180-degree pattern centered on the sensor over an area of 1000 square foot when mounted 48 inches above finished floor.
- D. Ultrasonic Type: Wall or Ceiling mounted; detect occupants in coverage area through pattern changes of reflected ultrasonic energy.
1. Detector Sensitivity: Detect a person of average size and weight moving not less than 12 inches in either a horizontal or a vertical manner at an approximate speed of 12 inches/s.
 2. Detection Coverage (Large Room): Detect occupancy anywhere within a circular area of 2000 sq. ft. when mounted on a 96-inch-high ceiling.
 3. Detection Coverage (Corridor): Detect occupancy anywhere within 90 feet when mounted on a 10-foot-high ceiling in a corridor not wider than 14 feet.
 4. Detection Coverage (Room, Wall Mounted): Detect occupancy anywhere within a 180-degree pattern centered on the sensor over an area of 1000 square feet when mounted 84 inches above finished floor.
- E. Dual-Technology Type: Wall or Ceiling mounted; detect occupants in coverage area using PIR and ultrasonic detection methods. The particular technology or combination

of technologies that control on-off functions is selectable in the field by operating controls on unit.

1. Sensitivity Adjustment: Separate for each sensing technology.
2. Detector Sensitivity: Detect occurrences of 6-inch-minimum movement of any portion of a human body that presents a target of not less than 36 sq. in., and detect a person of average size and weight moving not less than 12 inches in either a horizontal or a vertical manner at an approximate speed of 12 inches/s.
3. Detection Coverage (Standard Room): Detect occupancy anywhere within a circular area of 1000 sq. ft. when mounted on a 96-inch-high ceiling.
4. Detection Coverage (Room, Wall Mounted): Detect occupancy anywhere within a 180-degree pattern centered on the sensor over an area of 2000 square feet when mounted 48 inches above finished floor.

2.4 SWITCHBOX-MOUNTED OCCUPANCY SENSORS

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
1. Lutron
 2. nLight
 3. Cooper Industries, Inc.
 4. Leviton Manufacturing Co., Inc.
- B. General Requirements for Sensors: Automatic-wall-switch occupancy sensor with manual on-off switch, suitable for mounting in a single gang switchbox.
1. Listed and labeled as defined in the CEC, by a qualified testing agency, and marked for intended location and application, and shall comply with California Title 24.
 2. Occupancy Sensor Operation: Unless otherwise indicated, turn lights on when coverage area is occupied, and turn lights off when unoccupied; with a time delay for turning lights off, adjustable over a minimum range of 1 to 15 minutes.
 3. Operating Ambient Conditions: Dry interior conditions, 32 to 120 deg F.
 4. Switch Rating: Not less than 800-VA ballast or LED load at 120 V, 1200-VA ballast or LED load at 277 V, and 800-W incandescent.

2.5 OUTDOOR MOTION SENSORS

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
1. Lutron
 2. nLight
 3. Cooper Industries, Inc.
 4. Leviton Manufacturing Co., Inc.

B. Description: Solid-state outdoor motion sensors.

1. Listed and labeled as defined in the CEC, by a qualified testing agency, and marked for intended location and application, and shall comply with California Title 24.
2. Dual-technology (PIR and ultrasonic) type, weatherproof. Detect occurrences of 6-inch-minimum movement of any portion of a human body that presents a target of not less than 36 sq. in. Comply with UL 773A.
3. Switch Rating:
 - a. Luminaire-Mounted Sensor: 1000-W incandescent, 500-VA fluorescent/LED.
 - b. Separately Mounted Sensor: Dry contacts rated for 20-A ballast or LED load at 120- and 277-V ac, for 13-A tungsten at 120-V ac, and for 1 hp at 120-V ac. Sensor has 24-V dc, 150-mA, Class 2 power source, as defined by the CEC.
4. Switch Type: SP, field-selectable automatic "on," or manual "on," automatic "off." With bypass switch to override the "on" function in case of sensor failure.
5. Voltage: Match the circuit voltage type.
6. Detector Coverage:
 - a. Standard Range: 210-degree field of view, with a minimum coverage area of 900 sq. ft..
 - b. Long Range: 180-degree field of view and 110-foot detection range.
7. Ambient-Light Override: Concealed, field-adjustable, light-level sensor from 10 to 150 fc. The switch prevents the lights from turning on when the light level is higher than the set point of the sensor.
8. Concealed, field-adjustable, "off" time-delay selector at up to 30 minutes.
9. Adaptive Technology: Self-adjusting circuitry detects and memorizes usage patterns of the space and help eliminate false "off" switching.
10. Operating Ambient Conditions: Suitable for operation in ambient temperatures ranging from minus 40 to plus 130 deg F, rated as "raintight" according to UL 773A.

2.6 LIGHTING CONTACTORS

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 1. Lutron
 2. nLight
 3. Cooper Industries, Inc.
 4. Leviton Manufacturing Co., Inc.
- B. Description: Electrically operated and mechanically held, combination-type lighting contactors with fusible switch, complying with NEMA ICS 2 and UL 508.

1. Current Rating for Switching: Listing or rating consistent with type of load served, including tungsten filament, inductive, and high-inrush ballast (ballast with 15 percent or less THD of normal load current).
2. Fault Current Withstand Rating: Equal to or exceeding the available fault current at the point of installation.
3. Enclosure: Comply with NEMA 250.
4. Provide with control and pilot devices as indicated on Drawings, matching the NEMA type specified for the enclosure.

2.7 EMERGENCY SHUNT RELAY

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 1. Lutron
 2. nLight
 3. Cooper Industries, Inc.
 4. Leviton Manufacturing Co., Inc.
- B. Description: NC, electrically held relay, arranged for wiring in parallel with manual or automatic switching contacts; complying with UL 924.
 1. Coil Rating: 277 V.

2.8 CONDUCTORS AND CABLES

- A. Power Wiring to Supply Side of Remote-Control Power Sources: Not smaller than No. 12 AWG. Comply with requirements in Section 260519 "Low-Voltage Electrical Power Conductors and Cables."
- B. Classes 2 and 3 Control Cable: Multiconductor cable with stranded-copper conductors not smaller than No. 18 AWG. Comply with requirements in Section 260519 "Low-Voltage Electrical Power Conductors and Cables."
- C. Class 1 Control Cable: Multiconductor cable with stranded-copper conductors not smaller than No. 14 AWG. Comply with requirements in Section 260519 "Low-Voltage Electrical Power Conductors and Cables."

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine lighting control devices before installation. Reject lighting control devices that are wet, moisture damaged, or mold damaged.

- B. Examine walls and ceilings for suitable conditions where lighting control devices will be installed.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 SENSOR INSTALLATION

- A. Comply with NECA 1.
- B. Coordinate layout and installation of ceiling-mounted devices with other construction that penetrates ceilings or is supported by them, including light fixtures, HVAC equipment, smoke detectors, fire-suppression systems, and partition assemblies.
- C. Install and aim sensors in locations to achieve not less than 90 percent coverage of areas indicated. Do not exceed coverage limits specified in manufacturer's written instructions.

3.3 CONTACTOR INSTALLATION

- A. Comply with NECA 1.
- B. Mount electrically held lighting contactors with elastomeric isolator pads to eliminate structure-borne vibration unless contactors are installed in an enclosure with factory-installed vibration isolators.

3.4 WIRING INSTALLATION

- A. Comply with NECA 1.
- B. Wiring Method: Comply with Section 260519 "Low-Voltage Electrical Power Conductors and Cables." Minimum conduit size is 1/2 inch.
- C. Wiring within Enclosures: Comply with NECA 1. Separate power-limited and nonpower-limited conductors according to conductor manufacturer's written instructions.
- D. Size conductors according to lighting control device manufacturer's written instructions unless otherwise indicated.
- E. Splices, Taps, and Terminations: Make connections only on numbered terminal strips in junction, pull, and outlet boxes; terminal cabinets; and equipment enclosures.

3.5 IDENTIFICATION

- A. Identify components and power and control wiring according to Section 260553 "Identification for Electrical Systems."

1. Identify controlled circuits in lighting contactors.
2. Identify circuits or luminaires controlled by photoelectric and occupancy sensors at each sensor.

B. Label time switches and contactors with a unique designation.

3.6 FIELD QUALITY CONTROL

- A. Testing Agency: Engage a qualified testing agency to evaluate lighting control devices and perform tests and inspections.
- B. Manufacturer's Field Service: Engage a factory-authorized service representative to test and inspect components, assemblies, and equipment installations, including connections.
- C. Perform the following tests and inspections with the assistance of a factory-authorized service representative:
 1. Operational Test: After installing time switches and sensors, and after electrical circuitry has been energized, start units to confirm proper unit operation.
 2. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.
- D. Lighting control devices will be considered defective if they do not pass tests and inspections.
- E. Prepare test and inspection reports.

3.7 ADJUSTING

- A. Occupancy Adjustments: When requested within 12 months from date of Substantial Completion, provide on-site assistance in adjusting lighting control devices to suit actual occupied conditions. Provide up to two visits to Project during other-than-normal occupancy hours for this purpose.
 1. For occupancy and motion sensors, verify operation at outer limits of detector range. Set time delay to suit Owner's operations.
 2. For daylighting controls, adjust set points and deadband controls to suit Owner's operations.
 3. Align high-bay occupancy sensors using manufacturer's laser aiming tool.

3.8 SOFTWARE SERVICE AGREEMENT

- A. Technical Support: Beginning at Substantial Completion, service agreement shall include software support for two years.

- B. Upgrade Service: At Substantial Completion, update software to latest version. Install and program software upgrades that become available within two years from date of Substantial Completion. Upgrading software shall include operating system and new or revised licenses for using software.

- 1. Upgrade Notice: At least 30 days to allow Owner to schedule and access the system and to upgrade computer equipment if necessary.

3.9 DEMONSTRATION

- A. Coordinate demonstration of products specified in this Section with demonstration requirements for low-voltage, programmable lighting control systems specified in Section 260943.16 "Addressable-Luminaire Lighting Controls".
- B. Engage a factory-authorized service representative to train Owner's maintenance personnel to adjust, operate, and maintain lighting control devices.

END OF SECTION 260923

SECTION 262726 - WIRING DEVICES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section Includes:
 - 1. Standard-grade receptacles, 125 V, 20 A.
 - 2. GFCI receptacles, 125 V, 20 A.
 - 3. Twist-locking receptacles.
 - 4. Cord and plug sets.
 - 5. Toggle switches, 120/277 V, 20 A.
 - 6. Wall plates.
 - 7. Floor service fittings.
 - 8. Indoor Service Pole

1.3 DEFINITIONS

- A. AFCI: Arc-fault circuit interrupter.
- B. BAS: Building automation system.
- C. EMI: Electromagnetic interference.
- D. GFCI: Ground-fault circuit interrupter.
- E. Pigtail: Short lead used to connect a device to a branch-circuit conductor.
- F. RFI: Radio-frequency interference.
- G. SPD: Surge protective device.

1.4 ACTION SUBMITTALS

- A. Product Data: For each type of product.
- B. Shop Drawings: List of legends and description of materials and process used for premarking wall plates.

1.5 INFORMATIONAL SUBMITTALS

- A. Field quality-control reports.

1.6 CLOSEOUT SUBMITTALS

- A. Operation and Maintenance Data: For wiring devices to include in all manufacturers' packing-label warnings and instruction manuals that include labeling conditions.

1.7 MAINTENANCE MATERIAL SUBMITTALS

- A. Furnish extra materials that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
 - 1. Floor Service-Outlet Assemblies: One for every 10, but no fewer than one.
 - 2. SPD Receptacles: One for every 10 of each type installed, but no fewer than two of each type.

PART 2 - PRODUCTS

2.1 GENERAL WIRING-DEVICE REQUIREMENTS

- A. Wiring Devices, Components, and Accessories: Listed and labeled as defined in the CEC, by a qualified testing agency, and marked for intended location and use.
- B. Comply with the CEC.
- C. RoHS compliant.
- D. Comply with NEMA WD 1.
- E. Devices that are manufactured for use with modular plug-in connectors may be substituted under the following conditions:
 - 1. Connectors shall comply with UL 2459 and shall be made with stranding building wire.
 - 2. Devices shall comply with requirements in this Section.
- F. Devices for Owner-Furnished Equipment:
 - 1. Receptacles: Match plug configurations.
 - 2. Cord and Plug Sets: Match equipment requirements.
- G. Device Color:
 - 1. Wiring Devices Connected to Normal Power System: Color to be coordinated with Architect color

2. Wiring Devices Connected to Emergency Power system: Red.
3. Controlled receptacles: Color shall be blue and shall be labeled "CONTROLLED".
4. Isolated-Ground Receptacles: Orange.
5. SPD Devices: Blue.

H. Wall Plate Color: For plastic covers, match device color.

I. Source Limitations: Obtain each type of wiring device and associated wall plate from single source from single manufacturer.

2.2 STANDARD-GRADE RECEPTACLES, 125 V, 20 A

A. Duplex Receptacles, 125 V, 20 A:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. Eaton (Arrow Hart).
 - b. Hubbell Incorporated; Wiring Device-Kellems.
 - c. Leviton Manufacturing Co., Inc.
 - d. Pass & Seymour/Legrand (Pass & Seymour).
2. Description: Two pole, three wire, and self-grounding.
3. Configuration: NEMA WD 6, Configuration 5-20R.
4. Standards: Comply with UL 498 and FS W-C-596.

B. Tamper-Resistant Duplex Receptacles, 125 V, 20 A:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. Eaton (Arrow Hart).
 - b. Hubbell Incorporated; Wiring Device-Kellems.
 - c. Leviton Manufacturing Co., Inc.
 - d. Pass & Seymour/Legrand (Pass & Seymour).
2. Description: Two pole, three wire, and self-grounding. Integral shutters that operate only when a plug is inserted in the receptacle.
3. Configuration: NEMA WD 6, Configuration 5-20R.
4. Standards: Comply with UL 498 and FS W-C-596.
5. Marking: Listed and labeled as complying with the CEC, "Tamper-Resistant Receptacles" Article.

C. Weather-Resistant Duplex Receptacle, 125 V, 20 A:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

- a. Eaton (Arrow Hart).
 - b. Hubbell Incorporated; Wiring Device-Kellems.
 - c. Leviton Manufacturing Co., Inc.
 - d. Pass & Seymour/Legrand (Pass & Seymour).
2. Description: Two pole, three wire, and self-grounding. Integral shutters that operate only when a plug is inserted in the receptacle. Square face.
3. Configuration: NEMA WD 6, Configuration 5-20R.
4. Standards: Comply with UL 498.
5. Marking: Listed and labeled as complying with the CEC, "Receptacles in Damp or Wet Locations" Article.

D. Tamper- and Weather-Resistant Duplex Receptacles, 125 V, 20 A:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. Eaton (Arrow Hart).
 - b. Hubbell Incorporated; Wiring Device-Kellems.
 - c. Leviton Manufacturing Co., Inc.
 - d. Pass & Seymour/Legrand (Pass & Seymour).
2. Description: Two pole, three wire, and self-grounding. Integral shutters that operate only when a plug is inserted in the receptacle. Square face.
3. Configuration: NEMA WD 6, Configuration 5-20R.
4. Standards: Comply with UL 498.
5. Marking: Listed and labeled as complying with the CEC, "Tamper-Resistant Receptacles" and "Receptacles in Damp or Wet Locations" articles.

2.3 GFCI RECEPTACLES, 125 V, 20 A

A. Duplex GFCI Receptacles, 125 V, 20 A:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. Eaton (Arrow Hart).
 - b. Hubbell Incorporated; Wiring Device-Kellems.
 - c. Leviton Manufacturing Co., Inc.
 - d. Pass & Seymour/Legrand (Pass & Seymour).
2. Description: Integral GFCI with "Test" and "Reset" buttons and LED indicator light. Two pole, three wire, and self-grounding.
3. Configuration: NEMA WD 6, Configuration 5-20R.
4. Type: Non-feed through.
5. Standards: Comply with UL 498, UL 943 Class A, and FS W-C-596.

B. Tamper-Resistant Duplex GFCI Receptacles, 125 V, 20 A:

1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:
 - a. Hubbell Incorporated; Wiring Device-Kellems.
 - b. Pass & Seymour/Legrand (Pass & Seymour).
2. Description: Integral GFCI with "Test" and "Reset" buttons and LED indicator light. Two pole, three wire, and self-grounding. Integral shutters that operate only when a plug is inserted in the receptacle.
3. Configuration: NEMA WD 6, Configuration 5-20R.
4. Type: Non-feed through.
5. Standards: Comply with UL 498, UL 943 Class A, and FS W-C-596.
6. Marking: Listed and labeled as complying with the CEC, "Tamper-Resistant Receptacles" Article.

C. Tamper- and Weather-Resistant, GFCI Duplex Receptacles, 125 V, 20 A:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. Eaton (Arrow Hart).
 - b. Hubbell Incorporated; Wiring Device-Kellems.
 - c. Leviton Manufacturing Co., Inc.
 - d. Pass & Seymour/Legrand (Pass & Seymour).
2. Description: Integral GFCI with "Test" and "Reset" buttons and LED indicator light. Two pole, three wire, and self-grounding. Integral shutters that operate only when a plug is inserted in the receptacle. Square face.
3. Configuration: NEMA WD 6, Configuration 5-15R.
4. Type: Non-feed through.
5. Standards: Comply with UL 498 and UL 943 Class A.
6. Marking: Listed and labeled as complying with the CEC, "Tamper-Resistant Receptacles" and "Receptacles in Damp or Wet Locations" articles.

2.4 TWIST-LOCKING RECEPTACLES

A. Twist-Lock, Single Receptacles, 120 V, 20 A:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. Eaton (Arrow Hart).
 - b. Hubbell Incorporated; Wiring Device-Kellems.
 - c. Leviton Manufacturing Co., Inc.
 - d. Pass & Seymour/Legrand (Pass & Seymour).
2. Configuration: NEMA WD 6, Configuration L5-20R.
3. Standards: Comply with UL 498.

B. Twist-Lock, Single Receptacles, 250 V, 20 A:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. Eaton (Arrow Hart).
 - b. Hubbell Premise Wiring.
 - c. Leviton Manufacturing Co., Inc.
 - d. Pass & Seymour/Legrand (Pass & Seymour).
2. Configuration: NEMA WD 6, Configuration L6-20R.
3. Standards: Comply with UL 498.

C. Twist-Lock, Single Receptacles, 277 V, 20 A:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. Eaton (Arrow Hart).
 - b. Hubbell Premise Wiring.
 - c. Leviton Manufacturing Co., Inc.
 - d. Pass & Seymour/Legrand (Pass & Seymour).
2. Configuration: NEMA WD 6, Configuration L7-20R.
3. Standards: Comply with UL 498.

D. Twist-Lock, Isolated-Ground, Single Receptacles, 125 V, 20 A:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. Eaton (Arrow Hart).
 - b. Hubbell Premise Wiring.
 - c. Leviton Manufacturing Co., Inc.
 - d. Pass & Seymour/Legrand (Pass & Seymour).
2. Grounding: Equipment grounding contacts shall be connected only to green grounding screw terminal of the device and with inherent electrical isolation from mounting strap. Isolation shall be integral to receptacle construction and not dependent on removable parts.
3. Configuration: NEMA WD 6, Configuration L5-20R.
4. Standards: Comply with UL 498.

E. Description: Matching, locking-type plug and receptacle body connector, heavy-duty grade.

F. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. Eaton (Arrow Hart).

2. Ericson.
3. Hubbell Premise Wiring.
4. Leviton Manufacturing Co., Inc.
5. Pass & Seymour/Legrand (Pass & Seymour).

- G. Configuration: NEMA WD 6, Configurations L5-20P and L5-20R.
- H. Body: Nylon, with screw-open, cable-gripping jaws and provision for attaching external cable grip.
- I. External Cable Grip: Woven wire-mesh type made of high-strength, galvanized-steel wire strand, matched to cable diameter, and with attachment provision designed for corresponding connector.
- J. Standards: Comply with FS W-C-596.

2.5 CORD AND PLUG SETS

- A. Match voltage and current ratings and number of conductors to requirements of equipment being connected.
- B. Cord: Rubber-insulated, stranded-copper conductors, with Type SOW-A jacket; with green-insulated grounding conductor and ampacity of at least 130 percent of the equipment rating.
- C. Plug: Nylon body and integral cable-clamping jaws. Match cord and receptacle type for connection.

2.6 TOGGLE SWITCHES, 120/277 V, 20 A

- A. Single-Pole Switches, 120/277 V, 20 A:
1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:
 - a. Eaton (Arrow Hart).
 - b. Hubbell Incorporated; Wiring Device-Kellems.
 - c. Leviton Manufacturing Co., Inc.
 - d. Pass & Seymour/Legrand (Pass & Seymour).
 2. Standards: Comply with UL 20 and FS W-S-896.
- B. Two-Pole Switches, 120/277 V, 20 A:
1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

- a. Eaton (Arrow Hart).
 - b. Hubbell Incorporated; Wiring Device-Kellems.
 - c. Leviton Manufacturing Co., Inc.
 - d. Pass & Seymour/Legrand (Pass & Seymour).
 2. Comply with UL 20 and FS W-S-896.
- C. Three-Way Switches, 120/277 V, 20 A:
 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. Eaton (Arrow Hart).
 - b. Hubbell Incorporated; Wiring Device-Kellems.
 - c. Leviton Manufacturing Co., Inc.
 - d. Pass & Seymour/Legrand (Pass & Seymour).
 2. Comply with UL 20 and FS W-S-896.
- D. Four-Way Switches, 120/277 V, 20 A:
 1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:
 - a. Eaton (Arrow Hart).
 - b. Hubbell Incorporated; Wiring Device-Kellems.
 - c. Leviton Manufacturing Co., Inc.
 - d. Pass & Seymour/Legrand (Pass & Seymour).
 2. Standards: Comply with UL 20 and FS W-S-896.
- E. Pilot-Light, Single-Pole Switches: 120/277 V, 20 A:
 1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:
 - a. Eaton (Arrow Hart).
 - b. Hubbell Incorporated; Wiring Device-Kellems.
 - c. Leviton Manufacturing Co., Inc.
 - d. Pass & Seymour/Legrand (Pass & Seymour).
 2. Description: Illuminated when switch is on.
 3. Standards: Comply with UL 20 and FS W-S-896.
- F. Lighted Single-Pole Switches, 120/277 V, 20 A:

1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:
 - a. Eaton (Arrow Hart).
 - b. Hubbell Premise Wiring.
 - c. Leviton Manufacturing Co., Inc.
 - d. Pass & Seymour/Legrand (Pass & Seymour).
 2. Description: Handle illuminated when switch is on.
 3. Standards: Comply with NEMA WD 1, UL 20, and FS W-S-896.
- G. Key-Operated, Single-Pole Switches, 120/277 V, 20 A:
1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:
 - a. Eaton (Arrow Hart).
 - b. Hubbell Incorporated; Wiring Device-Kellems.
 - c. Leviton Manufacturing Co., Inc.
 - d. Pass & Seymour/Legrand (Pass & Seymour).
 2. Description: Factory-supplied key in lieu of switch handle.
 3. Standards: Comply with UL 20 and FS W-S-896.
- H. Single-Pole, Double-Throw, Momentary-Contact, Center-off Switches, 120/277 V, 20 A:
1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:
 - a. Eaton (Arrow Hart).
 - b. Hubbell Incorporated; Wiring Device-Kellems.
 - c. Leviton Manufacturing Co., Inc.
 - d. Pass & Seymour/Legrand (Pass & Seymour).
 2. Description: For use with mechanically held lighting contactors.
 3. Standards: Comply with NEMA WD 1, UL 20, and FS W-S-896.
- I. Key-Operated, Single-Pole, Double-Throw, Momentary-Contact, Center-off Switches, 120/277 V, 20 A:
1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:
 - a. Eaton (Arrow Hart).
 - b. Hubbell Incorporated; Wiring Device-Kellems.
 - c. Leviton Manufacturing Co., Inc.

- d. Pass & Seymour/Legrand (Pass & Seymour).
- 2. Description: For use with mechanically held lighting contactors, with factory-supplied key in lieu of switch handle.
- 3. Standards: Comply with NEMA WD 1, UL 20, and FS W-S-896.

2.7 WALL PLATES

- A. Single Source: Obtain wall plates from same manufacturer of wiring devices.
- B. Single and combination types shall match corresponding wiring devices.
 - 1. Plate-Securing Screws: Metal with head color to match plate finish.
 - 2. Material for Finished Spaces: Smooth, high-impact thermoplastic.
 - 3. Material for Unfinished Spaces: Smooth, high-impact thermoplastic.
 - 4. Material for Damp Locations: Cast aluminum with spring-loaded lift cover, and listed and labeled for use in wet and damp locations.
- C. Wet-Location, Weatherproof Cover Plates: NEMA 250, complying with Type 3R, weather-resistant, die-cast aluminum with lockable cover.
- D. Antimicrobial Cover Plates:
 - 1. Contact surfaces treated with a coating that kills 99.9 percent of certain common bacteria within two hours when regularly and properly cleaned.
 - 2. Tarnish resistant.

2.8 FLOOR SERVICE FITTINGS

- A. Flush-Type Floor Service Fittings:
 - 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. Eaton (Arrow Hart).
 - b. Hubbell Premise Wiring.
 - c. Thomas & Betts Corporation; A Member of the ABB Group.
 - d. Wiremold / Legrand.
 - 2. Description: Type: Modular, flush-type, dual-service units suitable for wiring method used, with cover flush with finished floor.
 - 3. Compartments: Barrier separates power from voice and data communication cabling.
 - 4. Service Plate and Cover: Rectangular, solid brass with satin finish.
 - 5. Power Receptacle: NEMA WD 6 Configuration 5-20R, gray finish, unless otherwise indicated.

6. Data Communication Outlet: Two modular, keyed, color-coded, RJ-45 jacks for twisted pair cable, complying with requirements in Section 271513 "Communications Copper Horizontal Cabling."

2.9 PREFABRICATED MULTIOUTLET ASSEMBLIES

- A. Description: Two-piece surface metal raceway, with factory-wired multioutlet harness.
- B. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:
 - a. Wiremold / Legrand.
 - b. Hubbell Incorporated; Wiring Device-Kellems.
- C. Components shall be products from single manufacturer designed for use as a complete, matching assembly of raceways and receptacles.
- D. Raceway Material: Metal, with manufacturer's standard finish.
- E. Multioutlet Harness:
 1. Receptacles: 15-A, 125-V, NEMA WD 6 Configuration 5-15R receptacles complying with NEMA WD 1, UL 498, and FS W-C-596.
 2. Receptacle Spacing: 6 inches.
 3. Wiring: No. 12 AWG solid, Type THHN copper, two circuit, connecting alternating receptacles.

2.10 INDOOR SERVICE POLES

- A. Description: Factory-assembled and -wired, exposed raceway and fittings to route electrical wiring from connections above ceiling to outlets below ceiling.
- B. Regulatory Requirements: Listed and labeled in accordance with the CEC by qualified electrical testing laboratory recognized by authorities having jurisdiction and marked for intended location and application.
- C. General Characteristics:
 1. Reference Standards: UL 5 for exposed power raceway and fittings, and UL 2024 for communications raceway and fittings.
 2. Listed and labeled in accordance with NFPA 90A for installation in air-handling plenum spaces.
 3. Mounting: Ceiling trim flange with concealed bracing arranged for positive connection to above ceiling structural supports; with pole foot and carpet pad attachment.
 4. Provide barrier to separate channel for power wiring from channel for voice and data communication cabling.

D. Indoor Service Pole :

1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:
 - a. Wiremold / Legrand.
 - b. Hubbell Incorporated; Wiring Device-Kellems.
2. Options:
 - a. Material: Steel.
 - b. Height: 12'-5" below ceiling
 - c. Finish: Manufacturer's standard painted finish and trim combination.
 - 1) Color: White.
 - d. Power Outlets: (4) N5-20R, (1) L6-30R in accordance with Section 262726 "Wiring Devices."
 - e. Wiring: Two circuits, connecting alternating receptacles, in accordance with Section 260519 "Low-Voltage Electrical Power Conductors and Cables."
 - f. Voice and Data Communication Outlets: (4) 8PSJ jacks complying with requirements in Section 271500 "Communications Horizontal Cabling."
 - g. A minimum of two four-pair cables in accordance with Section 271513 "Communications Copper Horizontal Cabling" for each outlet.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Comply with NECA 1, including mounting heights listed in that standard, unless otherwise indicated.
- B. Coordination with Other Trades:
 1. Protect installed devices and their boxes. Do not place wall finish materials over device boxes, and do not cut holes for boxes with routers that are guided by riding against outside of boxes.
 2. Keep outlet boxes free of plaster, drywall joint compound, mortar, cement, concrete, dust, paint, and other material that may contaminate the raceway system, conductors, and cables.
 3. Install device boxes in brick or block walls so that the cover plate does not cross a joint unless the joint is troweled flush with the face of the wall.
 4. Install wiring devices after all wall preparation, including painting, is complete.
- C. Conductors:

1. Do not strip insulation from conductors until right before they are spliced or terminated on devices.
2. Strip insulation evenly around the conductor using tools designed for the purpose. Avoid scoring or nicking of solid wire or cutting strands from stranded wire.
3. The length of free conductors at outlets for devices shall comply with the CEC, Article 300, without pigtails.
4. Existing Conductors:
 - a. Cut back and pigtail, or replace all damaged conductors.
 - b. Straighten conductors that remain and remove corrosion and foreign matter.
 - c. Pigtailing existing conductors is permitted, provided the outlet box is large enough.

D. Device Installation:

1. Replace devices that have been in temporary use during construction and that were installed before building finishing operations were complete.
2. Keep each wiring device in its package or otherwise protected until it is time to connect conductors.
3. Do not remove surface protection, such as plastic film and smudge covers, until the last possible moment.
4. Connect devices to branch circuits using pigtails that are not less than 6 inches in length.
5. When there is a choice, use side wiring with binding-head screw terminals. Wrap solid conductor tightly clockwise, two-thirds to three-fourths of the way around terminal screw.
6. Use a torque screwdriver when a torque is recommended or required by manufacturer.
7. When conductors larger than No. 12 AWG are installed on 15- or 20-A circuits, splice No. 12 AWG pigtails for device connections.
8. Tighten unused terminal screws on the device.
9. When mounting into metal boxes, remove the fiber or plastic washers used to hold device-mounting screws in yokes, allowing metal-to-metal contact.

E. Receptacle Orientation:

1. Install ground pin of vertically mounted receptacles down, and on horizontally mounted receptacles to the right.
2. Install hospital-grade receptacles in patient-care areas with the ground pin or neutral blade at the top.

F. Device Plates: Do not use oversized or extra-deep plates. Repair wall finishes and remount outlet boxes when standard device plates do not fit flush or do not cover rough wall opening.

G. Dimmers:

1. Install dimmers within terms of their listing.

2. Verify that dimmers used for fan-speed control are listed for that application.
3. Install unshared neutral conductors on the line and load side of dimmers according to manufacturers' device, listing conditions in the written instructions.

- H. Arrangement of Devices: Unless otherwise indicated, mount flush, with long dimension vertical and with grounding terminal of receptacles on top. Group adjacent switches under single, multigang wall plates.
- I. Adjust locations of floor service outlets and service poles to suit arrangement of partitions and furnishings.

3.2 GFCI RECEPTACLES

- A. Install non-feed-through GFCI receptacles where protection of downstream receptacles is not required.

3.3 IDENTIFICATION

- A. Comply with Section 260553 "Identification for Electrical Systems."
- B. Identify each receptacle with panelboard identification and circuit number. Use hot, stamped, or engraved machine printing with white-filled lettering on face of plate, and durable wire markers or tags inside outlet boxes.

3.4 FIELD QUALITY CONTROL

- A. Test Instrument for Receptacles: Digital wiring analyzer with digital readout or illuminated digital-display indicators of measurement.
1. In healthcare facilities, prepare reports that comply with NFPA 99.
 2. Test Instruments: Use instruments that comply with UL 1436.
 3. Test Instrument for Receptacles: Digital wiring analyzer with digital readout or illuminated digital-display indicators of measurement.
- B. Tests for Receptacles:
1. Line Voltage: Acceptable range is 105 to 132 V.
 2. Percent Voltage Drop under 15-A Load: A value of 6 percent or higher is unacceptable.
 3. Ground Impedance: Values of up to 2 ohms are acceptable.
 4. GFCI Trip: Test for tripping values specified in UL 1436 and UL 943.
 5. Using the test plug, verify that the device and its outlet box are securely mounted.
 6. Tests shall be diagnostic, indicating damaged conductors, high resistance at the circuit breaker, poor connections, inadequate fault-current path, defective devices, or similar problems. Correct circuit conditions, remove malfunctioning, units and replace with new ones, and retest as specified above.

- C. Test straight-blade for the retention force of the grounding blade according to NFPA 99. Retention force shall be not less than 4 oz.
- D. Wiring device will be considered defective if it does not pass tests and inspections.
- E. Prepare test and inspection reports.

END OF SECTION 262726

SECTION 262816 – ENCLOSED SWITCHES AND CIRCUIT BREAKERS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section Includes:
 - 1. Fusible switches.
 - 2. Nonfusible switches.
 - 3. Motor-rated toggle switches.
 - 4. Enclosures.

1.3 DEFINITIONS

- A. NC: Normally closed.
- B. NO: Normally open.
- C. SPDT: Single pole, double throw.

1.4 ACTION SUBMITTALS

- A. Product Data: For each type of enclosed disconnect switch, accessory, and component indicated. Include nameplate ratings, dimensioned elevations, sections, weights, and manufacturers' technical data on features, performance, electrical characteristics, ratings, accessories, and finishes.
 - 1. Enclosure types and details for types other than NEMA 250, Type 1.
 - 2. Current and voltage ratings.
 - 3. Short-circuit current ratings (interrupting and withstand, as appropriate).
 - 4. Include evidence of a nationally recognized testing laboratory (NRTL) listing for series rating of installed devices.
 - 5. Detail features, characteristics, ratings, and factory settings of individual overcurrent protective devices, accessories, and auxiliary components.
 - 6. Include time-current coordination curves (average melt) for each type and rating of overcurrent protective device; include selectable ranges for each type of overcurrent protective device. Provide in PDF electronic format.

B. Shop Drawings:

1. Include plans, elevations, sections, details, and attachments to other work.
2. Include wiring diagrams for power, signal, and control wiring.

1.5 INFORMATIONAL SUBMITTALS

A. Qualification Data: For qualified testing agency.

B. Seismic Qualification Data: Certificates, for enclosed disconnect switches, accessories, and components, from manufacturer.

1. Basis for Certification: Indicate whether withstand certification is based on actual test of assembled components or on calculation.
2. Dimensioned Outline Drawings of Equipment Unit: Identify center of gravity and locate and describe mounting and anchorage provisions.
3. Detailed description of equipment anchorage devices on which the certification is based and their installation requirements.

C. Field quality-control reports.

1.6 CLOSEOUT SUBMITTALS

A. Operation and Maintenance Data:

1. In addition to items specified in Section 017823 "Operation and Maintenance Data," include the following:
 - a. Manufacturer's written instructions for testing and adjusting enclosed disconnect switches to include in emergency, operation, and maintenance manuals.
 - b. Time-current coordination curves (average melt) for each type and rating of overcurrent protective device; include selectable ranges for each type of overcurrent protective device. Provide in PDF electronic format.

1.7 MAINTENANCE MATERIAL SUBMITTALS

A. Furnish extra materials that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.

1. Refer to Section 262813 "Fuses" for extra materials related to this section

1.8 QUALITY ASSURANCE

A. Testing Agency Qualifications: Accredited by NETA.

1. Testing Agency's Field Supervisor: Currently certified by NETA to supervise on-site testing.

1.9 FIELD CONDITIONS

- A. Environmental Limitations: Rate equipment for continuous operation under the following conditions unless otherwise indicated:
 1. Ambient Temperature: Not less than minus 22 deg F (minus 30 deg C) and not exceeding 104 deg F (40 deg C).
 2. Altitude: Not exceeding 6600 feet (2010 m).

1.10 WARRANTY

- A. Manufacturer's Warranty: Manufacturer and Installer agree to repair or replace components that fail in materials or workmanship within specified warranty period.
 1. Warranty Period: Greater than one (1) year from date of Substantial Completion.
 - a. If the manufacturer's warranty commences upon the date materials are delivered, then the manufacturer's warranty period must be at least two (2) years to meet the requirement stated above.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Seismic Performance: Enclosed switches shall withstand the effects of earthquake motions determined according to ASCE/SEI 7.
 1. The term "withstand" means "the unit will remain in place without separation of any parts from the device when subjected to the seismic forces specified and the unit will be fully operational after the seismic event."

2.2 GENERAL REQUIREMENTS

- A. Source Limitations: Obtain enclosed disconnect switches, overcurrent protective devices, components, and accessories, within same product category, from single manufacturer.
- B. Product Selection for Restricted Space: Drawings indicate maximum dimensions for enclosed disconnect switches, including clearances between enclosures, and adjacent surfaces and other items. Comply with maximum dimensions, if indicated, and required workspace clearances and actual space available at mounting location.

- C. Electrical Components, Devices, and Accessories: Listed and labeled as defined in the CEC, by an NRTL, and marked for intended location and application.
- D. Comply with the CEC.

2.3 MANUFACTURERS

- A. Subject to compliance with requirements, provide products by one of the following manufacturers:
 - 1. Eaton Electrical Inc.; Cutler-Hammer Business Unit.
 - 2. General Electric Company; GE Consumer & Industrial - Electrical Distribution.
 - 3. Siemens Energy & Automation, Inc.
 - 4. Square D; a brand of Schneider Electric.

2.4 FUSIBLE SWITCHES

- A. Type HD, Heavy Duty:
 - 1. Single Throw: UL 98 and NEMA KS 1, horsepower rated, with clips or bolt pads to accommodate indicated fuses. Lockable handle with capability to accept three padlocks and interlocked with cover in closed position.
- B. Voltage Rating, Ampere Rating, and Quantity of Poles: Refer to the Drawings.
- C. Fuse Type, Rating, and Quantities: Refer to the Drawings.
- D. Accessories:
 - 1. Equipment Ground Kit: Internally mounted and labeled for copper and aluminum ground conductors.
 - 2. Neutral Kit: Internally mounted; insulated, capable of being grounded and bonded; labeled for copper and aluminum neutral conductors. Provide for each application in which the feeder contains a grounded conductor (neutral wire).
 - 3. Auxiliary Contact Kit: Two NO/NC (Form "C") auxiliary contact(s), arranged to activate before switch blades open. Contact rating - 120-V ac.
 - 4. Hookstick Handle: Allows use of a hookstick to operate the handle.
 - 5. Lugs: Mechanical type, suitable for number, size, and conductor material.
 - 6. Service-Rated Switches: Labeled for use as service equipment. Provide wherever the disconnect switch serves as an electric service disconnect or wherever indicated on the Drawings.

2.5 NONFUSIBLE SWITCHES

A. Type HD, Heavy Duty:

1. Three Pole, Single Throw: UL 98 and NEMA KS 1, horsepower rated, lockable handle with capability to accept three padlocks and interlocked with cover in closed position.

B. Accessories:

1. Equipment Ground Kit: Internally mounted and labeled for copper and aluminum ground conductors.
2. Neutral Kit: Internally mounted; insulated, capable of being grounded and bonded; labeled for copper and aluminum neutral conductors. Provide for each application in which the feeder contains a grounded conductor (neutral wire).
3. Auxiliary Contact Kit: Two NO/NC (Form "C") auxiliary contact(s), arranged to activate before switch blades open. Contact rating - 120-V ac.
4. Hookstick Handle: Allows use of a hookstick to operate the handle.
5. Lugs: Mechanical type, suitable for number, size, and conductor material.
6. Service-Rated Disconnect Switches: Labeled for use as service equipment. Provide wherever the disconnect switch serves as an electric service disconnect or wherever indicated on the Drawings.

2.6 SHUNT TRIP SWITCHES

- ### A. General Requirements: Comply with ASME A17.1, UL 50, and UL 98, with Class J fuse block and 200-kA interrupting and short-circuit current rating.

- ### A. Type HD, Heavy Duty: Single throw, integral shunt trip mechanism, UL 98 and NEMA KS 1, horsepower rated, with clips or bolt pads to accommodate indicated fuses. Lockable handle with capability to accept three padlocks and interlocked with cover in closed position.

1. Fuse Type, Rating, and Quantities: Refer to the Drawings

- ### B. Voltage Rating, Ampere Rating, and Quantity of Poles: Refer to the Drawings.

- ### C. Control Circuit: 120-V ac; obtained from integral control power transformer, with primary and secondary fuses, with a enough control power capacity to operate shunt trip, pilot, indicating and control devices.

D. Accessories:

1. Oiltight key switch for key-to-test function.
2. Oiltight green ON pilot light.
3. Isolated neutral lug; 100 percent rating.
4. Mechanically interlocked auxiliary contacts that change state when switch is opened and closed.
5. Form C alarm contacts that change state when switch is tripped.

6. Three-pole, double-throw, fire-safety and alarm relay; 120-V ac coil voltage.
7. Three-pole, double-throw, fire-alarm voltage monitoring relay complying with NFPA 72.
8. Neutral Kit: Internally mounted; insulated, capable of being grounded and bonded; labeled for copper and aluminum neutral conductors.
9. Equipment Ground Kit: Internally mounted and labeled for copper and aluminum ground conductors.
10. Class R Fuse Kit: Provides rejection of other fuse types when Class R fuses are specified.
11. Auxiliary Contact Kit: Two NO/NC (Form "C") auxiliary contact(s), arranged to activate before switch blades open. Contact rating - 120-V ac.
12. Hookstick Handle: Allows use of a hookstick to operate the handle.
13. Lugs: Mechanical type, suitable for number, size, and conductor material.
14. Service-Rated Disconnect Switches: Labeled for use as service equipment.

2.7 ENCLOSURES

- A. UL 489, NEMA KS 1, NEMA 250, and UL 50, to comply with environmental conditions at installed location.
- B. Enclosure Environmental Rating Applications:
 1. Indoor, Dry and Clean Locations: NEMA 250, Type 1.
 2. Outdoor Locations: NEMA 250, Type 3R, galvanized steel.
 3. Indoor Locations Subject to Dust, Falling Dirt, and Dripping Noncorrosive Liquids: NEMA 250, Type 5
- C. Enclosure Finish:
 1. Type 1, Steel: The enclosure shall be finished with gray baked enamel paint, electrodeposited on cleaned, phosphatized steel.
 2. Types 1, 3R, 12, Galvanized Steel: The enclosure shall be finished with gray baked enamel paint, electrodeposited on cleaned, phosphatized galvanized steel.
 3. Type 1, 4-4X, Stainless Steel: A brush finish on Type 304 stainless steel.
 4. Types 7, 9: Copper-free cast aluminum alloy.
 5. Types 5, 12: Manufacturer's standard finish.
- D. Conduit Entry: NEMA 250 Types 4, 4X, and 12 enclosures shall contain no knockouts. NEMA 250 Types 7 and 9 enclosures shall be provided with threaded conduit openings in both end-walls.
- E. Operating Mechanism:
 1. NEMA 250 Type 1: The operating handle shall be externally operable with the operating mechanism being an integral part of the box, not the cover.
 2. NEMA 250 Type 3R: The operating handle shall be directly operable through the dead front trim of the enclosure.

3. NEMA 250 Type 4, 4X stainless steel, 12, or 12K shall have a dual cover interlock mechanism to prevent unintentional opening of the enclosure cover when the disconnect is in the closed position (ON) and to prevent closing the circuit (ON) when the enclosure cover is open.
4. NEMA 250 Types 7, 9: The operating handle shall be externally operable with the operating mechanism being an integral part of the cover. Enclosure shall be furnished with a breather and drain kit to allow their use in outdoor and wet location applications.
5. The cover interlock mechanism shall have an externally operated override. The override shall not permanently disable the interlock mechanism, which shall return to the locked position once the override is released. The tool used to override the cover interlock mechanism shall not be required to enter the enclosure in order to override the interlock.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine elements and surfaces to receive enclosed disconnect switches for compliance with installation tolerances and other conditions affecting performance of the Work.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.
 1. Commencement of work shall indicate Installer's acceptance of the areas and conditions as satisfactory.

3.2 INSTALLATION

- A. Coordinate layout and installation of disconnect switches, and components with equipment served and adjacent surfaces. Maintain required workspace clearances and required clearances for equipment access doors and panels.
- B. Install individual wall-mounted disconnect switches with tops at uniform height unless otherwise indicated.
- C. Comply with mounting and anchoring requirements specified in Section 260548.16 "Seismic Controls for Electrical Systems."
- D. Temporary Lifting Provisions: Remove temporary lifting of eyes, channels, and brackets and temporary blocking of moving parts from enclosures and components.
- E. Install fuses in fusible devices.
- F. Comply with the CEC and NECA 1.

3.3 IDENTIFICATION

- A. Comply with requirements in Section 260553 "Identification for Electrical Systems."
 - 1. Identify field-installed conductors, interconnecting wiring, and components; provide warning signs.
 - 2. Label each enclosure with engraved metal or laminated-plastic nameplate.

3.4 FIELD QUALITY CONTROL

- A. Testing Agency: Engage a qualified testing agency to perform tests and inspections.
- B. Manufacturer's Field Service: Engage a factory-authorized service representative to test and inspect components, assemblies, and equipment installations, including connections.
- C. Perform Tests and Inspections:
 - 1. Visual and Mechanical Inspection:
 - a. Inspect physical and mechanical condition.
 - b. Inspect anchorage, alignment, grounding, and clearances.
 - c. Verify that the unit is clean.
 - d. Verify blade alignment, blade penetration, travel stops, and mechanical operation.
 - e. Verify that fuse sizes and types match the Specifications and Drawings.
 - f. Verify that each fuse has adequate mechanical support and contact integrity.
 - g. Inspect bolted electrical connections for high resistance using one of the two following methods:
 - 1) Use a low-resistance ohmmeter.
 - a) Compare bolted connection resistance values to values of similar connections. Investigate values that deviate from those of similar bolted connections by more than 50 percent of the lowest value.
 - 2) Verify tightness of accessible bolted electrical connections by calibrated torque-wrench method in accordance with manufacturer's published data or NETA ATS Table 100.12.
 - a) Bolt-torque levels shall be in accordance with manufacturer's published data. In the absence of manufacturer's published data, use NETA ATS Table 100.12.
 - h. Verify that operation and sequencing of interlocking systems is as described in the Specifications and shown on the Drawings.
 - i. Verify correct phase barrier installation.

- j. Verify lubrication of moving current-carrying parts and moving and sliding surfaces.

2. Electrical Tests:

- a. Perform resistance measurements through bolted connections with a low-resistance ohmmeter. Compare bolted connection resistance values to values of similar connections. Investigate values that deviate from adjacent poles or similar switches by more than 50 percent of the lowest value.
- b. Measure contact resistance across each switchblade fuseholder. Drop values shall not exceed the high level of the manufacturer's published data. If manufacturer's published data are not available, investigate values that deviate from adjacent poles or similar switches by more than 50 percent of the lowest value.
- c. Perform insulation-resistance tests for one minute on each pole, phase-to-phase and phase-to-ground with switch closed, and across each open pole. Apply voltage in accordance with manufacturer's published data. In the absence of manufacturer's published data, use Table 100.1 from the NETA ATS. Investigate values of insulation resistance less than those published in Table 100.1 or as recommended in manufacturer's published data.
- d. Measure fuse resistance. Investigate fuse-resistance values that deviate from each other by more than 15 percent.
- e. Perform ground fault test according to NETA ATS 7.14 "Ground Fault Protection Systems, Low-Voltage."

D. Disconnect switches will be considered defective if they do not pass tests and inspections.

E. Prepare test and inspection reports.

- 1. Test procedures used.
- 2. Include identification of each disconnect switch tested and describe test results.
- 3. List deficiencies detected, remedial action taken, and observations after remedial action.

3.5 ADJUSTING

- A. Adjust moving parts and operable components to function smoothly and lubricate as recommended by manufacturer.

END OF SECTION 262816

SECTION 264313 - SURGE PROTECTIVE DEVICES FOR LOW-VOLTAGE ELECTRICAL POWER CIRCUITS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Type 1 surge protective devices.
2. Type 2 surge protective devices.
3. Enclosures.
4. Conductors and cables.

1.2 DEFINITIONS

- A. I_n : Nominal discharge current.
- B. Maximum Continuous Operating Voltage (MCOV): The maximum designated RMS value of the power frequency voltage that may be continuously applied to the mode of protection of an SPD.
- C. Metal-Oxide Varistor (MOV): An electronic component with a significant bidirectional, nonlinear current-voltage characteristic.
- D. Mode(s), Modes of Protection, or Protection Modes: Electrical paths where the SPD offers defense against transient overvoltages. Examples include: line to neutral (L-N), line to ground (L-G), line to line (L-L), and neutral to ground (N-G).
- E. SCCR: Short-circuit current rating.
- F. Type 1 SPDs: Permanently connected SPDs intended for installation between the secondary of the service transformer and the line side of the service disconnect overcurrent device.
- G. Type 2 SPDs: Permanently connected SPDs intended for installation on the load side of the service disconnect overcurrent device, including SPDs located at the branch panel.
- H. Type 3 SPDs: Point of utilization SPDs.
- I. Type 4 SPDs: Component SPDs, including discrete components, as well as assemblies.

- J. Type 5 SPDs: Discrete component surge suppressors, such as MOVs that may be mounted on a printed wiring board, connected by its leads or provided within an enclosure with mounting means and wiring terminations.
- K. Voltage Protection Rating (VPR): A rating selected from UL 1449 list of preferred values assigned to each mode of protection.

1.3 ACTION SUBMITTALS

A. Product Data:

- 1. For each type of product.
 - a. Include electrical characteristics, specialties, and accessories for SPDs.
 - b. Certification of compliance with UL 1449 by qualified electrical testing laboratory recognized by authorities having jurisdiction including the following information:
 - 1) Tested values for VPRs.
 - 2) I_n ratings.
 - 3) MCOV, type designations.
 - 4) OCPD requirements.
 - 5) Manufacturer's model number.
 - 6) System voltage.
 - 7) Modes of protection.

B. Field quality-control reports.

1.4 INFORMATIONAL SUBMITTALS

- A. Sample Warranty: For manufacturer's special warranty.

1.5 WARRANTY

- A. Special Manufacturer Extended Warranty: Manufacturer warrants that SPDs perform in accordance with specified requirements and agrees to provide repair or replacement of SPDs that fail to perform as specified within extended warranty period.
 - 1. Initial Extended Warranty Period: Five year(s) from date of Substantial Completion, for labor, materials, and equipment.
 - 2. Follow-On Extended Warranty Period: 10 year(s) from date of Substantial Completion, for materials only, f.o.b. the nearest shipping point to Project site.

PART 2 - PRODUCTS

2.1 TYPE 1 SURGE PROTECTIVE DEVICES (SPDs)

- A. Subject to compliance with requirements, provide products by one of the following manufacturers:
 - 1. Eaton Electrical Inc.; Cutler-Hammer Business Unit.
 - 2. General Electric Company; GE Consumer & Industrial - Electrical Distribution.
 - 3. Siemens Energy & Automation, Inc.
 - 4. Square D; a brand of Schneider Electric.
- B. Source Limitations: Obtain devices from single source from single manufacturer.
- C. General Characteristics:
 - 1. Reference Standards: UL 1449, Type 1.
 - 2. MCOV: Not less than 125 percent of nominal system voltage for 208Y/120 V and 120/240 V power systems, and not less than 115 percent of nominal system voltage for 480Y/277 V power systems.
 - 3. Peak Surge Current Rating: Minimum single-pulse surge current withstand rating per phase must not be less than 200 kA. Peak surge current rating must be arithmetic sum of the ratings of individual MOVs in a given mode.
 - 4. Protection modes and UL 1449 VPR for grounded wye circuits with 208Y/120 V, three-phase, four-wire circuits must not exceed the following:
 - a. Line to Neutral: 700 V for 208Y/120 V.
 - b. Line to Line: = 1200 V for 208Y/120 V.
 - c. =
 - 5. SCCR: Not less than 100 kA.
 - 6. I_n Rating: 20 kA.
- D. Options:
 - 1. Include integral disconnect switch.
 - 2. Include internal thermal protection that disconnects the SPD before damaging internal suppressor components.
 - 3. Include indicator light display for protection status.
 - 4. Include audible alarm.
 - 5. Include NEMA ICS 5, dry Form C contacts rated at 2 A and 24 V(ac) for remote monitoring of protection status.
 - 6. Include surge counter.

2.2 TYPE 2 SURGE PROTECTIVE DEVICES (SPDs)

- A. Subject to compliance with requirements, provide products by one of the following manufacturers:
 - 1. Eaton Electrical Inc.; Cutler-Hammer Business Unit.
 - 2. General Electric Company; GE Consumer & Industrial - Electrical Distribution.
 - 3. Siemens Energy & Automation, Inc.
 - 4. Square D; a brand of Schneider Electric.
- B. Source Limitations: Obtain devices from single source from single manufacturer.
- C. General Characteristics:
 - 1. Reference Standards: UL 1449, Type 2; UL 1283.
 - 2. MCOV: Not less than 125 percent of nominal system voltage for 208Y/120 V and 120/240 V power systems, and not less than 115 percent of nominal system voltage for 480Y/277 V power systems.
 - 3. Peak Surge Current Rating: Minimum single-pulse surge current withstand rating per phase must not be less than 100 kA. Peak surge current rating must be arithmetic sum of the ratings of individual MOVs in a given mode.
 - 4. Protection modes and UL 1449 VPR for grounded wye circuits with 208Y/120 V, three-phase, four-wire circuits must not exceed the following:
 - a. Line to Neutral: 700 V for 208Y/120 V.
 - b. Line to Ground: 700 V for 208Y/120 V.
 - c. Neutral to Ground: 700 V for 208Y/120 V.
 - d. Line to Line: 1200 V for 208Y/120 V.
 - 5. Protection modes and UL 1449 VPR for 240/120 V, single-phase, three-wire circuits must not exceed the following:
 - a. Line to Neutral: 700 V.
 - b. Line to Ground: 700 V.
 - c. Neutral to Ground: 700 V.
 - d. Line to Line: 1200 V.
 - 6. SCCR: Equal or exceed 100 kA.
 - 7. I_n Rating: 10 kA.
- D. Options:
 - 1. Include LED indicator lights for power and protection status.
 - 2. Include internal thermal protection that disconnects the SPD before damaging internal suppressor components.
 - 3. Include NEMA ICS 5, dry Form C contacts rated at 2 A and 24 V(ac) for remote monitoring of protection status.
 - 4. Include surge counter.

2.3 TYPE 3, TYPE 4, AND TYPE 5 SURGE PROTECTIVE DEVICES (SPDs)

- A. Type 3, Type 4, and Type 5 SPDs are not approved for field installation. See "Related Requirements" Paragraph in "Summary" Article for products with manufacturer-installed Type 3, Type 4, and Type 5 SPDs.

2.4 ENCLOSURES

- A. Indoor Enclosures: Type 1.
- B. Outdoor Enclosures: Type 3R.

2.5 CONDUCTORS AND CABLES

- A. Power Wiring: Same size as SPD leads, complying with Section 260519 "Low-Voltage Electrical Power Conductors and Cables."

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Provide OCPD and disconnect for installation of SPD in accordance with UL 1449 and manufacturer's instructions.
- B. Install leads between disconnects and SPDs short, straight, twisted, and in accordance with manufacturer's instructions. Comply with wiring methods in Section 260519 "Low-Voltage Electrical Power Conductors and Cables."
 - 1. Do not splice and extend SPD leads unless specifically permitted by manufacturer.
 - 2. Do not exceed manufacturer's recommended lead length.
 - 3. Do not bond neutral and ground.
- C. Use crimped connectors and splices only. Wire nuts are unacceptable.

3.2 FIELD QUALITY CONTROL

- A. Field tests and inspections must be witnessed by Architect, Tenant, and authorities having jurisdiction.
- B. Tests and Inspections:
 - 1. Compare equipment nameplate data for compliance with Drawings and the Specifications.
 - 2. Inspect anchorage, alignment, grounding, and clearances.

3. Verify that electrical wiring installation complies with manufacturer's installation requirements.

C. Nonconforming Work:

1. SPDs that do not pass tests and inspections will be considered defective.
2. Remove and replace defective units and retest.

D. Prepare test and inspection reports.

E. Manufacturer Services:

1. Engage factory-authorized service representative to support field tests and inspections.

3.3 STARTUP SERVICE

- A. Complete startup checks in accordance with manufacturer's instructions.
- B. Do not perform insulation-resistance tests of the distribution wiring equipment with SPDs installed. Disconnect SPDs before conducting insulation-resistance tests; reconnect them immediately after the testing is over.
- C. Energize SPDs after power system has been energized, stabilized, and tested.

END OF SECTION 264313

SECTION 265119 - LED INTERIOR LIGHTING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section includes the following types of LED luminaires:
 - 1. Cylinder.
 - 2. Downlight.
 - 3. Recessed, linear.
 - 4. Strip light.
 - 5. Surface mount, linear.
 - 6. Surface mount, nonlinear.
 - 7. Suspended, linear.
 - 8. Suspended, nonlinear.
 - 9. Luminaire accessories
 - 10. Light engines
 - 11. Drivers and lighting power supplies
 - 12. Supports for luminaires
- B. Related Requirements:
 - 1. Section 260923 "Lighting Control Devices" for automatic control of lighting, including time switches, photoelectric relays, occupancy sensors, and multipole lighting relays and contactors.

1.3 DEFINITIONS

- A. CCT: Correlated color temperature.
- B. CRI: Color Rendering Index.
- C. Fixture: See "Luminaire."
- D. IP: International Protection or Ingress Protection Rating.
- E. LED: Light-emitting diode.

- F. Lumen: Measured output of lamp and luminaire, or both.
- G. Luminaire: Complete lighting unit, including lamp, reflector, and housing.

1.4 ACTION SUBMITTALS

- A. Product Data: For each type of product.
 - 1. Arrange in order of luminaire designation.
 - 2. Include data on features, accessories, and finishes.
 - 3. Include physical description and dimensions of luminaires.
 - 4. Include emergency lighting units, including batteries and chargers.
 - 5. Include life, output (lumens, CCT, and CRI), and energy-efficiency data.
 - 6. Photometric data and adjustment factors based on laboratory tests, complying with IES "Lighting Measurements Testing and Calculation Guides" for each luminaire type. The adjustment factors shall be for lamps and accessories identical to those indicated for the luminaire as applied in this Project IES LM-79.
 - a. Manufacturers' Certified Data: Photometric data certified by manufacturer's laboratory with a current accreditation under the National Voluntary Laboratory Accreditation Program for Energy Efficient Lighting Products.
 - b. Testing Agency Certified Data: For indicated luminaires, photometric data certified by a qualified independent testing agency. Photometric data for remaining luminaires shall be certified by manufacturer.
- B. Shop Drawings: For nonstandard or custom luminaires.
 - 1. Include plans, elevations, sections, and mounting and attachment details.
 - 2. Include details of luminaire assemblies. Indicate dimensions, weights, loads, required clearances, method of field assembly, components, and location and size of each field connection.
 - 3. Include diagrams for power, signal, and control wiring.
- C. Shop Drawings: Linear perimeter wall wash and wall graze luminaires.
 - 1. All continuous perimeter linear luminaire shall run wall-to-wall and provide with mitered corners. Submittal shall include exact run length plan drawings for all locations based on field verified dimensions.
- D. Sustainable Design Submittals:
 - 1. Product Data: Indicating luminaire is certified by ENERGY STAR and Design Lights Consortium.
- E. Product Schedule: For luminaires and lamps. Use same designations indicated on Drawings.

- F. Qualification Data: For professional engineer. Samples: For each luminaire and for each color and texture with standard factory-applied finish.
- G. Samples for Initial Selection: For each type of luminaire with custom factory-applied finishes.
 - 1. Include Samples of luminaires and accessories involving color and finish selection.
- H. Samples for Verification: For each type of luminaire.
 - 1. Include Samples of luminaires and accessories to verify finish selection.
- I. Product Schedule: For luminaires and lamps. Use same designations indicated on Drawings.

1.5 INFORMATIONAL SUBMITTALS

- A. Coordination Drawings: Reflected ceiling plan(s) and other details, drawn to scale, on which the following items are shown and coordinated with each other, using input from installers of the items involved:
 - 1. Luminaires.
 - 2. Suspended ceiling components.
 - 3. Partitions and millwork that penetrate the ceiling or extend to within 12 inches of the plane of the luminaires.
 - 4. Structural members to which equipment and or luminaires will be attached.
 - 5. Initial access modules for acoustical tile, including size and locations.
 - 6. Items penetrating finished ceiling, including the following:
 - a. Other luminaires.
 - b. Air outlets and inlets.
 - c. Speakers.
 - d. Sprinklers.
 - e. Access panels.
 - f. Ceiling-mounted projectors.
 - 7. Moldings.
- B. Qualification Data: For testing laboratory providing photometric data for luminaires.
- C. Seismic Qualification Data: For luminaires, accessories, and components, from manufacturer.
 - 1. Basis for Certification: Indicate whether withstand certification is based on actual test of assembled components or on calculation.
 - 2. Dimensioned Outline Drawings of Equipment Unit: Identify center of gravity and locate and describe mounting and anchorage provisions.

3. Detailed description of equipment anchorage devices on which the certification is based and their installation requirements.

- D. Product Certificates: For each type of luminaire.
- E. Product Test Reports: For each type of luminaire, for tests performed by a qualified testing agency.
- F. Sample warranty.

1.6 CLOSEOUT SUBMITTALS

- A. Operation and Maintenance Data: For luminaires and lighting systems to include in operation and maintenance manuals.
 1. Provide a list of all lamp types used on Project; use ANSI and manufacturers' codes.

1.7 MAINTENANCE MATERIAL SUBMITTALS

- A. Furnish extra materials that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
 1. Lamps: Ten for every 100 of each type and rating installed. Furnish at least one of each type.
 2. Replaceable LED modules: 1 for each 20 [5%] of each type. Furnish at least 5 of each type.
 3. Drivers: 1 for each 10 [10%] of each type. Furnish at least 5 of each type.
 4. Diffusers/Lenses/Louvers: One for every 100 of each type and rating installed. Furnish at least one of each type.
 5. Globes and Guards: One for every 20 of each type and rating installed. Furnish at least one of each type.

1.8 QUALITY ASSURANCE

- A. Luminaire Photometric Data Testing Laboratory Qualifications: Provided by an independent agency, with the experience and capability to conduct the testing indicated, that is an NRTL as defined by OSHA in 29 CFR 1910.7, accredited under the NVLAP for Energy Efficient Lighting Products, and complying with the applicable IES testing standards.
- B. Provide luminaires from a single manufacturer for each luminaire type.
- C. Each luminaire type shall be binned within a three-step MacAdam Ellipse to ensure color consistency among luminaires.

- D. All lighting fixtures shall be manufactured, furnished, and installed in compliance with all government agencies having jurisdiction. All fixtures shall bear the appropriate UL (or ETL) and IBEW identifications.
- E. Manufacturers and model # listed on the Lighting Fixture Schedule as the Basis of Design are the approved lighting fixture for each luminaire type. Those manufacturers shall be assumed capable of supplying the listed fixtures unless clearly written exceptions are set forth in their quotations. Any such exceptions shall immediately be brought to the attention of the Architect/Engineer and the Lighting Designer.

Manufacturers listed as approved equal are permitted to submit alternate products meeting the specification and the performance criteria as scheduled. Specifier shall have the final decision on suitability of any submittal item for this Project. Manufacturers listed as approved equal must submit with the following for review:

- 1. 3D photometric calculations for all spaces in the project with the proposed alternate product along with 3D photometric calculations with the Basis of Design products for comparison.
 - 2. Submit (1) each working sample of the proposed alternate product and the Basis of Design product for review by the Lighting Designer. Minimum 4'-0" long required for linear fixtures. Submit control equipment for the sample fixtures if requested by the specifier. The samples must be supplied and shall be submitted with 120volt driver complete with cord and plug set and ready for hanging, energizing and examining. The sample shall be shipped (prepaid) by Contractor to the Lighting Designer or as otherwise specified or directed
- F. Mockups: For interior luminaires in room or module mockups, complete with power and control connections.
- 1. Obtain Architect's approval of luminaires in mockups before starting installations.
 - 2. Maintain mockups during construction in an undisturbed condition as a standard for judging the completed Work.
 - 3. Approval of mockups does not constitute approval of deviations from the Contract Documents contained in mockups unless Architect specifically approves such deviations in writing.
 - 4. Subject to compliance with requirements, approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.
 - 5. The specific design requirements of several conditions will mandate the necessity of full-scale mockups prior to final authorization (release) to fabricate. The Contractor shall include as part of his bid provision for complete mockups including luminaire supports of the following conditions including control system. All mockup fixtures shall be installed as indicated on drawings / schedule and energized for review.

1.9 DELIVERY, STORAGE, AND HANDLING

- A. Protect finishes of exposed surfaces by applying a strippable, temporary protective covering before shipping.

1.10 WARRANTY

- A. Warranty: Manufacturer and Installer agree to repair or replace components of luminaires that fail in materials or workmanship within specified warranty period.
- B. Warranty Period: Five year(s) minimum from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Structural Performance of Supports for Luminaires: Supports for luminaires shall withstand the effects of gravity loads and stresses within limits and under conditions indicated.
 - 1. Luminaire-mounting supports shall be capable of supporting a horizontal force of 100 percent of luminaire weight and a vertical force of 400 percent of luminaire weight.
- B. Seismic Performance: Luminaires shall withstand the effects of earthquake motions determined according to ASCE/SEI 7.
- C. Seismic Performance: Luminaires and lamps shall be labeled vibration and shock resistant.
 - 1. The term "withstand" means "the luminaire will remain in place without separation of any parts when subjected to the seismic forces specified and the luminaire will be fully operational during and after the seismic event."
- D. Ambient Temperature: 41 to 104 deg F.
 - 1. Relative Humidity: Zero to 95 percent.
- E. Altitude: Sea level to 1000 feet.

2.2 LUMINAIRE REQUIREMENTS

- A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in the CEC, by a qualified testing agency, and marked for intended location and application.
- B. Factory-Applied Labels: Comply with UL 1598. Include recommended lamps. Locate labels where they will be readily visible to service personnel, but not seen from normal viewing angles when lamps are in place.
 - 1. Label shall include the following lamp characteristics:
 - a. "USE ONLY" and include specific lamp type.
 - b. Lamp diameter, shape, size, wattage, and coating.

c. CCT and CRI.

- C. Recessed luminaires shall comply with NEMA LE 4.
- D. NRTL Compliance: Luminaires for hazardous locations shall be listed and labeled for indicated class and division of hazard by an NRTL.
- E. FM Global Compliance: Luminaires for hazardous locations shall be listed and labeled for indicated class and division of hazard by FM Global.
- F. California Title 24 compliant.
- G. LED and drivers
 - 1. Light emitting diodes used for interior applications shall have CRI as scheduled, with a minimum CRI of 80 if not identified. CRI of LEDs shall also have a CQS value matching the CRI, following the NIST color quality scale. CCT shall be as scheduled.
 - 2. LED luminaires shall have integral light engine, heat sink, driver, and optic package. Minimum LM-80 depreciation to L70 at 50,000 hours under installed conditions. Minimum CRI of 85 with less than 50K CCT shift over mean life, binning to 2-step McAdams ellipse.
 - 3. LED light engines shall be thermally fixed to heat sinks sized to appropriately dissipate gate heat under design load in the installed conditions. Lumen maintenance calculations shall be based upon the average ambient temperature at the luminaire housing or cavity area. All interior LED luminaires shall be designed to meet an L70 mean life of at least 50,000 hours with scheduled drive currents.
 - 4. LED drivers
 - a. Drivers shall be solid state with integral heat sink. Driver shall have overload and short circuit protection, with a power factor of 0.9 to 1.0 and maximum THD of 20%.
 - b. Remote drivers shall be enclosed in NEMA enclosures.
 - c. Drivers shall be dimmable as scheduled.
 - d. Drivers shall have minimum mean life of 50,000 hours, with unlimited switching.
 - 5. LED dimming and color control:
 - a. Verify that all scheduled LED luminaire drivers are compatible with the means of control indicated, either DMX-512, 0-10VDC, or low voltage dimmer.
 - b. Compatibility: Certified by manufacturer for use with individually specified luminaire and individually specified power supplies and/or drivers.
- H. Luminaire Accessories
 - 1. Extra lenses, louvers, snoots, and other scheduled accessories shall be installed as directed by Specifier during system aiming and commissioning. All unused accessories shall be turned over to Owner after commissioning for attic stock.

2.3 MATERIALS

A. Metal Parts:

1. Free of burrs and sharp corners and edges.
2. Sheet metal components shall be steel unless otherwise indicated.
3. Form and support to prevent warping and sagging.

B. Steel:

1. ASTM A36/A36M for carbon structural steel.
2. ASTM A568/A568M for sheet steel.

C. Stainless Steel:

1. 1. Manufacturer's standard grade.
2. 2. Manufacturer's standard type, ASTM A240/240M.

D. Galvanized Steel: ASTM A653/A653M.

E. Aluminum: ASTM B209.

2.4 FINISHES

- A. Painted surfaces shall be synthetic enamel with acrylic, alkyd, epoxy, polyester or polyurethane base, light stabilized, baked on at 350 degrees Fahrenheit minimum, catalytically or photochemically polymerized after application.
- B. White finishes minimum 90% reflectance (semi-gloss).
- C. Selection: Unless otherwise indicated, all external fixture finishes shall be as selected by the Architect/Engineer. Unless otherwise indicated, all fixture finishes shall be semi-gloss polyester powder coat enamel (color to be selected by Architect).
- D. Undercoat: Except for stainless steel all ferrous metal surfaces shall be given a five stage phosphate treatment or other acceptable base bonding treatment before final painting and after fabrication.
- E. Unpainted non-reflecting surfaces shall be satin finished and coated with a baked-on clear lacquer to preserve the finish. Where aluminum surfaces are treated with an anodic process, the clear lacquer coating may be omitted.
- F. Unpainted aluminum surfaces: Finish interior aluminum trims with an anodized coating of not less than 7 mg. per square inch, of a color and surface finish as selected by the Architect/Engineer. Finish exterior aluminum and aluminum trims with an anodized coating of not less than 35 mg. per square inch of a color and surface finish as selected by the Architect/Engineer.

- G. Metal finishes: Provide finishes of the color and type indicated and having the following properties:
 - 1. Protection of metal from corrosion: 5-year warranty against perforation or erosion of the finish from weathering.
 - 2. Color retention: 5-year warranty against fading, staining, or chalking from weathering including solar radiation.
 - 3. Variations in finishes are unacceptable in the same piece. Variations in finishes of adjoining components are acceptable if they are within the range of approved Samples and if they can be and are assembled or installed to minimize contrast.
- H. In situations where lighting fixture trims are painted to match the ceiling, the fixture trims being painted must be removed from the fixture housing and painted away from the ceiling. Reseat back into housing only after paint is completely dry. Do not paint in place. Damage to the ceiling caused by painting trims in place to be fixed by the Contractor at Contractor's expense.

2.5 LUMINAIRE SUPPORT

- A. Comply with requirements in Section 260529 "Hangers and Supports for Electrical Systems" for channel and angle iron supports and nonmetallic channel and angle supports.
- B. Single-Stem Hangers: 1/2-inch steel tubing with swivel ball fittings and ceiling canopy. Finish same as luminaire.
- C. Wires: ASTM A641/A641M, Class 3, soft temper, zinc-coated steel, 12 gauge.
- D. Rod Hangers: 3/16-inch minimum diameter, cadmium-plated, threaded steel rod.
- E. Hook Hangers: Integrated assembly matched to luminaire, line voltage, and equipment with threaded attachment, cord, and locking-type plug.

2.6 MISCELLANEOUS

- A. Where (or if) indicated all remote step-down transformers and ballasts shall be properly wired to fixtures to ensure that voltage drop does not exceed 5%, regardless of transformer's or ballast's location.
- B. All remote step-down transformers and drivers shall be mounted in approved NEMA type enclosures and only located in areas previously deemed to be readily accessible by the Owner's maintenance personnel.
- C. All fixture lengths whether straight or curvilinear shall be fabricated based upon the fixture manufacturer's or contractor's field verified dimensions only.
- D. Fixture manufacturer shall coordinate conduit entry locations with installing contractor.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.
- B. Examine roughing-in for luminaire to verify actual locations of luminaire and electrical connections before luminaire installation.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 TEMPORARY LIGHTING

- A. If approved by the Architect, use selected permanent luminaires for temporary lighting. When construction is sufficiently complete, clean luminaires used for temporary lighting and install new lamps.

3.3 INSTALLATION

- A. Comply with NECA 1.
- B. Install luminaires level, plumb, and square with ceilings and walls unless otherwise indicated.
- C. Install lamps in each luminaire.
- D. Supports:
 - 1. Sized and rated for luminaire weight.
 - 2. Able to maintain luminaire position after cleaning and relamping.
 - 3. Provide support for luminaire without causing deflection of ceiling or wall.
 - 4. Luminaire-mounting devices shall be capable of supporting a horizontal force of 100 percent of luminaire weight and a vertical force of 400 percent of luminaire weight.
- E. Flush-Mounted Luminaires:
 - 1. Secured to outlet box.
 - 2. Attached to ceiling structural members at four points equally spaced around circumference of luminaire.
 - 3. Trim ring flush with finished surface.
- F. Wall-Mounted Luminaires:

1. Attached to a minimum 20 gauge backing plate attached to structural members in walls.
2. Do not attach luminaires directly to gypsum board.

G. Suspended Luminaires:

1. Ceiling Mount:
 - a. Pendant mount with 5/32-inch- diameter aircraft cable supports 10 feet in length.
 - b. Hook mount.
2. Pendants and Rods: Where longer than 48 inches, brace to limit swinging.
3. Stem-Mounted, Single-Unit Luminaires: Suspend with twin-stem hangers. Support with approved outlet box and accessories that hold stem and provide damping of luminaire oscillations. Support outlet box vertically to building structure using approved devices.
4. Continuous Rows of Luminaires: Use tubing or stem for wiring at one point and tubing or rod for suspension for each unit length of luminaire chassis, including one at each end.
5. Do not use ceiling grid as support for pendant luminaires. Connect support wires or rods to building structure.

H. Ceiling-Grid-Mounted Luminaires:

1. Secure to any required outlet box.
2. Secure luminaire to the luminaire opening using approved fasteners in a minimum of four locations, spaced near corners of luminaire.
3. Use approved devices and support components to connect luminaire to ceiling grid and building structure in a minimum of four locations, spaced near corners of luminaire.

- I. Comply with requirements in Section 260519 "Low-Voltage Electrical Power Conductors and Cables" for wiring connections.

3.4 IDENTIFICATION

- A. Identify system components, wiring, cabling, and terminals. Comply with requirements for identification specified in Section 260553 "Identification for Electrical Systems."

3.5 FIELD QUALITY CONTROL

- A. Perform the following tests and inspections:
 1. Operational Test: After installing luminaires, switches, and accessories, and after electrical circuitry has been energized, test units to confirm proper operation.

2. Test for Emergency Lighting: Interrupt power supply to demonstrate proper operation. Verify transfer from normal power to battery power and retransfer to normal.

- B. Luminaire will be considered defective if it does not pass operation tests and inspections.
- C. Prepare test and inspection reports.

3.6 STARTUP SERVICE

- A. Comply with requirements for startup specified in Section 260923 "Lighting Control Devices"
- B. Illumination Levels and Scene Adjustments: After the entire installation is complete, including but not limited to installation of finishes, furniture, and/or artwork, provide on-site assistance in adjusting system light illumination levels and scenes. Provide up to two (2) 8-hour day visits to Project during other-than-normal occupancy hours for this purpose. Contractor to coordinate with Owner for potential end-user training.

3.7 AIMING

- A. All adjustable lighting units shall be aimed, focused, locked, etc., by the Contractor under the supervision of the Lighting Designer. The Lighting Designer shall indicate the number of crews (foreman and apprentice) required. All aiming and adjusting shall be carried out after the entire installation is complete. All ladders, scaffolds, lift equipment, safety belts, flashlights, walkie talkie equipment, etc. required shall be furnished by the Contractor at the direction of the Lighting Designer. As aiming and adjusting is completed, locking set screws and bolts and nuts shall be tightened securely.
- B. Night work: Where possible, units shall be focused during the normal working day. However, where daylight interferes with seeing, aiming shall be accomplished at night.

3.8 ADJUSTING

- A. Occupancy Adjustments: When requested within 12 months of date of Substantial Completion, provide on-site assistance in adjusting the direction of aim of luminaires to suit occupied conditions. Make up to two visits to Project during other-than-normal hours for this purpose. Some of this work may be required during hours of darkness.
 1. During adjustment visits, inspect all luminaires. Replace lamps or luminaires that are defective.
 2. Parts and supplies shall be manufacturer's authorized replacement parts and supplies.
 3. Adjust the aim of luminaires in the presence of the Architect.

END OF SECTION 265119

SECTION 265213 - EMERGENCY AND EXIT LIGHTING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section Includes:
 - 1. Emergency lighting units.
 - 2. Exit signs.
 - 3. Luminaire supports.

1.3 DEFINITIONS

- A. CCT: Correlated color temperature.
- B. CRI: Color Rendering Index.
- C. Emergency Lighting Unit: A lighting unit with internal or external emergency battery powered supply and the means for controlling and charging the battery and unit operation.
- D. Fixture: See "Luminaire" Paragraph.
- E. Lumen: Measured output of lamp and luminaire, or both.
- F. Luminaire: Complete lighting unit, including lamp, reflector, and housing.

1.4 ACTION SUBMITTALS

- A. Product Data: For each type of emergency lighting unit, exit sign, and emergency lighting support.
 - 1. Include data on features, accessories, and finishes.
 - 2. Include physical description of the unit and dimensions.
 - 3. Include life, output of luminaire (lumens, CCT, and CRI), and energy-efficiency data.

4. Include photometric data and adjustment factors based on laboratory tests, complying with IES LM-45, for each luminaire type.
 - a. Testing Agency Certified Data: For indicated luminaires and signs, photometric data certified by a qualified independent testing agency. Photometric data for remaining luminaires and signs shall be certified by manufacturer.
 - b. Manufacturers' Certified Data: Photometric data certified by manufacturer's laboratory with a current accreditation under the National Voluntary Laboratory Accreditation Program for Energy Efficient Lighting Products.
- B. Shop Drawings: For nonstandard or custom luminaires.
 1. Include plans, elevations, sections, and mounting and attachment details.
 2. Include details of equipment assemblies. Indicate dimensions, weights, loads, required clearances, method of field assembly, components, and location and size of each field connection.
 3. Include diagrams for power, signal, and control wiring.
- C. Samples: For each product and for each color and texture specified.
- D. Samples for Initial Selection: For each type of luminaire with factory-applied finishes.
- E. Samples for Verification: For each type of luminaire.
 1. Include Samples of luminaires and accessories to verify finish selection.
- F. Product Schedule:
 1. For emergency lighting units. Use same designations indicated on Drawings.
 2. For exit signs. Use same designations indicated on Drawings.

1.5 INFORMATIONAL SUBMITTALS

- A. Coordination Drawings: Reflected ceiling plan(s) and other details, drawn to scale, on which the following items are shown and coordinated with each other, using input from installers of the items involved:
 1. Luminaires.
 2. Suspended ceiling components.
 3. Partitions and millwork that penetrate the ceiling or extend to within 12 inches (300 mm) of the plane of the luminaires.
 4. Structural members to which equipment will be attached.
 5. Size and location of initial access modules for acoustical tile.
 6. Items penetrating finished ceiling including the following:
 - a. Other luminaires.
 - b. Air outlets and inlets.

- c. Speakers.
- d. Ceiling-mounted projectors.
- e. Sprinklers.
- f. Access panels.

7. Moldings.

- B. Qualification Data: For testing laboratory providing photometric data for luminaires.
- C. Product Certificates: For each type of luminaire.
- D. Seismic Qualification Data: For luminaires, accessories, and components, from manufacturer.
 - 1. Basis for Certification: Indicate whether withstand certification is based on actual test of assembled components or on calculation.
 - 2. Dimensioned Outline Drawings of Equipment Unit: Identify center of gravity and locate and describe mounting and anchorage provisions.
 - 3. Detailed description of equipment anchorage devices on which the certification is based and their installation requirements.
 - 4. Provide seismic qualification certificate for each piece of equipment.
- E. Product Test Reports: For each luminaire for tests performed by manufacturer and witnessed by a qualified testing agency.
- F. Sample Warranty: For manufacturer's warranty.

1.6 CLOSEOUT SUBMITTALS

- A. Operation and Maintenance Data: For luminaires and lighting systems to include in emergency, operation, and maintenance manuals.
 - 1. Provide a list of all lamp types used on Project; use ANSI and manufacturers' codes.

1.7 MAINTENANCE MATERIAL SUBMITTALS

- A. Furnish extra materials that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
 - 1. Lamps: 10 for every 100 of each type and rating installed. Furnish at least one of each type.
 - 2. Diffusers and Lenses: One for every 100 of each type and rating installed. Furnish at least one of each type.
 - 3. Globes and Guards: One for every 20 of each type and rating installed. Furnish at least one of each type.

1.8 QUALITY ASSURANCE

- A. Luminaire Photometric Data Testing Laboratory Qualifications: Luminaire manufacturer's laboratory that is accredited under the National Volunteer Laboratory Accreditation Program for Energy Efficient Lighting Products.
- B. Luminaire Photometric Data Testing Laboratory Qualifications: Provided by an independent agency, with the experience and capability to conduct the testing indicated, that is an NRTL as defined by OSHA in 29 CFR 1910.7, accredited under the National Volunteer Laboratory Accreditation Program for Energy Efficient Lighting Products, and complying with the applicable IES testing standards.
- C. FM Global Compliance: Luminaires for hazardous locations shall be listed and labeled for indicated class and division of hazard by FM Global.
- D. Mockups: For interior luminaires in room or module mockups, complete with power and control connections.
 - 1. Obtain Architect's approval of luminaires and signs in mockups before starting installations.
 - 2. Maintain mockups during construction in an undisturbed condition as a standard for judging the completed Work.
 - 3. Approval of mockups does not constitute approval of deviations from the Contract Documents contained in mockups unless Architect specifically approves such deviations in writing.
 - 4. Subject to compliance with requirements, approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

1.9 DELIVERY, STORAGE, AND HANDLING

- A. Protect finishes of exposed surfaces by applying a strippable, temporary protective covering before shipping.

1.10 WARRANTY

- A. Warranty: Manufacturer and Installer agree to repair or replace components of luminaires that fail in materials or workmanship within specified warranty period.
 - 1. Warranty Period: Two year(s) from date of Substantial Completion.
- B. Special Warranty for Emergency Lighting Batteries: Manufacturer's standard form in which manufacturer of battery-powered emergency lighting unit agrees to repair or replace components of rechargeable batteries that fail in materials or workmanship within specified warranty period.
 - 1. Warranty Period for Emergency Power Unit Batteries: Five years from date of Substantial Completion. Full warranty shall apply for the entire warranty period.

2. Warranty Period for Self-Powered Exit Sign Batteries: Five years from date of Substantial Completion. Full warranty shall apply for the entire warranty period.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Seismic Performance: Luminaires shall withstand the effects of earthquake motions determined according to ASCE/SEI 7. Luminaires and lamps shall be labeled vibration and shock resistant.
 1. The term "withstand" means "the luminaire will remain in place without separation of any parts when subjected to the seismic forces specified and the luminaire will be fully operational during and after the seismic event."

2.2 GENERAL REQUIREMENTS FOR EMERGENCY LIGHTING

- A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in the CEC, by a qualified testing agency, and marked for intended location and application.
- B. NRTL Compliance: Fabricate and label emergency lighting units, exit signs, and batteries to comply with UL 924.
- C. Comply with the CEC and NFPA 101.
- D. Comply with NEMA LE 4 for recessed luminaires.
- E. Lamp Base: Comply with ANSI C81.61.
- F. Bulb Shape: Complying with ANSI C79.1.

2.3 EMERGENCY LIGHTING

- A. General Requirements for Emergency Lighting Units: Self-contained units.
- B. Emergency Luminaires:
 1. Manufacturers to be defined on light fixture schedule on drawing set and in Section 265119
 2. Additional features:
 - a. Operating at nominal voltage of 277 V ac Coordinate requirements below with "Emergency Power Units" Article.
 - b. Operating on externally supply power from an inverter.
 - c. Rated for installation in damp locations, and for sealed and gasketed luminaires in wet locations.

- d. UL 94 V-0 flame rating.

2.4 EXIT SIGNS

- A. General Requirements for Exit Signs: Comply with UL 924; for sign colors, visibility, luminance, and lettering size, comply with authorities having jurisdiction.
- B. Internally Lighted Signs:
 - 1. Manufacturers to be defined on light fixture schedule on drawing set
 - 2. Operating at nominal voltage of 277 V ac.
 - 3. Lamps for AC Operation: LEDs; 50,000 hours minimum rated lamp life.
 - a. Operating on externally supply power from an inverter.
- C. Self-Luminous Signs: Not allowed.

2.5 MATERIALS

- A. Metal Parts:
 - 1. Free of burrs and sharp corners and edges.
 - 2. Sheet metal components shall be steel unless otherwise indicated.
 - 3. Form and support to prevent warping and sagging.
- B. Doors, Frames, and Other Internal Access:
 - 1. Smooth operating, free of light leakage under operating conditions.
 - 2. Designed to permit relamping without use of tools.
 - 3. Designed to prevent doors, frames, lenses, diffusers, and other components from falling accidentally during relamping and when secured in operating position.
- C. Diffusers and Globes:
 - 1. Prismatic acrylic.
 - 2. Glass: Annealed crystal glass unless otherwise indicated.
 - 3. Acrylic: 100 percent virgin acrylic plastic, with high resistance to yellowing and other changes due to aging, exposure to heat, and UV radiation.
 - 4. Lens Thickness: At least 0.125 inch (3.175 mm) minimum unless otherwise indicated.
- D. Housings:
 - 1. Extruded aluminum housing and heat sink.
 - 2. Clear painted finish.
- E. Conduit: Electrical metallic tubing, minimum 3/4 inch (21 mm) in diameter.

2.6 METAL FINISHES

- A. Appearance of Finished Work: Noticeable variations in same piece are not acceptable. Variations in appearance of adjoining components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.

2.7 LUMINAIRE SUPPORT COMPONENTS

- A. Comply with requirements in Section 260529 "Hangers and Supports for Electrical Systems" for channel and angle iron supports and nonmetallic channel and angle supports.
- B. Support Wires: ASTM A641/A641M, Class 3, soft temper, zinc-coated steel, 12 gage (2.68 mm).

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for conditions affecting performance of luminaires.
- B. Examine roughing-in for luminaire to verify actual locations of luminaire and electrical connections before luminaire installation.
- C. Examine walls, floors, roofs, and ceilings for suitable conditions where emergency lighting luminaires will be installed.
- D. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

- A. Comply with NECA 1.
- B. Install luminaires level, plumb, and square with ceilings and walls unless otherwise indicated.
- C. Install lamps in each luminaire.
- D. Supports:
 - 1. Sized and rated for luminaire and emergency power unit weight.
 - 2. Able to maintain luminaire position when testing emergency power unit.
 - 3. Provide support for luminaire and emergency power unit without causing deflection of ceiling or wall.

4. Luminaire-mounting devices shall be capable of supporting a horizontal force of 100 percent of luminaire and emergency power unit weight and vertical force of 400 percent of luminaire weight.

E. Wall-Mounted Luminaire Support:

1. Attached to structural members in walls.
2. Do not attach luminaires directly to gypsum board.

F. Suspended Luminaire Support:

1. Pendants and Rods: Where longer than 48 inches (1200 mm), brace to limit swinging.
2. Stem-Mounted, Single-Unit Luminaires: Suspend with twin-stem hangers. Support with approved outlet box and accessories that hold stem and provide damping of luminaire oscillations. Support outlet box vertically to building structure using approved devices.
3. Continuous Rows of Luminaires: Use tubing or stem for wiring at one point and wire support for suspension for each unit length of luminaire chassis, including one at each end.
4. Do not use ceiling grid as support for pendant luminaires. Connect support wires or rods to building structure.

G. Ceiling Grid Mounted Luminaires:

1. Secure to any required outlet box.
2. Secure emergency power unit using approved fasteners in a minimum of four locations, spaced near corners of emergency power unit.
3. Use approved devices and support components to connect luminaire to ceiling grid and building structure in a minimum of four locations, spaced near corners of luminaire.

3.3 IDENTIFICATION

- A. Identify system components, wiring, cabling, and terminals. Comply with requirements for identification specified in Section 260553 "Identification for Electrical Systems."

3.4 FIELD QUALITY CONTROL

- A. Perform the following tests and inspections:

1. Test for Emergency Lighting: Interrupt power supply to demonstrate proper operation. Verify transfer from normal power to battery power and retransfer to normal.

- B. Luminaire will be considered defective if it does not pass operation tests and inspections.

- C. Prepare test and inspection reports.

3.5 ADJUSTING

- A. Adjustments: Within 12 months of date of Substantial Completion, provide on-site visit to do the following:
 - 1. Inspect all luminaires. Replace lamps, emergency power units, batteries, signs, or luminaires that are defective.
 - a. Parts and supplies shall be manufacturer's authorized replacement parts and supplies.
 - 2. Conduct short-duration tests on all emergency lighting.

END OF SECTION 265213

SECTION 311000 - SITE CLEARING

PART 1- GENERAL

1.1 DESCRIPTION

- A. Furnish labor, material and equipment required for the removal of surface debris, removal of trees, shrubs and other plant life, where indicated on the Drawings; remove temporary structures, miscellaneous debris in and around structures to be demolished; remove appurtenances and abandoned utilities; remove brush, trash, salvage and debris resulting from clearing; remove paved asphalt concrete areas. Include stripping and stockpiling of topsoil, and dust control.

1.2 QUALITY ASSURANCE

- A. Requirements of Regulatory Agencies: Perform Work, including disposal of debris, in accordance with rules and regulations of State and local agencies having jurisdiction. Comply with Section 01 41 00 and 01 41 01.

1.3 SUBMITTALS

- A. Conform to the requirements of Section 011330 for submittal procedures.
- B. Product Data: Provide data for Products specified.
- C. Manufacturer's Installation Instructions: Indicate special procedures required to install Products specified.
- D. Manufacturer's Certificate: Certify that products meet or exceed specified requirements.
- E. Project Record Documents: Record actual locations of pipe mains, valves, connections, and invert elevations. Identify and describe unexpected variations to subsoil conditions or discovery of uncharted utilities.

1.4 SURROUNDING SITE CONDITION SURVEY

- A. Prior to commencing the Work, Contractor, and District's Representative shall tour the Project site together to examine and record damage to existing adjacent buildings, streets, sidewalks, and all other improvements. This record shall serve as a basis for determination of subsequent damage due to Contractor's operations and shall be signed by all parties making the tour. Any cracks, sags, or damage to the adjacent buildings and improvements not noted in the original survey, but subsequently discovered, shall be reported to the District's Representative.

1.5 PROTECTION OF EXISTING STRUCTURES AND UTILITIES

- A. The Drawings show existing above and below grade structures, drainage lines, storm drains, sewers, water, gas, electrical, hot water, steam, condensate and other utilities that are known to the District in their approximate location. The Contractor shall exercise care in avoiding damage to these facilities. The Contractor will be held responsible for the repair if damaged. The District or District's Representative does not guarantee that all utilities or obstructions are shown or that the locations indicated are accurate.
- B. Locate and surface mark (various colors specified by USA) all known existing underground structures and utilities before proceeding with construction operations that may damage them. Stake and flag utility valve boxes and other surface structures. Prior to commencing excavation and trenching, coordinate with Underground Service Alert (USA North/1-800-227-2600 or 811) for field verification and marking of utilities within limits of Project site. Provide USA notification permit number to District's Representative prior to starting site Work. Existing underground structures and utilities shall be kept in service unless approval to interrupt or shutdown service is obtained from District's Representative. If damaged, the utility shall be repaired with no adjustment of Contract Sum or Contract Time.
- C. Contractor shall uncover, prior to any earthwork for new construction, all existing piping where crossings, interferences, close proximity (5 feet or less) or connections are shown on the Drawings, from 1 foot below proposed construction limit to the existing ground surface. Any variation in the actual elevations and the indicated elevations shall be brought to the District's Representative's attention. If the Contractor does not expose all existing utilities, Contractor shall not be entitled to additional compensation for Work necessary to avoid interferences.
- D. If interferences occur at locations other than the general locations shown on the Drawings, and such utilities are damaged before their locations have been established, or create an interference, the Contractor shall notify the District's Representative and a method for repairing the damage or correcting the interference shall be supplied by the District's Representative. Payment for additional Work due to interferences not shown on the Drawings shall be in accordance with the General Conditions.
- E. Care shall be exercised to prevent damage to adjacent facilities including walks, streets, curbs, and gutters from settlement, lateral movement, undermining, and washout and other hazards; where equipment will pass over these obstructions suitable planking shall be placed. Damaged facilities, due to the Contractor operations, shall be removed and replaced at the Contractor's expense.
- F. If any other structures or utilities are encountered, request District's Representative to provide direction on how to proceed with the Work.
- G. If any structure or utility is damaged, take immediate action to ensure the safety of persons and property. Correct damage immediately. Contractor shall bear all costs of correction, replacement, repair, restoration, including related damages additional testing, inspection, and compensation for District's Representatives services and expenses. Compensation to the District shall be made by deductive Change Order.
- H. No Work is to be performed on energized electrical equipment unless scheduled with the District's Representative. The District reserves the right to specify specific conditions for all Work involving energized high-voltage electrical equipment.

PART 2 – PRODUCTS

2.1 MATERIALS

- A. Herbicide: Surflan, Chipco, Ronstar G, or equal.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Existing Conditions: Verify existing conditions at the site and include all work evident by site inspection whether or not shown on the Drawings.

3.2 PREPARATION AND COORDINATION

- A. Notify District's Representative before starting Work and comply with District requirements.
- B. Do not close or obstruct roadways, sidewalks or hydrants without District's Representative's approval.
- C. Tree Protection: Tree and plant protection shall be in accordance with Section 01416 Special Procedures. Trees identified by the District's Representative for relocation shall be removed and turned over to the District, at a location identified by the District's Representative.

3.3 SITE CLEARING

- A. Conduct clearing with minimum interference to public and private access. Maintain egress and access from adjacent structures at all times.
- B. Clear the site within the limits shown and remove all pavement, trees, shrubs, remaining brush, stumps and waste material that would interfere with construction operation, except as specifically indicated otherwise on the Drawings, or identified by the District's Representative.
- C. Apply an approved herbicide to remaining roots over 1 1/2 inches in diameter.
- D. In areas not to be further excavated, fill depressions resulting from site clearing. Place and compact satisfactory soil materials in accordance with the Geotechnical Report.
- E. Clear undergrowth and deadwood without disturbing subsoil.
- F. Pollution and Dust:
 - 1. Comply with Section 01 35 00.
 - 2. Conduct operations so as to prevent windblown dust and dirt from interfering with adjacent property's normal operations.

- 3. Wet down dirt areas by spraying as required to prevent dust from becoming airborne.
- G. Assume liability for all claims related to windblown dust and dirt.
- H. No burning on District property.

3.4 CONSTRUCTION WASTE MANAGEMENT

- A. Comply with the applicable provisions of Section 01412 Hazardous Materials and Section 01505 Construction Waste Management, including, but not limited to:
 - 1. Separate packaging materials by type and place in locations designated by the Contractor.
 - 2. Place unused scrap material in locations designated by the Contractor.

END OF SECTION 311000

SECTION 312000 - EARTH MOVING

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Rough Grading of site, Excavating, backfilling and grading, as required to obtain contours and elevations indicated on the Drawings.
2. Subgrade preparation for pavement areas.

B. Related Sections:

1. Section 311000 Site Clearing.
2. Section 312333 Trenching and Backfilling.
3. Section 312513 Erosion Controls

1.2 REFERENCES

- A. AASHTO T 180 - Standard Specification for Moisture-Density Relations of Soils Using a 4.54 kg (10-lb) Rammer and a 457 mm (18 in.) Drop; American Association of State Highway and Transportation Officials; 1997.
- B. ASTM D 698 - Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft³ (600 kN-m/m³)); 2000a.
- C. ASTM D 1556 - Standard Test Method for Density and Unit Weight of Soil in Place by the Sand-Cone Method; 2000.
- D. ASTM D 1557 - Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft³ (2,700 kN m/m³)); 2000.
- E. ASTM D 2167 - Standard Test Method for Density and Unit Weight of Soil in Place by the Rubber Balloon Method; 1994.
- F. ASTM D 2419 - Standard Test Method for Sand Equivalent Value of Soils and Fine Aggregates; 1995.
- G. ASTM D 2922 - Standard Test Methods for Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth); 1996.
- H. ASTM D 3017 - Standard Test Method for Water Content of Soil and Rock in Place by Nuclear Methods (Shallow Depth); 1996.

- I. Geotechnical Investigation for site is available in accordance with Information Available to Bidders.

1.3 DEFINITIONS

- A. Excavation: Earth excavation includes excavation of pavement and other obstructions visible on the ground surface; underground structures, utilities and other items to be demolished and removed; together with earth and other materials encountered that are not classified as rock or unauthorized excavation.
- B. Subgrade: Previously undisturbed material prepared, and compacted to required density and elevation to support a structure, or pavement system.
- C. Subbase: Compacted layer of approved material used between the subgrade and the pavement.
- D. Earth Excavation: Materials not otherwise defined as rock excavation including removal and disposal of pavements, visible on grade obstructions, underground structures, utilities and other items indicated to be removed.
- E. Unauthorized Excavation: Includes removal and disposal of material beyond subgrade elevations, and dimensions indicated without prior approval of the District's Representative.
- F. Standard Specifications: Refers to the Standard Specifications, State of California, California State Transportation Agency, Department of Transportation (Caltrans), latest edition. In case of conflict between the Standard Specifications and these Specifications, the strictest Specifications shall govern.
- G. Provisions for measurement and payment specified within the Standard Specifications shall be disregarded and the provisions of this Agreement shall govern.
- H. Relative Compaction: Ratio, expressed as a percentage of field dry density as compacted to a maximum dry density of representative sample of the same material determined by ASTM D1557.

1.4 SUBMITTALS

- A. Conform to the requirements of Section 01330 for submittal procedures.
- B. Product Data: Provide data on Products specified.
- C. Manufacturer's Installation Instructions: Indicate special procedures required to install Products specified.
- D. Manufacturer's Certificate: Certify that products meet or exceed specified requirements.
- E. Project Record Documents: Record actual locations of pipe mains, valves, connections, and invert elevations. Identify and describe unexpected variations to subsoil conditions or discovery of uncharted utilities.

- F. Deliver samples of import backfill materials to District's Representative in quantities sufficient for testing. Deliver at least 15 days prior to use.
- G. Submit a Confined Space Emergency Plan in accordance with Section 01 41 00 Regulatory Requirements prior to any personnel entering trenches or excavations greater than 5 feet in depth.
- H. 1.5 QUALITY ASSURANCE
- A. Testing and Inspection Service: District will engage soil testing and inspection service, for quality assurance testing during earthwork operations.

1.6 DELIVERY, STORAGE AND HANDLING

- A. Stockpile satisfactory excavated materials in approved location, until required for backfill or fill. Place, grade, and shape stockpiles for proper drainage.
 - 1. Do not store soil within drip line of trees indicated to remain.

1.7 PROJECT CONDITIONS

- A. Subsurface Conditions: Contractor responsibility to determine the exact nature and extent of subgrade conditions.
- B. Subgrade and geotechnical information provided by the District shall not relieve the Contractor of responsibility for being familiar with the character and extent of subsurface conditions that may be encountered during performance of the Work.
- C. Do not use explosives.
- D. The Contractor shall assess and evaluate all site conditions and layout the work before any earthwork shall begin.

1.8 MAINTENANCE

- A. Repair settlement at excavated areas for a period of one year following final acceptance at no additional cost to District. Remove surface (pavement, lawn or other finish), add backfill material, compact, and replace surface treatment; restore appearance, quality, and condition of surface and finish to match adjacent work, and eliminate evidence of restoration.

1.9 WARRANTY

- A. The Contractor shall warrant the Work against settlement for a period of one year after the date of final acceptance, and shall repair damage caused by settlement within that time. For the purpose of this Specification, settlement will be deemed to have occurred if on paved surfaces, depressions greater than 3/8 inch occur relative to paved surfaces outside the excavation area.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Fill Materials: Use only suitable fill except where sand is required. Do not use water saturated soil material or contaminated material.
 - 1. On-site soils are considered suitable for use in engineered fill material, provided that they are at a workable moisture content and free of significant concentrations of organic materials, rubble or debris. The on-site clay soils located at an approximate depth of ten feet below existing site grades are not considered suitable for use in fill construction beneath at-grade structures, exterior slab-on-grade concrete or pavements.
 - 2. If imported material is required for fill and backfill, the imported material must be granular soil, free of organic matter, which does not exhibit excessive shrinkage or swelling behavior when subjected to changes in water content. Imported fill shall contain no environmental contaminants or construction debris. The material shall conform to the following:
 - a. Have 100 percent pass through a 3 inch sieve, 95 to 100 percent pass through a 1 inch sieve.
 - b. Be thoroughly compacted without excessive voids.
 - c. Have a maximum Plasticity Index of 15.
 - d. Have an Expansion Index less than 20.

PART 3 - EXECUTION

3.1 PREPARATION

- A. Excavate by hand within drip-line of trees to remain. Do not damage trees or roots, prevent dehydration of exposed roots. Refer to Section 01 56 39 Tree & Plant Protection for additional requirements.
- B. Surfaces to receive fill and soils to be compacted shall be free of standing water, and shall not be saturated with water.
- C. In asphalt concrete paved areas, neatly saw cut pavement 12 inches beyond the limits of excavations. If edge of pavement is located within 30 inches of limit of excavation, remove pavement to existing edge.
- D. Complete clearing and stripping as indicated on Drawings and in accordance with Section 31 10 00 Site Clearing.
- E. Remove existing utility lines that traverse the site as indicated on Drawings and in accordance with Section 31 10 00 Site Clearing.

- F. Scarify and compact the upper 12 inches of the exposed subgrade-to-receive fill to 90 percent relative compaction.

3.2 EXCAVATION

- A. Additional Excavation: When excavation has reached required subgrade elevation shown on Drawings, notify District's Representative who will inspect conditions. When unsuitable bearing materials are encountered at required subgrade elevations, carry excavations deeper and place excavated material as directed by the District's Representative.
- B. Stability of Excavations: Comply OSHA regulations for slope requirements. Provide shoring and bracing where required slope cannot be maintained.
- C. Excavation for Pavements: Cut surface under pavements to comply with pavement section shown on Contract Documents.
- D. Coordinate excavation, preparation and backfill with Work of related Sections for Project Site utilities, drainage and irrigation systems.
- E. Replace the excavated material or any approved supplementary import material in lifts not to exceed 6 inches in compacted thickness and compact each lift to a minimum 90 percent relative compaction.
- F. The upper 12-inches of fill within building pads and concrete flatwork areas shall be per the project geotechnical report.
- G. Perform footing excavations after fill placement is complete.

3.3 COMPACTION

- A. General: Control soil compaction during construction providing minimum percentage of density specified for each area classification as indicated below.
- B. Percentage of Maximum Density Requirements: Compact soil to no less than the following percentages of maximum density in accordance with ASTM D 1557.
 - 1. Building Slabs: Compact top 12 inches of subgrade and each layer of backfill or fill material at 90 percent relative compaction.
 - 2. Lawn or Unpaved Areas: Compact top 12 inches of subgrade to 85% relative density, and each preceding layer of backfill or fill material at 90 percent density.
 - 3. Vehicular pavements: Compact top 12 inches of subgrade and each layer of backfill or fill material at 90 percent relative compaction. The upper 6 inches of pavement subgrade soils shall be compacted to at least 95 percent relative compaction.
- C. Moisture Control: Where subgrade or layer of soil material must be moisture conditioned before compaction, uniformly apply water to surface of subgrade, or layer of soil material, to prevent free water appearing on surface during or subsequent to compaction operations.

1. Remove and replace or scarify and air dry soil material that is too wet to permit compaction to specified density.
2. Soil material that has been removed because it is too wet to permit compaction may be stockpiled or spread and allowed to dry. Assist drying by discing, harrowing or pulverizing until moisture content is reduced to a satisfactory value.

3.4 BACKFILL AND FILL

- A. Place approved soil material in layers to required subgrade elevations, for each area classification listed below. Do not use water saturated soil material or contaminated material.
 1. In excavations, use approved excavated or borrow material.
 2. Under planted areas, use topsoil from site stockpile as specified In Section 311000 Site Clearing.
 3. Under walks and pavements, use subbase material, approved excavated or borrow material, or combination of both.
 4. Under steps, use approved subbase material.
 5. Under building slabs, use approved drainage fill material.
- B. Backfill excavation as promptly as work permits, but not until completion of the following:
 1. Acceptance of construction below finish grade including, where applicable, dampproofing, waterproofing, and perimeter insulation.
 2. Inspection, testing, approval, and recording locations of underground utilities.
 3. Removal of concrete formwork, shoring and bracing: Prevent settling due to removal of materials from below structures.
 4. Backfilling of voids with satisfactory materials.
 5. Removal of trash and debris from excavation.
 6. Permanent or temporary horizontal bracing is in place on horizontally supported walls.
- C. Place backfill and fill materials in uniform lifts not more than 8 inches in loose depth for material compacted by heavy compaction equipment, and not more than 6 inches loose depth for material compacted by hand-operated tampers. Prevent wedging action of backfill against structures and displacement of piping and conduit.

3.5 GRADING

- A. Provide smooth finished surfaces within specified tolerances, compact with uniform levels or slopes between points where elevations are indicated on Drawings, or between such points and existing grades.
- B. Grade areas outside of building lines to drain away from structures and to prevent ponding. Finish surfaces free from irregular surface changes, within the following tolerances above or below required finish grade.
 - 1. Lawn and Unpaved Areas to Receive Topsoil: 0.10 foot
 - 2. Pavements and Walks: Line, grade and cross-section, 0.10 foot
 - 3. Structures: 0.10 foot.
- C. Compaction: After grading, compact subgrade surfaces to the depth and indicated percentage of maximum or relative density for each area classification.
- D. Grade fill under building slabs smooth and even, free of voids, to required elevation. Provide final grades with a tolerance of plus or minus 1/4 inch in 10 feet.

3.6 FIELD QUALITY CONTROL

- A. See Section 01 40 00 Quality Requirements, for general requirements for field inspection and testing.
- B. Perform compaction density testing on compacted fill in accordance with ASTM D6938.
- C. Evaluate results in relation to compaction curve determined by testing uncompacted material in accordance with ASTM D1557 ("modified Proctor"), or AASHTO T 180.
- D. If tests indicate Work does not meet specified requirements, remove Work, replace and retest at no additional cost to the District.

3.7 DISPOSAL OF EXCESS AND WASTE MATERIALS

- A. Transport approved clean excess excavated material to designated soil storage areas on District's property and within four miles of Project Site and stockpile soil. Keep enough soil to place 12 inches in planting areas, soil to be clean of debris including gravel.
- B. Comply with the applicable provisions of Section 01 74 00 - Cleaning.
- C. Remove excess excavated material, trash, debris and waste materials and dispose of it off the District's property.
- D. Except for stripped topsoil or other material indicated to remain District property, cleared materials shall become the Contractor's property and shall be removed from the Project site.

3.8 PROTECTION

- A. Protection of Graded Areas: Protect newly graded areas from traffic and erosion. Keep free of trash and debris.
- B. Cold Weather Protection: Protect excavation bottoms against freezing when atmospheric temperature is less than 35 degrees F.
- C. Repair and re-establish grades in settled, eroded, and rutted areas to specified tolerances.
- D. Where completed compacted areas are disturbed by subsequent construction operations or adverse weather, scarify surface, re-shape, and compact to required density prior to further construction.

3.9 CONSTRUCTION WASTE MANAGEMENT

- A. Comply with the applicable provisions of Section 01 74 00 – Cleaning, including, but not limited to:
 - 1. Separate packaging materials by type and place in locations designated by the Contractor.
 - 2. Place unused scrap material in locations designated by the Contractor.

END OF SECTION 321000

SECTION 312333 - TRENCHING AND BACKFILLING

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes trenching, backfilling and compacting for utilities.
- B. Related sections:
 - 1. Section 01 40 00 Quality Requirements.
 - 2. Section 31 20 00 Earth Moving.
 - 3. Section 31 25 13 Erosion Controls.

1.2 REFERENCES

- A. ASTM D 1557 - Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft³); 2000.
- B. Manual of Warning Signs, Lights and Devices for Use in Performance of Work Upon Highways, issued by the California State Department of Transportation.
- C. Office of Safety and Health Act (OSHA) Construction Safety Orders.
- D. California Code of Regulations Title 8: Construction Safety Orders.

1.3 DEFINITIONS

- A. Finish Grade Elevations: Indicated on Drawings
- B. State Standard Specifications: Standard Specifications, State of California, California State Transportation Agency, Department of Transportation (Caltrans), latest edition, excluding Sections pertaining to measurement and payment items.
- C. Relative Compaction: Ratio, expressed as a percentage of field dry density as compacted to a maximum dry density of representative sample of the same material determined by American Society for Testing and Materials (ASTM) Test Method D1557 (c).

1.4 SUBMITTALS

- A. Conform to the requirements of Section 01330 for submittal procedures.
- B. Product Data: Provide data for Products specified.

- C. Manufacturer's Installation Instructions: Indicate special procedures required to install Products specified.
- D. Manufacturer's Certificate: Certify that products meet or exceed specified requirements.
- E. Project Record Documents: Record actual locations of pipe mains, valves, connections, and invert elevations. Identify and describe unexpected variations to subsoil conditions or discovery of uncharted utilities.
- F. Submit name of imported materials source.
- G. Deliver samples of backfill and fill materials to District's Representative in quantities sufficient for testing. Deliver at least 15 days prior to use.

1.5 WARRANTY

- A. The Contractor shall warrant against settlement for a period of one year after the date of final acceptance, and shall repair damage caused by settlement within that time. For the purpose of this Specification, settlement will be deemed to have occurred if on paved surfaces, the depression falls 3/8-inches below the average of the sides of the uncut portion.

PART 2 - PRODUCTS

2.1 BEDDING AND BACKFILL MATERIALS

- A. Bedding: In accordance with City of Concord Department of Public Works Standard Specifications, latest edition.
- B. Backfill: In accordance with City of Concord Department of Public Works Standard Specifications, latest edition.

2.2 SOURCE QUALITY CONTROL

- A. See Section 01 40 00 Quality Requirements for general requirements for testing and analysis of soil material.
- B. Provide materials of each type from same source throughout the Work.

PART 3 - EXECUTION

3.1 PREPARATION

- A. Preparation of Work

1. Underpin adjacent structures, which may be damaged by excavation Work, including utilities.
2. Maintain trench crossings for vehicular and pedestrian traffic at street crossing, driveways and fire hydrants.

3.2 EXAMINATION

- A. Identify required lines, levels, contours, and datum locations.
- B. Locate, identify, and protect utilities that remain and protect from damage.
- C. See Section 31 20 00 Earth Moving for additional requirements.

3.3 TRENCHING

A. Work Included

1. Perform operations necessary to excavate earth, regardless of character and subsurface conditions, from the trench or adjacent thereto, and to place trench stabilization, pipe bedding, pipe cover, trench water removal, trench backfill and base, as shown on the Drawings, as well as providing traffic control and regulation through construction areas.
2. The Contractor shall do excavation of whatever substance is encountered to the lines and grades shown on the Drawings. Materials suitable for use as backfill shall be piled in an orderly manner a sufficient distance from the edge of the trench to avoid overloading and to prevent sliding into the trench.
3. The Contractor shall do such grading or Work as is necessary to prevent surface water from entering the excavation.
4. Demolish and remove existing pavement, curb and gutter, and other Project Site facilities as shown on the Drawings allow Project operations. Existing asphalt concrete pavement to be removed shall be saw cut in longitudinal neat straight lines while maintaining the cuts vertical for the full depth of the asphalt concrete pavement. Portions of existing concrete curbs, gutters and sidewalks to be removed to permit new construction shall be cut using a concrete saw to provide neat straight lines with vertical cuts.
5. Maximum allowable open trench is 600 L.F. at any one time. Trenches outside the enclosure of the temporary construction fence are to be covered or otherwise protected at the end of each work day.
6. Slope banks of excavations deeper than 4 feet to angle of repose or less until shored.
7. Do not interfere with 45 degree bearing splay of building foundations
8. Cut trenches wide enough to allow inspection of installed utilities.
9. Hand trim excavations. Remove loose matter.

10. Remove large stones and other hard matter which could damage piping or impede consistent backfilling or compaction.
 11. Remove lumped subsoil, boulders and rock up to 1/3 cu. yd. in size.
 12. Remove excavated material that is unsuitable for re-use from Project Site.
 13. Stockpile excavated material to be re-used in area designated on Project Site in accordance with Section 31 20 00 Earth Moving.
 14. Remove excess excavated material from Project Site in accordance with provisions in Section 31 20 00 Earth Moving.
- B. Width of Trench: Except where otherwise specifically permitted by District's Representative, sides of trenches shall be vertical, shored, as required, and shall be of uniform width from top to bottom. Trenches shall be of a width as shown on the Drawings.

3.5 PREPARATION FOR UTILITY PLACEMENT

- A. Cut out soft areas of subgrade not capable of compaction in place. Backfill with general fill.
- B. Compact subgrade to density equal to or greater than requirements for subsequent fill material.
- C. Until ready to backfill, maintain excavations and prevent loose soil from falling into excavation.
- D. Buried pipe shall have at least 36 inches of cover and 12 inches of clearance from other utilities, unless otherwise noted on the plans.

3.5 PIPE BEDDING

- A. Bedding Excavation: Excavate trenches below grade of pipe bottom to the depth indicated on drawings.
- B. Stabilization of Trench Bottom: When trench is unstable due to wet or spongy foundation, stabilize trench bottom with gravel or crushed rock. The District's Representative will determine suitability of trench bottom and amount of gravel or crushed rock needed to stabilize soft foundation. Remove and replace soft material with gravel or crushed rock when directed by District's Representative.
- C. Placement of Bedding Material: Place sufficient bedding material in trench bottom up to grade of bottom of pipe. Relative compaction of tamped material shall be not less than 90 percent relative compaction. Place and compact additional bedding material to provide uniform bearing under the full length of the pipe to a minimum width of 60 percent of its external diameter.

3.6 BACKFILLING

- A. Backfill to contours and elevations indicated using unfrozen materials.

- B. Place sand backfill to not less than 4" above top of pipe.
- C. Place warning tape and tracer wire for all utilities.
- D. Fill up to subgrade elevations unless otherwise indicated.
- E. Employ a placement method that does not disturb or damage other Work.
- F. Systematically fill to allow maximum time for natural settlement. Do not fill over porous, wet, frozen or spongy subgrade surfaces.
- G. Maintain optimum moisture content of fill materials to attain required compaction density.
- H. Granular Fill: Place and compact materials in equal continuous layers not exceeding 6 inches compacted depth.
- I. Soil Fill: Place and compact material in equal continuous layers not exceeding 8 inches compacted depth.
- J. Slope grade away from building minimum 2 inches in 10 feet, unless noted otherwise on the Drawings. Make gradual grade changes. Blend slope into level areas.
- K. Reshape and re-compact fills subjected to vehicular traffic.
- L. Compaction: Native backfill shall be compacted by machine in uniform layers not exceeding 0.67 foot. Backfill shall be compacted to a relative compaction of not less than 90 percent to within 1 foot of subgrade. The upper 1 foot of subgrade shall be compacted to 95 percent; 85 percent compaction will be acceptable in undeveloped areas.

3.7 TOLERANCES

- A. Top Surface of General Backfilling: Plus or minus 0.10 foot from required elevations.
- B. Top Surface of Backfilling Under Paved Areas: Plus or minus 0.10 foot from required elevations.

3.8 FIELD QUALITY CONTROL

- A. See Section 01 40 00 Quality Requirements for general requirements for field inspection and testing.
- B. The District will make soils tests when advised by the Contractor that in the Contractor's opinion sufficient densities have been achieved. If the first tests in any areas fails, the Contractor shall pay for further testing in that area until specified densities are obtained. The District's Representative shall determine the number and location of tests required. Contractor shall provide a backhoe and operator upon request at no additional cost to the District.
- C. Lights, flags, and other warning and safety devices for street and highway work shall conform to the requirements set forth in the current Manual of Warning Signs, Lights and Devices for

Use in Performance of Work Upon Highways, issued by the California State Department of Transportation.

- D. Preparation, excavation and trenching shall comply with California Code of Regulations Title 8: Construction Safety Orders.

3.9 CLEANING

- A. Leave unused materials in a neat, compact stockpile during progress of work.
- B. Remove unused stockpiled materials. Leave area in a clean and neat condition. Grade stockpile area to prevent standing surface water.
- C. Leave borrow areas in a clean and neat condition. Grade to prevent standing surface water.

3.10 DISPOSAL OF EXCESS EXCAVATED MATERIAL

- A. The Contractor shall remove and dispose of all excess excavated material to a suitable site. The proper and legal disposal shall be the responsibility of the Contractor.

3.11 CONSTRUCTION WASTE MANAGEMENT

- B. Comply with the applicable provisions of Section 01 74 00 - Cleaning including, but not limited to:
 - 1. Separate packaging materials by type and place in locations designated by the Contractor.
 - 2. Place unused scrap material in locations designated by the Contractor.

END OF SECTION 312333

SECTION 312513 - EROSION CONTROLS

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Work included: The work included in this Section includes all labor, materials, and equipment necessary to place temporary and permanent erosion and sediment control measures as detailed on the Drawings and specified herein.

1.2 RELATED SECTIONS

- A. Section 312000 Earth Moving

1.3 REFERENCES

- A. The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by the basic designation only. Refer to Section 01 42 00 for definitions, acronyms, and abbreviations.
- B. Unless otherwise noted, standards, manuals, and codes refer to the latest edition of such standards, manuals, and codes as of the date of issue of this Project Manual.
- C. Referenced Standards:
 - 1. Caltrans Standard Specifications.

1.4 QUALITY ASSURANCE AND CONTROL

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

1.5 ENVIRONMENTAL REQUIREMENTS

- A. Protect adjacent properties and water resources from erosion and sediment damage throughout life of contract.

1.6 SUBMITTALS

- A. Product Data: Submit:
 - 1. Materials list of items proposed to be provided under this Section.

2. Specifications and other data needed to prove compliance with the specified requirements.
3. Monthly Inspection Report and Certification Form for Erosion and Sediment Controls. Please note that inspections must be done monthly at least two (2) weeks apart and after a Two-Year rainfall (4 to 6 inches of rain). Keep reports on file at the job trailer. Do not mail to state or city offices. A copy of the report form is attached in the SWPP Plan.

PART 2 - PRODUCTS

2.1 FOR EROSION AND SEDIMENT CONTROL

- A. The primary erosion and sediment control measures implemented during the Mass Grading/Site Preparation phase of the project shall be inspected, maintained, and repaired in accordance with the Storm Water Pollution Prevention Plan for this project. Secondary measures such as Inlet Protection, dust control, erosion control blanket, temporary and permanent seeding shall be installed/applied as necessary. See Civil Plans for placement of BMP's and the Erosion Control Details for further information.
- B. Inlet Protection as shown on the above mentioned detail sheet.

PART 3 - EXECUTION

3.1 PREPARATION

- A. Review Site Improvement Plans and the Storm Water Pollution Prevention Plan along with the approved "Notice of Intent" issued by the California Regional Water quality Control Board (RWQCB).
- B. Deficiencies or changes on Site Improvement Plans or Storm Water Pollution Prevention Plan as it is applied to current conditions shall be brought to the attention of the Project Civil Engineer for remedial action.

3.2 EROSION CONTROL AND STORM WATER POLLUTION PREVENTION PLAN IMPLEMENTATION

- A. Place erosion control and storm water pollution prevention measures in accordance with the approved Contract Documents as construction proceeds and the appropriate phase is in progress for each measure.
- B. Permanent erosion control measures shall be incorporated into the Project at the earliest practical time to minimize the need for temporary controls.

3.3 Permanent and Temporary Seeding Measures

- A. Permanently seed and mulch cut slopes as excavation proceeds to extent considered desirable and practical.
- B. Slopes that erode easily or that will not be graded for a period of fourteen (14) days or more shall be temporarily seeded as work progresses with temporary seeding.

3.4 REMOVAL OF EROSION AND SEDIMENT CONTROL MEASURES

- A. When site is ninety-five percent (95%) re-vegetated and stabilized with grasses, remove temporary sediment risers. Remove accumulated sediment and regrade area to original contours. Seed and protect with permanent grass seed mixture.
- B. Remove drainage structure inlet protection.
- C. Remove silt fence and temporary check dams. Seed and protect any disturbed areas with permanent grass seed mixture.

END OF SECTION 312513

SECTION 321216 - ASPHALT PAVING

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Section Includes:

1. Asphaltic concrete paving, wearing, binder and base course.
2. Surface sealer.
3. Paving fabrics.
4. Aggregate subbase course.

1.2 RELATED SECTIONS

- A. Section 31 25 13 Erosion Controls
- B. Section 31 20 00 Earth Moving

1.3 REFERENCES

- A. The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by the basic designation only. Refer to Section 01 42 00 for definitions, acronyms, and abbreviations.
- B. Unless otherwise noted, standards, manuals, and codes refer to the latest edition of such standards, manuals, and codes as of the date of issue of this Project Manual.
- C. Referenced Standards:
1. CalTrans Standard Specifications.
 2. American Association of State Highway and Transportation Officials:
 3. AI MS-2 - Mix Design Methods for Asphalt Concrete and Other Hot- Mix Types.
 4. AI MS-19 - Basic Asphalt Emulsion Manual.
 5. ASTM D946 - Standard Specification for Penetration-Graded Asphalt Cement for Use in Pavement Construction.
 6. ASTM D3381 - Standard Specification for Viscosity-Graded Asphalt Cement for Use in Pavement Construction.

1.4 UNIT PRICE - MEASUREMENT AND PAYMENT

A. Asphalt Pavement Mix (Base Course):

1. Basis of Measurement: By cubic yard.
2. Basis of Payment: Includes preparing base, primer, tack coating surfaces, placing, compacting and rolling, testing. Includes mix design, supplying to site, testing.

B. Asphalt Pavement Mix (Wearing Course):

1. Basis of Measurement: By cubic yard.
2. Basis of Payment: Includes primer, tack coating surfaces, placing, compacting and rolling, testing. Includes mix design, supplying to site, testing.

1.5 PERFORMANCE REQUIREMENTS

- A. Paving: Designed for main street arteries.

1.6 SUBMITTALS

- A. Product Data: Submit product information and mix design.

1.7 QUALITY ASSURANCE

- A. Perform Work in accordance with California Department of Transportation Public Work's standards.
- B. Mixing Plant: Conform to California Department of Transportation Public Work's standards.
- C. Obtain materials from same source throughout.

1.8 ENVIRONMENTAL REQUIREMENTS

- A. Do not place asphalt when ambient air or base surface temperature is less than 40 degrees F, or surface is wet or frozen.

PART 2 – PRODUCTS

2.1 MATERIALS

- A. Asphalt Cement: In accordance with Section 39 of California Department of Transportation Public Work's standards.
- B. Aggregate for Base Course Mix: In accordance with California Department of Transportation Public Work's standards.

- C. Aggregate for Wearing Course Mix: In accordance with California Department of Transportation Public Work's standards.
- D. Tack Coat: In accordance with California Department of Transportation Public Work's standards.

2.2 ASPHALT PAVING MIX

- A. Use dry material to avoid foaming. Mix uniformly.
- B. Base Course: In accordance with California Department of Transportation Public Work's standards.
- C. Wearing Course: In accordance with California Department of Transportation Public Work's standards.

2.3 SOURCE QUALITY CONTROL AND TESTS

- A. Submit proposed mix design of each class of mix for review prior to beginning of Work.

PART 3 – EXECUTION

3.1 EXAMINATION

- A. Verify compacted subgrade subbase is dry and ready to support paving and imposed loads.
- B. Verify gradients and elevations of base are correct.
- C. Verify gutter drainage grilles and frames, manhole frames, and are installed in correct position and elevation.

3.2 SUBBASE

- A. Prepare subbase in accordance with California Department of Transportation Public Work's standards.

3.3 PREPARATION – PRIMER

- A. Apply primer in accordance with California Department of Transportation Public Work's standards.

3.4 PREPARATION - TACK COAT

- A. Apply tack coat in accordance with California Department of Transportation Public Work's standards.

3.5 PLACING ASPHALT PAVEMENT - SINGLE COURSE

- A. Install Work in accordance with California Department of Transportation Public Work's standards.
- B. Place asphalt within twenty-four (24) hours of applying primer or tack coat.
- C. Place asphalt wearing course as indicated on the Plans.
- D. Compact pavement by rolling to specified density. Do not displace or extrude pavement from position. Hand compact in areas inaccessible to rolling equipment.
- E. Perform rolling with consecutive passes to achieve even and smooth finish without roller marks.

3.6 PLACING ASPHALT PAVEMENT - DOUBLE COURSE

- A. Place wearing course within twenty-four (24) hours of placing and compacting binder course. When binder course is placed more than twenty-four (24) hours before placing wearing course, clean surface and apply tack coat before placing wearing course.
- B. Compact each course by rolling to specified density. Do not displace or extrude pavement from position. Hand compact in areas inaccessible to rolling equipment.
- C. Perform rolling with consecutive passes to achieve even and smooth finish, without roller marks.

3.7 TOLERANCES

- A. Flatness: Maximum variation of 1/4 inch measured with 10 foot straight edge.
- B. Scheduled Compacted Thickness: Within 1/4 inch.
- C. Variation from Indicated Elevation: Within 1/4 inch.

3.8 PROTECTION OF FINISHED WORK

- A. Immediately after placement, protect pavement from mechanical injury for forty-eight (48) hours or until surface temperature is less than 140 degrees F.

END OF SECTION 321216

SECTION 321313 - SITE CONCRETE

PART 1 - GENERAL

1.1 SUMMARY

- A. This Section includes site concrete, including but not limited to pavements, walls, retaining walls, stairs, curbs, gutters, mow bands, and other minor site concrete.
- B. Provide all labor, materials, equipment, and services to complete the work as indicated on the drawings, and in accordance with these specifications. Work includes but is not limited to the following:
 - 1. Concrete formwork
 - 2. Concrete reinforcement
 - 3. Cast-in-place concrete items:
 - a. Concrete paving, sidewalks, ramps, pads, curbs, gutters, mow bands, walls, truncated domes, etc.
 - b. Miscellaneous concrete.
 - c. All imbeds including anchor bolts, tiedowns, hold downs with bolts, straps, and sleeves.
- C. Related Sections
 - 1. Section 01330 Submittals

1.2 REFERENCES

- A. Caltrans Standard Specifications - Standard Specifications, State of California, California State Transportation Agency, Department of Transportation (Caltrans), latest edition.
- B. ASTM - American Society for Testing and Materials
- C. ACI - American Concrete Institute, Manual of Concrete Practice.
- D. CBC – California Building Code

1.3 DEFINITIONS

- A. Percent Compaction: ASTM D1557, percentage as shown on the Drawings of the maximum in-place dry density of the same material.

1.4 SUBMITTALS

- A. Conform to the requirements of Division 1, Section 01 32 19 for submittal requirements.
- B. Shop Drawings Reinforcement: Submit shop drawings for fabrication, bending and placement of concrete reinforcement. Comply with ACI 315 "Manual of Standard Practice for Detailing

Reinforced Concrete Structures" showing bar schedules, stirrup spacing, diagrams of bent bars and arrangement of concrete reinforcement. Include special reinforcement required at openings through concrete structures.

C. Concrete Design Mixes:

The preparation of design mixes will be the responsibility of the Contractor. Mix designs may be prepared by the supplier and shall be certified by a Civil Engineer registered in California. Mix designs will be designed by the supplier and approved by the District's Representative.

Written reports will be submitted to the District Representative of each proposed mix for review. Do not begin concrete production until mixes have been reviewed by the District's Representative.

Adjustment of Concrete Mixes:

Mix design adjustments may be requested by the Contractor when characteristics of materials, job conditions, weather, test results and other circumstances warrant; at no additional cost to the District and as accepted by the District's Representative. Provide submittals as in A above. Submit adjustment designs a minimum of 48 hours ahead of schedule for concrete production.

D. Product Data: Manufacturers' current catalog cuts and specifications for the following:

Expansion joint filler, sealant, backer rod and bond breaker, including manufacturer's standard color chart for sealant

Air-entrainment.

Curing Compound.

Fly Ash or Slag

MDO plywood made for forming

Water stops

Tactile warning surfacing

Integral color

E. Certificates:

Reinforcing Steel: Certificate of compliance

Concrete Mix Design: Ticket for each batch delivered showing the following:

- a. Mix identification.
- b. Weight of cement, aggregate, water, and admixtures, aggregate sizes/proportion, and air entrainment.

1.5 QUALITY ASSURANCE

- A. Comply with American Society for Testing Materials (ASTM) A-615 "Standard Specifications for Deformed and Plain Billet-Steel Bars for Concrete Reinforcement," and "Manual of Standard Practice for Detailing Reinforced Concrete Structures," publication American Concrete Institute (ACI) 315-65 of the American Concrete Institute.
- B. Comply with all pertinent recommendations contained in ACI, "Recommended Practice of Concrete Formwork, ACI-347", and the 2019 California Building Code (CBC).
- C. Construct forms to sizes, shapes, lines and dimensions indicated on Drawings, and to obtain accurate alignment, location, grades, level and plumb work in finished structures. Provide for openings, offsets, sinkages, keyways, recesses, reglets, chamfers, blocking, screeds, bulkheads, anchorages and inserts, and other features required in Work. Use selected materials to obtain required finish. Solidly butt joints and provide back-up at joints to prevent leakage of cement paste.
- D. Provide complete forms of such strength and construction as to prevent any spread, shifting, or settling when concrete is deposited, and tight enough to avoid any leakage or washing out of cement mortar.
- E. Provide at least one person who shall be present at all times during execution of this portion of the Work and who shall be thoroughly trained and experienced in placing the types of concrete specified and who shall direct all Work performed under this Section. For finishing of exposed surfaces of the concrete, use only thoroughly trained and experienced journeymen concrete finishers.
- F. Conform to Section 90 of the Caltrans Standard Specifications.
- G. The Contractor shall contact District's Representative of any discrepancies between field conditions and plans prior to proceeding with Work. The written dimension on Drawings shall supersede the graphic presentation. Dimensions are from back of curb, center line, base lines or as noted on the plans. All field adjustments must be approved by District's Representative prior to installation.
- H. All walks and curbs shall be established in the field for review and approval prior to concrete pours. The Contractor shall layout the area or form work for review by District's Representative. If approval is not obtained, the Contractor is responsible for removal of any unauthorized field adjustments.
- I. Transitions of curves to other curves, and curves to straight line tangents, shall be smooth and continuous.
- J. Place expansion joint and score joints as shown on plan. Adjustments in the field shall be made only with the approval of District's Representative.
- K. Where new concrete paving is placed adjacent to curbs or existing concrete paving, a construction joint (cold joint) shall be provided between the new concrete paving and curbs or existing concrete paving.
- L. Sleeving shall be coordinated with concrete work. Refer to irrigation plan for sleeving location.

- M. The Contractor shall be responsible for repairing, at no additional cost to District, any disturbed existing landscape designated to remain which resulted from construction of this project.
- N. Some materials may require a several week order lead time. Contractor is responsible for determining any and all ordering lead times, and providing required materials at the project site in a timely manner. No unapproved substitutions will be allowed. Contact District's Representative immediately if a specified material is not available.
- O. **MOCK-UP:** Refer to specification Section 01 32 19 for submittal requirements.

One 4 foot square mock up for all poured in place finishes, including concrete paving and vertical walls, as shown on the drawings. Mock-ups shall also include finish, jointing, thickness, and edging.

Mock-ups shall be reviewed and approved by the District's Representative prior to commencing full work. Approved mock-up shall serve as a standard of quality for judging the acceptance of paving on the Project and may remain as part of the work.

- P. Lines and Levels: To be established by a licensed Surveyor or registered Civil Engineer.
- Q. Mix Standards: Conform to the ACI Manual and the Portland Cement Association's "Design and Control of Concrete Mixes".
- R. Design of Concrete Mix: Employ approved commercial testing laboratory to design concrete mixes as follows:

| Item | Minimum Cement Content | 28-Day Minimum Strength | Water to Max. Slump | Aggregate Size | Gal/Bag Cement Ratio Max. |
|--|------------------------------|-------------------------------|---------------------------|-------------------|---------------------------------|
| Slabs on Grade, Curbs, Exterior Walkways | 517 lb/cu. yd | 3,000 PSI | 3 in. | ¾ in | 5.5 |

- S. Fly Ash:

Source Control: The following sources of ash are not to be used:

- a. Ash from a peaking plant instead of a base loaded plant.
- b. Ash from plants burning different coals or blends of coal.
- c. Ash from plants burning other fuels (wood chips, tires, trash) blended with coal.
- d. Ash from plants using oil as a supplementary fuel.
- e. Ash from plants using precipitator additives, such as ammonia.
- f. Ash from start-up or shut-down phases of operation.
- g. Ash from plants not operating at a "steady state."
- h. Ash that is handled and stored using a wet system.

Fly ash used in concrete should be as consistent and uniform as possible. Fly ash to be used in concrete should be monitored by a quality assurance/quality control (QA/QC) program that complies with the recommended procedures in ASTM C311.(6) These procedures establish

standards for methods of sampling and frequency of performing tests for fineness, loss on ignition (LOI), specific gravity, and pozzolanic activity such that the consistency of a fly ash source can be certified.

1.6 QUALIFICATION OF INSTALLER

- A. Installer shall be thoroughly trained and experienced in the skills required, and shall be completely familiar with the products and their installation as specified on the Drawings and in this Section. Installer shall be present at all times during progress of Work of this Section and shall direct all Work performed.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Delivered Mixes: Coordinate delivery so that mixes may be immediately poured upon arrival at site.

- B. Components and Accessories:

Fittings and Reinforcements: Protect from rust, soil and oil contamination at all times. Store on pallets above ground.

Templates: Protect from damage. Test accuracy prior to each use.

1.8 SEQUENCING AND SCHEDULING

- A. Coordination: Coordinate all items of other trades to be furnished and set in place. Coordinate proper installation of all accessories embedded in the concrete and for the provision of holes, openings, etc., necessary to the execution of the work of the trades in ample time that progress of the work is not delayed.

1.9 JOB CONDITIONS

- A. Cold-Weather Placement: comply with provisions of ACI 306 and as follows. Protect concrete work from physical damage or reduced strength that could be caused by frost, freezing actions, or low temperatures.

- B. When air temperature has fallen to or is expected to fall below 40 deg F (4 deg C), uniformly heat water and aggregates before mixing to obtain a concrete mixture temperature of not less than 50 deg F (10 deg C) and not more than 80 deg F (27 deg C) at point of placement.

Do not use frozen materials or materials containing ice or snow. Do not place concrete on frozen subgrade or on subgrade containing frozen materials.

Do not use calcium chloride, salt, or other materials containing antifreeze agents or chemical accelerators.

- C. Hot-Weather Placement: When hot weather conditions exist that would impair quality and strength of concrete, place concrete complying with ACI 305 and as specified.

Cool ingredients before mixing to maintain concrete temperature at time of placement to below 90 deg F (32 deg C). Mixing water may be chilled or chopped ice may be used to control temperature, provided water equivalent of ice is calculated to total amount of mixing water. Using liquid nitrogen to cool concrete is Contractor's option.

Cover reinforcing steel with water-soaked burlap if it becomes too hot, so that steel temperature will not exceed the ambient air temperature immediately before embedding in concrete.

Fog spray form, reinforcing steel, and subgrade just before placing concrete. Keep subgrade moisture uniform without puddles or dry areas.

1.10 COORDINATION

- A. Secure all pipe sleeves, anchors and bolts, including those for angle frames, inserts, ties and other materials in connection with concrete construction, in position before concrete is placed.
- B. Obtain information and instructions from other Trades and suppliers in ample time to schedule and coordinate the installation of items furnished by them to be embedded in concrete so provisions for their work can be made without delaying the project.

1.11 FORM CONSTRUCTION TOLERANCES

- A. Set form to required grades and lines, rigidly braced and secured. Install sufficient quantity of forms to allow continuous progress of Work so that forms can remain in place for twenty-four hours after concrete placement.
- B. Check completed formwork for grade and alignment to following tolerances:
- C. Top of forms not more than one-eighth inch in ten feet vertical elevation.
- D. Vertical face on longitudinal axis not more than one-fourth inch in ten feet horizontal width.
- E. Circular or curved formwork shall be continuous, complete radii as indicated on Drawings. No straight segments in circular/curved formwork shall be accepted.

1.12 TESTS AND OBSERVATIONS

- A. The following tests shall be made by District's testing laboratory or by a certified Special Inspector as determined by the District. Special inspections for Concrete Construction shall be in accordance with Section 1704.4 and Table 1704.4 of the 2019 CBC and as noted below:

Periodic Inspection of reinforcing steel and placement.

Cement: Mill analysis and test reports by supplier certifying cement conforms to Specifications is acceptable in lieu of tests at the discretion of District's Representative.

Provide free access to Work and cooperate with testing laboratory.

Submit proposed mix design of each class of concrete to inspection and testing firm for review prior to commencement of Work.

Concrete Inspections:

- a. Continuous Placement Inspection: Inspect for proper installation procedures.
- b. Periodic Curing Inspection: Inspect for specified curing temperature and procedures.

Strength Test Samples:

- a. Sampling Procedures: ASTM C172.
- b. Cylinder Molding and Curing Procedures: ASTM C31, cylinder specimens.

Concrete cylinders: Make and cure in accordance with ASTM C31.

- a. Record shall be made of the time cylinders were made and of locations of concrete from which the cylinders were taken.
- b. Three identical cylinders shall be taken from each pour of 25 cubic yards or part thereof, being placed each day.
- c. When volume of concrete for any class of concrete would provide less than 5 sets of cylinders, take samples from five randomly selected batches, or from every batch when less than 5 batches are used.
- d. Make one additional cylinder during cold weather concreting, and field cure.

Field Testing:

- a. Slump Test Method: ASTM C143.
- b. Air Content Test Method: ASTM C173.
- c. Temperature Test Method: ASTM C1064.
- d. Measure slump and temperature for each compressive strength concrete sample.
- e. Measure air content in air entrained concrete for each compressive strength concrete sample.

Cylinder Compressive Strength Testing:

- a. Test Method: ASTM C39.
- b. Test Acceptance: In accordance with ACI 318.
- c. Test one cylinder at 7 days.
- d. Test two cylinders at 28 days.

Maintain records of concrete placement. Record date, location, quantity, air temperature and test samples taken.

Should tests show that concrete is below specified strength; the Contractor shall remove all such concrete. Full cost of removal of inferior concrete, its replacement with concrete of proper specified strength and testing shall be borne by the Contractor.

1.13 CODES AND STANDARDS

- A. ACI 301 "Structural Concrete for Building"
- B. ACE 305 "Recommended Practice for Hot Weather Concreting"

- C. ACI 306 “Recommended Practice for Cold Weather Concreting”.
- D. ACI 308 “Curing Concrete”
- E. ACI 309 “Recommended Practice for Consolidation of Concrete”
- F. ACI 318 "Building Code Requirements for Reinforced Concrete".
- G. ACI 347 “Recommended Practice for Concrete Formwork”.
- H. ACI 605 “Recommended Practice for Hot Weather Concreting”.
- I. ACI 614 "Recommended Practice for Measuring, Mixing, and Placing Concrete".
- J. ASTM C31 “Practices for Making and Curing Concrete Test Specimens in the Field”.
- K. ASTM C33-86 "Specifications for Concrete Aggregate".
- L. ASTM C94-89 "Specifications for Ready Mixed Concrete".
- M. ASTM C143 “Test Method for Slump Portland Cement Concrete”.
- N. ASTM C150 “Portland Cement”.
- O. ASTM C309 “Specifications for Liquid Membrane-forming Compounds for Curing Concrete”.
- P. Western Concrete Reinforce Steel Institute (WCRSI) "Manual of Standard Practice".
- Q. Where provisions of pertinent codes and standards conflict with this Specification, the more stringent provisions shall govern.
- R. California Building Code (CBC), latest edition.
- S. Section 90 of the Caltrans Standard Specifications.

PART 2 - PRODUCTS

2.1 CONCRETE REINFORCEMENT

- A. Reinforcing Bars: Deformed Billet Steel Bars, ASTM A-615, Grade 40 or 60, containing a minimum of 70% total recycled content, clean and free from rust, scale, or coating that will reduce bond.
- B. Smooth Dowels for Joints: ASTM A615, Grade 40 smooth, billet-steel bars, shop painted with iron-oxide zinc-chromate primer.
- C. Welded Wire Mesh: ASTM A-185 plain type and uncoated finish.

2.2 CONCRETE

- A. Concrete Mix:

Ready-mixed concrete in accordance with ASTM C-94 and with aggregates comply with ASTM C-33 and Portland Cement ASTM C-150, Type II.

All mixes shall conform to applicable building code requirements listed herein or on the Drawings. All mix designs shall be submitted to the District's Representative for approval before being used. Mix design shall show proportions of cement, fine and coarse aggregate, and water and gradation of combined aggregates. Calcium chloride shall not be added at any mix.

Concrete shall be Class B per Caltrans Standards.

Cement: All cement shall be Portland cement Type II, and shall be the product of one manufacturer. The temperature of cement delivered to the plant shall not exceed 150 degrees Fahrenheit.

Aggregates

- a. Coarse aggregate shall have a minimum cleanliness value of 75.
- b. Fine aggregate shall have a minimum of sand equivalent of 75.
- c. Any suitable individual grading of coarse aggregates may be used.

Water: All water shall be clean and free from deleterious matter.

Admixture: No admixture of any type shall be used without prior approval of the District's Representative.

Concrete shall be as specified: Class B

- a. 28-Day Minimum Strength: Refer to Table in Paragraph 1.5(R) above
- b. Concrete slump: Refer to Table in Paragraph 1.5(R) above
- c. Air Content: No air entrainment

- B. Fly Ash: Pozzolanic admixtures, conforming to ASTM C618, Class C, with weight loss of ignition limited to not exceed 3 percent shall be used in mix designs to replace Portland Cement up to 15% by weight, unless noted otherwise on drawings.

Reference: ACI 211.4R-93.

C. Aggregate Base for Pavement:

2. Description: Class II aggregate base shall be 3/4 inch maximum and free from organic matter and other deleterious substances, and shall be of such nature that it can be compacted readily under watering and rolling to form a firm, stable base.

3. Grading Requirements:

| Percent Passing | Sieve Size |
|-----------------|------------|
| 100 | 1 in. |
| 90-100 | 3/4 in. |
| 35-60 | #4 |
| 10-30 | #30 |
| 2-9 | #200 |

4. Quality Requirements:

- a. Sand Equivalent: 25 min
- C. Water: Clean, potable (domestic) free from injurious amounts of salts, oils, acids, alkalis, organic materials or other deleterious matter. Available from source determined by District's Representative.
- D. Air Entrainment: ASTM C260.
- E. Admixtures: Admixtures containing chlorides are not permitted. All admixtures shall be mixed in accordance with manufacture's written recommendations.

2.3 COLOR ADDITIVES (If shown on plans)

A. Manufacturer: Davis Colors

5. Contact Information:

- a. Phone: 800-356-4848 or 323-269-7311.
- b. E-mail: info@daviscolors.com.
- c. Web Site: www.daviscolors.com.

B. Type:

- 1. Concentrated pigments specially processed for mixing into concrete and complying with ASTM C979.

C. Color Additive Delivery:

- 6. Automated Dispensing: Meter and dispense colors using computer-controlled automated color weighing and dispensing system. Use Davis Colors Chameleon liquid metering system and Hydrotint liquid color additives.
- 7. Manual Dispensing: Use Davis Colors Mix-Ready powdered color additives in pre-measured disintegrating bags.

2.4 MIXES

- A. Variations in water-cement ratio affect final appearance of concrete. Low water-cement ratio promotes richer, deeper concrete colors.
- B. Slump: [4 inches] If greater slump is required, use water-reducing or super-plasticizing admixture; do not add water.
- C. Color Additives: Mix in accordance with manufacturer's instructions. Mix until color additives are uniformly dispersed throughout mixture and disintegrating bags, if used, have disintegrated.
- D. Do not retemper mix or add water in field.

2.5 CONCRETE COLORS

A. Concrete Colors:

1. Natural Gray Concrete Paving
 - a. No color added
 - b. Finish: Medium Broom

2.6 CONCRETE FLATWORK

- A. Curing Compound for Flatwork: Davis Colors [W-1000 Clear Cure & Seal] [Color Seal II, tinted to match integrally colored concrete]; complying with ASTM C309 and designed for use on integrally colored concrete.
- B. Moist Curing Blankets: McTech Group (www.mctechgroup.com) [UltraCure NCF][UltraCure SUN] disposable curing blankets designed for use on colored or decorative concrete and to keep surface of concrete moist for seven days.

2.7 ACCESSORIES

- A. Tie Wires: Black annealed, ASTM A-82, minimum 16 gauge.
- B. Chains, Bolsters, Bar supports, Spacers: Sized and shaped for strength and support of reinforcement during installation and placement of concrete.
- C. Stirrup Steel: ASTM A-82.
- D. Snap Ties: Snap-off metal of fixed length capable of leaving no metal within one and one-half (1 1/2) inches of surface nor causing fractures, spall or other defects larger than one (1) inch in diameter.

E. Expansion Joint Materials:

Premolded Joint Filler: ASTM D1751, non-extruding and bituminous type resilient filler, compatible with sealant, and having a "guide strip" removable depth gauge.

Joint Sealant: ASTM C290, non-sag sealant "Dynatred" by Pecora Corporation, [214] 278-8158 or "Sonolastic Sealant Two-Part" by Sonneborn, [415] 889-9899, or equal.

- a. Color shall be selected by the District's Representative from the manufacturer's full color selection.

Bond Breaker: Pressure-sensitive tape as recommended by sealant manufacturer to suit application.

F. Forms:

Steel or wood of size and strength to resist movement during concrete placement and to retain horizontal and vertical alignment until removal.

Use forms that are straight and free of distortions and defects.

Use flexible spring forms or laminated boards to form radius bends as required.

- G. Form Release Agent: Colorless non-staining, free from oils. Chemical agent shall not impair bonding of paint or other proposed coatings.

- H. Form-Facing Materials:

All Surfaces: of sufficient strength to hold concrete properly in place and prevent leakage of water from forms.

Exposed Surfaces: Matte finish, coated, medium density overlay plywood made for forming. No wood-textured finish will be permitted on exposed concrete unless specified as such.

- I. Curing Compound: ASTM C309, Type I-D, Class A.

- J. Integral Color: As indicated on Drawings.

2.8 DETECTABLE WARNING SURFACE

- B. Detectable warning surfaces shall be ADA compliant.

- C. Detectable warning surface shall be ADA Solutions Cast-In-Place Replaceable Tactile, or approved equal.

1. Color: Truncated dome color to be yellow FS 33538 of Federal Standard 595C for the conditions on this project (CBC 11B-705.1.1.3).
2. Size: All truncated dome panels shall be 36" wide. The length shall be according to the Civil drawings.
3. Warranty: The manufacturer guarantees a five-year manufacturer warranty.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Verification of Conditions: Verify that subgrade preparation for concrete paving has been completed prior to commencement of work.

Surface Drainage:

Report in writing conflicts discovered on the site or prior work, which would prevent positive drainage. Correct prior to performing concrete work.

Do not permit finished paving surfaces to vary more than 1/4 in. measured with a 10 ft. metal straightedge, except at grade changes. No "birdbaths" or other surface irregularities will be permitted. Properly correct irregularities.

3.2 PREPARATION

- A. Templates: Use templates for all anchor plates, bolts, inserts and other items embedded in concrete. Accurately secure so that they will not be displaced during placing of concrete.

- B. Piping and Conduit: Do not embed piping, other than electrical conduit, in structural concrete. Locate conduit to maintain strength of structures at maximum. Verify size, length and location of electrical conduit.
- C. Exposed Tree Roots: protect per Section 01416 Special Procedures
- D. Aggregate Base Course: Compact base course to thicknesses and relative compaction shown on Drawings.

3.3 CONCRETE REINFORCEMENT PLACEMENT

- A. Fabricate reinforcement in accordance with ACI-315, providing a minimum concrete cover of three inches or as specified in UBC, latest edition.
- B. Place all reinforcement in the exact position shown on the Drawings and secure in position during the placing and compacting of concrete. Wire bars together with No.16 gauge wire with ties at all intersections except where spacing is less than twelve inches in each direction, in which case tie alternate intersections.
- C. Place all sleeves, inserts, anchors and embedded items required for adjoining work or for its support prior to concreting. Fill voids in embedded items temporarily with readily removable material to prevent entry of concrete.
- D. Give all contractors and subcontractors whose work is related to concrete or supported by it, ample notice and opportunity to introduce and/or furnish embedded items before concrete placement.
- E. Verify that concrete reinforcement may be installed in strict accordance with all pertinent codes and regulations, the Shop Drawings and the original design.
- F. Verify score joints in sidewalk slabs are constructed at 5-foot maximum intervals.

G. Bending:

Fabricate all reinforcement in strict accordance with the reviewed Shop Drawings.

Do not use bars with kinks or bends not indicated on the Drawings or on the reviewed Shop Drawings.

Do not bend or straighten steel in a manner that will injure the material.

Bend all bars cold.

Make all bends for other bars, including hooks, around a pin having diameter not less than six times the minimum thickness of the bar for number 8 and smaller and eight times the thickness for number 9 and larger.

- H. Before the start of concrete placement, accurately place all concrete reinforcement, positively securing and supporting by concrete blocks, metal chairs or spacer, or by metal hangers.
- I. Clearance:

Preserve clear space between bars of not less than one time the normal diameter of round bars.

In no case let the clear distance be less than 1 inch or less than 1-1/3 times the maximum size of aggregate.

Provide the following minimum concrete covering of reinforcement:

Concrete below ground deposited against forms: 3 inches.

Concrete deposited against earth: 3 inches.

Concrete elsewhere: as indicated on Drawings.

J. Splicing:

Horizontal bars:

Place bars in horizontal members with minimum laps at splices sufficient to develop the strength of the bars. Splice 40 bar diameters minimum.

Bars may be wired together at laps.

Wherever possible, stagger the splices of adjacent bars.

Wire fabric: Make all splices in wire fabric at least 1-1/2 meshes wide.

Other splices: Make only those other splices that are indicated on the approved Shop Drawings or specifically approved by District's Representative.

K. Dowels/Anchor Bolts: Place all required steel dowels/anchor bolts and securely anchor them into position before the concrete is placed. Bending the dowels after placement of concrete will not be permitted.

L. Obstruction: In the event conduits, piping, inserts, sleeves, or any other items interfere with placing reinforcement as indicated on the Drawings, or as otherwise required, immediately consult District's Representative and obtain review of new procedure before placing concrete.

3.4 CONCRETE FORMWORK CONSTRUCTION

A. Construct support, brace and maintain formwork to support vertical and lateral loads that might be applied until such loads can be supported by concrete.

B. Contractor assumes full responsibility in the removal of forms. The length of time forms must remain in place depends on the rate of time required for concrete to obtain a proper strength. Remove forms after the concrete is sufficiently hard to prevent damage to concrete.

C. Circular or curved formwork shall be continuous, complete radii as indicated on Drawings. No straight segments in circular/curved formwork shall be accepted.

D. Reuse of Forms:

Do not reuse forms if there is any evidence of surface wear or defect which would impair quality of surface.

Thoroughly clean and properly coat forms before reuse.

3.5 INSTALLATION

- A. Notification: Notify the District's Representative at least 48 hours before placing concrete.
- B. Placing Concrete:

Unless otherwise indicated or required by the Drawings, concrete paving shall be placed on compacted subgrade to thicknesses indicated on the Drawings to 95 percent compaction.

Place concrete in accordance with ACI-304 and Section 2605 of the California Building Code. Immediately after depositing, compact concrete thoroughly by mechanical vibration. No vibrating of form is allowed. Mixing shall be continuous, with no interruptions from the time the truck is filled until the time it is emptied. Concrete shall be placed within one and a half hours from the time water is first added.

Insure anchors, seats, plates, and other items to be cast into concrete are placed, held securely and will not cause hardship in placing concrete.

Insure reinforcement, inserts, embedded parts, etc. are not disturbed during concrete placement.

Pour concrete continuously between predetermined construction and control joints. Do not break or interrupt successive pours such that cold joints occur, unless otherwise indicated on the Drawings.

Lines and Grades: Elevations requiring accurate placement shall be set by a competent instrument man, using a professional type instrument.

For all concrete placed on soil, the subgrade shall be wet and compacted prior to placing.

Before placing concrete mixing, conveying and finishing equipment, forms and reinforcing shall be well-cleaned. Wet form before placing concrete, unless oiled forms are used.

3.6 CURING AND PROTECTION

- A. Beginning immediately after placement, protect concrete from premature drying, from excessively hot or cold temperatures, and from mechanical injury. Maintain concrete with minimal moisture loss at relatively constant temperature for a period necessary for hydration of cement and hardening of concrete. In hot, dry and windy weather protect concrete from rapid moisture loss before and during finishing operations with an evaporation – control material. Apply according to manufacturer's instruction.
- B. As soon as building flat work has hardened sufficiently to prevent injury to finish, apply an approved concrete curing agent in accordance with the manufacturer's recommendation.

- C. Start initial curing as soon as free water has disappeared from concrete surface after placing and finishing. Keep continuously moist for not less than seven (7) days.
- D. Excessive cracking as determined by the District's Representative which is aesthetically unacceptable or which will result in premature disintegration of paving shall result in replacement of concrete.
- E. Removal of Forms: Remove no sooner than at seven days after each pour.
- F. Conform to all applicable requirements for curing and protection of concrete, Sections 90-7 and 90-8 of the Caltrans Standard Specifications.
- G. Spraying: Spray concrete during the curing period as frequently as drying conditions may require.
- H. Curing: Cure concrete in accordance with the ACI Manual of Concrete Practice. During curing period, maintain concrete above 70 degrees F. for at least 3 days or above 50 degrees F. for at least 5 days.
- I. Damage and Defacement: Protect all concrete work against damage and defacement during subsequent construction operations until final acceptance.

3.7 CLEANING AND PATCHING

- A. Removal: Remove all projecting fins, bolts, wire, nails, etc., not necessary for the work, or cut them back 1 in. from the surface and patch in an inconspicuous manner.
- B. Snap Ties: Immediately after removal of forms, cut off snap ties extending from the face of concrete to at least 1 in. deep in the concrete. Fill or plug as detailed in Drawings.
- C. Voids: Fill holes with a 1:3 cement/sand mortar with the same color as the adjoining concrete. Mix and place the mortar as dry as possible and finish flush with the adjacent surface.
- D. Corrective Patching: Correct all defects in concrete work. Chip all voids to a depth of at least 1 in. with the edges perpendicular to the surface and parallel to form markings. Fill all voids, surface irregularities, or honeycombing by patching or rubbing. Ensure that all concrete surfaces so repaired duplicate the appearance of the unpatched work.
- E. Finishing: Work finish surface texture as specified below.

3.8 FINISHES

- A. Medium Broom Finish:

Floating: Float surface once it has sufficiently stiffened. Check planeness of surface with a 10 ft. straightedge in all directions. Cut down high spots and fill lows. Immediately refloat to a uniform non-directional sandy texture.

Obtain by drawing a stiff bristled broom across a floated finish.

Direction of brooming to be perpendicular to direction of paving.

3.9 JOINTS

A. Construction Joints:

Locate and install joints as indicated on the Drawings so they do not impair strength or appearance of slab.

All joints and other edges shall be formed in the fresh concrete using an edging tool to provide a smooth uniform impression.

B. Score Joints:

Locate and install joints as indicated on the Drawings so they do not impair strength or appearance of slab.

Score joints shall be formed in the fresh concrete using a jointer to cut the groove so that a smooth uniform impression is obtained. All joints shall be struck before and after sandblast.

Locate and form joints with 1/4 inch radius edges and 1 inch to 1-1/4 inch deep score at the location as shown on the Drawings.

All joints and other edges shall be formed in the fresh concrete using an edging tool to provide a smooth uniform impression.

C. Expansion Joints:

Locate and install joints as indicated on the Drawings so they do not impair strength or appearance of slab.

Expansion joints shall be provided at the location and 40-foot maximum intervals as shown on the plans, and at all locations where concrete paving abuts buildings, curbs or other proposed or existing structures. Install as per detail on the Drawings.

All joints and other edges shall be formed in the fresh concrete using an edging tool to provide a smooth uniform impression.

Install backer-rod and joint sealant as indicated on the Drawings.

Sealing of Expansion Joints: After the curing period, strip out all depth gauge strips and carefully clean expansion joints. Fill with joint compound as shown on Drawings. Avoid spilling compound on paved surfaces or overflowing from joint.

Protect expansion joints from damage until placement of filler or caulk.

3.10 FIELD QUALITY CONTROL

A. Samples: Contractor shall coordinate with the District to select a qualified testing laboratory to take samples for testing during the course of the work as described in Article 1.13 Tests and Observations.

- B. Field inspection and testing will be performed by a qualified testing laboratory in accordance with ACI 318 and as described in Article 1.13 Tests and Observations.
- C. Cost of Testing: Contractor shall be responsible for costs associated with testing.
- D. Rejected Materials: Remove off the site all concrete below specified strength.
- E. Cost of Removal and Retesting: Contractor shall be responsible for costs associated with removal and costs associated with retesting.
- F. Integral color: Color shall be evenly saturated in concrete mix to provide consistent, even, and distinct color in finished installation, including after medium sandblast finish is applied.
- G. Defective Work: Remove in its entirety and replace all defective concrete work which after corrective patching, rubbing, etc., fails to duplicate the appearance of unpatched work and/or conform to the standards set forth in these Specifications.
- H. Observe formwork continuously while concrete is being placed to see that there are no deviations from desired elevation, alignment, plumbness or camber.
- I. If during construction any weakness develops and falsework shows undue settlement or discoloration, stop work, remove affected construction if permanently damaged, and strengthen falsework.

END OF SECTION 321313