

## PROJECT MANUAL

# **Cal Poly Humboldt Deck Rehabilitation**

**Project No: 1485-0001**

921 Waterfront Drive  
Eureka, California 95501

100% Construction Documents  
04/01/2025

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Cal Poly Humboldt  
Deck Rehabilitation  
1485-0001

DOCUMENT 000107.10

SEALS PAGE - ARCHITECT

PART 1 - GENERAL

1.1 DESIGN PROFESSIONALS OF RECORD

Architect:



END OF DOCUMENT 000107.10

<b>BUILDING PERMIT APPROVAL</b>	
THIS PROJECT HAS DEMONSTRATED CONFORMANCE WITH APPLICABLE CODES AND STANDARDS ESTABLISHED BY STATUTE AND UNIVERSITY POLICY. BASED ON THIS DETERMINATION THESE DOCUMENTS ARE	
<b>APPROVED FOR CONSTRUCTION</b>	
	
KASSIDY D. BANDUCCI	
Campus Deputy Building Official California State Polytechnic University, Humboldt	
Date:	<u>May 01, 2025</u>
Permit No.	<u>2024/25-025</u>
<small>Construction Permit is not an official Notice to Proceed. Construction permit shall become invalid unless the work on the site authorized by such permit is commenced within 365 days after its issuance, unless the permittee has abandoned the work authorized by the permit. A permittee may request an extension of a permit in writing and demonstrate justifiable cause for the extension. The building official may grant, in writing, one or more extensions of time for periods of not more than 180 days per extension.</small>	
OTHER APPROVALS, AS APPLICABLE:	
<input type="checkbox"/> OFS APPROVAL	<input checked="" type="checkbox"/> SEISMIC PEER REVIEW
<input type="checkbox"/> DSA ACCESS REVIEW	<input type="checkbox"/> MECHANICAL PEER REVIEW

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Cal Poly Humboldt  
Deck Rehabilitation  
1485-0001

SECTION 00 01 10

TABLE OF CONTENTS

DIVISION 00 - PROCUREMENT AND CONTRACTING REQUIREMENTS

00 01 07.10	Seals Page - Architect
00 01 10	Table of Contents

DIVISION 01 - GENERAL REQUIREMENTS

01 11 00	Summary of Work
01 14 00	Work Restrictions
01 23 00	Alternates
01 25 00	Substitution Procedures
01 25 10	Substitution Request Form
01 26 13	Requests for Interpretation (RFI)
01 26 13A	RFI Template
01 31 13	Coordination
01 31 19	Project Meetings
01 31 26	Electronic Communications Protocol
01 32 00	Construction Progress Documentation
01 33 00	Submittal Procedures
01 25 10	Substitution Request Form
01 33 00A	Submittal Routing Form
01 35 00	Special Procedures
01 35 23	Owner Safety Requirements
01 35 53	Security
01 41 00	Regulatory Requirements
01 42 00	Reference Standards and Abbreviations
01 45 00	Quality Control
01 45 29	Testing and Lab Services
01 51 00	Temporary Utilities
01 52 00	Construction Facilities
01 55 00	Vehicular Access and Parking
01 55 29	Construction Staging Areas
01 56 39	Temporary Tree and Planting Protection
01 57 00	Temporary Controls
01 57 10	Existing Finish Protection
01 60 00	Product Requirements
01 71 00	Examination and Preparation
01 73 00	Execution Requirements
01 73 29	Cutting and Patching Requirements
01 74 00	Cleaning Requirements
01 74 19	Construction Waste Management and Disposal
01 74 19A	Contractor's Construction Waste and Recycling Plan
01 74 19B	Contractor's Reuse Recycling and Disposal Report
01 77 00	Closeout Procedures
01 78 10	Survey and Layout Data
01 78 23	Operation and Maintenance Data
01 78 36	Warranties
01 78 39	Project Record Documents

Cal Poly Humboldt  
Deck Rehabilitation  
1485-0001

**DIVISION 02 - EXISTING CONDITIONS**

02 41 00A Contractor's Building Demolition Waste and Recycling Plan  
02 41 00B Contractor's Reuse, Recycling, and Disposal Report  
02 41 19 Selective Demolition

**DIVISION 03 - CONCRETE**

03 35 01 Miscellaneous Concrete Finishing  
03 35 46 Concrete Topical Treatments

**DIVISION 04 - MASONRY**

NOT USED

**DIVISION 05 – METALS**

05 52 13 Pipe and Tube Railings  
05 73 00 Decorative Metal Railings

**DIVISION 06 - WOOD, PLASTICS, AND COMPOSITES**

06 05 73 Wood Treatment

**DIVISION 07 - THERMAL AND MOISTURE PROTECTION**

07 14 16 Cold Fluid Applied Waterproofing  
07 25 00 Weather Barriers  
07 46 46 Fiber Cement Siding  
07 62 00 Sheet Metal Flashing and Trim  
07 62 15 Copper Flashing and Trim  
07 92 00 Joint Sealants

**DIVISION 08 - OPENINGS**

NOT USED

**DIVISION 09 - FINISHES**

09 06 90.23 Paints and Coatings Schedule  
09 91 13 Exterior Painting  
09 91 23 Interior Painting  
09 96 00 High Performance Coatings

**DIVISION 10 - SPECIALTIES**

NOT USED

**DIVISION 11 - EQUIPMENT**

NOT USED

**DIVISION 12 - FURNISHINGS**

NOT USED

Cal Poly Humboldt  
Deck Rehabilitation  
1485-0001

DIVISION 13 - SPECIAL CONSTRUCTION  
NOT USED

DIVISION 14 - CONVEYING EQUIPMENT  
NOT USED

DIVISION 21 - FIRE SUPPRESSION  
NOT USED

DIVISION 22 - PLUMBING  
NOT USED

DIVISION 23 - HEATING, VENTILATING, AND AIR CONDITIONING (HVAC)  
NOT USED

DIVISION 25 - INTEGRATED AUTOMATION  
NOT USED

DIVISION 26 - ELECTRICAL  
NOT USED

DIVISION 27 - COMMUNICATIONS  
NOT USED

DIVISION 28 - ELECTRONIC SAFETY AND SECURITY  
NOT USED

DIVISION 31 - EARTHWORK  
NOT USED

DIVISION 32 - EXTERIOR IMPROVEMENTS  
NOT USED

DIVISION 33 - UTILITIES  
NOT USED

DIVISION 34 - TRANSPORTATION  
NOT USED

DIVISION 35 - WATERWAY AND MARINE CONSTRUCTION  
NOT USED

Cal Poly Humboldt  
Deck Rehabilitation  
1485-0001

DIVISION 40 - PROCESS INTERCONNECTIONS  
NOT USED

DIVISION 41 - MATERIAL PROCESSING AND HANDLING EQUIPMENT  
NOT USED

DIVISION 42 - PROCESS HEATING, COOLING, AND DRYING EQUIPMENT  
NOT USED

DIVISION 43 - PROCESS GAS AND LIQUID HANDLING, PURIFICATION, AND STORAGE  
EQUIPMENT  
NOT USED

DIVISION 44 - POLLUTION AND WASTE CONTROL EQUIPMENT  
NOT USED

DIVISION 45 - INDUSTRY-SPECIFIC MANUFACTURING EQUIPMENT  
NOT USED

DIVISION 46 - WATER AND WASTEWATER EQUIPMENT  
NOT USED

DIVISION 48 - ELECTRICAL POWER GENERATION  
NOT USED

END OF SECTION 00 01 10



## **SECTION 01 11 00**

### **SUMMARY OF THE WORK**

#### **PART 1 - GENERAL**

##### **1.1 RELATED DOCUMENTS**

- A. Construction Drawings, Technical Specifications, Addenda, and general provisions of the Contract, including Contract General Conditions and Supplementary General Conditions and other Division 1 Specification Sections, apply to this Section.

##### **1.2 SUMMARY**

- A. The following subjects are included in this section:
  - 1. Project Description
  - 2. Project Phasing
  - 3. Contractor Use of Premises / Work Restrictions
  - 4. Superintendent / Supervisory Staff
  - 5. Special Project Requirements
  - 6. Protection of Work
  - 7. Owner Furnished / Contractor Installed
  - 8. Permits, Licenses, & Fees
  - 9. Partnering

##### **1.3 PROJECT DESCRIPTION**

- A. Work Included in the Contract: This project proposes to rehabilitate two exterior decks.
  - 1. Exterior edge of framing, deck structure and sheathing, and siding damaged by water intrusion to be removed and replaced.
  - 2. New soffit material installed below deck after existing material demolished to allow for new structure to be installed.
  - 3. New glass railing system installed in place of demolished exterior railing system.
  - 4. Existing downspouts reconnected to new gutter installed at deck edge.
  - 5. Fire sprinkler systems to be maintained and protected during construction.
  - 6. Maintain access and egress to building during construction.

##### **1.4 PROJECT PHASING**

- A. Phasing Plan/Sequence of Work: Work shall be performed in a single phase.
- B. Owner Occupancy: Work will occur in an operating University environment.

##### **1.5 CONTRACTOR USE OF PREMISES / WORK RESTRICTIONS (Also refer to Contract General Conditions)**

- A. General
  - 1. Contractor shall at all times conduct the work so as to impose no hardship on the Trustees or others engaged in the Trustees' work nor cause any unreasonable delay or hindrance thereto.

2. Construction activities will be scheduled to minimize disruption to the University and to Campus users.
3. The Contractor may not interrupt any Campus utilities without prior written permission from the Trustees. Requests for utility shutdowns shall be submitted a minimum of 14 calendar days in advance of the requested shutdown date.
4. The Work of the Project is to be completed within an operating University, and that University operations and construction activities by others will be in progress at the Work Site during the course of this Contract. Refer to Section 01 14 00 – Work Restrictions for additional requirements.

B. Surrounding Site Condition Survey

1. Prior to commencing the work, the Contractor and the University Representative shall tour the Project Site together to examine and record damage to existing buildings, landscape, hardscape and other improvements, both on and adjacent to the project site. The resulting record shall serve as a basis for determination of subsequent damage due to Contractor's operations and shall be signed by parties involved in the tour using Site Survey form 702.08 which is part of the contract documents. Any damage to existing improvements not noted in the original survey, but subsequently discovered, shall be reported to the University Representative immediately.

C. Protection of Existing Structures and Utilities (also refer to Contract General Conditions)

1. Locate all known existing utility installations before proceeding with construction operations which may cause damage to such installations. The existing utilities shall be protected and maintained in continual service at the Contractor's expense. Where existing utilities cross or are adjacent to the work of this contract, the Contractor shall notify the University Representative a minimum of 48 hours in advance of commencement of work and receive approval for the method of uncovering the utility. The Contractor shall locate the existing utility(s) by hand digging, pot holing, locator device, ground penetrating radar, X-ray, or other methods recommended by the Contractor and approved by the Construction Administrator. Repair of damage to existing utility(s) shall be at the Contractor's expense.
2. In the event that undocumented existing structures or utilities are encountered, the contractor shall immediately notify the University Representative and request direction concerning how to proceed with the work.
3. Should the Contractor damage any existing structure or utility, the Contractor shall take immediate action to ensure the safety of both persons and property.
4. Contractor shall visit existing building(s) and grounds and thoroughly familiarize itself with existing conditions. Existing record drawings are available for Contractor review at [*state location*]
5. Contractor shall include all necessary pipe offsets, fittings, etc. as required to complete the work in the base bid. No additional costs due to the Contractor's failure to survey existing conditions and review available record drawings will be allowed.
6. Contractor shall note all utility items (utility meters, junction boxes, valve boxes, post indicator valves, man-hole covers, etc.) at or above grade in the vicinity of the project site prior to commencing with trenching operations. These items indicate the presence of

underground utilities in the area which shall be located and kept in continual service. This requirement shall apply regardless of inclusion of these utilities on existing record documents.

7. When cutting, removal or alteration of existing work is required to form connections with new work or otherwise to meet the requirements of the contract documents, perform such work so as not to damage the work that will remain in place. Refer to sections for cutting, patching and repair requirements.
8. Contractor shall provide all necessary materials, equipment and labor to adequately protect existing structures, floors, architectural finishes, utilities, landscape and hardscape which may be impacted by the work of this contract.

D. Allowable Work Schedule

1. Normal construction activities shall be performed Monday through Friday between the hours of 7:00 am and 6:00 pm, excluding holidays.
2. Shutdown of existing utilities or other activities which impact Campus operations shall be scheduled in advance with the University Representative in accordance with paragraph 1.05.A.3 above, and shall be scheduled during off-hours at the discretion of the University and at no additional cost to the University.
3. Contractor shall submit an "Off-hours work Schedule Request" a minimum of 72 hours prior to any anticipated weekend or holiday work. A request must also be submitted for work outside of normal working hours.

E. Site Decorum

1. Contractor is to control the conduct of labor forces and prevent unwanted interaction initiated by workers with the University staff, students or other individuals other than those associated with the project.
2. In the event that any worker initiates unwanted interaction, utilizes profanity, or (in the opinion of the University Representative) conducts him/herself in an offensive or unprofessional manner, the Contractor shall immediately remove the worker from the project and replace said worker with another of equivalent technical skill at no additional cost to the University.
3. No smoking is allowed within any University facility, including new buildings under construction which have reached a point in construction where the building is partially enclosed.
4. No radios, other than 2-way communication type, shall be allowed on the project site.
5. Contractor shall provide an ANSI Class II - Heavy Duty Safety Vest and Hard Hat for every employee, every subcontractor, every sub-tier subcontractor, and subcontractor employee working on-site. Vests are not optional.

F. University Keys

1. Contractor shall provide a written request to the University for keys to existing facilities. In accordance with University policy, the Contractor shall be assessed a refundable deposit of

\$50 per change key and \$100 for maintenance or building master keys issued for use in conjunction with the work. The deposit may be made in the form of cash, cashier's check, company check or personal check. Deposits must be received prior to issuance of keys by the Physical Plant Management Key Shop. The deposit will be refunded upon completion of the project and receipt of the keys by the Campus Physical Plant Management Key Shop. If the Contractor fails to return a key, a lost key fine shall be charged for the actual cost of re-keying campus locks up to a maximum of \$5,000 per building.

2. Site fences shall be locked with the University standard lock in order to allow the University 24 hour access for maintenance and inspection, or response to an emergency condition. Should Contractor wish to use a different lock, it shall be double-locked with the University standard lock at all times that the site is secured.

## **1.6 SUPERINTENDENT / SUPERVISORY STAFF**

A. The following requirements are in addition to the requirements of the Contract General Conditions:

1. The Contractor shall employ a competent Superintendent able to read, write and communicate fluently in English. The Superintendent shall be on site at all times during which work occurs on the project site and shall be fully authorized to represent Contractor in all matters pertaining to the work of this contract. All communications and agreements with the Superintendent shall be binding upon Contractor. The Superintendent shall be acceptable to the University and shall continue in the capacity of Superintendent for the duration of the project unless the Superintendent ceases employment with Contractor or the University otherwise agrees. The Superintendent shall not be employed on any other project by the Contractor during the course of this project.
2. Work shall not occur on the site except under the direct supervision of the Superintendent. Failure to maintain a Superintendent on the Project site at all times that work is occurring will result in the issuance of a stop work notice by the University Representative. Any schedule impact resulting from said stop work order shall be the responsibility of the Contractor; no additional costs for delay will be due Contractor, nor will assessment of liquidated damages be suspended to account for the work stoppage.
3. In addition to the Superintendent, Contractor shall assign a full time project manager solely dedicated to the work of this project for the duration of the project.

## **1.7 SPECIAL PROJECT REQUIREMENTS - NONE**

## **1.8 PROTECTION OF WORK**

- A. Protect the Work from theft, vandalism, and unauthorized entry. The Contractor shall have the sole responsibility for job site security.
- B. During Off-Work Hours. During all hours that Work is not being prosecuted, furnish such watchman's services as Contractor may consider necessary to safeguard materials and equipment in storage on the Project site, including Work in place and in process of fabrication, against theft, acts of malicious mischief, vandalism, and other losses or damages.

## **1.9 OWNER-FURNISHED/CONTRACTOR-INSTALLED PRODUCTS**

- A. Owner-Furnished/Contractor-Installed (OFICI) Products: University will furnish, for installation by

Contractor, products which are identified on the Drawings and in the Specifications as "OFICI (Owner-Furnished/Contractor-Installed)", "installed by General Contractor," or similar terminology. See Drawings for identification of such products.

- B. Relationship to Work under the Contract: Work under the Contract shall include all provisions necessary to fully incorporate such products into the Work, including, as necessary, fasteners, backing, supports, piping, conduit, conductors and other such provisions from point of service to point of connection, and field finishing, as shown on Drawings and specified herein.

#### **1.10 PERMITS, LICENSES AND FEES**

- A. Permits, Licenses and Fees, General: Refer to Contract General Conditions.
- B. Licenses: Contractor shall obtain and pay all licenses associated with construction activities, such as business licenses, contractors' licenses and vehicle and equipment licenses. All costs for licenses shall be included in the Contract Amount.
- C. Parking Fees: Contractor shall obtain and pay for all parking permits and fees for vehicles parked off of the Construction Site. Refer to Section 01 55 00, Vehicular and Pedestrian Controls for additional parking requirements.

#### **1.11 PARTNERING**

- A. The Trustees intend to encourage the foundation of a cohesive partnership with the Contractor and its Subcontractors, the Architect and its consultants, and the Trustees. This partnership will be structured to draw on the strengths of each organization to identify and achieve reciprocal goals. The objectives are effective and efficient Contractor performance, intended to achieve completion within budget, on schedule, and in accordance with the Contract Drawings and Specifications.

#### **PART 2 - PRODUCTS**

- A. Not applicable to this Section.

#### **PART 3 - EXECUTION**

- A. Not applicable to this Section.

**END OF SECTION**

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## **SECTION 01 14 00**

### **WORK RESTRICTIONS**

#### **PART 1 - GENERAL**

##### **1.1 RELATED DOCUMENTS**

- A. Construction Drawings, Technical Specifications, Addenda, and general provisions of the Contract, including Contract General Conditions and Supplementary General Conditions and other Division 1 Specification Sections, apply to this Section.

##### **1.2 SUMMARY**

- A. The following subjects are included in this section.
  - 1. Submittals
  - 2. Work Plans
  - 3. Contractor's use of Premises
  - 4. Contractor's Use of Project Area
  - 5. Time Restrictions
  - 6. Noise and Vibration Restrictions
  - 7. University's use of Site and Premises

##### **1.3 SUBMITTALS**

- A. Submit each Work Plan for review and approval a minimum of (21) calendar days prior to the start of construction in areas affecting University operations. Participate in review of proposed Work Plan with the Construction Manager, Architect and University. Within 3 calendar days after joint review, submit revised Work Plan.
- B. Format/Submittal Requirements
  - 1. Contractor's Work Plans shall be in the form of marked-up drawings, sketches and/or original drawings that clearly convey the nature and location of Contractor's planned activities. Drawings shall be supplemented by written descriptions of the work. Work Plans shall be submitted in written narrative form where without drawings where deemed adequate by the Construction Administrator to fully describe construction activities, impacts and protectionary measures.
  - 2. Work Plans shall be submitted in accordance with the requirements of Section 01 33 00.

##### **1.4 WORK PLANS**

- A. Contractor shall submit comprehensive written work plans for all activities affecting University operations, including but not limited to, the following:
  - 1. Barricade and Fencing locations.
  - 2. Haul routes.
  - 3. Routing of vehicular and pedestrian traffic around specific construction area(s).
  - 4. Utility shutdowns/tie-in to existing utilities.
  - 5. Disabled access routes.
  - 6. Fire Department access to University buildings.
  - 7. Vehicular traffic access to buildings.
  - 8. Parking spaces impacted.
  - 9. Construction site and contractor parking access.

10. Large equipment access (cranes, loaders, backhoes, etc.)
  11. Work within pedestrian thoroughfares and campus roads.
  12. Work within the inner-Campus area.
- B. The Work Plans shall be used to communicate Project impacts to the campus community.
- C. Contractor shall cooperate with the University to minimize conflicts and facilitate University operations.
1. Off-hours and weekend work may be required for existing utility shutdowns and other work of major impact to the University. No additional costs shall be paid by the University due to this requirement.

#### **1.5 CONTRACTOR'S USE OF PREMISES (Also refer to Contract General Conditions)**

A. General

1. Contractor shall at all times conduct the work so as to impose no hardship on the Trustees or others engaged in the Trustees' work nor cause any unreasonable delay or hindrance thereto.
2. Construction activities will be scheduled to minimize disruption to the University and to Campus users.
3. The Contractor may not interrupt any Campus utilities without prior written permission from the Trustees. Requests for utility shutdowns shall be submitted a minimum of 7 calendar days in advance of the requested shutdown date in writing to the Construction Administrator.

B. Surrounding Site Condition Survey

1. Prior to commencing the work, the Contractor and the University Representative shall tour the Project Site together to examine and record damage to existing buildings, landscape, hardscape and other improvements, both on and adjacent to the project site. The contractor and the campus shall video record the condition of all areas where work is to take place. The video shall be turned over to the University prior to the Notice to Proceed along with Site Survey and Acceptance Form # 702.08.
2. The resulting record shall serve as a basis for determination of subsequent damage due to Contractor's operations and shall be signed parties involved in the tour. Any damage to existing improvements not noted in the original survey, but subsequently discovered, shall be reported to the University Representative immediately.

C. Protection of Existing Structures and Utilities (also refer to Contract General Conditions)

1. Locate all known existing utility installations before proceeding with construction operations that may cause damage to such installations. The existing utilities shall be protected and maintained in continual service at the Contractor's expense. Where existing utilities cross or are adjacent to the work of this contract, the Contractor shall notify the University Representative a minimum of 48 hours in advance of commencement of work. The Contractor shall locate the existing utility(s) by hand digging; repair of damage to existing utility(s) shall be at the Contractor's expense.
2. In the event that undocumented existing structures or utilities are encountered, the Contractor shall immediately notify the University Representative and request direction concerning how to proceed with the work.
3. Should the Contractor damage any existing structure or utility, the Contractor shall take immediate action to ensure the safety of both persons and property.



4. Contractor shall visit existing building(s) and grounds and thoroughly familiarize itself with existing conditions. Existing record drawings are available for Contractor review at the office of Cal Poly Humboldt. Contact Facilities Management, Howard Maxwell 707-823-5076
5. Contractor shall include all necessary pipe offsets, fittings, etc. as required to complete the work in the base bid. No additional costs due to the Contractor's failure to survey existing conditions and review available record drawings will be allowed.
6. Contractor shall note all utility items (utility meters, junction boxes, valve boxes, post indicator valves, man-hole covers, etc.) at or above grade in the vicinity of the project site prior to commencing with trenching operations. These items indicate the presence of underground utilities in the area that shall be located and kept in continual service. This requirement shall apply regardless of inclusion of these utilities on existing record documents.
7. When cutting, removal or alteration of existing work is required to form connections with new work or otherwise to meet the requirements of the contract documents, perform such work so as not to damage the work that will remain in place. Refer to Sections 01 35 16 and 01 73 29 for cutting, patching and repair requirements.
8. Contractor shall provide all necessary materials, equipment and labor to adequately protect existing structures, floors, architectural finishes, utilities, landscape and hardscape that may be impacted by the work of this contract.
9. Trenching and/or installing new utilities (water, power, data, telecommunications, gas) – The Contractor shall layout proposed utility trenches 14 days prior to doing work. The Contractor will layout and mark all utilities shown on the drawings and examine the site for other potential utilities which may cross the site. After which CSUN Physical Plant Management will verify and mark additional utilities. After which the Contractor shall hire a ground penetrating radar firm to scan the entire trench line and determine all utility locations; GPR cost will be paid for by the Contractor. After GPR scanning has been completed, the Contractor shall hire a vacuum utility locating service to physically pothole and physically locate all utilities identified on the drawings, through Physical Plant Management review, and GPR scanning. After all of the above has been completed the contractor may proceed with trenching operations.

D. Allowable Work Schedule

1. Normal construction activities shall be performed Monday through Friday between the hours of 7:00 am and 6:00 pm, excluding holidays.
2. Shutdown of existing utilities or other activities which impact Campus operations shall be scheduled in advance with the University Representative in accordance with paragraph 1.4-A-3 above, and shall be scheduled during off-hours at the discretion of the University and at no additional cost to the University.
3. Contractor shall submit an "Off-hours Work Schedule Request Form" (attached) a minimum of 72 hours prior to any anticipated weekend or holiday work. A form must also be submitted for work outside of normal working hours. The form to be utilized is included at the end of this section.

E. Site Decorum

1. Contractor is to control the conduct of labor forces and prevent unwanted interaction initiated by workers with the University staff, students or other individuals other than those associated with the project.
2. In the event that any worker initiates unwanted interaction, utilizes profanity, or (in the opinion of the University Representative) conducts him/herself in an offensive or unprofessional manner, the Contractor shall immediately remove the worker from the

project and replace said worker with another of equivalent technical skill at no additional cost to the University.

3. No smoking is allowed on the University Campus.
4. No radios, other than 2-way communication type, shall be allowed on the project site.
5. Contractor shall provide a ANSI Class II - Heavy Duty Safety Vest (Item#:SV59G-Green/SV59O-Orange) <http://www.safetygearonline.com/safety-vest/custom-screen-printing/screen-printing-service> and Hard Hat for every employee, every subcontractor, every sub-tier subcontractor, and subcontractor employee working on-site. Custom made Class II Safety Vest shall at a minimum indicate the Contractor and Project Name, on BOTH the back and front of the vest. Vests can be ordered: <http://www.safetygearonline.com/>. **Vests are not optional. Failure to comply with this requirement will result in a \$1,000.00 credit to the University via credit change order. Contractor shall maintain a supply of at least 10 vests on site at all times.**

F. University Keys

1. Contractor shall provide a written request to the University for keys to existing facilities. In accordance with University policy, the Contractor shall be assessed a refundable deposit of \$50 per change key and \$100 for maintenance or building master keys issued for use in conjunction with the work. The deposit may be made in the form of cash, cashier's check, company check or personal check. The Physical Plant Management Key Shop must receive deposits prior to issuance of keys. The CPH Facilities Management Key Shop will refund the deposit upon completion of the project and receipt of the keys. If the Contractor fails to return a key, a lost key fine shall be charged for the actual cost of re-keying campus locks up to a maximum of \$5,000 per building.
2. Site fences shall be locked with the University standard lock in order to allow the University 24 hour access for maintenance and inspection, or response to an emergency condition. Should Contractor wish to use a different lock, it shall be double-locked with the University standard lock at all times that the site is secured.

### 1.3 CONTRACTOR'S USE OF PROJECT AREA

- A. Location of Work: The Work shall be accomplished within areas indicated on Drawings as Project Area or, if not indicated, to areas as directed by University's Representative. Use of other areas, including parking areas, shall be subject to approval by University's Representative. Refer to Section 01 55 29 - Construction Staging Areas and Section 01 55 00 - Vehicular and Pedestrian Controls for additional requirements.
1. Contractor shall not unreasonably encumber the site with materials or equipment.
  2. Contractor shall assume full responsibility for protection and safekeeping of products stored on the premises.
  3. Contractor shall move any stored products which interfere with operations of University or contractors performing work under separate contracts for University.
  4. Temporary closures or restrictions of use of public thoroughfares, necessary to accomplish the Work, shall be made only as approved in advance by public safety and parking authorities having jurisdiction, as directed in writing by the University's Representative.
  5. Once the Contractor begins Work on a trenching heading, the Work shall proceed on a minimum 8 hours per day continuous basis, as weather permits, without stopping until the open trenches are backfilled and the surfaces are re-established.
- B. Unless otherwise specified or indicated on the Drawings, during the construction period the Contractor shall have full use of the designated Project Area for construction operations, including use of the site. Contractor's use of Project Area shall be limited only by University's right to perform construction operations with its own forces or to employ separate contractors on portions of the

Project in accordance with the Contract General Conditions.

- C. Continued Use of Existing Building: Maintain existing building in a weather tight condition throughout construction period. Repair damage caused by construction operations. Protect building and its occupants during construction period.
- D. Cooperation with Others:
  - 1. The Contractor shall at all times cooperate with, coordinate the Work with and provide access to the University, University Contractors, and buildings operating in the vicinity of the Project Site to the extent necessary for the Work and ongoing operations at the University may progress in an orderly manner. The Contractor shall implement measures to minimize disruption to ensure the Contractor's actions and methods of operation will not result in interference with ongoing operations at the University. The Contractor shall have no claim against the University as a result of these other activities. If Contractor's Work causes disruption to ongoing campus operations, Contractor shall work irregular hours and/or implement other measures, at the Contractor's expense, to avoid any disruption to ongoing University operations.
  - 2. The Contractor agrees and acknowledges that the Work of the Project is to be completed within an operating University, and that University operations and construction activities by others will be in progress at the Work Site during the course of this Contract.
  - 3. The Contractor shall coordinate construction activities with the Construction Manager to minimize interference with all parties concerned.
- E. Protection of Existing Improvements and Facilities: Contractor shall protect property adjacent to the Project Area and all existing improvements and facilities within the Project Area, including paving and landscaping indicated to remain.
  - 1. All existing improvements and facilities, except those specifically indicated for removal or reconstruction shall be protected with temporary barriers, enclosures and passageways.
  - 2. After completion of Work, existing improvements and facilities shall be restored to original condition and location. Project Area shall be cleaned and restored to presentable condition, equivalent to or better than the condition prior to start of Work.
  - 3. Should existing improvements and facilities be damaged or soiled beyond renovation or repair, new products shall be provided by Contractor equivalent to existing products, as directed by University's Representative.
- F. Project Area Access: Limit access to site to indicated routes and access points as identified. If routes and access points are not indicated, access shall be as approved and as directed by University's Representative. Do not restrict access to adjacent facilities and do not restrict access for those performing work under separate contracts for University.
  - 1. Access to and egress from Project Area shall be in strict conformance to prearranged routes approved by University's Representative, with the understanding that curtailment of construction traffic or revision of access routes may be required on short notice if University's operations mandate such changes because of excessive noise or problems of safety, service or supply.
  - 2. Driveways and Entrances: Keep driveways and entrances serving premises clear and available to service and emergency vehicles at all times. Do not use these areas for parking or storage of materials.
    - a. Schedule deliveries to minimize use of driveways and entrances.
    - b. Schedule deliveries to minimize space and time requirements for storage of materials and equipment on-site.
- G. Emergency Access: Provide pathways, drives, gates, directional signage and other provisions as required by authorities having jurisdiction for emergency access to Project Area and adjoining campus facilities.

- H. Emergency Egress: Maintain all pathways, drives, gates, and other means of egress during construction as required by public safety authorities having jurisdiction.

#### **1.4 TIME RESTRICTIONS**

- A. Contractor's Work Hours: Work shall be limited to Monday through Friday, except University-observed holidays and periods when classes are not in session, during hours of 7:00am to 6:00pm.
  - 1. Work on other days and at other hours shall be only with written approval of University's Representative.
  - 2. Work during final exam periods at ends of class sessions shall be restricted to minimize noise, vibrations and other distracting and inhibiting activities.
  - 3. If it becomes necessary to perform Work on weekends and holidays, in order to meet milestone and final completion dates, Work shall be performed at no change in Contract Amount unless authorized by written Change Order or Field Instruction by the Construction Administrator.

#### **1.5 NOISE AND VIBRATION RESTRICTIONS**

- A. Noise Restrictions: Minimize noise from construction activities. Limit loud construction activities to times when classes are not in session in adjacent [facilities] [spaces].
- B. Vibration Restrictions: Do not perform activities that cause vibrations in adjacent occupied spaces, including spaces above and below location where Work is performed. If vibrations transmit through structure, perform Work at times when University activities are not being conducted.

#### **1.6 UNIVERSITY'S USE OF SITE AND PREMISES**

- A. University's Use of Site and Premises: University reserves the right to occupy and to place and install equipment in completed or partially completed areas of buildings and site. Such placing of equipment and partial occupancy shall not constitute acceptance of the total Work.
  - 1. Full University Occupancy: University will occupy site and existing buildings during entire construction period. Cooperate with University during construction operations to minimize conflicts and facilitate University usage. Perform the Work so as not to interfere with University's operations.
  - 2. Partial University Occupancy: University reserves the right to occupy and to place and install equipment in completed areas of building provided such occupancy does not interfere with completion of the Work. Such placement of equipment and partial occupancy shall not constitute acceptance of the total Work.
  - 3. Before University occupancy, mechanical, electrical, and fire safety systems shall be fully operational, and required tests and inspections shall be successfully completed. Any occupancy of a building is contingent upon a certificate of temporary or final occupancy provided by the State Fire Marshal. Unless otherwise agreed, University will provide operation and maintenance of mechanical and electrical systems in portions of the building used by University. Unless otherwise agreed in writing by the University, warranty periods shall not begin until date established by Notice of Completion filed at Contract closeout.
  - 4. Upon occupancy, University will assume responsibility for maintenance and custodial service for occupied portions of building.

#### **PART 2 - PRODUCTS**

Not Applicable to this Section

#### **PART 3 - EXECUTION**

Not Applicable to this Section

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**END OF SECTION**

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## SECTION 01 23 00

### ALTERNATES

#### PART 1 - GENERAL

##### 1.1 RELATED DOCUMENTS

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

##### 1.2 SUMMARY

- A. Section includes administrative and procedural requirements for alternates.

##### 1.3 DEFINITIONS

- A. Alternate: An amount proposed by bidders and stated on the Bid Form for certain work defined in the bidding requirements that may be added to or deducted from the base bid amount if the Owner decides to accept a corresponding change either in the amount of construction to be completed or in the products, materials, equipment, systems, or installation methods described in the Contract Documents.
  - 1. Alternates described in this Section are part of the Work only if enumerated in the Agreement.
  - 2. The cost or credit for each alternate is the net addition to or deduction from the Contract Sum to incorporate alternates into the Work. No other adjustments are made to the Contract Sum.

##### 1.4 PROCEDURES

- A. Coordination: Revise or adjust affected adjacent work as necessary to completely integrate work of the alternate into Project.
  - 1. Include, as part of each alternate, miscellaneous devices, accessory objects, and similar items incidental to or required for a complete installation, whether or not indicated as part of alternate.
- B. Execute accepted alternates under the same conditions as other Work of the Contract.
- C. Schedule: A Part 3 "Schedule of Alternates" Article is included at the end of this Section. Specification Sections referenced in schedule contain requirements for materials necessary to achieve the work described under each alternate.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 SCHEDULE OF ALTERNATES

- A. Base Bid: As shown on the approved Construction Documents.
- B. [Additive ] [Deductive ]Alternate Number:
  - 1. Description:
- C. [Additive ] [Deductive ]Alternate Number:
  - 1. Description:
- D. [Additive ] [Deductive ]Alternate Number:
  - 1. Description:

END OF SECTION



## **SECTION 01 25 00**

### **SUBSTITUTION PROCEDURES**

#### **PART 1 - GENERAL**

##### **1.1 RELATED DOCUMENTS**

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

##### **1.2 SECTION INCLUDES**

- A. General requirements applicable to substitutions of materials, products, equipment and systems.

##### **1.3 DEFINITIONS**

- A. Substitutions: Changes in products, materials, equipment, and methods of construction required by Contract Documents proposed by Contractor after award of Contract are considered to be requests for substitutions. Following are not considered to be requests for substitutions:
  - 1. Substitutions requested during bidding period, and accepted by Addendum prior to award of Contract, are included in Contract Documents and are not subject to requirements specified in this Section for Substitutions.
  - 2. Revisions to Contract Documents requested by University Representative or Architect.
  - 3. Specified options of products and construction methods included in Contract Documents.
  - 4. Contractor's determination of and compliance with governing regulations and orders issued by governing authorities.

##### **1.4 SUBSTITUTION OF MATERIALS AND EQUIPMENT**

- A. Substitutions, General: Catalog numbers and specific brands or trade names are used in materials, products, equipment and systems required by the Specifications to establish the standards of quality, utility and appearance required. Alternative products which are of equal quality and of required characteristics for the purpose intended may be proposed for use provided the Contractor complies with provisions of Supplementary General Conditions and Contract General Conditions, subject to the following provisions.
  - 1. See Section 01 60 00 - Basic Product Requirements for requirements regarding product options.
  - 2. Substitutions will only be authorized by properly executed Change Order or Field Instruction.
  - 3. Product and Material Substitution period ended 10 days prior to bid. The University has no obligation to entertain substitutions unless product in no longer being produced.

## 1.5 SUBMITTALS

- A. Requests for substitutions will not be considered before selection of Contractor. Substitutions will not be considered when:
1. Indicated on shop drawings or product data submittals without separate formal "Substitution Request by the Contractor.
  2. Requested directly by subcontractor or supplier.
  3. Acceptance will require revision of Contract Documents.
  4. Proposed changes are not in compliance with general intent of Contract Documents.
- B. Requests for substitutions will be considered only as allowed in the Supplementary General Conditions and Contract General Conditions. Other requests will be considered after Notice to Proceed only when:
1. Specified product or method of construction cannot be provided within Contract Time. Architect or University Representative will not consider request if product or method cannot be provided as result of failure to pursue Work promptly or coordinate activities properly.
  2. Subsequent information or changes indicate specified product will not perform as intended.
  3. Requested substitution offers University substantial advantage, in cost, time, energy conservation, or other considerations, after deducting additional responsibilities University must assume. University's additional responsibilities include compensation to Architect for redesign and evaluation services, compensation to University Representative for additional processing and evaluation services, increased cost of other construction by University, and similar considerations.
    - a. University Representative and Architect's time shall be compensated as specified for compensation of time in paragraph 01 25 00-H-3-a.
  4. Specified product or method of construction cannot receive necessary approval by governing authority, and requested substitution can be approved.
  5. Specified product or method of construction cannot be provided in manner that is compatible with other materials and where Contractor certifies that substitution will overcome incompatibility.
  6. Specified product or method of construction cannot be coordinated with other materials and where Contractor certifies that proposed substitution can be coordinated.
  7. Specified product or method of construction cannot provide warranty required by Contract Documents and where Contractor certifies that proposed substitution provides required warranty.
- C. Do not order or install substitute products without written acceptance from the University.
- D. Only 1 request for substitution for each product will be considered. When substitution is not accepted, provide specified product.
- E. Architect will determine acceptability of substitutions.
- F. Submit 2 copies of each request to Architect through University Representative on Substitution Request Form at end of Section. Submit separate form for each substitution.
1. Identify products by Specification Section and Article numbers.
  2. Provide manufacturer's name and address, trade name of products, and model or catalog number.
  3. List fabricators and suppliers as appropriate.
  4. Document each request with complete data substantiating compliance of proposed substitution with requirements of Contract Documents including independent laboratory testing reports, approval numbers, listings, and approved assembly descriptions as requested by Campus Construction Manager or Architect, or as required by agencies having jurisdiction.
  5. Attach product data as specified in Section 01 33 00.

6. Give itemized comparison of proposed substitution with specified product, listing variation, and reference to Specification Section and Article numbers.
  7. Give quality and performance comparison between proposed substitution and specified product.
  8. Submit written certification from manufacturer that proposed substitution is appropriate for this application.
  9. List availability of maintenance services and replacement materials.
  10. State effect of substitution on construction schedule, and changes required in other Work or products.
- G. By making requests for substitutions, Contractor:
1. Represents that Contractor has personally investigated proposed substitute product and determined that it is equal to or superior in all respects to that specified.
  2. Represents that Contractor will provide same warranty for substitution that Contractor would for the specified product.
  3. Will coordinate installation of accepted substitute, making such changes as may be required for Work to be compatible with substrates and adjacent materials, and complete in all respects.
  4. Waives claims for additional time related to substitution that may later become apparent.
  5. Certifies that cost data presented is complete and includes related costs under this Contract, including redesign costs, and waives claims for additional costs related to substitution which may later become apparent.
- H. Modification of Documents: Where substitution requires changes to design of Work as indicated on accepted Shop Drawings for proper installation; furnish drawings and specifications prepared by and bearing seal of licensed Architect and Architects as appropriate, revising Shop Drawings.
1. Submit revised Documents for acceptance in accordance with Section 01 33 00.
  2. Revised Drawings shall be sufficiently complete for proper installation of substitution and related Work.
    - a. Include details of connection to and relationship with adjacent materials.
  3. If, in Architect's sole judgment, proposed substitution is of such significance or deals with product or system affecting basic design or aesthetics, pay Architect for changes required to Contract Documents as follows:
    - a. Reimburse Owner for Architect's account for time spent in changing Contract Documents at rate of 3.2 times rate of Direct Personnel Expense (DPE). Direct Personnel Expense is defined as direct salaries of Architect's personnel engaged on Project and portion of costs of mandatory, and customary contributions and benefits related thereto, including employment taxes and other statutory employee benefits, insurance, sick leave, holidays, vacations, pensions, and similar contributions and benefits.
  4. Contractor is responsible for cost of revised Documents, obtaining and paying for review and plan check by authorities having jurisdiction, and cost of revised construction.
  5. Submit revised drawings with Record Documents in accordance with Section 01 78 39.

## 1.6 SUBMITTAL PROCEDURES

- A. Architect's and University Representative's Action: If necessary, Architect through University Representative will request additional information or documentation for evaluation within 1 week of receipt of request for substitution. Architect will notify Contractor of acceptance or rejection of substitution within 2 weeks of receipt of request, or 1 week of receipt of additional information or

documentation, whichever is later. Acceptance will be in form of Change Order, should a change in Contract cost or time be associated with the substitution.

1. Architect or University Representative will not make exhaustive attempt to determine products proposed for substitution are equivalent to, or can be modified in order to be equivalent to specified products.
    - a. Where extensive investigation is required by University Representative or Architect, as determined by University Representative or Architect, Contractor shall reimburse University for University Representative's or Architect's account for time spent in processing additional resubmittals at rate of 3.2 times rate of Direct Personnel Expense (DPE). Direct Personnel Expense is defined as direct salaries of Architect's or University Representative's personnel engaged on Project and portion of costs of mandatory, and customary contributions and benefits related thereto, including employment taxes and other statutory employee benefits, insurance, sick leave, holidays, vacations, pensions, and similar contributions and benefits.
  2. Use product specified if Architect and University Representative couldn't make decision on use of proposed substitute within time allocated.
  3. If accepted by Architect and University Representative, products proposed for substitution are accepted subject to modifications by manufacturer, if necessary, to meet detailed requirements of Drawings and Specifications.
- B. For Accepted Products: Submit shop drawings, product data, and samples in accordance with Section 01 33 00.
- C. Contractor's submittal, and Architect's and University Representative's acceptance of Shop Drawings, Product Data, or Samples for construction activities not complying with Contract Documents do not constitute acceptable or valid request for substitution, nor do they constitute approval.

## **PART 2 - PRODUCTS (Not Used)**

## **PART 3 - EXECUTION (Not Used)**

### **END OF SECTION**

SECTION 01 25 10

SUBSTITUTION REQUEST FORM

Substitution Request Number: \_\_\_\_\_  
Specification Section / Paragraph: \_\_\_\_\_  
Specified Manufacturer / Product: \_\_\_\_\_  
Proposed Substitution: \_\_\_\_\_  
Reason for Proposed Substitution: \_\_\_\_\_

Point-By-Point comparative data sheet attached – REQUIRED FOR THIS REQUEST.  
Include product description, specifications, drawings, photographs, and performance and test data adequate for evaluation of the request. Applicable portions of the data are clearly identified.  
Attached data also includes a description of changes to the Contract Documents that the proposed substitution will require for its proper installation.

Supporting Data Attached (Circle):

Drawings	Product Data	Samples	Tests	Reports	Other
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The Undersigned certifies:

1. Proposed substitution has been fully investigated and determined to be equal or superior in all respects to the specified products performance. Same warranty will be furnished for proposed substitution as for specified product.
2. Proposed substitution will have no adverse effect on other trades and will not affect or delay progress schedule.
3. Proposed substitution does not affect dimensions and Functional Performance Values.
4. Payment will be made for changes to building design, including A/E design, detailing, and construction costs caused by the substitution.

Submitted by: \_\_\_\_\_ Date: \_\_\_\_\_  
Telephone: \_\_\_\_\_ Email: \_\_\_\_\_

ARCHITECT'S REVIEW AND ACTION

- ☐ Substitution approved as noted. Make submittals in accordance with Section 01 25 00.
- ☐ Substitution rejected. Use specified materials.
- ☐ Substitution Request received too late. Use specified materials.

Signed by: \_\_\_\_\_ Date: \_\_\_\_\_

END OF SECTION

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## **SECTION 01 26 13 REQUESTS FOR INTERPRETATION (RFI)**

### **PART 1 - GENERAL**

#### **1.1 RELATED DOCUMENTS**

- A. Construction Drawings, Technical Specifications, Addenda, and general provisions of the Contract, including Contract General Conditions and Supplementary General Conditions and other Division 1 Specification Sections, apply to this Section.

#### **1.2 SECTION INCLUDES**

- A. Procedures for submitting requests for interpretation (RFI).
- B. Limitations on use of RFI to obtain interpretation and clarification.

#### **1.3 RELATED SECTIONS**

- A. Section 01 31 13 - Coordination: Requirements for organizing and coordinating the Work.
- B. Section 01 31 26- Electronic Communications Protocol
- B. Section 01 33 00 - Submittal Procedures: Restriction on use of submittals for changes in materials, products, equipment and systems.
- C. Section 01 60 00 – Product Requirements: Procedures for requesting substitutions of materials, products, equipment and systems.

#### **1.4 DEFINITIONS**

- A. Request for Interpretation: A document submitted by the Contractor requesting clarification of a portion of the Contract Documents, hereinafter referred to as an RFI.

#### **1.5 CONTRACTOR'S REQUESTS FOR INTERPRETATION (RFIs)**

- A. Contractor's Requests for Interpretation (RFIs): Should Contractor be unable to determine from the Contract Documents the exact material, process, or system to be installed; or when the elements of construction are required to occupy the same space (interference); or when an item of Work is described differently at more than one place in the Contract Documents; the Contractor shall request that the Architect make an interpretation of the requirements of the Contract Documents to resolve such matters. Contractor shall comply with procedures specified herein to make Requests for Interpretation (RFIs).
- B. Submission of RFIs: RFIs shall be prepared and submitted electronically on a form provided by the Contractor and approved by the University Representative.
  - 1. Forms shall be completely filled in and submitted via an Electronic Project Management (EPM) System agreed upon by the University Representative.
  - 2. Each RFI shall be given a discrete, consecutive number.
  - 3. Each page of the RFI and each attachment to the RFI shall bear the University's project name, project number, date, RFI number and a descriptive title.

4. Contractor shall sign all RFIs attesting to good faith effort to determine from the Contract Documents the information requested for interpretation. Electronic signatures are acceptable and subject to authentication. Frivolous RFIs shall be subject to reimbursement from Contractor to University for fees charged by Architect, Architect's consultants and other design professionals engaged by the University.
- C. Subcontractor-Initiated and Supplier-Initiated RFIs: RFIs from subcontractors and material suppliers shall be submitted through, be reviewed by and be attached to an RFI prepared, signed and submitted by Contractor. RFIs submitted directly by subcontractors or material suppliers will be returned unanswered to the Contractor.
1. Contractor shall review all subcontractor- and supplier-initiated RFIs and take actions to resolve issues of coordination, sequencing and layout of the Work.
  2. RFIs submitted to request clarification of issues related to means, methods, techniques and sequences of construction or for establishing trade jurisdictions and scopes of subcontracts will be returned without interpretation. Such issues are solely the Contractor's responsibility.
  3. Contractor shall be responsible for delays resulting from the necessity to resubmit an RFI due to insufficient or incorrect information presented in the RFI.
- D. Requested Information: Contractor shall carefully study the Contract Documents, in particular, the Contract General Conditions, to ensure that information sufficient for interpretation of requirements of the Contract Documents is not included. RFIs that request interpretation of requirements clearly indicated in the Contract Documents will be returned without interpretation.
1. In all cases in which RFIs are issued to request clarification of issues related to means, methods, techniques and sequences of construction, for example, pipe and duct routing, clearances, specific locations of Work shown diagrammatically, apparent interferences and similar items, the Contractor shall furnish all information required for the Architect or University's Representative to analyze and/or understand the circumstances causing the RFI and prepare a clarification or direction as to how the Contractor shall proceed.
  2. If information included with this type RFI by the Contractor is insufficient, the RFI will be returned unanswered.
- E. Unacceptable Uses for RFIs: RFIs shall not be used to request the following:
1. Approval of submittals (use procedure specified in Section 01 33 00 - Submittals Procedures)
  2. Approval of substitutions (refer to Section 01 60 00 - Product Requirements)
  3. Changes that entail change in Contract Time and Contract Sum (comply with provisions of the Contract General Conditions)
  4. Different methods of performing Work than those indicated in the Contract Drawings and Specifications (comply with provisions of the Contract General Conditions).
- F. Disputed Requirements: In the event the Contractor believes that a clarification by the University's Representative results in additional cost or time, Contractor shall comply with the Contract General Conditions.
- G. RFI Log: Contractor shall prepare and maintain a log of RFIs, and at any time requested by the University's Representative, the Contractor shall furnish copies of the log showing all outstanding RFIs.



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1485-0001

- H. Review Time: Architect will return RFIs to Contractor and University's Representative within seven calendar days of receipt. RFIs received after 5:00 pm shall be considered received on the next regular working day for the purpose of establishing the start of the seven-calendar day response period.

**PART 2 - PRODUCTS**

Not Applicable to this Section.

**PART 3 - EXECUTION**

Not Applicable to this Section.

**END OF SECTION**

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## REQUEST FOR INFORMATION NO. \_\_\_\_\_

<b>Project:</b> Enter Project Name	<b>Project ID:</b> Enter Project ID
<b>Contractor:</b> Enter Contractor Name	<b>Architect:</b> Enter A/EOR Firm Name
<b>University Project Manager:</b> Enter PM Name	
<b>Date Submitted:</b> Enter Date	

**Author:** Enter Author

**TO:** Humboldt State University

**Author Company:** Enter Company Name

Enter HSU PM Name

<b>Discipline(s):</b> Enter Disciplines	<b>Correspondents (as assigned by the university):</b> Enter Name, Company Enter Name, Company Enter Name, Company Enter Name, Company
<b>References:</b> Enter Documents	
<b>Drawing(s):</b> Enter Drawing(s)	
<b>Specification(s):</b> Enter Section(s)	
<b>Other:</b>	<b>Priority Assigned by University:</b> Enter Status
<b>Question:</b>	
<b>Suggested Solution by Author (if any):</b>	
Is work impacted pending a response? <input type="checkbox"/> Yes <input type="checkbox"/> No	
Is the project schedule impacted pending a response? <input type="checkbox"/> Yes <input type="checkbox"/> No	
Does the suggested solution present a potential cost impact? <input type="checkbox"/> Yes <input type="checkbox"/> No	

Reply by University	Date Answered: mm/dd/yr

*\*Per the Contract General Conditions, the Contractor shall not proceed with additive or deductive Work which has change order implications as a result of this RFI without prior written approval from the Trustees.*

cc: Author  
Project File

## SECTION 01 31 13

### PROJECT COORDINATION

#### PART 1 - GENERAL

##### 1.1 RELATED DOCUMENTS

- A. Construction Drawings, Technical Specifications, Addenda, and general provisions of the Contract, including Contract General Conditions and Supplementary General Conditions and other Division 1 Specification Sections, apply to this Section.

##### 1.2 SECTION INCLUDES

- A. Requirements for Project Coordination and electrical and mechanical coordination or “tight” conditions involving Work under Contract.

##### 1.3 RELATED SECTIONS

- A. Section 01 11 00 - Summary of the Work: Various types of Work to be coordinated, including Owner-Furnished/Contractor-Installed products.
- B. Section 01 60 00 - Product Requirements: Coordination of products, especially general requirements for system completeness and product substitutions.

##### 1.4 COORDINATION

- A. Coordination, General:
  - 1. Coordinate the Work according to provisions stated in Contract General Conditions. Do not delegate responsibility for coordination to any subcontractor.
    - a. Anticipate the interrelationship of all subcontractors and their relationship with the total work.
    - b. Resolve differences or disputes between subcontractors and materials suppliers concerning coordination, interference, or extent of work between sections. The Contractor's decisions, if consistent with the Contract Documents, shall be final. The Architect is not required to coordinate work between sections and will not do so.
    - c. Coordinate the work of subcontractors and material suppliers, so that their work is performed in a manner to minimize interference with, and to facilitate the progress of the work.
    - d. Provide detailing for a complete project.
  - 2. Coordinate Work under the Contract with work under separate contracts by University.
  - 3. Coordinate utility and building services shut-downs and closures of vehicular and pedestrian thoroughfares, including access to buildings and parking areas, to minimize disruption of University activities.
  - 4. Be responsible for providing anchorage, blocking, joining and other detailing as required to provide complete project.
  - 5. Do not obstruct spaces required by Code in front of electrical equipment, access doors, etc.
  - 6. Do not cover any Work (piping, wiring, ducts, etc.), until properly inspected and approved.
  - 7. Remove and replace any and all Work under any Section which is not in accordance with the Contract Documents with other materials and Work which is in conformance with the Contract Documents.

uments. Repair or replace all other Work damaged by these operations at no increase in contract price.

8. This work shall be coordinated with all associated Work in a manner that will insure that all work will be accomplished as rapidly as the progress of the project will permit and so that no work will be delayed for want of associated work.
- B. Coordination of OFCI Products: Contractor shall cooperate with University and others as directed by University's Representative in scheduling and sequencing the incorporation into the Work of Owner Furnished/Contractor Installed (OFCI) products identified in the Contract Drawings and Specifications.
- C. Relationship of Contract Documents: Drawings, Specifications and other Contract Documents in the Project Manual are intended to be complementary. What is required by one shall be as if required by all. What is shown or required, or may be reasonably inferred to be required, or which is usually and customarily provided for similar work, shall be included in the Work.
- D. Discrepancies in Contract Documents: In the event of error, omission, ambiguity or conflict in Drawings or Specifications, Contractor shall bring the matter to attention of the Architect in a timely manner during the bidding period, for determination and direction by the Architect in accordance with provisions of the Contract General Conditions.
- E. Construction Interfacing and Coordination: Layout, scheduling and sequencing of Work shall be solely the Contractor's responsibility.
  1. Contractor shall verify, confirm and coordinate field measurements so that new construction correctly and accurately interfaces with conditions existing prior to construction.
  2. Contractor shall bring together the various parts, components, systems and assemblies as required for the correct interfacing and integration of all elements of Work. Contractor shall coordinate Work to correctly and accurately connect abutting, adjoining, overlapping and related elements, including work under separate contracts by University, utility agencies and companies.

## **1.5 COORDINATION OF SUBCONTRACTS AND SEPARATE CONTRACTS**

- A. Superintendence of Work: Contractor shall appoint a field superintendent and a project manager, who shall directly and full time supervise and coordinate all Work of the Contract.
- B. Subcontractors, Trades and Materials Suppliers: Contractor shall require all subcontractors, trades, crafts and suppliers to coordinate their portions of Work with the Contractor's field superintendent to prevent scheduling, sequencing, dimensional and other conflicts and omissions.
- C. Coordination with Work under Separate Contracts: Contractor shall coordinate and schedule Work under the Contract with work being performed for Project under separate contracts by University, serving utilities and public agencies. Contractor shall make direct contacts with parties responsible for work of the Project under separate contracts, in order to provide timely notifications and to facilitate information exchanges.

## **1.6 SUBMITTALS**

- A. Coordination Documents: Coordinate shop drawings, diagrams and other specified in various product Sections of the Contract Specifications. Submit coordination drawings and schedules as specified below, prior to submitting shop drawings, product data, and samples.

## **PART 2 - PRODUCTS**

Not Applicable to this Section.

### **PART 3 – EXECUTION**

#### **3.1 COORDINATION REQUIRED**

- A. Coordinate Work specified in Division 13 - Special Construction, Division 23 – Heating, Venting, and Air Conditioning and Division 26 - Electrical within each Division, between these Divisions and with Work specified in other Divisions.
- B. Coordinate progress schedules, including dates for submittals and for delivery of products.
- C. Conduct meetings with suppliers, installers and others concerned with the Work, to establish and maintain coordination of layout, sequencing and completion of various elements of Work.
- D. Conduct meetings with installers and others concerned with the Work, to properly integrate various mechanical and electrical systems, to facilitate construction and to provide proper access and work space for maintenance, renovation and improvement of system components. Include participation by representatives of University, including maintenance personnel.
- E. Assist in resolution of conflicts by providing technical advice, coordination drawings and three dimensional representations of integrated system components, including computer and physical models as necessary.
- F. At construction progress meetings, report on progress of Work to be adjusted under coordination requirements and any necessary changes in sequencing and scheduling of Work.
- G. Transmit minutes of coordination meetings and reports to University's Representative, Architect, Architect's consultants (as applicable) and to meeting participants.

#### **3.2 COORDINATION DOCUMENTS**

- A. Coordination Drawings and Models: Contractor shall prepare coordination drawings and three-dimensional models, in computer form and in physical form as necessary, to organize layout and installation of mechanical and electrical products for efficient use of available space, for proper sequence of installation, for integration with building structure, for future maintenance and renovation, and to identify potential conflicts between systems and elements.
- B. System Services: Contractor shall identify on coordination drawings and models all plumbing and electrical power and signal services required for each component of each system.
  - 1. Contractor shall certify that characteristics of services and controls are correct for each component.
  - 2. Certification shall be in written form and signed by Contractor and mechanical and electrical coordinator.
- C. Responsibility and Services Matrix: Contractor shall prepare schedule matrix identifying elements of mechanical and electrical Work requiring coordination, as specified in each Section in division of the Contract Specifications.
  - 1. Include identification of parties having responsibilities related to each element of Work and describe what that responsibility shall be.
  - 2. Include required off-site and on-site tests and inspections for various elements of Work.
  - 3. Include identification of administrative activities related to each element of mechanical and electrical Work

k, such as product data, shop drawings, coordination drawings, samples, mock-ups, test reports for each element of Work.

4. Include identification of elements of Work requiring temporary services.
- D. Maintenance and Disposition of Coordination Documentation: Maintain coordination documents, including models, for duration of the Work, recording all changes. After review of original and revised documents and models by University's Representative and Architect, submit documents and models as part of Project record documents. See Section 01 78 39, Project Record Documents.

### **3.3 COORDINATION OF SUBMITTALS**

- A. Submittal Reviews by Mechanical and Electrical Coordinator: In addition to specified review actions by Contractor, specified in Section 01 33 00 - Submittals Procedures, all product data, shop drawings and samples shall be reviewed by the mechanical and electrical coordinator for proper coordination of various elements of Work, as described in the preceding Article titled "Coordination Documents."
1. Include Owner-furnished/Contractor-installed (OFICI) products.
  2. Include products to be provided (furnished and installed) under separate contracts by University, to the extent that information is provided in the Contract Documents and supplemental instructions from University's Representative.
  3. Review by Contractor shall be completed prior to submission of product data, shop drawings and samples to Architect for review.
  4. Indicate review actions by Contractor by signed review stamp and other appropriate notations on submittals.
  5. Coordinate with other review actions to be taken by Contractor, as specified in Section 01 33 00 - Submittals Procedures.
- B. Field Conditions: Contractor shall verify field dimensions and clearances and relationship to available space and anchoring provisions. Report conflicts in writing to the Architect and the University's Representative.
- C. Product Characteristics: Contractor shall:
1. Verify compatibility of equipment and other elements requiring plumbing, HVAC and electrical services and signals with services to be provided.
  2. Verify motor voltages and control characteristics.
  3. Coordinate controls, interlocks, wiring of pneumatic switches, and relays.
  4. Coordinate wiring and control diagrams.
  5. Review the effect of changes in one element of the Work of other elements of the Work. Identify conflicts and report conflicts in written and graphic form to the Architect and the University's Representative.
  6. Verify information provided in maintenance and operating instructions and coordinate preparation of maintenance and operation data. See Section 01 78 23 - Operation and Maintenance Data.

### **3.4 COORDINATION OF SUBSTITUTIONS AND MODIFICATIONS**



- A. Review of Proposed Substitutions: See Section 01 25 00- Substitution Procedures. Product Substitution Contractor shall review Contractor's proposals and requests for substitution prior to submission to Architect.
1. Contractor shall verify compliance with Contract Documents and shall certify compatibility with other elements of the Work, including proper integration with building structure, load limitations, operating and maintenance space and accessibility provisions, and suitability for available building services, including plumbing and electrical power and signal systems.
  2. Contractor shall prepare and submit recommendation for action regarding proposals, including identification of related changes in other elements of the Work.

### **3.5 SYSTEM AND EQUIPMENT START-UP**

- A. Observations of System and Equipment Activation and Start-Up: Contractor shall observe activation and start-up of systems and equipment, including all Work specified in Divisions 2 through 48 with connections to utilities, building services and controls.
1. Contractor shall verify that utilities, building services and control systems are properly connected, complete and functional within criteria of manufacturer and criteria indicated in the Contract Documents.
  2. Contractor shall verify that activated elements are properly anchored and that operating components operate properly according to the component's intended design.
  3. Contractor shall verify that activated elements of the Work are in operable condition according to normal operating characteristics required by the manufacturer and the Contract Documents.
  4. Should adjustments be necessary to activated elements, Contractor shall advise the Architect and University's Representative of necessary actions and shall observe that proper actions are performed to achieve required operating characteristics.
- B. Observations of System and Equipment Demonstrations: Contractor shall observe performance demonstrations including equipment demonstrations to Architect and University's Representative. Record times and additional information required for operation and maintenance manuals.
- C. Documentation of Observations of Activation, Start-Up, Adjustment and Demonstration: Contractor shall keep written record of activation, start-up, operational tests and inspections and necessary adjustments and re-tests and re-inspections.
1. Documentation shall include record of time and date of activation, start-up, operational tests and inspections and shall include measured results of tests and inspections.
  2. Documentation shall be submitted to University's Representative and Architect.

### **3.6 INSPECTION AND ACCEPTANCE OF EQUIPMENT**

- A. Contract Completion Review:
1. Prior to Contract Completion review, Contractor shall verify that each component and system has been properly adjusted, cleaned, lubricated, inspected and tested, and is ready for operation and use.

**END OF SECTION**

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## SECTION 01 31 19

### PROJECT MEETINGS

#### PART 1 - GENERAL

##### 1.1 RELATED DOCUMENTS

- A. Construction Drawings, Technical Specifications, Addenda, and general provisions of the Contract, including Contract General Conditions and Supplementary General Conditions and other Division 1 Specification Sections, apply to this Section.

##### 1.2 REQUIREMENTS INCLUDED

- A. Preconstruction meeting.
- B. Construction progress meetings.
- C. Pre-installation conferences.
- D. Change Order review meetings
- E. Monthly Progress Payment Meetings
- F. Contract Closeout Meeting
- G. Partnering

##### 1.3 RELATED REQUIREMENTS

- A. Section 01 45 00 - Quality Control: General requirements for construction quality, to be reviewed at construction progress meetings.
- B. Section 01 32 16 - Construction Progress Schedules: General requirements for construction progress schedules, to be reviewed at construction progress meetings.
- C. Section 01 32 00 - Construction Progress Documentation: General requirements for construction progress reports, to be reviewed at construction progress meetings.
- D. Section 01 33 00 - Submittal Procedures: Status of submittals to be reviewed at construction progress meetings.
- E. Section 01 77 00 - Contract Closeout Procedures: Contract Completion Review.

##### 1.4 PRECONSTRUCTION MEETING

- A. Preconstruction Meeting: University's Representative will administer a preconstruction meeting immediately prior to Contractor mobilization onto the project site.
  - 1. Representatives of the Trustees, the Contractor, selected Subcontractors *[OPTIONAL]*, Architect, and Architect's Consultants *[OPTIONAL]*, and OTHER campus representatives, as appropriate, will attend.
- B. Schedule: Schedule preconstruction meeting within five days of construction start date established in the Notice to Proceed.
- C. Location: Preconstruction meeting will be held at a location as directed by the University's Representative.

D. Agenda: Preconstruction meeting shall cover the following topics as a minimum.

1. Special Project Procedures: Site access restrictions, if any, and requirements to avoid disruption of operations at adjoining facilities. Present University's requirements for use of premises.
2. Designation of Key Personnel: The Trustees, Architect, and Contractor shall designate key personnel and provide a name and address list that includes the following.
  - a. The Trustees: The University Representative, Inspector of Record, and others authorized to act in certain capacities for the University.
  - b. Architect: Principal and Project Administrator as appropriate.
  - c. Contractor: Project Manager and Superintendent.
  - d. Major subcontractors (as required): Principal/Project Manager and Superintendent.
  - e. Major materials suppliers (as required): Contact person.
3. Subcontractors List: Distribute and discuss list of subcontractors and suppliers.
4. Coordination: Review requirements for Contractor's coordination of Work. Review sequence and schedule for work being performed for University under separate contracts. Discuss coordination of construction to minimize impacts on continuing Campus operations.
5. Project Communication Procedures: Review administrative requirements for written and oral communications.
6. Construction Schedule: Distribute and discuss preliminary schedule, initial baseline construction schedule and critical work sequencing of major elements of Work, including coordination of Owner-Furnished/Contractor-Installed (OFCI) products and work under separate contracts by serving utility agencies and companies and University.
7. Campus and Site Security: Review requirements for Contractor to develop and implement site security.
8. Safety Program: Review requirements for Contractor to develop and implement safety program in compliance with Contract General Conditions and the Owner Controlled Insurance Program (OCIP) [OPTIONAL].
9. Site Access by University's Representative and Architect: Review requirements and administrative procedures Contractor may wish to institute for identification and reporting purposes.
10. Permits and Fees: Review Contract requirements and review schedule and process for obtaining permits and paying fees.
11. Project Layout: Review requirements for laying out of Work, including surveying requirements.
12. Construction Facilities: Designate storage and staging areas, construction office areas and parking areas and review site access requirements.
13. Temporary Utilities: Requirements for establishing and paying for temporary water, power, lighting and other utility services during construction, including metering and allowances. Refer to Section 01 51 00 - Temporary Utilities.
14. Construction Progress Schedules: Review requirements for preparation and submittal of updating of construction progress and submittals schedules.
15. Payment Procedures: Review requirements for preparation and submission of applications for progress pay

ments and for final payment.

16. Change Procedures: Review requirements and administrative procedures for Change Orders, Field Instructions and Contractor's Requests for Interpretation (RFI).
17. Submittals Administration: Review administrative procedures for shop drawings, product data and samples submittals and review of preliminary Submittals Schedule.
18. Materials and Equipment: Review substitution or equal product requirements; review schedule for major equipment purchases and deliveries; review materials and equipment to be provided by University (OFCI products).
19. Testing and Inspection: Review tests and inspections to be performed by the following.
  - a. Independent testing and inspection agencies.
  - b. Manufacturers and installers.
  - c. Service utilities and public agencies.
  - d. Authorities having jurisdiction (i.e.: State Fire Marshal, Health Dept., etc.).
20. Operation and Maintenance Data: Format and content of operation and maintenance manuals. Refer to Section 01 78 23 - Operation and Maintenance Data.
21. Instruction of University's Personnel: Review requirements and scheduling of instruction of personnel specified for Demonstration and Training and in various Sections in Divisions 2 through 17 of the Specifications.
22. Starting and Adjusting Procedures: Review requirements of starting and adjusting operating components. Refer to Section 01 75 00 - Starting and Adjusting.
23. Project Record Documents: Review requirements and procedures for preparing, reviewing and submitting project record drawings and specifications.
24. Construction Cleaning: Review requirements for progress and final cleaning specified in Section 01 74 00 - Cleaning Requirements.
25. Contract Closeout: Review requirements specified in Section 01 77 00 - Contract Closeout Procedures, including procedures for filing of Notice of Completion, final payment and submittals.

## **1.5 CONSTRUCTION PROGRESS MEETINGS**

- A. Construction Progress Meetings: Meetings will be held to review progress and quality of construction. The essence of the discussion of each meeting shall be entered into the written record (minutes) of the meeting by the Architect or the University Representative designee.
- B. Schedule: Construction progress meetings shall be periodically scheduled throughout progress of the Work. Frequency shall be as determined necessary for progress of Work. Generally, it is intended that construction progress meetings be held at weekly intervals.
- C. Administration: The University's Representative shall make physical arrangements for meetings. Architect shall prepare agenda with copies for participants, preside at meetings, record minutes and distribute copies within two working days to University's Representative, Contractor, participants and those affected by decisions made at meetings (these duties may be shared with the University's Representative or their designee and shall be determined at the preconstruction meeting). Each discussion item at construction progress meetings shall be numerically identified and carried through subsequent meeting minutes until resolved.

- D. Attendance: Contractor's project manager and jobsite superintendent shall attend each meeting. Contractor's subcontractors and suppliers may attend as appropriate to subject under discussion. University's Representative will attend each meeting. Architect's consultants will also attend, as appropriate to agenda topics for each meeting and as provided in University-Architect Agreement.
- E. Suggested Agenda for Each Construction Progress Meeting:
1. Meeting Minutes: Review and correct, if necessary, minutes of previous meeting.
    - a. Unless published minutes are challenged in writing prior to the next regularly scheduled progress meeting, they will be accepted as properly stating the activities and decisions of the meeting.
    - b. Persons challenging published minutes shall reproduce and distribute copies of the challenge to all indicated recipients of the particular set of minutes.
    - c. Challenge to minutes shall be settled as priority portions of "old business" at the next regularly scheduled meeting.
  2. Progress of the Work: Since last meeting and proposed progress.
    - a. Identify potential problems which might impede progress.
    - b. Develop corrective measures and procedures, including but not necessarily limited to additional manpower to regain planned schedule.
    - c. Review three-week "look ahead" construction schedule (current week plus two weeks ahead), including identification of conflicts and delays.
  3. Ordering Status: Review status of long-lead time equipment and materials delivery affecting construction progress.
  4. RFI Status: Review status of Requests for Interpretation (RFI) status.
  5. Submittals Status: Review shop drawings, product data and samples submission and review status.
  6. Contract Modifications: Pending Change Orders and Field Instructions. Review status of proposed substitutions.
  7. Old Business: Active discussion topics carried over from previous meetings.
  8. New Business: New topics of discussion affecting construction progress and quality.
  9. Quality Control: Review maintenance of quality standards and identification of non-conforming Work, including proposed remedial measures to be taken by Contractor.
  10. Project Record Documents: Status of project record drawings and specifications.
  11. Environmental and Safety Issues.
  12. Other items affecting progress and quality of the Work.
- F. Meeting Time and Location: As mutually agreed by the Architect, the Contractor, and the University's Representative at on-site location.
- G. Special Meetings: As necessary, the Architect, the Contractor, or the University's Representative may convene special meetings to discuss specific construction issues in detail and to plan specific activities.

## **1.6 PRE-INSTALLATION CONFERENCES**

- A. Pre-Installation Conferences: When specified in individual product specification Sections, convene a pre-ins

tallation conference prior to commencing Work specified in individual product Sections.

1. Require attendance by representatives of firms whose activities directly affect or are affected by Work specified in the Section.
2. Review conditions of installation, preparation and installation procedures and coordination with related Work and work under separate contracts.
3. Distribute written notice of agenda, meeting time, and location a minimum of 4 calendar days in advance.
  - A. Agenda: Review progress of other construction activities and preparations for the particular activity under consideration, including requirements for the following:
    1. Contract Documents.
    2. Options.
    3. Related Change Orders.
    4. Review of mockups.
    5. Possible conflicts.
    6. Compatibility problems.
    7. Time schedules.
    8. Weather limitations.
    9. Manufacturer's written recommendations.
    10. Installation procedures.
    11. Warranty requirements.
    12. Compatibility of materials.
    13. Acceptability of substrates.
    14. Testing and inspecting requirements.
    15. Required performance results.
  - B. Record significant conference discussions, agreements, and disagreements.
  - C. Do not proceed with installation if the conference cannot be successfully concluded. Initiate whatever actions are necessary to resolve impediments to performance of the Work and reconvene the conference at earliest feasible date.

## **1.7 CHANGE ORDER REVIEW MEETING**

- A. Subsequent to the weekly project meeting, a Change order review meeting shall be held to discuss in detail the status of all project change documents. The Contractor, University Representative and Architect (as necessary) shall be in attendance. The following items shall be reviewed at this meeting:
  1. Cost Request Bulletins (both previously issued and necessary for progress of construction).
  2. Change Orders.
  3. Contractor Change Order Requests.
  4. Field Instructions (both previously issued and necessary for progress of construction).

## **1.8 MONTHLY PROGRESS PAYMENT MEETING**

- A. A meeting shall be conducted by the University Representative each month prior to Contractor's submission of the Payment Application. This meeting shall be held subsequent to the regular project meeting which precedes the required date for submission of the Payment Application.
  1. Each line item of the payment application shall be reviewed to confirm agreement with the stated percentage complete for the specific item of work. The University Representative will advise Contractor of percentages which are not acceptable and will red-line a copy of the draft payment application indicating necessary revisions required in order for processing of the payment application.

2. The Contractor shall make necessary revisions in accordance with the red-line comments provided by the University Representative prior to official submission of the payment application.

## **1.9 CONTRACT CLOSEOUT MEETING**

- A. Contract Closeout Meeting: As specified in Section 01 77 00 - Closeout Procedures.
- B. Approximately four (4) to six (6) weeks prior to the scheduled completion of the Project, for the convenience of the contractor, the University Representative will include in the standard meeting agenda a Project Close-out meeting.

The purpose of the close-out meeting is to produce an action list of major items required to be completed prior to the issuance of the Notice of Completion.

1. The action list shall assign an action responsibility and a projected action completion date to each item.
2. The contractor shall be solely responsible for the timely completion of all required close-out items.
3. Items to be considered include:
  - Punch list
  - O & M manuals
  - HVAC Balance Report
  - Spare Parts/Materials
  - Keys/Keying
  - Warrantees
  - As-built Drawings and Specifications
  - As-built Schedule
  - State Fire Marshal Inspection
  - Elevator Inspection
  - Other Required Regulatory Inspections
  - Removal of Temporary Facilities
  - Final Cleaning and Pest Control
  - Landscape Maintenance
  - Commissioning/Equipment Startup
  - Acceptance
  - Notice of Completion
  - Final Payment
  - Occupancy

## **PART 2 - PRODUCTS**

Not applicable to this Section.

## **PART 3 - EXECUTION**

Not applicable to this Section.

**END OF SECTION**



**SECTION 01 31 26**  
**ELECTRONIC COMMUNICATIONS PROTOCOL**

**PART 1- GENERAL**

**1.1 DESCRIPTION**

- A. This Section is in addition to the Contract General Conditions.
- B. The Contractor shall be required to use an Electronic Project Management (EPM) system for electronic construction management document control and communications between the University, Architect of Record, other project-related consultants, and the Contractor (aka the Project team). Unless otherwise designated by the University, the system will be maintained and owned by the Contractor but operated collaboratively by the Project Team. The EPM that the Contractor chooses shall be approved by the University. The Contractor shall be responsible for training the members of the Project team on how to use the EPM at no additional costs to the contract.
- C. The Contractor shall be primarily responsible for the scanning, uploading, and logging of all electronic documents for the project as indicated below.
- D. The Contractor shall provide personnel and equipment as required by their employees to electronically submit all necessary documents.
- E. The EPM system shall contain the following information which shall be made available by the Contractor for the project team:
  - 1. Submittal Information (shop drawings, product data, etc.) and Logs
  - 2. Requests for Information and Logs
  - 3. Inspection Requests / Reports
  - 4. Non-Compliance Inspection Reports
  - 5. Project Photographs
  - 6. Project Meeting Minutes
  - 7. Project FTP Site
  - 8. Contract Documents (including specifications, drawings, reference materials, sketches, ASIs, etc.)
  - 9. Other Documentation as determined by the University's Representative and the Project team.
- F. All Request for Information (RFIs) and Inspection Requests shall be submitted by the Contractor to the University electronically through the EPM.
- G. The University will **NOT** except faxed and/or hand written documentation of RFIs, RFI Sketches, and/or Inspection Requests.
  - 1. The Contractor shall be solely responsible for data entry via the chosen EPM Website for the generation of RFIs.
  - 2. The Contractor shall be solely responsible for the scanning of sketches / drawings as necessary for the electronic submittal and attachment of necessary information related to RFIs.
  - 3. Contractor shall supply field personnel all necessary computer equipment necessary to enter RFIs and other documentation electronically.

- H. Submittals shall be submitted via Section 01 33 00 Submittals.

## **1.2 CONTRACTOR'S RESPONSIBILITIES**

- A. The Contractor shall have sufficient computer(s) with capabilities to access the EPM system at their on-site and off-site project offices. At the pre-construction meeting, the Contractor shall provide to the University's Representative the contact information (including email addresses) of all Contractor personnel that the Contractor chooses to provide coordination for the EPM system and information. At a minimum, this will include the Contractor's Project Engineer and/or other technical staff as required. These personnel shall have sufficient computer skills required to access the Internet and do basic trouble shooting of the EPM system. The Contractor shall provide training and technical support to the Project team personnel for use of the EPM system. The Contractor shall plan on an average of 4-hours training for each of the Project team personnel who will be using the system. Having the above capability in place onsite is a condition precedent to processing the Contractor's first payment request.

## **1.3 OFFICIAL RECORDS**

- A. The documentation and records maintained on the EPM system will be the "Official Records" for the project (not including as-builts created by the Architect). At the conclusion of the project all records shall be made available via Adobe "pdf" and/or other electronic filing methods approved by the University Representative for import/export.

## **PART 1 - PRODUCTS**

- A. Not applicable to this Section.

## **PART 2 - EXECUTION**

- A. Not applicable to this Section.

## **END OF SECTION**

## **SECTION 01 32 00**

### **CONSTRUCTION PROGRESS DOCUMENTATION**

#### **PART 1 - GENERAL**

##### **1.1 RELATED DOCUMENTS**

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

##### **1.2 SECTION INCLUDES**

- A. Section Includes:
  - 1. Requirements for CPM schedules and associated reports.
  - 2. Requirements for Contractor Work Plans.

##### **1.3 CPM CONSTRUCTION SCHEDULES AND REPORTS**

- A. General: Comply with the Contract General Conditions.
- B. Submittals:
  - 1. Initial Construction Schedule
    - a. Submit a "Draft" 3-Week Look-ahead Schedule at the Pre-construction Meeting.
    - b. Within 30 calendar days after issuance of Notice to Proceed, Contractor shall submit a detailed Initial Construction Schedule that includes all construction activities, from Notice to Proceed through Project completion.
    - c. Within 15 calendar days, the Construction Administrator will review the Initial Construction Schedule and provide comments.
    - d. Contractor shall revise the Initial Construction Schedule in accordance with University comments and resubmit within 15 calendar days. Upon approval by the University, the schedule shall be designated as the Contract Construction Schedule.
    - e. No change to the content or CPM logic of the Contract Construction Schedule shall be made by Contractor without prior approval by the Construction Administrator.
  - 2. Schedule Updates
    - a. The Contract Construction Schedule shall be updated and submitted monthly in accordance with the Contract General Conditions.
      - 1) The updated Contract Construction Schedule shall accurately represent the as-built condition of all completed and in-progress work activities as of the schedule data date.
      - 2) The Contract Construction Schedule shall use activity codes that allow for logical summarization of like activities. A Summary Schedule of not less than 20 activities shall be submitted monthly with the detailed Contract Construction Schedule.
      - 3) Prior to preparing the first update of the approved Contract Schedule, Contractor shall designate the approved Contract Schedule as the baseline, or "target schedule". All schedule updates shall include the original (i.e. target) information, including

start dates, finish dates, durations, successors, predecessors, etc. for each activity. The actual progress for each activity shall be shown directly below the target bar.

- 4) Monthly submittals shall include the following items.
  - a) Schedule electronic files
  - b) Detailed network diagram (D size)
  - c) Summary schedule (8-1/2" x 11")
  - d) Detailed bar chart graphics (8-1/2"x 11")
  - e) Tabular reports (8-1/2" x 11")
- b. A 3-week look-ahead schedule (current week plus two weeks forward), derived directly from the Contract Construction Schedule, shall be updated and submitted for review during each weekly progress meeting. The 3-week look-ahead schedule shall be a sub-network of the Contract Construction Schedule; hand drawn schedules, marked-up versions of previous schedules, or schedules generated using alternate scheduling software will not be accepted.

C. Basic Requirements of Contractor's Scheduling System

1. The Contract Construction Schedule shall be prepared, updated and maintained using the latest version of Primavera Project Planner for Windows (or equal). Should Contractor request the use of an alternate scheduling software system, a formal Request for Substitution shall be submitted in accordance with section 01 25 00. Should the University approve use of an alternate system, Contractor shall be required to provide one legally licensed copy of the software to the Construction Administrator, as well as necessary training in the use of the system, at no additional cost.
2. The system shall be operated by on-site personnel at terminals located in Contractor's site office. On-site management shall be capable of using the system to address all project activities and resources on a real time interactive basis, and capable of rapidly evaluating alternative means and methods in response to job conditions and as required to optimize project management. Contractor's scheduling system shall be capable of providing the following minimum on-site reporting functions:
  - a. Precedence Diagram Method (PDM) schedules
  - b. Progress reports in tabular formats
  - c. Network comparisons
  - d. Super and sub-networks
  - e. Resource reporting
  - f. Report writer allowing flexible formatting and summarization
  - g. Graphic output to a laser jet printer or full size plotting device

D. C.P.M. Schedule Format

1. Activities shall be coded in a logical manner to allow for sorting and grouping of like characteristics, including but not limited to such items as: phase, work shift, project area, activity type (i.e. submittal, agency review, const. activity, etc.), trade, etc.
2. Include activities and milestones as requested for work completed by University under separate contract, University furnished materials, move in, etc.
3. The schedule duration shall be calculated using Critical Path Method for the Initial Construction Schedule, Contract Construction Schedule, and all schedule updates.
4. Work activities shall be divided so that no schedule activity shall be less than 1 nor more than 30 calendar days.
5. A minimum of 5% of the schedule activities shall be designated as milestone activities.
6. Identify work days and non-work days on the schedule.
7. Contractor shall work in conjunction with each subcontractor and supplier to ensure that all relevant submittal, procurement, delivery and installation dates for the various trades are accurately represented in the Initial Construction schedule and each subsequent schedule update.

8. Contractor's Superintendent shall be integrally involved in production of the Initial Construction Schedule and each subsequent update.
9. Include activities for all project submittals as required under Section 01 33 00 and the technical specifications (Divisions 2 through 33).
10. Failure by Contractor to include any element of the work required for performance of the Contract shall not relieve Contractor of the obligation to complete the entire Work of the Contract in accordance with the Contract Completion Date.

E. Construction Analysis

1. The Contractor shall provide the University the following minimum information in the Initial Construction Schedule and subsequent Monthly Updates:
  - a. Activity identification code keyed to Summary and Detailed Construction Schedules.
  - b. Activity description
  - c. Status date and remaining duration
  - d. Activity duration
  - e. Early start/early finish and late start/late finish
  - f. Total float
  - g. Free float
  - h. Predecessor and successor activity for each individual activity
  - i. A listing of all constraints for each individual activity
  - j. A comparison between the current update and the Initial Construction Schedule (baseline schedule).
  - k. No more than 20% of the total project activities shall be critical or near critical (less than 5 working days of total float).
2. The Initial Construction Schedule and subsequent Monthly Schedule Updates shall include, but not limited to, the following major milestones:
  - a. NTP Date, mobilization, coordination review and detailing activities.
  - b. Submittal preparation by Contractor and review and approval by the Architect and Construction Administrator, including shop drawings, technical manuals and all other submittals. Contractor shall allow at least 21 calendar days for review of submittals.
  - c. Order, manufacture, fabrication, delivery and checkout of all long lead and major construction material.
  - d. Off-site improvements
  - e. Demolition of existing structures
  - f. Earthwork – excavation, backfill and compaction
  - g. Foundation
  - h. Structural – columns and beams, deck, roof
  - i. Masonry
  - j. Waterproofing
  - k. Elevator superstructure, support
  - l. Rough-outs – mechanical, plumbing, electrical, telecommunications, HVAC, fire-alarm, sprinkler system
  - m. Exterior finishes – walls, roof
  - n. Building Dried-In
  - o. Miscellaneous metals and equipment installation
  - p. M/E/P finishes - mechanical, plumbing, electrical, telecommunications, HVAC, fire-alarm, sprinkler system, elevator motors
  - q. Elevator cabs
  - r. Interior drywall/plaster
  - s. Interior finishes – painting, flooring, finish cabinetry, hardware
  - t. Sitework – curbs, gutters, hardscape, roads
  - u. All utility interfaces
  - v. Landscaping

- w. Punch List
  - x. Performance and acceptance testing
  - y. Contractor close-out documentation and training
  - z. Contractor punch list corrective work
  - aa. Final cleanup
  - bb. Identification of all holidays and non-working days.
3. The Contractor shall show all tasks and milestones applicable for the project. The Construction Administrator shall be the final arbitrator on the tasks and milestones that should be included in the Initial Construction Schedule and subsequent updates.

**F. Submittal Schedule**

1. The University Representative will provide a schedule of all required submittals at the Pre-construction Meeting. Contractor shall input anticipated submission dates for each submittal item. Within 21 calendar days after award of Contract, and before submitting items for review, submit 2 copies of the completed submittal schedule. The submittal numbers designated by University Representative shall be used for identification of all submittals.

**G. Responsibility for Completion**

1. Should any monthly or weekly update of the Contract Construction Schedule indicate that the critical path has been extended, thus impacting the Contract Completion Date, Contractor shall submit a written action plan for bringing the schedule into compliance with the Contract Completion Date. Contractor shall initiate corrective actions, as approved by the Construction Administrator, at no additional cost. These actions shall include, but not be limited to, one or more of the following:
- a. Increase construction manpower in certain or all trades in order to bring the completion date into compliance with Contract requirements.
  - b. Increase the number of labor shifts, working hours per shift, or working days per week as required to bring the completion date into compliance with Contract requirements.
  - c. Reschedule activities in order to achieve the maximum number of concurrent work activities.
  - d. Arrange and pay for acceleration of fabrication schedules for long lead material items.
  - e. Arrange and pay for alternate shipping or delivery methods in order to expedite material procurement.
2. Comments provided by the Construction Administrator concerning the Initial Construction Schedule, Contract Construction Schedule, or any schedule update shall not relieve Contractor from the responsibility for compliance with the entire requirements of the Contract Documents.

**1.4 CONSTRUCTION PROGRESS REPORTS**

- A. Daily Log: Contractor shall maintain a written daily log at the job site with the following information as a minimum:
- 1. Date.
  - 2. Weather conditions.
  - 3. Subcontractors and trades performing Work under the Agreement on the Site, and number of workers each and number of hours worked by each worker.
  - 4. Others on the Site performing work for University under separate contracts.
  - 5. List of visitors to site, giving name, company or agency affiliation and telephone number.

6. Descriptions of situations and circumstances which could delay normal progress of Work or which could be basis of claim for change in Contract Time or Contract Sum.
  7. Changes to Work and who authorized changes.
  8. Comments as Contractor determines are appropriate for Project record.
  9. Reports shall include photos and/ or videos as needed to illustrate a particular circumstance more accurately.
- B. Submission of Logs: Submit one copy of daily logs to University's Representative and Architect at weekly intervals, for review at Construction Progress Meetings.

**PART 2 - PRODUCTS** (Not Used)

**PART 3 - EXECUTION** (Not Used)

**END OF SECTION**

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## **SECTION 01 33 00**

### **SUBMITTAL PROCEDURES**

#### **PART 1 - GENERAL**

##### **1.1 RELATED DOCUMENTS**

- A. Construction Drawings, Technical Specifications, Addenda, and general provisions of the Contract, including Contract General Conditions and Supplementary General Conditions and other Division 1 Specification Sections, apply to this Section.

##### **1.2 SECTION INCLUDES**

- A. Administrative requirements
- B. Construction Progress Schedule Submittal
- C. Contractor's review of submittals.
- D. Architect's review of submittals.
- E. Product data submittals.
- F. Shop drawing submittals.
- G. Sample submittals.
- H. Manufacturer's Instructions
- I. Reports of results of tests and inspections.
- J. Operations and Maintenance Data submittals
- K. Certificates

##### **1.3 RELATED SECTIONS**

- A. Section 01 31 13 – Project Coordination
- B. Section 01 31 26 – Electronic Communications Protocol
- C. Section 01 45 00 - Quality Control: Test and inspection reports.
- D. Section 01 77 00 - Closeout Procedures: Submittals for occupancy, Acceptance and Final Payment.
- E. Section 01 78 23 - Operation and Maintenance Data: Requirements for preparation and submission.

##### **1.4 DEFINITIONS**

- A. Shop Drawings, Product Data and Samples: Instruments prepared and submitted by Contractor, for Contractor's benefit, to communicate to Architect the Contractor's understanding of the design intent, for review and comment by Architect on the conformance of the submitted information to the general intent of the design. Shop drawings, product data and samples are not Contract Documents. Drawings, diagrams, schedules and ill

ustrations, with related notes, are specially prepared for the Work of the Contract, to illustrate a portion of the Work.

- B. Product Data: Standard published information ("catalog cuts") and specially prepared data for the Work of the Contract, including standard illustrations, schedules, brochures, diagrams, performance charts, instructions and other information to illustrate a portion of the Work.
- C. Samples: Physical examples that demonstrate the materials, finishes, features, workmanship and other characteristics of a portion of the Work. Accepted samples shall serve as quality basis for evaluating the Work.
- D. Other Submittals: Technical data, test reports, calculations, surveys, certifications, special warranties and guarantees, operation and maintenance data, extra stock and other submitted information and products shall also not be considered Contract Documents but shall be information from Contractor to Architect to illustrate a portion of the Work for confirmation of understanding of design intent.

## 1.5 ADMINISTRATIVE REQUIREMENTS

- A. Administrative Requirements for Submittals: Submittals shall be made in accordance with requirements specified herein and in other Divisions of the Specifications. See also the Contract General Conditions for additional requirements; especially those regarding requests for alternatives or equals and for substitutions.
  - 1. All required submittals, with the exception of O&M manuals, close-out submittals, and mock-ups required to be installed concurrent with specific construction activities, shall be submitted within 90 calendar days after Notice to Proceed.
- B. Contractor Coordination of Submittals: Coordinate preparation and processing of submittals with performance of construction activities. Transmit each submittal sufficiently in advance of performance of related construction activities to avoid delay.
  - 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 elements of the Work so processing will not be delayed by the need to review submittals concurrently for coordination.
    - a. The Architect will return without action submittals requiring coordination with other submittals until related submittals are coordinated.
- C. Submittal Log: Prior to proceeding with affected work, Contractor shall prepare and submit a Submittal Log, which lists submittal items per the product specifications for review and approval by University's Representative and Architect. Contractor shall allow seven (7) calendar days for Trustees review. Submittal Log shall identify all specified submittals to be made and shall serve as checklist for submittals.
  - 1. Maintain accurate submittal log for duration of Contract. Indicate current status of all submittals at all times. Submit log at progress meeting and as otherwise requested by University Representative or Architect.
  - 2. Format shall be suitable for Project and shall be subject to acceptance by University's Representative and the Architect. Comply with directions by University's Representative and the Architect for scope and format of Submittals List.
  - 3. Submittals list shall include the following submittal types and headings:
    - SD = Shop Drawings are required
    - PD = Product Data required
    - SA = Samples required
    - CO = Color samples required

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Deck Rehabilitation  
1485-0001

- SS = Site Sample installations are required
- LM = List of Materials
- RD = Record Drawings required
- CE = Certificates are required
- PR = Manufacturer's instructions or specifications required
- OM = Operation and Maintenance manuals are required
- EQ = Maintenance materials/equipment are required
- WA = Warranties and/or guarantees are required
- LR = Laboratory Reports are required
- FT = Factory Test reports are required
- ST = Site Test reports required
- RP = Submittal to the Architect for record purposes only and not for review or approval
- O = Other submittal requirements as specified in Section

2. Sample Table:

Section	<u>SD</u>	<u>PD</u>	<u>SA</u>	<u>CO</u>	<u>SS</u>	<u>LM</u>	<u>RD</u>	<u>CE</u>	<u>PR</u>	<u>OM</u>	<u>EQ</u>	<u>WA</u>	<u>LR</u>	<u>FT</u>	<u>ST</u>	<u>RP</u>	<u>O</u>
05120	x					x											
09250		x			x	x		x					x		x		
10810		x	x														

- D. Transmission of Submittals: Submittals shall be processed electronically (with exceptions such as product and material samples or otherwise designated or approved by the University Representative). Transmit all submittals from Contractor to Architect via Electronic Project Management (EPM) system, unless otherwise directed, using a transmittal form for each one. Submittals received from sources other than the Contractor will be returned without action. Include all information specified below for identification of submittal and for monitoring of review process.

1. Architect will provide example Letter of Transmittal, if requested.
2. Submittals shall be concurrently made available via EPM to University's Representative for review.

- E. Timing of Submittals: Make submittals sufficiently in advance of construction activities to allow shipping, handling and review by the Architect and Architect's consultants. Allow sufficient review time so that installation will not be delayed as a result of the time required to process submittals, including time for resubmittals.

1. The Architect will make desired corrections and consolidate relevant Trustees comments within fifteen (15) calendar days and return the submittal to the Contractor via EPM system. Submittals, which require coordination with other submittals, may require more than fifteen (15) calendar days review time. Submittals that require selection of colors will be reviewed. Color selection may not be provided until all submittals requiring color selection have been received and reviewed, and color selections have been approved by the Trustees.
2. Make corrections required by the Architect and submit via EPM system for final review and distribution.
3. If an intermediate submittal is necessary, process the same as the initial submittal.
4. No extension of Contract Time will be authorized because of failure to transmit submittals to the Architect sufficiently in advance of the Work to permit processing.

- F. Submittals Identification:

1. Provide a space on all submittals electronically approximately four-inches by five-inches on the label or bes

ide the title block on Shop Drawings to record the Contractor's review and approval markings and the action taken. Include the following information on the label for processing and recording action taken:

- a. Project name and Trustees project number
  - b. Submission date
  - c. Name and address of Architect
  - d. Name and address of Contractor
  - e. Name and address of subcontractor
  - f. Name and address of supplier
  - g. Name of manufacturer
  - h. Number and title of appropriate Specification Section
  - i. Drawing number and detail references, as appropriate.
2. Identify each element on submittal by reference to Drawing sheet number, detail, schedule, room number, assembly or equipment number, Specifications article and paragraph, and other pertinent information to clearly correlate submittal with Contract Drawings. On the submittal transmittal form or separate sheet record deviations from Contract Document requirements, including minor variations and limitations. Include Contractor's certification that information submitted complies with requirements of the Contract Document. The Architect's review of such submittals or shop drawings or product data shall not relieve the Contractor of responsibility for deviations from the drawings or specifications.
  3. Identify each submittal by Specification Section number followed by a number indicating sequential submittal for that Section. Resubmittals shall use same number as original submittal, followed by a letter indicating sequential resubmittal. For example:  
  
09 26 13-01-01 First submittal for Section 09 26 13 - Gypsum Veneer Plastering.  
09 26 13-02-01 Second submittal for Section 09 26 13 - Gypsum Veneer Plastering.  
09 26 13-02-02 Resubmittal of second submittal for Section 09 26 13 - Gypsum Veneer Plastering.  
09 26 13-02-03 Second resubmittal of second submittal for Section 09 26 13 - Gypsum Veneer Plastering.
  4. Place a permanent label or title block on each submittal electronically for identification. Indicate the name of the entity that prepared each submittal on the label or title block.
- G. Grouping of Submittals: Unless otherwise specifically permitted by the Architect, make all submittals in groups containing all associated items. The Architect may reject partial submittals as incomplete or hold them until related submittals are made.
- H. Unsolicited Submittals: Unsolicited submittals may be returned without being reviewed.
- I. Record Submittals: When record submittals are specified, submit in accordance with the Electronic Project Management System requirements. Record submittals will not be reviewed but will be retained for historical and maintenance purposes.
- J. Revisions: Revisions to original submittal list and schedule will only be accepted by University Representative and Architect when revisions are required by circumstances not reasonably anticipated by Contractor during preparation of original schedule. Submit revisions not later than 20 calendar days following the date that the need for revision became necessary.

## **1.6 CONSTRUCTION PROGRESS SCHEDULE SUBMITTAL**

- A. Submit as specified in the Contract General Conditions under Schedule and Section 01 32 00 for Construction Progress Documentation.

## 1.7 CONTRACTOR'S REVIEW OF SUBMITTALS

- A. Contractor's Review of Submittals: Prior to submission to Architect for review, Contractor shall review each submittal for completeness and conformance to specified requirements. Contractor shall stamp each submittal with a review action stamp and sign each copy of submittal. Submittals without stamp and signature will not be reviewed and will be returned. Electronic signatures are acceptable but will need to be authenticated during the submittal process. Contractor's submittal action stamp shall certify the following actions by Contractor:

1. Field measurements have been determined and verified.
2. Conformance with requirements of Contract Drawings and Specifications is confirmed.
3. Catalog numbers and similar data are correct.
4. Work being performed by various subcontractors and trades is coordinated.
5. Field construction criteria have been verified, including confirmation that information submitted has been coordinated with the work being performed by others for University and actual site conditions.
6. All deviations from requirements of Drawings and Specifications have been identified and noted.
7. Contractor shall certify that submittals have been reviewed and approved:

Stamp Submittals utilizing the following language:

"The undersigned certifies this submittal has been reviewed and approved with respect to the means, methods, techniques, sequences, and procedures of construction, and safety precautions and programs incidental thereto; and also warrants that this submittal complies with the Contract Documents and comprises no variation thereto.

Signature: \_\_\_\_\_ Date: \_\_\_\_\_  
Name Printed: \_\_\_\_\_ Title \_\_\_\_\_  
Contractor Name: \_\_\_\_\_

8. Submittals not certified by being stamped and signed by Contractor electronically will be returned without action, as will submittals which, in University Representative's or Architect's opinion, have not been adequately reviewed and coordinated by Contractor.
- B. Changes in Work: Changes in the Work shall not be authorized by submittal review actions. No review action, implicit or explicit, shall be interpreted to authorize changes in the Work. Changes shall only be authorized by separate written direction from the University Representative, in accordance with the Contract General Conditions.
- C. Allow sufficient review time so that installation will not be delayed as result of time required to process submittals, including time for resubmittals.
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 elements of Work so processing will not be delayed by need to review submittals concurrently for coordination.
    - a. University Representative and Architect reserve right to withhold action on submittal requiring coordination with other submittals until related submittals are received.

3. Allow additional time if processing must be delayed to permit coordination with subsequent submittals.
  4. If intermediate submittal is necessary, process same as initial submittal.
  5. Allow same time for reprocessing each submittal as allowed for processing original submittal.
  6. No extension of Contract Time will be authorized because of failure to transmit submittals to University Representative sufficiently in advance of Work to permit processing.
- D. Package each submittal appropriately for transmittal and handling. Transmit each submittal from Contractor to University Representative using Submittal Transmittal form attached at the end of this section.
1. Submittals received from sources other than Contractor will be returned without action.
  2. Number each submittal and resubmittal as indicated in approved Submittal Schedule.
  3. Submittals forwarded without a completed Submittal Transmittal form will be returned without review.
  4. Submittals shall be submitted electronically unless they are related to materials and products.

## **1.8 REVIEW OF SUBMITTALS BY UNIVERSITY'S REPRESENTATIVE AND ARCHITECT**

- A. Review of Submittals by University's Representative and Architect: Submittals shall be a communication aid between Contractor and Architect by which interpretation of Contract Documents requirements may be confirmed in advance of construction.
1. Reviews by University's Representative, Architect and Architect's consultants shall be only for general conformance with the design concept of the Project and general compliance with the information given in the Drawings and Specifications.
  2. The Architect's review shall not be construed as an "approval," or to relieve the Contractor(s) and material suppliers of responsibility for errors or omissions in the submitted documents.
  3. Acceptance of a specific item does not include acceptance of the assembly of which the item is a component.
  4. Except for submittals for record, information or similar purposes, where action and return is required or requested, the Architect will review each submittal, mark to indicate action taken, and return promptly via EPM system.
- B. Review Action: Architect will stamp each submittal with a uniform, self-explanatory action stamp.
1. Stamp will be appropriately marked as follows to indicate the action taken:
    - a. Action 1 (no exception taken): Means fabrication, manufacture, or construction may proceed providing submittal complies with Contract Documents.
    - b. Action 2 (make corrections noted; no resubmission required): Means fabrication, manufacture, or construction may proceed providing submittal complies with Architect's notations and Contract Documents. (Note: If Contractor cannot comply with notations, make revisions and resubmit.)
    - c. Action 3 (make corrections noted; submit corrected copy): Means fabrication, manufacture, or construction may proceed; however, submittal did not fully demonstrate full extent of all conditions, details and coordination with other surrounding work and therefore requires additional information and rework as noted. Resubmit shop drawings for final Action 1 or 2. Should Contractor proceed with fabrication, manufacturing or construction, it shall do so at its own

risk.

- d. Action 4 (rejected, revise and resubmit): Means submittal does not comply with design intent of Contract Documents. Do not use submittals stamped Action 3. Make revisions and resubmit.
  - e. Action 5 (rejected, submit specified item): Means submittal varies from specified item or system specified in Contract Documents and is not acceptable for use on the project. Do not use submittals stamped Action 4. Make revisions and resubmit.
  - f. Action 6 (resubmit with related assembly items): Means submittal of related assembly item(s) are required in conjunction with the submittal for proper review.
  - g. Action 7 (rejected; incorrect transmittal): Means the Submittal Transmittal form specified for use on the Project was not included, incomplete, or incorrectly completed.
  - h. Action 8 (No Action): Means documents have not been reviewed by Architect and submittal is returned to Contractor for several possible reasons: submittal not requested, submittal not complete, submittal not coordinated, or submittal bears no resemblance to design intent.
  - i. Action 9 (submitted to consultant for review): This code is for the use of the Architect to indicate routing to various A/E consultants. Any submittals marked Action 6 by Architect will be returned to Contractor without review.
  - j. Record Submittals: Specifications require certain information and calculations be submitted for record purposes only. Such submittals will not be acted upon, stamped or returned to Contractor.
- 2. Do not permit submittals marked "Rejected, Revise and Resubmit" to be used at the Project site, or elsewhere where Work is in progress.
  - 3. Note: Any work performed prior to receiving a fully approved submittal shall be done at the Contractor's risk and shall be subject to being replaced if Contract requirements are not met.

C. Contract Requirements:

- 1. Review actions by Architect and Architect's consultants shall not relieve the Contractor from compliance with requirements of the Contract Drawings and Specifications.
  - a. Acceptance of submittals with deviations shall not relieve Contractor from responsibility for additional costs of changes required to accommodate such deviations.
  - b. Deviations included in submittals without prior acceptance will be considered an exception from review of submittals whether noted or not on returned copy.
- 2. No review action, implicit or explicit, shall be interpreted to authorize changes in the Work. Changes shall only be authorized by separate written Change Order or Field Instruction, in accordance with the Contract General Conditions.
- 3. When professional certification of performance criteria of materials, systems or equipment is required by

Contract Documents, University Representative and Architect shall be entitled to rely upon accuracy and completeness of such calculations and certifications.

4. Notations by University Representative or Architect which increase contract cost or time of completion shall be brought to University Representative's and Architect's attention before proceeding with Work.

D. Resubmittals:

1. Subject to same terms and conditions as original submittal.
2. University Representative and Architect will accept not more than one resubmittal.
  - a. Should additional resubmittals be required, Contractor shall reimburse Trustees for University Representative and Architect's accounts for time spent in processing additional resubmittals at rate of 2.5 times rate of Direct Personnel Expense (DPE). Direct Personnel Expense is defined as direct salaries of University Representative's and Architect's personnel engaged on Project and portion of costs of mandatory, and customary contributions and benefits related thereto, including employment taxes and other statutory employee benefits, insurance, sick leave, holidays, vacations, pensions, and similar contributions and benefits.

## 1.9 PRODUCT DATA SUBMITTALS

- A. Product Data: Catalog cuts, photographs, illustrations, standard details, standard schedules, performance charts, material characteristics, color and pattern charts, test data, roughing-in diagrams and templates, standard wiring diagrams and performance curves and listings by Code authorities and nationally-recognized testing and inspection services. Where product data must be specially prepared because standard manufacturer data is not suitable for use, submit according to requirements for shop drawings specified below.
- B. Modifications to Standard Product Data: Modify manufacturer's standard catalog data to indicate precise conditions of the Project.
  1. Provide space for review action stamps and, if required by authorities having jurisdiction, license seal of Engineer and/or design consultant, if applicable.
  2. Mark each copy to show applicable choices and options. Where manufacturer's product data includes information on several products, some of which are not required, mark copies to highlight applicable information.
  3. Include the following information:
    - a. Manufacturer's literature with recommendations,
    - b. Compliance with recognized trade association standards,
    - c. Compliance with recognized testing agency standards,
    - d. Application of testing agency labels and seals,
    - e. Notation of dimensions verified by field measurement,
    - f. Notation of coordination requirements,
    - g. Environmental Product Declaration (EPD)'s information.

Environmental Product Declaration: Independently verified document created and verified in accordance with International Organization for Standardization (ISO) 14025 for Type III environmental declarations that identifies the global warming potential emissions of the facility- specific material or product through a product stage life cycle assessment.



The legislation was introduced as Assembly Bill (AB) 262. It targets the embedded carbon emissions of certain construction materials used in public works projects. AB 262 requires that these materials have a global warming potential that falls below a limit set by the Department of General Services.

The following materials or products are subject to the Buy Clean California Act, and shall have EPD's submitted for all products listed below:

Material or product	Material specifications: CSI Uniformat
Carbon steel rebar	Section 03 20 00, "Bar Reinforcement"
Structural steel	Section 05 12 00, "Structural Steel"
Flat glass	Section 08 80 00, "Glazing"
Mineral wool board insulation	Section 07 21 13.19 "Mineral Board Insulation"

4. Do not submit product data until compliance with requirements of the Contract Documents has been confirmed.
  5. Proceed with installation only using reviewed copy of product data with appropriate action stamp as indicated in Section 1.8 B1 above. Do not permit use of unmarked copies of product data in connection with construction.
- C. Copies: Submit electronic copies of catalog pages with applicable data highlighted and cross-referenced to Drawings and Specifications requirements. Paper copies will not be acceptable unless specifically authorized by the University Representative. Distribution of approved submittals shall be electronic unless otherwise noted.

#### 1.10 SHOP DRAWINGS SUBMITTALS

- A. Shop Drawings: Drawings, diagrams, schedules and other graphic depictions to illustrate fabrication and installation of a portion of the Work. Shop Drawings shall include fabrication and installation drawings, setting diagrams, schedules, patterns, templates and similar drawings. Include the following information:
1. Identification of products and materials included
  2. Compliance with referenced standards
  3. Notation of coordination requirements
  4. Dimensions
  5. Notation of dimensions established by field measurement.
- B. Coordination: Show all field dimensions and relationships to adjacent or critical features of Work.
- C. Preparation of Shop Drawings: Prepare and submit electronically newly prepared information, drawn to accurate scale. Highlight, encircle, or otherwise indicate deviations from the Contract Documents. Do not reproduce Contract Documents or copy standard information as the basis of Shop Drawings. Standard information prepared without specific reference to the Project is not considered Shop Drawings.

1. Provide space for review action stamps and, if required by governing authorities having jurisdiction, license seal of Architect and Architect's design consultant, if applicable.
  2. Prepare shop drawings submitted in electronic format that shall be printable on minimum sheet size of 17-inches by 22-inches, or smaller if a multiple of 8-1/2 inches by 11-inches. Maximum size shall be 30-inches by 42-inches.
  3. Except as otherwise approved by the University Representative, submit all shop drawings electronically using the Contractor's Electronic Project Management system.
  4. Do not use Shop Drawings without an appropriate final review stamp indicating action taken in connection with construction.
- D. Distribution of Reviewed Shop Drawings: Electronic distribution of reviewed shop drawings will be by Contractor and must be stamped by the Architect.

#### **1.11 SAMPLE SUBMITTALS**

- A. Samples: Full-size, fully-fabricated samples cured and finished as specified and physically identical with the material or product proposed. Samples shall include partial sections of manufactured or fabricated components, cuts or containers of materials, color range sets, and swatches showing color, texture and pattern.
1. Mount, display, or package Samples in the manner specified to facilitate review of qualities indicated. Prepare Samples to include the following:
    - a. Project name and location
    - b. Manufacturer and supplier.
    - c. Name, finish, and composition of material.
    - d. Location where material is to be used.
    - e. Specification Section number.
    - f. Submittal number.
    - g. Contractor's review stamp.
    - h. Space for Architect's review stamp.
    - i. Compliance with recognized standards
    - j. Availability and delivery time.
  2. Submit Samples for review of kind, color, pattern, and texture, for a final check of these characteristics with other elements, and for a comparison of these characteristics between the final submittal and the actual component as delivered and installed.
  3. Submit actual samples. Photographic or printed reproductions will not be accepted.
  4. Field samples specified in individual Sections are special types of samples. Field samples shall be full-size examples erected on site to illustrate finishes, coatings, or finish materials and to establish the standard by which the Work will be evaluated.

- B. Preliminary or Selection Submittals: Where samples are for selection of color, pattern, texture or similar characteristics from a range of standard choices, submit full set of choices for the specified material or product.
  - 1. Preliminary submittals will be reviewed and returned with the Architect's mark indicating selection and other action.
- C. Quantity: Except for samples illustrating assembly details, workmanship, fabrication techniques, connections, operation and similar characteristics, submit three sets. One sample will be returned marked with the action taken.
  - 1. Maintain sets of samples, as returned, at the Project site, for quality comparisons throughout the course of construction.
  - 2. Unless otherwise noted, full-size and complete samples will be returned and may be incorporated into field mock-ups. Samples may be incorporated into the Work (completed construction) only with written approval of the Architect and the University Representative in advance of sample preparation.
  - 3. Other samples shall be produced and mounted on cardstock in 8-1/2" by 11" format, three-hole punched and suitable for inclusion in product sample binders. Contractor shall provide binders as directed.
  - 4. Contractor shall prepare and distribute additional samples to subcontractors, manufacturers, fabricators, suppliers, installers, and others as necessary for performance of the Work.
  - 5. Accepted samples will form standard of comparison for finished Work. Defects and deviations in excess of those in accepted samples, are unacceptable and are subject to rejection of completed Work.
- D. Color Samples: Architect will review and select colors for Project only after all colors are received, so that colors may be properly coordinated.

## **1.12 MANUFACTURER'S INSTRUCTIONS**

- A. Manufacturer's Instructions: Submit manufacturer's instructions for preparation, mixing, assembly, handling, application and installation of products, as applicable and as specified in product sections of the Specifications.
  - 1. Include applicable ICBO ES Evaluation Reports. Evaluation Reports shall be current and shall be annotated for applicable products.
  - 2. Include applicable Safety Data Sheets (SDS), for Project record only.
  - 3. Include written recommendations, as applicable, from manufacturer for Project conditions.
  - 4. Identify conflicts between manufacturers' instructions and Contract Documents.
- B. Copies: Electronic distribution will be required. If requested and agreed to by the University Representative, copies may be distributed as necessary.
- C. Reviews by Architect and University's Representative: Manufacturer's instructions shall be for information and will not be reviewed by Architect or University's Representative.

## **1.13 REPORTS OF RESULTS OF INSPECTIONS AND TESTS**

- A. Reports of Results of Inspections and Tests: Submit technical data, test reports, calculations, surveys, and cer

tifications based on field tests and inspections by independent inspection and testing agency and by authorities having jurisdiction.

1. Reports of results of inspections and tests shall not be considered Contract Documents.
2. Refer to Section 01 45 00 - Quality Control for additional requirements.

#### **1.14 OPERATION AND MAINTENANCE DATA SUBMITTALS**

- A. Operation and Maintenance Data Submittals: Refer to requirements specified in Section 01 78 23 - Operation and Maintenance Data. Include operation and maintenance data submittals in Construction Progress Schedule. Refer to Contract General Conditions.

#### **PART 2 - PRODUCTS**

Not applicable to this Section.

#### **PART 3 - EXECUTION**

Not applicable to this Section.

**END OF SECTION**

# California State University, [Campus Name]

[Campus Address]

## SUBMITTAL ROUTING FORM

### PROJECT:

Contract: \_\_\_\_\_ SUBMITTAL NUMBER: \_\_\_\_\_

Section: **FILL IN #** No. \_\_\_\_\_ Rev. \_\_\_\_\_

### ARCHITECT:

Specification Title: \_\_\_\_\_  
Paragraph No.: \_\_\_\_\_  
Description of Item: \_\_\_\_\_  
Manufacturer: \_\_\_\_\_  
Contractor's Name: \_\_\_\_\_  
Telephone No.: \_\_\_\_\_  
Contact: \_\_\_\_\_

**This Submittal is forwarded for review as required by the Contract Documents.**

1. We understand a separate transmittal form is required for each paragraph in each specification section for which a submittal is required.
2. If a submittal contains material not applicable for review, all information which is not applicable shall be deleted prior to submission.
3. We further understand that submittals not dated and signed in compliance with the contract documents will be returned without a review and must be resubmitted.
4. All substitution requests must be accompanied by a completed Substitution Request Form.

ROUTING SEQUENCE	CHECKED BY	DATE RECEIVED	DATE SENT	NO. OF COPIES	ACTION TAKEN*
Subcontractor/Vendor					
Contractor					
Project Manager					
Architect					
Consultant					
Architect					
Project Manager					
Contractor					

**Contractors Remarks:** \_\_\_\_\_

**Architects Remarks:** \_\_\_\_\_

**CM / PM Remarks:** \_\_\_\_\_

### \*Action Legend

1. No exception taken
2. Make corrections noted; no resubmission required
3. Make corrections noted; submit corrected copy
4. Rejected; revise and resubmit
5. Rejected; submit specified item
6. Resubmit with related assembly item
7. Rejected; incorrect transmittal
8. No action
9. Submitted to consultant for review
10. Record Submittals

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## **SECTION 01 35 00**

### **SPECIAL PROCEDURES**

#### **PART 1 - GENERAL**

##### **1.1 RELATED DOCUMENTS**

- A. Construction Drawings, Technical Specifications, Addenda, and general provisions of the Contract, including Contract General Conditions and Supplementary General Conditions and other Division 1 Specification Sections, apply to this Section.

##### **1.2 SECTION INCLUDES**

1. Environmental protection procedures
2. Smoke/odor control procedures
3. Noise control procedures
4. Dust and air pollution control procedures
5. Hazardous materials procedures
6. Welding and burning mitigation procedures
7. Erosion and sediment control procedures (Storm Water Pollution Protection Plan)
8. Disposal operations procedures
9. Cultural resources procedures
10. Alteration project procedures.

##### **1.3 RELATED SECTIONS**

- A. Section 01 73 29 - Cutting and Patching: General requirements for procedures and limitations for cutting and patching the work.

##### **1.4 ENVIRONMENTAL PROTECTION PROCEDURES**

- A. Environmental Protection Procedures: General requirements specified in this Section are in addition to those of the Contract General Conditions.
  1. During the progress of the work, keep the premises occupied in a neat and clean condition and protect the environment both on site and off site, throughout and upon completion of the construction project.
  2. In coordination with the Campus, develop an Environmental Protection Plan in detail and submit to University's Representative for approval within 30 calendar days from the date of commencement specified in the Notice to Proceed. Distribute approved plan electronically to all employees and to all subcontractors and their employees. Environmental Protection Plan shall include, but not be limited to, the following items:

- a. Required permits
  - b. Proposed sanitary landfill site
  - c. Other proposed disposal sites
  - d. Noise Control
  - e. Dust Control
  - f. Erosion and Sediment Control
  - g. Any agreements with public or private landowners regarding equipment, materials storage, borrow sites, fill sites, or disposal sites. Such agreements made by Contractor shall be invalid if their execution causes violation of local or regional grading or land use regulations.
- B. Environmental Protection: Provide protection, operate temporary facilities and conduct construction in ways and by methods that comply with environmental regulations, and minimize the possibility that air, waterways and subsoil might be contaminated or polluted, or that other undesirable effects might result.
  1. Avoid use of tools and equipment that produce harmful noise. Restrict use of noise making tools and equipment to hours that will minimize complaints from persons or firms near the site.
  2. Comply with noise control requirements specified below.
- C. Construction Operations: All construction operations shall comply with all applicable Federal, State and local Codes, ordinances, statutes and regulations pertaining to water, air, solid waste and noise pollution. It shall be Contractor's responsibility to identify and determine necessary measures to be taken to comply with such Codes, ordinances, statutes and regulations.
- D. Definitions of Contaminants:
  1. Sediment: Soil and other debris that have been eroded and transported by runoff water
  2. Solid waste: Rubbish, debris, garbage and other discarded solid materials resulting from construction activities, including a variety of combustible and non-combustible wastes, such as ashes, waste materials that result from construction or maintenance and repair work, leaves and tree trimmings
  3. Chemical waste: Includes petroleum products, bituminous materials, salts, acids, alkalis, herbicides, pesticides, disinfectants, organic chemicals and inorganic wastes. Some of the above may be classified as "hazardous"
  4. Sanitary wastes:
    - a. Sewage: Domestic sanitary sewage
    - b. Garbage: Refuse and scraps resulting from preparation, cooking, dispensing and consumption of food.
- E. Hazardous Materials: See also Section below titled "HAZARDOUS MATERIALS PROCEDURES."
  1. Except as otherwise specified, in the event the Contractor encounters on the site material reasonably believed to be asbestos, lead, polychlorinated biphenyl (PCB), or other hazardous materials which have not been rendered harmless, the Contractor shall immediately stop Work in the area affected and report the condition to the Trustees in writing.
  2. Work in affected areas shall not thereafter be resumed except by written agreement of the Trustees and Contractor if in fact the material is asbestos, lead, PCB, or other hazardous materials and has not been rendered harmless.



Cal Poly Humboldt  
Deck Rehabilitation  
1485-0001

3. Work in affected areas shall be resumed in the absence of asbestos, lead, PCB, or other hazardous materials, or when such materials have been rendered harmless.
- F. Protection of Natural Resources: It is intended that the natural resources within the Project boundaries and outside the limits of permanent work performed under this Contract be preserved in their existing condition or be restored to an equivalent or improved condition upon completion of the work. Confine construction activities to areas defined by the public roads, easements, and work area limits shown on the drawings. Return construction areas to their pre-construction elevations except where surface elevations are otherwise noted to be changed. Maintain natural drainage patterns. Conduct construction activities such that ponding of stagnant water conducive to mosquito breeding habitat will not occur at any time.
1. Land resources protection: Do not remove, cut, deface, injure or destroy trees or shrubs outside the work area limits. Do not remove, deface, injure or destroy trees within the Project area without permission from University's Representative. Such improvements shall be removed and replaced, if required, by the Contractor at no change in Contract Time and Contract Sum.
  2. Landscaping protection: Protect trees that are located near the limits of Project area which may possibly be defaced, bruised or injured or otherwise damaged by the Contractor's operations. No ropes, cables or guys shall be fastened to or be attached to any existing nearby trees or shrubs for anchorages. Refer to additional requirements specified in Section 01 56 00 - Temporary Barriers and Controls.
    - a. Trimming: Refer to Section 01 56 39 - Tree and Plant Protection.
    - b. Excavations around trees: Refer to Section 01 56 39 - Tree and Plant Protection.
    - c. Repair and restoration: Repair or replace trees or other landscape feature scarred or damaged by equipment or construction operations as specified below. Repair and restoration plan shall be reviewed and approved by University's Representative prior to its initiation.
  3. Temporary construction:
    - a. Remove all signs of temporary construction facilities such as haul roads, work areas, structures, foundations of temporary structures, stockpiles of excess or waste materials, or any other vestiges of construction as directed by the University's Representative.
    - b. Level all temporary roads, parking areas and any other areas that have become compacted or shaped.
    - c. Unpaved areas where vehicles have been operated shall receive suitable surface treatment or shall be periodically wetted down to prevent construction operations from producing dust damage and nuisance to persons and property, at no additional cost to the Trustees.
    - d. Keep haul roads clear at all times of any object that creates an unsafe condition. Promptly remove any contaminants or construction materials dropped from construction vehicles. Do not drop mud and debris from construction equipment on public streets. Sweep clean turning areas and pavement entrances as necessary.
  4. Water resources: Comply with all applicable Federal, State and local Codes, ordinances, statutes and regulations pertaining to discharge (directly or indirectly) of pollutants to underground and natural waters.
    - a. Perform all Work under the Contract in a manner that any adverse environmental impacts are reduced to a level that is acceptable to University's Representative and authorities having jurisdiction.
    - b. Refer to Division 2 - Site Construction, earthwork Sections, and Civil Drawings for specific requirements on control of storm water and disposal of water from dewatering activities.
  5. Oily Substances: At all times, special measures shall be taken to prevent oily or other hazardous substances from entering the ground, drainage areas or local bodies of water in such quantities as to affect normal use, aesthetics or produce a measurable impact upon the areas. All soil or water that is contaminated with oily substances due to Contractor's operations shall be disposed of in accordance with applicable regulations, at no change in Contract Time and Contract Sum.

## **1.5 SMOKE/ODOR CONTROL PROCEDURES**

- A. Smoke/Odor Control: Protect primary fresh air intakes to existing buildings from exhaust from internal combustion engines, paint and solvent fumes and other noxious fumes and vapors.
  - 1. Implement control methods such as snorkels from engines exhausts to 50 feet away from air intakes. Provide carbon filters on air intakes as necessary, including periodic replacement of filters to ensure effectiveness.
  - 2. All other activities generating fumes shall be limited to minimum distance of 50 feet from air intake grilles.
  - 3. If fume-generating procedures must occur within 50 feet of an air intake, Contractor shall do the following:
    - a. Notify University's Representative at least 14 calendar days in advance of such activities.
    - b. Perform Work when it least impacts the University (evenings, weekends or particularly windy days).
    - c. Provide carbon filter media, plastic barriers, or other control methods to ensure fresh air only enters into the building ventilation system.

## **1.6 NOISE CONTROL PROCEDURES**

- A. Noise Control Procedures, General: Requirements of this Section are in addition to those of the Contract General Conditions. Maximum noise levels within 1,000 feet of classrooms, laboratories, residences, businesses, adjacent buildings and other populated areas:
  - 1. Noise levels for trenchers, pavers, graders and trucks: Not exceeding 90 dBA at 50 feet as measured under noisiest operating conditions.
  - 2. Noise levels for all other equipment: Not exceeding 85 dBA at 50 feet.
- B. Noise Control of Equipment:
  - 1. Equip jackhammers with exhaust mufflers and steel muffling sleeves.
  - 2. Use air compressors of a quiet type such as a "whisperized" compressor. Compressor hoods shall be closed while equipment is in operation.
  - 3. Use electrically-powered rather than gasoline or diesel powered fork-lifts.
  - 4. Provide portable noise barriers around jack hammering, with barriers constructed of 3/4 inch plywood lined with 1-inch thick duct-liner type fiberglass on Work side.
- C. Noise Control of Construction Operations:
  - 1. Keep noisy equipment as far as possible from noise-sensitive site boundaries.
  - 2. Machines shall not be left idling.
  - 3. Use electric power in lieu of internal combustion engine power whenever possible.
  - 4. Maintain equipment properly to reduce noise from excessive vibration, faulty mufflers, or other sources. All engines shall have properly functioning mufflers.

- D. Scheduling of Noisy Operations: Schedule construction activities to minimize time of noisy operations and disruption to occupants of adjoining facilities. Notify University's Representative in advance of performing Work creating unusual noise and schedule such Work at times mutually agreeable.
- E. Accessory Noise: Do not play radios, tape recorders, televisions, and other similar items at construction site.

#### **1.7 DUST AND AIR POLLUTION CONTROL PROCEDURES**

- A. Dust and Air Pollution Control Procedures, General: Requirements of this Section are in addition to those of Article 4.03 of the Contract General Conditions. Employ measures to prevent or minimize creation of dust and air pollution. Contractor shall appoint a dust control monitor to oversee and implement all measures specified in this Article.
  - 1. Unpaved areas shall be wetted down, to eliminate dust formation, a minimum of twice a day to reduce particulate matter. When wind velocity exceeds 15 mph, site shall be watered down more frequently.
  - 2. Store all volatile liquids, including fuels or solvents in closed containers.
  - 3. No on-site burning of debris, lumber and other scrap shall be permitted.
  - 4. Properly maintain equipment to reduce gaseous pollutant emissions.
  - 5. Exposed areas, new driveways and sidewalks shall be seeded, treated with soil binders or paved, as appropriate, as soon as possible.
  - 6. Cover stockpiles of soil, sand and other loose materials.
  - 7. Cover trucks hauling soil, debris, sand or other loose materials.
  - 8. Sweep project area streets at least once daily. Refer to Section 01 74 00 - Cleaning Requirements.

#### **1.8 HAZARDOUS MATERIALS PROCEDURES**

- A. Unidentified Hazardous Materials:
  - 1. Information regarding known asbestos containing material (ACM) is available from University's office of Environmental Health and Safety.
  - 2. Except as otherwise specified, in the event that Contractor encounters on the project site material reasonably believed to be asbestos, polychlorinated biphenyl (PCB), or other hazardous materials which have not been rendered harmless, the Contractor shall immediately stop work in the area affected and report the condition to University's Representative.
  - 3. Work in the affected area shall not be resumed except by written agreement between University and Contractor if in fact the material is asbestos, PCB, or other hazardous materials and has not been rendered harmless.
  - 4. Work in the affected area shall be resumed in the absence of asbestos, PCB or other hazardous materials, or when such materials have been rendered harmless.
- B. Identified Hazardous Materials
  - 1. Materials identified as hazardous materials prior to construction shall be removed by a qualified contractor

licensed for such work.

2. Work outside of removal of IHM's shall not begin in areas where IHM's have been identified until IHM's have been removed.
3. If additional materials are found during removal of IHM's then refer 1.8A.

## **1.9 WELDING AND BURNING MITIGATION PROCEDURES**

- A. Welding and Burning Mitigation Procedures: Eliminate welding and burning of steel as much as possible. Where unavoidable, perform welding and burning with all possible precaution to avoid fire hazard. Provide a fire watch for minimum of 30 minutes after burning stops. Provide protection for all adjacent surfaces.

## **1.10 EROSION AND SEDIMENT CONTROL PROCEDURES**

- A. Erosion and Sediment Control Procedures: Refer to runoff control requirements specified in Section 01 57 00 - Temporary Controls. Obtain and comply with Storm Water Pollution Protection Plan (SWPPP) and project-specific requirements indicated on Civil Drawings.

## **1.11 DISPOSAL OPERATIONS PROCEDURES**

- A. Solid Waste Management:
  1. Supply solid waste transfer containers. Daily remove all debris such as spent air filters, oil cartridges, cans, bottles, combustibles and litter. Take care to prevent trash and papers from blowing onto adjacent property. Encourage personnel to use refuse containers. Convey contents to a sanitary landfill.
  2. Washing of concrete containers where wastewater may reach adjacent property, storm drains or natural water courses will not be permitted. Remove any excess concrete to the sanitary landfill.
- B. Chemical Waste and Hazardous Materials Management: furnish containers for storage of spent chemicals used during construction operations. Dispose of chemicals and hazardous materials in accordance with applicable regulations.
- C. Garbage: Store garbage in covered containers, pick up daily and dispose of in a sanitary landfill.
- D. Grading Spoil and Landscape Debris: Dispose of vegetation, weeds, rubble, and other materials removed by the clearing, stripping and grubbing operations off site at a suitable disposal site in accordance with applicable Federal, State and local Codes, ordinances, statutes and regulations
- E. Excavated Materials:
  1. Native soil complying with the requirements of applicable Division 2 - Site Construction earthwork Section, may be used for backfill, fill and embankments as allowed in applicable by that section.
  2. Remove all material which is excavated in excess of that required for backfill. Dispose of unsuitable excavated material from the site and dispose of it legally.
    - a. Excess suitable backfill material shall be hauled off site. No additional compensation will be paid to the Contractor for such off haul. Include all such costs in the Contract Sum.
    - b. Unsuitable backfill material shall be disposed of off-site in accordance with applicable regulations, in a disposal site indicated in the Environmental Protection Plan.
    - c. Remove rubbish and materials unsuitable for backfill immediately following excavation.

- d. Remove material in excess of that required for backfill immediately following backfill operations.

## **1.12 CULTURAL RESOURCES PROCEDURES**

- A. Cultural Resources Procedures: Requirements specified in this Section are in addition to those required by Article 4.03 of the Contract General Conditions.
  1. Project does not pass through any known archaeological sites. However, it is conceivable that unrecorded archaeological sites could be discovered during construction.
  2. In the event that artifacts, human remains, or other cultural resources are discovered during subsurface excavations at locations of the Work, the Contractor shall protect the discovered items, cease work for a distance of 35 feet radius in the area, notify the Architect and University Representative and comply with applicable law.
  3. Trustees may retain an Archaeologist to monitor and recover data and artifacts during period that work has ceased.
  4. All items found which are considered to have archaeological significance are the property of the University.

## **PART 2 - PRODUCTS**

### **2.1 PRODUCTS FOR PATCHING, EXTENDING AND MATCHING**

- A. Provide same products or types of construction as that in existing structure, as needed to patch, extend or match existing.
- B. Generally the Contract Documents will not define products or standards of workmanship present in existing construction; determine products by inspection and necessary testing, and determine quality of workmanship by using existing as a sample for comparison.
- C. The presence of a product, finish, or type of construction requires that patching, extending or matching shall be performed as necessary to make work complete and consistent with identical standards of quality.

## **PART 3 - EXECUTION**

### **3.1 CUTTING AND PATCHING**

- A. Perform cutting and patching as specified in Section 01 73 29 - Cutting and Patching.

**END OF SECTION**

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## **SECTION 01 35 23**

### **OWNER SAFETY REQUIREMENTS**

#### **PART 1 - GENERAL**

##### **1.1 RELATED DOCUMENTS**

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

##### **1.2 SECTION INCLUDES**

- A. Procedures for health and safety protection and requirements for reporting accidents.

##### **1.3 SUBMITTALS**

- A. Accident Reporting: A copy of each accident report, which the Contractor or subcontractors submit to their insurance carriers, shall be forwarded to the University's Representative as soon as possible, but in no event later than seven (7) calendar days after the day the accident occurred.
- B. Contractor shall submit a copy of its Injury and Illness Prevention Plan (IIPP) adhering to all requirements of Title 8-Cal-OSHA prior to start of construction.
- C. Contractor will not be given a Notice-to-Proceed without approval of a complete IIPP to the University's EH&S Department.
- D. The Contractor's IIPP shall describe the policies it uses to provide a safe and healthy workplace for employees. The IIPP submittal shall include but is not limited to the following required information (per Title 8, CCR 3203):
  - 1. Identification of the person responsible (by name) for implementing the plan.
  - 2. Describe the system used for insuring employee compliance with the plan.
  - 3. Describe the system used for communication health and safety information to employees.
  - 4. Describe the procedure used for correction of unsafe conditions.
  - 5. Describe the procedure used for investigating injuries and illnesses.
  - 6. Describe the procedure used for identifying and evaluating workplace hazards including:
    - a. Establishing IIPP program on site
    - b. Inspection of the worksite.
    - c. Evaluation of new substances, processes, or equipment
    - d. Awareness of new or previously unrecognized hazards
  - 7. Describe how safety and health regulations and standards shall be met.
  - 8. Describe type of protective equipment and work procedures to be used.
  - 9. Describe emergency procedures for accidental spills or exposures.
  - 10. Describe methods for hazard detection and air sampling of confined spaces
  - 11. Describe procedures used to safely enter confined spaces

#### **1.4 FACILITIES AND EQUIPMENT**

- A. Special facilities, devices, equipment, clothing, and similar items used by the Contractor in the execution of the Work shall comply with the applicable regulations.

#### **1.5 HAZARDOUS MATERIALS**

- A. The Contractor shall bring to the attention of the University, any material suspected of being hazardous which he encounters during execution of the Work. The University shall perform tests to determine if the material is hazardous. If the material is found hazardous and additional protective measures are needed, a Contract Change Order may be required, subject to the requirements of the General Conditions.

#### **1.6 SMOKING POLICY**

- A. California State University, Northridge is a Tobacco and Smoke-free Campus. Smoking and use of Tobacco and/or electronic cigarettes is prohibited within the campus, buildings, grounds, site, and parking lots.
- B. Definition: Smoking means inhaling, exhaling, burning and carrying a lighted cigarette, cigar, pipe, or other smoking apparatus.
- C. The University regulations are intended to mitigate exposure to secondhand smoke.
  - 1. Smoking is prohibited in all University buildings (including facilities under construction) and leased space (including space within buildings shared with others). This prohibition shall apply to any area enclosed by the perimeter (outermost) walls of the building, including restrooms, warehouse and storage space. Atriums, balconies, stairwells, and other similar building features are to be considered "within a building."
  - 2. Smoking is prohibited in state/university-owned vehicles. This prohibition includes passenger vehicles and all other state-owned mobile equipment, including light and heavy-duty trucks, cargo and passenger vans, buses, and any other mobile equipment with an enclosed or enclosable driver/passenger compartment.
  - 3. Smoking is prohibited within 25 feet of doorways/buildings.
  - 4. Smoking is prohibited on major walkways throughout campus.
  - 5. Specific outside areas for smoking will not be established or identified.
  - 6. The Contractor will clearly display signs at the entrances/exits and other appropriate locations throughout the construction site to notify workers and the public that smoking is prohibited within the building.

### **PART 2 - PRODUCTS (Not Used)**

### **PART 3 - EXECUTION**

#### **3.1 STOP WORK ORDERS**

- A. When the Contractor or its subcontractors are notified by the University's Representative of an incident of noncompliance with the provisions of the Contract, and the action(s) to be taken, the Contractor shall



immediately, if so directed, or within 48 hours after receipt of a notice of violation, correct the unsafe or unhealthy condition.

- B. If the Contractor fails to comply promptly, all or any part of the work performed may be stopped by with a "Stop Work Order." When, in the opinion of the University's Representative, satisfactory corrective action has been taken to correct the unsafe and unhealthy condition, a start order will be given immediately.
- C. The Contractor shall not be allowed any extension of time or compensation for damages by reason of or in connection with such work stoppage.

### **3.2 PROTECTION**

- A. Contractor shall take all necessary precautions to prevent injury to the public, building occupants, or damage to property of others. For the purposes of the Contract, the public or building occupants shall include all persons not employed by the Contractor or a subcontractor working under the Contractor's direction.
- B. Work shall not be performed in any area occupied by the public or Owner's employees unless specifically permitted by the Contract or the Owner and unless adequate steps are taken for the protection of the public and the Owner's employees.
- C. Whenever practicable, the work area shall be fenced, barricaded, or otherwise blocked off from the public or building occupants to prevent unauthorized entry into the work area.
- D. Alternate Precautions: When the nature of the Work prevents isolation of the work area, and the public or building occupants may be in or pass through, under or over the work area, alternate precautions such as the posting of signs, the use of signal persons, the erection of barricades or similar protection around particularly hazardous operations shall be used as appropriate.
- E. Public Thoroughfare: When Work is to be performed over a public thoroughfare such as a sidewalk, lobby, or corridor, the thoroughfare shall be closed, if possible, or other precautions taken such as the installation of screens or barricades. When the exposure to heavy falling objects exists, as during the erection of building walls or during demolition, special protection of the type detailed in 29 CFR 1910/1926 shall be provided.
- F. Fences and barricades shall be removed upon completion of the project to the satisfaction of the University.
- G. Storing, positioning or use of equipment, tools, materials, scraps, and trash in a manner likely to present a hazard to the public or building occupants by its accidental shifting, ignition, or other hazardous qualities is prohibited.

**END OF SECTION**

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## **SECTION 01 35 53**

### **SECURITY**

#### **PART 1 - GENERAL**

##### **1.1 RELATED DOCUMENTS**

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

##### **1.2 SECTION INCLUDES**

- A. Contractor Security requirements.

##### **1.3 SECURITY (Also refer to Contract General Conditions)**

- A. Protect the Work from theft, vandalism and unauthorized entry. Contractor shall have sole responsibility for job site security.
- B. Maintain security throughout construction until the University's occupancy or acceptance.
- C. Provide keying different from permanent keying of locks and include organized, locked and supervised storage for receiving and dispensing items of finish hardware throughout the construction.
- D. Provide the Project Inspector with keys necessary to gain access to locked areas of the Work. The Project Inspector will be responsible for such keys and will return them to the Contractor upon acceptance of the project or area as complete.

##### **1.4 ENTRY CONTROL**

- A. Restrict entrance of persons and vehicles into project site.
- B. Allow building entrance only to authorized persons with proper identification.

##### **1.5 PERMANENT KEYS**

- A. Immediately upon receipt of permanent keys for whatever purpose (finish hardware, mechanical equipment, casework, dispensers, lockers, switches, equipment items, etc.), tag or otherwise clearly identify keys according to one approved system and turn them over to the University prior to any opportunity of access to keys by parties other than the University.

Cal Poly Humboldt  
Deck Rehabilitation  
1485-0001

**PART 2 - PRODUCTS (Not Used)**

**PART 3 - EXECUTION (Not Used)**

**END OF SECTION**

## **SECTION 01 41 00**

### **REGULATORY REQUIREMENTS**

#### **PART 1 - GENERAL**

##### **1.1 RELATED DOCUMENTS**

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

##### **1.2 SUMMARY**

- A. Section includes: Certain Codes and Standards and relevant requirements applicable to the Work required under this Contract.

##### **1.3 AUTHORITY AND PRECEDENCE OF CODES, ORDINANCES AND STANDARDS**

- A. Authority: All codes, ordinances and standards referenced in the Drawings and Specifications shall have the full force and effect as though printed in their entirety in the Specifications.
- B. Precedence:
  - 1. Where specified requirements differ from the requirements of applicable codes, ordinances and standards, the more stringent requirements shall take precedence.
  - 2. Where the Drawings or Specifications require or describe products or execution of better quality, higher standard or greater size than required by applicable codes, ordinances and standards, the Drawings and Specifications shall take precedence so long as such increase is legal.
  - 3. Where no requirements are identified in the Drawings or Specifications, comply with all requirements of applicable codes, ordinances and standards of authorities having jurisdiction.

##### **1.4 STATUTORY AND JURISDICTIONAL REGULATIONS**

- A. Perform the Work in accordance with Applicable Code Requirements and applicable requirements of all other regulatory agencies including, but not limited to, the following:
  - 1. State of California Code of Regulations (CCR), Title 24 State Building Standards, 2022.
  - 2. California State Fire Marshall.
- B. Performance of the Work shall also comply with applicable requirements of California Code of Regulations (CCR) as follows:

1. Title 19 - Public Safety.
  2. Title 22 - Social Security.
- C. Unless otherwise specified, specific references to codes, regulations, standards, manufacturers' instructions, or requirements of regulatory agencies, when used to specify requirements for materials or design elements, shall mean the edition of each in effect as identified in the Contract Documents.
- D. Contractor shall maintain copies of regulatory reference manuals and code books on the job site for reference during planning, submittal processing and field installation of specific work.
- E. Contractor and each subcontractor or supplier engaged in construction of the project shall be thoroughly familiar with the codes and regulations applicable to their specific construction activities. Contractor's responsibility for familiarity with applicable codes and regulations shall extend to the entire scope of work specified in the Contract Documents.

## **1.5 CONFLICTS**

- A. Unless otherwise directed by the Architect, if a conflict exists between referenced regulatory requirements, comply with the one establishing more stringent requirements.
- B. Unless otherwise directed by the Architect, if a conflict exists between referenced regulatory requirements and the Contract Documents, comply with the more stringent requirements.
- C. Submittals
- D. Submit to the University Representative copies of all permits, licenses, certifications, inspection reports, jurisdictional settlements, notices, receipts for fee payments, judgments, correspondence, records and other documentation established and/or required in conjunction with compliance with specified standards and regulations. Maintain copies of the aforementioned documents at the project site at all times.

## **PART 2 - PRODUCTS (Not Used)**

## **PART 3 - EXECUTION (Not Used)**

**END OF SECTION**

## **SECTION 01 42 00**

### **REFERENCE STANDARDS AND ABBREVIATIONS**

#### **PART 1 - GENERAL**

##### **1.1 RELATED DOCUMENTS**

- A. Construction Drawings, Technical Specifications, Addenda, and general provisions of the Contract, including Contract General Conditions and Supplementary General Conditions and other Division 1 Specification Sections, apply to this Section.

##### **1.2 SECTION INCLUDES**

- A. Use of references in Drawings and Specifications, including requirements for copies of reference standards at Project site.
- B. Definitions of terms used in Specifications and Drawings, including abbreviations, acronyms, names and terms which may be used in Specifications.

##### **1.3 RELATED SECTIONS**

- A. Section 01 41 00 - Regulatory Requirements: Identification of applicable building Code and other codes, ordinances and regulations applicable to performance of the Work.

##### **1.4 USE OF REFERENCES**

- A. References: The Drawings and Specifications contain references to various standards, standard specifications, codes, practices and requirements for products, execution, tests and inspections. These reference standards are published and issued by the agencies, associations, organizations and societies listed in this Section or identified in individual product specification Sections.
  - 1. Wherever term "Agency" occurs in Standard Specifications, it shall be understood to mean the term used for University for purposes of the Contract.
  - 2. Wherever term "Engineer" occurs in Standard Specifications, it shall be understood to mean Architect or other responsible design professional for purposes of the Contract.
  - 3. Where reference is made to Standard Details, such reference shall be to the Standard Details accompanying the Standard Specifications.
- B. Relationship to Drawings and Specifications: Such references are incorporated into and made a part of the Drawings and Specifications to the extent applicable.
- C. Referenced Grades Classes and Types: Where an alternative or optional grade, class or type of product or execution is included in a reference but is not identified on the Drawings or in the Specifications, provide the highest, best and greatest of the alternatives or options for the intended use and prevailing conditions.
- D. Copies of Reference Standards:
  - 1. Reference standards are not furnished with the Drawings and Specifications because it is presumed that the Contractor, subcontractors, manufacturers, suppliers, trades and crafts are familiar with these generally-recognized standards of the construction industry.

2. Copies of reference standards may be obtained from publishing sources.

E. Jobsite Copies:

1. Contractor shall obtain and maintain at the Project site copies of reference standards identified on the Drawings and in the Specifications in order to properly execute the Work.
2. At a minimum, the following shall be readily available at the site (electronically or in print), as applicable to the Work:
  - a. State Building Codes: As referenced in Section 01 41 00 - Regulatory Requirements.
  - b. Safety Codes: Occupational Safety and Health Act (OSHA) regulations and State of California, California Administrative Code, California Code of Regulations (CCR), Title 8 - Industrial Relations, Chapter 4, Subchapter 7, General Industry Safety Orders (Cal-OSHA), to extent applicable to the Work.
  - c. General Standards:
    - 1) CCR Title 24, Part 2, Volume 3: 2021 California Building Code (CBC) Material, Testing and Installation Standards.
    - 2) CCR Title 24, Part 12: 2021 California Referenced Standards Code.
    - 3) Underwriters Laboratories, Inc. (UL) Building Products Listing.
    - 4) Factory Mutual Research Organization (FM) Approval Guide.
    - 5) American Society for Testing and Materials (ASTM) Standards in Building Codes.
    - 6) American National Standards Institute (ANSI) standards.
  - d. Fire and Life Safety Standards: All referenced standards pertaining to fire rated construction and exiting.
  - e. Common Materials Standards: American Concrete Institute (ACI), American Institute of Steel Construction (AISC), American Welding Society (AWS), Gypsum Association (GA), National Fire Protection Association (NFPA), Tile Council of America (TCA) and Woodwork Institute of California (WIC) standards to the extent referenced within the Contract Specifications.
  - f. Research Reports: ICC Evaluation Service, Inc. (ICC-ES), formerly ICBO Evaluation Service, Inc. (ICBO ES) Research Reports and National Evaluation Service, Inc. Reports (NER), for products not in conformance to prescribed requirements stated in California Building Code (CBC).
  - g. Product Listings: Approval documentation, indicating approval of authorities having jurisdiction for use of product within the applicable jurisdiction.

F. Edition Date of References:

1. When an edition or effective date of a reference is not given, it shall be understood to be the current edition or latest revision published as of the date of the [Agreement] [Contract Drawings and Contract Specifications].
2. All amendments, changes, errata and supplements as of the effective date shall be included.

- G. ASTM and ANSI References: Specifications and Standards of the American Society for Testing and Materials (ASTM) and the American National Standards Institute (ANSI) are identified in the Drawings and Specifications by abbreviation and number only and may not be further identified by title, date, revision or amendment. It is presumed that the Contractor is familiar with and has access to these nationally- and industry-recognized specifications and standards.

## 1.5 DEFINITIONS OF TERMS

- A. Basic Contract Definitions: Words and terms governing the Work are defined in the Contract General and Supplementary Conditions, as referenced in the Agreement.



- B. Words and Terms Used on Drawings and in Specifications: Additional words and terms may be used in the Drawings and Specifications and are defined as follows:
1. "Applicable": As appropriate for the particular condition, circumstance or situation.
  2. "Approve(d)": Approval action shall be limited to the duties and responsibilities of the party giving approval, as stated in the Conditions of the Contract. Approvals shall be valid only if obtained in writing and shall not apply to matters regarding the means, methods, techniques, sequences and procedures of construction. Approval shall not relieve the Contractor from responsibility to fulfill Contract requirements.
  3. "And/or": If used, shall mean that either or both of the items so joined are required.
  4. "Directed": Limited to duties and responsibilities of the University's Representative or Architect as stated in the Contract General Conditions, meaning "as instructed by the University's Representative or Architect, in writing, regarding matters other than the means, methods, techniques, sequences and procedures of construction. Terms such as "directed", "requested", "authorized", "selected", "approved", "required", and "permitted" mean "directed by the University's Representative or Architect", "requested by the University's Representative or Architect", and similar phrases. No implied meaning shall be interpreted to extend the responsibility of the University's Representative, Architect or other responsible design professional into the Contractor's supervision of construction.
  5. "Equal" or "Equivalent": As determined by Architect or other responsible design professional as being equivalent, considering such attributes as durability, finish, function, suitability, quality, utility, performance and aesthetic features.
  6. "Furnish": Means supply and deliver to the Project site, ready for unloading, unpacking, assembly, installation, and similar operations."
  7. "Indicated": The term indicated refers to graphic representations, notes, or schedules on the Drawings, or other Paragraphs or Schedules in the Specifications, and similar requirements in the Contract Documents. Terms such as "shown", "noted", "scheduled", and "specified" are used to help the reader locate the reference. There is no limitation on location.
  8. "Install": Describes operations at the Project site including the actual unloading, unpacking, assembly, erection, placing, anchoring, applying, working to dimension, finishing, curing, protecting, cleaning and similar operations.
  9. "Installer"
    - a. "Installer": refers to the Contractor or an entity engaged by the Contractor, such as an employee, subcontractor, or sub-subcontractor for performance of a particular construction activity, including installation, erection, application and similar operations. Installers are required to be experienced in the operations they are engaged to perform.
    - b. "Experienced Installer": The term "experienced," when used with "installer" means having a minimum of 5 previous Projects similar in size to this Project, knowing the precautions necessary to perform the Work, and being familiar with requirements of authorities having jurisdiction over the Work.
  10. "Jobsite": Same as site.
  11. "Necessary": With due considerations of the conditions of the Project and as determined in the professional judgment of the Architect or other responsible design professional as being necessary for per

formance of the Work in conformance with the requirements of the Contract Documents, but excluding matters regarding the means, methods, techniques, sequences and procedures of construction.

12. "Noted": Same as "Indicated."
13. "Per": Same as "in accordance with," "according to" or "in compliance with."
14. "Products": Material, system or equipment.
15. "Project Site": Same as "Site."
16. "Proper": As determined by the Architect or other responsible design professional as being proper for the Work, excluding matters regarding the means, methods, techniques, sequences and procedures of construction, which are solely the Contractor's responsibility to determine.
17. "Provide": Means "furnish and install, complete and ready for the intended use."
18. "Regulation": Includes laws, ordinances, statutes and lawful orders issued by authorities having jurisdiction, as well as and rules, conventions and agreements within the construction industry that control performance of the Work.
19. "Required": Necessary for performance of the Work in conformance with the requirements of the Contract Documents, excluding matters regarding the means, methods, techniques, sequences and procedures of construction, such as:
  - a. Regulatory requirements of authorities having jurisdiction.
  - b. Requirements of referenced standards.
  - c. Requirements generally recognized as accepted construction practices of the locale.
  - d. Notes, schedules and graphic representations on the Drawings.
  - e. Requirements specified or referenced in the Specifications.
  - f. Duties and responsibilities stated in the Bidding and Contract Requirements.
20. "Scheduled": Same as "Indicated."
21. "Selected": As selected by the University's Representative, Architect or other responsible design professional from the full selection of the manufacturer's products, unless specifically limited in the Contract Documents to a particular quality, color, and texture or price range.
22. "Shown": Same as "Indicated."
23. "Site": Same as "Site of the Work" or "Project Site;" the area or areas or spaces occupied by the Project and including adjacent areas and other related areas occupied or used by the Contractor for construction activities, either exclusively or with others performing other construction on the Project. The extent of the Project Site is shown on the Drawings, and may or may not be identical with the description of the land upon which the Project is to be built.
24. "Supply": See "Furnish."
25. "Testing Laboratory" or "Testing Laboratories": An independent entity engaged to perform specific inspections or tests, at the Project Site or elsewhere, and to report on, and, if required, to interpret, results of those inspections or tests. Refer to Section 01458 - Testing Laboratory Services.
26. "Testing and Inspection Agency": Same as "Testing Laboratory."

## 1.6 ABBREVIATIONS, ACRONYMS, NAMES AND TERMS, GENERAL

- A. Industry Organizations: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the entities in the following list. Names, telephone numbers, and Web site addresses are subject to change and are believed to be accurate and up-to-date.

AA	Aluminum Association, Inc. (The) <a href="http://www.aluminum.org">www.aluminum.org</a>	(202) 862-5100
AAADM	American Association of Automatic Door Manufacturers <a href="http://www.aaadm.com">www.aaadm.com</a>	(216) 241-7333
AABC	Associated Air Balance Council <a href="http://www.aabchq.com">www.aabchq.com</a>	(202) 737-0202
AAMA	American Architectural Manufacturers Association <a href="http://www.aamanet.org">www.aamanet.org</a>	(847) 303-5664
AASHTO	American Association of State Highway and Transportation Officials <a href="http://www.transportation.org">www.transportation.org</a>	(202) 624-5800
AATCC	American Association of Textile Chemists and Colorists (The) <a href="http://www.aatcc.org">www.aatcc.org</a>	(919) 549-8141
ABMA	American Bearing Manufacturers Association <a href="http://www.abma-dc.org">www.abma-dc.org</a>	(202) 367-1155
ACI	ACI International (American Concrete Institute) <a href="http://www.aci-int.org">www.aci-int.org</a>	(248) 848-3700
ACPA	American Concrete Pipe Association <a href="http://www.concrete-pipe.org">www.concrete-pipe.org</a>	(972) 506-7216
AEIC	Association of Edison Illuminating Companies, Inc. (The) <a href="http://www.aeic.org">www.aeic.org</a>	(205) 257-2530
AFPA	American Forest & Paper Association (See AF&PA)	
AF&PA	American Forest & Paper Association <a href="http://www.afandpa.org">www.afandpa.org</a>	(800) 878-8878 (202) 463-2700
AGA	American Gas Association <a href="http://www.aga.org">www.aga.org</a>	(202) 824-7000
AGC	Associated General Contractors of America (The)	(703) 548-3118

Cal Poly Humboldt  
Deck Rehabilitation  
1485-0001

	<a href="http://www.agc.org">www.agc.org</a>	
AHA	American Hardboard Association (Now part of CPA)	
AHAM	Association of Home Appliance Manufacturers <a href="http://www.aham.org">www.aham.org</a>	(202) 872-5955
AI	Asphalt Institute <a href="http://www.asphaltinstitute.org">www.asphaltinstitute.org</a>	(859) 288-4960
AIA	American Institute of Architects (The) <a href="http://www.aia.org">www.aia.org</a>	(800) 242-3837 (202) 626-7300
AISC	American Institute of Steel Construction <a href="http://www.aisc.org">www.aisc.org</a>	(800) 644-2400 (312) 670-2400
AISI	American Iron and Steel Institute <a href="http://www.steel.org">www.steel.org</a>	(202) 452-7100
AITC	American Institute of Timber Construction <a href="http://www.aitc-glulam.org">www.aitc-glulam.org</a>	(303) 792-9559
ALCA	Associated Landscape Contractors of America <a href="http://www.alca.org">www.alca.org</a>	(800) 395-2522 (703) 736-9666
ALSC	American Lumber Standard Committee, Incorporated <a href="http://www.alsc.org">www.alsc.org</a>	(301) 972-1700
AMCA	Air Movement and Control Association International, Inc. <a href="http://www.amca.org">www.amca.org</a>	(847) 394-0150
ANSI	American National Standards Institute <a href="http://www.ansi.org">www.ansi.org</a>	(202) 293-8020
AOSA	Association of Official Seed Analysts <a href="http://www.aosaseed.com">www.aosaseed.com</a>	(505) 522-1437
APA	APA - The Engineered Wood Association <a href="http://www.apawood.org">www.apawood.org</a>	(253) 565-6600
APA	Architectural Precast Association <a href="http://www.archprecast.org">www.archprecast.org</a>	(239) 454-6989
API	American Petroleum Institute <a href="http://www.api.org">www.api.org</a>	(202) 682-8000
ARI	Air-Conditioning & Refrigeration Institute <a href="http://www.ari.org">www.ari.org</a>	(703) 524-8800
ARMA	Asphalt Roofing Manufacturers Association <a href="http://www.asphaltroofing.org">www.asphaltroofing.org</a>	(202) 207-0917
ASCE	American Society of Civil Engineers	(800) 548-2723

Cal Poly Humboldt  
Deck Rehabilitation  
1485-0001

	<a href="http://www.asce.org">www.asce.org</a>	(703) 295-6300
ASHRAE	American Society of Heating, Refrigerating and Air-Conditioning Engineers <a href="http://www.ashrae.org">www.ashrae.org</a>	(800) 527-4723 (404) 636-8400
ASME	ASME International (The American Society of Mechanical Engineers International) <a href="http://www.asme.org">www.asme.org</a>	(800) 843-2763 (212) 591-7722
ASSE	American Society of Sanitary Engineering <a href="http://www.asse-plumbing.org">www.asse-plumbing.org</a>	(440) 835-3040
ASTM	ASTM International (American Society for Testing and Materials International) <a href="http://www.astm.org">www.astm.org</a>	(610) 832-9585
AWCI	AWCI International (Association of the Wall and Ceiling Industries International) <a href="http://www.awci.org">www.awci.org</a>	(703) 534-8300
AWCMA	American Window Covering Manufacturers Association (See WCSC)	
AWI	Architectural Woodwork Institute <a href="http://www.awinet.org">www.awinet.org</a>	(800) 449-8811 (703) 733-0600
AWPA	American Wood-Preservers' Association <a href="http://www.awpa.com">www.awpa.com</a>	(334) 874-9800
AWS	American Welding Society <a href="http://www.aws.org">www.aws.org</a>	(800) 443-9353 (305) 443-9353
AWWA	American Water Works Association <a href="http://www.awwa.org">www.awwa.org</a>	(800) 926-7337 (303) 794-7711
BHMA	Builders Hardware Manufacturers Association <a href="http://www.buildershardware.com">www.buildershardware.com</a>	(212) 297-2122
BIA	Brick Industry Association (The) <a href="http://www.bia.org">www.bia.org</a>	(703) 620-0010
BICSI	BICSI <a href="http://www.bicsi.org">www.bicsi.org</a>	(813) 979-1991
BIFMA	BIFMA International (Business and Institutional Furniture Manufacturer's Association International) <a href="http://www.bifma.com">www.bifma.com</a>	(616) 285-3963
CCC	Carpet Cushion Council <a href="http://www.carpetcushion.org">www.carpetcushion.org</a>	(203) 637-1312

Cal Poly Humboldt  
Deck Rehabilitation  
1485-0001

CCFSS	Center for Cold-Formed Steel Structures <a href="http://www.umn.edu/~ccfss">www.umn.edu/~ccfss</a>	(573) 341-4471
CDA	Copper Development Association Inc. <a href="http://www.copper.org">www.copper.org</a>	(800) 232-3282 (212) 251-7200
CEA	Canadian Electricity Association <a href="http://www.canelect.ca">www.canelect.ca</a>	(613) 230-9263
CFFA	Chemical Fabrics & Film Association, Inc. <a href="http://www.chemicalfabricsandfilm.com">www.chemicalfabricsandfilm.com</a>	(216) 241-7333
CGA	Compressed Gas Association <a href="http://www.cganet.com">www.cganet.com</a>	(703) 788-2700
CGSB	Canadian General Standards Board <a href="http://www.pwgsc.gc.ca/cgsb">www.pwgsc.gc.ca/cgsb</a>	(800) 665-2472 (819) 956-0425
CIMA	Cellulose Insulation Manufacturers Association <a href="http://www.cellulose.org">www.cellulose.org</a>	(888) 881-2462 (937) 222-2462
CISCA	Ceilings & Interior Systems Construction Association <a href="http://www.cisca.org">www.cisca.org</a>	(630) 584-1919
CISPI	Cast Iron Soil Pipe Institute <a href="http://www.cispi.org">www.cispi.org</a>	(423) 892-0137
CLFMI	Chain Link Fence Manufacturers Institute <a href="http://www.chainlinkinfo.org">www.chainlinkinfo.org</a>	(301) 596-2583
CPA	Composite Panel Association <a href="http://www.pbmdf.com">www.pbmdf.com</a>	(301) 670-0604
CPPA	Corrugated Polyethylene Pipe Association <a href="http://www.cppa-info.org">www.cppa-info.org</a>	(800) 510-2772 (202) 462-9607
CRI	Carpet & Rug Institute (The) <a href="http://www.carpet-rug.com">www.carpet-rug.com</a>	(800) 882-8846 (706) 278-3176
CRSI	Concrete Reinforcing Steel Institute <a href="http://www.crsi.org">www.crsi.org</a>	(847) 517-1200
CSA	CSA International (Formerly: IAS - International Approval Services) <a href="http://www.csa-international.org">www.csa-international.org</a>	(800) 463-6727 (416) 747-4000
CSI	Cast Stone Institute 10 West Kimball St. Winder, GA 30680-2535	(770) 868-5909
CSI	Construction Specifications Institute (The) <a href="http://www.csinet.org">www.csinet.org</a>	(800) 689-2900 (703) 684-0300

Cal Poly Humboldt  
Deck Rehabilitation  
1485-0001

CSSB	Cedar Shake & Shingle Bureau <a href="http://www.cedarbureau.org">www.cedarbureau.org</a>	(604) 820-7700
CTI	Cooling Technology Institute (Formerly: Cooling Tower Institute) <a href="http://www.cti.org">www.cti.org</a>	(281) 583-4087
DHI	Door and Hardware Institute <a href="http://www.dhi.org">www.dhi.org</a>	(703) 222-2010
EIA	Electronic Industries Alliance <a href="http://www.eia.org">www.eia.org</a>	(703) 907-7500
EIMA	EIFS Industry Members Association <a href="http://www.eima.com">www.eima.com</a>	(800) 294-3462 (770) 968-7945
EJCDC	Engineers Joint Contract Documents Committee <a href="http://www.asce.org">www.asce.org</a>	(800) 548-2723 (703) 295-6300
EJMA	Expansion Joint Manufacturers Association, Inc. <a href="http://www.ejma.org">www.ejma.org</a>	(914) 332-0040
ESD	ESD Association	(315) 339-6937
FCI	Fluid Controls Institute <a href="http://www.fluidcontrolsintitute.org">www.fluidcontrolsintitute.org</a>	(216) 241-7333
FIBA	Federation Internationale de Basketball Amateur (The International Basketball Federation) <a href="http://www.fiba.com">www.fiba.com</a>	41 22 545 00 00
FIVB	Federation Internationale de Volleyball (The International Volleyball Federation) <a href="http://www.fivb.ch">www.fivb.ch</a>	41 21 345 35 35
FM	Factory Mutual System (See FMG)	
FMG	FM Global (Formerly: FM - Factory Mutual System) <a href="http://www.fmglobal.com">www.fmglobal.com</a>	(401) 275-3000
FRSA	Florida Roofing, Sheet Metal & Air Conditioning Contractors Association, Inc. <a href="http://www.floridarooft.com">www.floridarooft.com</a>	(407) 671-3772
FSA	Fluid Sealing Association <a href="http://www.fluidsealing.com">www.fluidsealing.com</a>	(610) 971-4850
FSC	Forest Stewardship Council <a href="http://www.fscsoax.org">www.fscsoax.org</a>	52 951 5146905

Cal Poly Humboldt  
Deck Rehabilitation  
1485-0001

GA	Gypsum Association <a href="http://www.gypsum.org">www.gypsum.org</a>	(202) 289-5440
GANA	Glass Association of North America <a href="http://www.glasswebsite.com">www.glasswebsite.com</a>	(785) 271-0208
GRI	Geosynthetic Research Institute (See GSI)	
GS	Green Seal <a href="http://www.greenseal.org">www.greenseal.org</a>	(202) 872-6400
GSI	Geosynthetic Institute <a href="http://www.geosynthetic-institute.org">www.geosynthetic-institute.org</a>	(610) 522-8440
HI	Hydraulic Institute <a href="http://www.pumps.org">www.pumps.org</a>	(888) 786-7744 (973) 267-9700
HI	Hydronics Institute <a href="http://www.gamanet.org">www.gamanet.org</a>	(908) 464-8200
HMMA	Hollow Metal Manufacturers Association (See NAAMM)	
HPVA	Hardwood Plywood & Veneer Association <a href="http://www.hpva.org">www.hpva.org</a>	(703) 435-2900
HPW	H. P. White Laboratory, Inc. <a href="http://www.hpwhite.com">www.hpwhite.com</a>	(410) 838-6550
IAS	International Approval Services (See CSA)	
IBF	International Badminton Federation <a href="http://www.intbadfed.org">www.intbadfed.org</a>	(441-24) 223-4904
ICEA	Insulated Cable Engineers Association, Inc. <a href="http://www.icea.net">www.icea.net</a>	(770) 830-0369
ICRI	International Concrete Repair Institute, Inc. <a href="http://www.icri.org">www.icri.org</a>	(847) 827-0830
IEC	International Electrotechnical Commission <a href="http://www.iec.ch">www.iec.ch</a>	41 22 919 02 11
IEEE	Institute of Electrical and Electronics Engineers, Inc. (The) <a href="http://www.ieee.org">www.ieee.org</a>	(212) 419-7900
IESNA	Illuminating Engineering Society of North America <a href="http://www.iesna.org">www.iesna.org</a>	(212) 248-5000
IGCC	Insulating Glass Certification Council	(315) 646-2234



Cal Poly Humboldt  
Deck Rehabilitation  
1485-0001

	<a href="http://www.igcc.org">www.igcc.org</a>	
IGMA	Insulating Glass Manufacturers Alliance (The) <a href="http://www.igmaonline.org">www.igmaonline.org</a>	(613) 233-1510
ILI	Indiana Limestone Institute of America, Inc. <a href="http://www.iliiai.com">www.iliiai.com</a>	(812) 275-4426
ISO	International Organization for Standardization <a href="http://www.iso.ch">www.iso.ch</a>	41 22 749 01 11
ISSFA	International Solid Surface Fabricators Association <a href="http://www.issfa.net">www.issfa.net</a>	(702) 567-8150
ITS	Intertek <a href="http://www.intertek.com">www.intertek.com</a>	(800) 345-3851 (607) 753-6711
ITU	International Telecommunication Union <a href="http://www.itu.int/home">www.itu.int/home</a>	41 22 730 51 11
KCMA	Kitchen Cabinet Manufacturers Association <a href="http://www.kcma.org">www.kcma.org</a>	(703) 264-1690
LMA	Laminating Materials Association <a href="http://www.lma.org">www.lma.org</a>	(201) 664-2700
LPI	Lightning Protection Institute <a href="http://www.lightning.org">www.lightning.org</a>	(800) 488-6864 (847) 577-7200
MBMA	Metal Building Manufacturers Association <a href="http://www.mbma.com">www.mbma.com</a>	(216) 241-7333
MFMA	Maple Flooring Manufacturers Association <a href="http://www.maplefloor.org">www.maplefloor.org</a>	(847) 480-9138
MFMA	Metal Framing Manufacturers Association <a href="http://www.metalframingmfg.org">www.metalframingmfg.org</a>	(312) 644-6610
MH	Material Handling Industry of America (See MHIA)	
MHIA	Material Handling Industry of America <a href="http://www.mhia.org">www.mhia.org</a>	(800) 345-1815 (704) 676-1190
MIA	Marble Institute of America <a href="http://www.marble-institute.com">www.marble-institute.com</a>	(440) 250-9222
MPI	Master Painters Institute <a href="http://www.paintinfo.com">www.paintinfo.com</a>	(888) 674-8937
MSS	Manufacturers Standardization Society of The Valve and Fittings Industry Inc.	(703) 281-6613

Cal Poly Humboldt  
Deck Rehabilitation  
1485-0001

	<a href="http://www.mss-hq.com">www.mss-hq.com</a>	
NAAMM	National Association of Architectural Metal Manufacturers <a href="http://www.naamm.org">www.naamm.org</a>	(312) 332-0405
NACE	NACE International (National Association of Corrosion Engineers International) <a href="http://www.nace.org">www.nace.org</a>	(281) 228-6200
NADCA	National Air Duct Cleaners Association <a href="http://www.nadca.com">www.nadca.com</a>	(202) 737-2926
NAGWS	National Association for Girls and Women in Sport  <a href="http://www.aahperd.org/nagws/">www.aahperd.org/nagws/</a>	(800)213-7193 x453
NAIMA	North American Insulation Manufacturers Association (The) <a href="http://www.naima.org">www.naima.org</a>	(703) 684-0084
NBGQA	National Building Granite Quarries Association, Inc. <a href="http://www.nbgqa.com">www.nbgqa.com</a>	(800) 557-2848
NCAA	National Collegiate Athletic Association (The) <a href="http://www.ncaa.org">www.ncaa.org</a>	(317) 917-6222
NCMA	National Concrete Masonry Association <a href="http://www.ncma.org">www.ncma.org</a>	(703) 713-1900
NCPI	National Clay Pipe Institute <a href="http://www.ncpi.org">www.ncpi.org</a>	(262) 248-9094
NCTA	National Cable & Telecommunications Association <a href="http://www.ncta.com">www.ncta.com</a>	(202) 775-3550
NEBB	National Environmental Balancing Bureau <a href="http://www.nebb.org">www.nebb.org</a>	(301) 977-3698
NECA	National Electrical Contractors Association <a href="http://www.necanet.org">www.necanet.org</a>	(301) 657-3110
NeLMA	Northeastern Lumber Manufacturers' Association <a href="http://www.nelma.org">www.nelma.org</a>	(207) 829-6901
NEMA	National Electrical Manufacturers Association <a href="http://www.nema.org">www.nema.org</a>	(703) 841-3200
NETA	InterNational Electrical Testing Association <a href="http://www.netaworld.org">www.netaworld.org</a>	(303) 697-8441
NFHS	National Federation of State High School Associations <a href="http://www.nfhs.org">www.nfhs.org</a>	(317) 972-6900
NFPA	NFPA <a href="http://www.nfpa.org">www.nfpa.org</a>	(800) 344-3555 (617) 770-3000

Cal Poly Humboldt  
Deck Rehabilitation  
1485-0001

NFRC	National Fenestration Rating Council <a href="http://www.nfrc.org">www.nfrc.org</a>	(301) 589-1776
NGA	National Glass Association <a href="http://www.glass.org">www.glass.org</a>	(703) 442-4890
NHLA	National Hardwood Lumber Association <a href="http://www.natlhardwood.org">www.natlhardwood.org</a>	(800) 933-0318 (901) 377-1818
NLGA	National Lumber Grades Authority <a href="http://www.nlga.org">www.nlga.org</a>	(604) 524-2393
NOFMA	National Oak Flooring Manufacturers Association <a href="http://www.nofma.org">www.nofma.org</a>	(901) 526-5016
NRCA	National Roofing Contractors Association <a href="http://www.nrca.net">www.nrca.net</a>	(800) 323-9545 (847) 299-9070
NRMCA	National Ready Mixed Concrete Association <a href="http://www.nrmca.org">www.nrmca.org</a>	(888) 846-7622 (301) 587-1400
NSF	NSF International (National Sanitation Foundation International) <a href="http://www.nsf.org">www.nsf.org</a>	(800) 673-6275 (734) 769-8010
NSSGA	National Stone, Sand & Gravel Association <a href="http://www.nssga.org">www.nssga.org</a>	(800) 342-1415 (703) 525-8788
NTMA	National Terrazzo & Mosaic Association, Inc. <a href="http://www.ntma.com">www.ntma.com</a>	(800) 323-9736 (540) 751-0930
NTRMA	National Tile Roofing Manufacturers Association (See RTI)	
NWWDA	National Wood Window and Door Association (See WDMA)	
OPL	Omega Point Laboratories, Inc. <a href="http://www.opl.com">www.opl.com</a>	(800) 966-5253 (210) 635-8100
PCI	Precast/ Prestressed Concrete Institute <a href="http://www.pci.org">www.pci.org</a>	(312) 786-0300
PDCA	Painting & Decorating Contractors of America <a href="http://www.pdca.com">www.pdca.com</a>	(800) 332-7322 (314) 514-7322
PDI	Plumbing & Drainage Institute <a href="http://www.pdionline.org">www.pdionline.org</a>	(800) 589-8956 (978) 557-0720
PGI	PVC Geomembrane Institute <a href="http://www.pgi-tp.ce.uiuc.edu">www.pgi-tp.ce.uiuc.edu</a>	(217) 333-3929

Cal Poly Humboldt  
Deck Rehabilitation  
1485-0001

PTI	Post-Tensioning Institute <a href="http://www.post-tensioning.org">www.post-tensioning.org</a>	(602) 870-7540
RCSC	Research Council on Structural Connections <a href="http://www.boltcouncil.org">www.boltcouncil.org</a>	(800) 644-2400 (312) 670-2400
RFCI	Resilient Floor Covering Institute <a href="http://www.rfci.com">www.rfci.com</a>	(301) 340-8580
RIS	Redwood Inspection Service <a href="http://www.calredwood.org">www.calredwood.org</a>	(888) 225-7339 (415) 382-0662
RTI	Roof Tile Institute (Formerly: NTRMA - National Tile Roofing Manufacturers Association) <a href="http://www.ntrma.org">www.ntrma.org</a>	(312) 670-4177
SAE	SAE International <a href="http://www.sae.org">www.sae.org</a>	(724) 776-4841
SDI	Steel Deck Institute <a href="http://www.sdi.org">www.sdi.org</a>	(847) 462-1930
SDI	Steel Door Institute <a href="http://www.steeldoor.org">www.steeldoor.org</a>	(440) 899-0010
SEFA	Scientific Equipment and Furniture Association <a href="http://www.sefalabs.com">www.sefalabs.com</a>	(516) 294-5424
SGCC	Safety Glazing Certification Council <a href="http://www.sgcc.org">www.sgcc.org</a>	(315) 646-2234
SIA	Security Industry Association <a href="http://www.siaonline.org">www.siaonline.org</a>	(703) 683-2075
SIGMA	Sealed Insulating Glass Manufacturers Association (See IGMA)	
SJI	Steel Joist Institute <a href="http://www.steeljoist.org">www.steeljoist.org</a>	(843) 626-1995
SMA	Screen Manufacturers Association <a href="http://www.smacentral.org">www.smacentral.org</a>	(561) 533-0991
SMACNA	Sheet Metal and Air Conditioning Contractors' National Association <a href="http://www.smacna.org">www.smacna.org</a>	(703) 803-2980
SMPTE	Society of Motion Picture and Television Engineers <a href="http://www.smppte.org">www.smppte.org</a>	(914) 761-1100
SPFA	Spray Polyurethane Foam Alliance (Formerly: SPI/SPFD - The Society of the Plastics Industry, Inc.; Spray Polyurethane Foam Division)	(800) 523-6154

Cal Poly Humboldt  
Deck Rehabilitation  
1485-0001

	<a href="http://www.sprayfoam.org">www.sprayfoam.org</a>	
SPIB	Southern Pine Inspection Bureau (The) <a href="http://www.spib.org">www.spib.org</a>	(850) 434-2611
SPI/SPFD	Society of the Plastics Industry, Inc. (The) Spray Polyurethane Foam Division (See SPFA)	
SPRI	SPRI (Single Ply Roofing Institute) <a href="http://www.spri.org">www.spri.org</a>	(781) 647-7026
SSINA	Specialty Steel Industry of North America <a href="http://www.ssina.com">www.ssina.com</a>	(800) 982-0355 (202) 342-8630
SSPC	SSPC: The Society for Protective Coatings <a href="http://www.sspc.org">www.sspc.org</a>	(877) 281-7772 (412) 281-2331
STI	Steel Tank Institute <a href="http://www.steeltank.com">www.steeltank.com</a>	(847) 438-8265
SWI	Steel Window Institute <a href="http://www.steelwindows.com">www.steelwindows.com</a>	(216) 241-7333
SWRI	Sealant, Waterproofing, & Restoration Institute <a href="http://www.swrionline.org">www.swrionline.org</a>	(816) 472-7974
TCA	Tile Council of America, Inc. <a href="http://www.tileusa.com">www.tileusa.com</a>	(864) 646-8453
TIA/EIA	Telecommunications Industry Association/Electronic Industries Alliance <a href="http://www.tiaonline.org">www.tiaonline.org</a>	(703) 907-7700
TMS	The Masonry Society <a href="http://www.masonrysociety.org">www.masonrysociety.org</a>	(303) 939-9700
TPI	Truss Plate Institute, Inc. <a href="http://www.tpinst.org">www.tpinst.org</a>	(608) 833-5900
TPI	Turfgrass Producers International <a href="http://www.turfgrasssod.org">www.turfgrasssod.org</a>	(800) 405-8873 (847) 705-9898
UL	Underwriters Laboratories Inc. <a href="http://www.ul.com">www.ul.com</a>	(800) 285-4476 (847) 272-8800
UNI	Uni-Bell PVC Pipe Association <a href="http://www.uni-bell.org">www.uni-bell.org</a>	(972) 243-3902
USAV	USA Volleyball <a href="http://www.usavolleyball.org">www.usavolleyball.org</a>	(888) 786-5539 (719) 228-6800
USGBC	U.S. Green Building Council	(202) 828-7422

Cal Poly Humboldt  
Deck Rehabilitation  
1485-0001

	<a href="http://www.usgbc.org">www.usgbc.org</a>	
USITT	United States Institute for Theatre Technology, Inc. <a href="http://www.usitt.org">www.usitt.org</a>	(800) 938-7488 (315) 463-6463
WASTEC	Waste Equipment Technology Association <a href="http://www.wastec.org">www.wastec.org</a>	(800) 424-2869 (202) 244-4700
WCLIB	West Coast Lumber Inspection Bureau <a href="http://www.wclib.org">www.wclib.org</a>	(800) 283-1486 (503) 639-0651
WCMA	Window Covering Manufacturers Association (See WCSC)	
WCSC	Window Covering Safety Council (Formerly: WCMA - Window Covering Manufacturers Association) <a href="http://www.windowcoverings.org">www.windowcoverings.org</a>	(800) 506-4636 (212) 661-4261
WDMA	Window & Door Manufacturers Association (Formerly: NWWDA - National Wood Window and Door Association) <a href="http://www.wdma.com">www.wdma.com</a>	(800) 223-2301 (847) 299-5200
WI	Woodwork Institute (Formerly: WIC – Woodwork Institute of California) <a href="http://www.wicnet.org">www.wicnet.org</a>	(916) 372-9943
WIC	Woodwork Institute of California (See WI)	
WMMPA	Wood Moulding & Millwork Producers Association <a href="http://www.wmmpa.com">www.wmmpa.com</a>	(800) 550-7889 (530) 661-9591
WSRCA	Western States Roofing Contractors Association <a href="http://www.wsrca.com">www.wsrca.com</a>	(800) 725-0333 (650) 548-0112
WWPA	Western Wood Products Association <a href="http://www.wwpa.org">www.wwpa.org</a>	(503) 224-3930

- A. Abbreviations, General: The following are commonly-used abbreviations which may be found on the Drawings or in the Specifications:

AC or ac	Alternating current or air conditioning (depending upon context)
AMP or amp	Ampere
C	Celsius
CFM or cfm	Cubic feet per minute
CM or cm	Centimeter
CY or cy	Cubic yard
DC or dc	Direct current
DEG or deg	Degrees
F	Fahrenheit
FPM or fpm	Feet per minute

Cal Poly Humboldt  
Deck Rehabilitation  
1485-0001

FPS or fps	Feet per second
FT or ft	Foot or feet
Gal or gal	Gallons
GPM or gpm	Gallons per minute
IN or in	Inch or inches
Kip or kip	Thousand pounds
KSI or ksi	Thousand pounds per square inch
KSF or ksf	Thousand pounds per square foot
KV or kv	Kilovolt
KVA or kva	Kilovolt amperes
KW or kw	Kilowatt
KWH or kwh	Kilowatt hour
LBF or lbf	Pounds force
LF or lf	Lineal foot
M or m	Meter
MPH or mph	Miles per hour
MM or mm	Millimeter
PCF or pcf	Pounds per cubic foot
PSF or psf	Pounds per square foot
PSI or psi	Pounds per square inch
PSY or psy	Per square yard
SF or sf	Square foot
SY or sy	Square yard
V or v	Volts

- B. 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."

ADAAG	Americans with Disabilities Act (ADA) Accessibility Guidelines for Buildings and Facilities Available from Access Board <a href="http://www.access-board.gov">www.access-board.gov</a>	(800) 872-2253 (202) 272-0080
CFR	Code of Federal Regulations Available from Government Printing Office <a href="http://www.access.gpo.gov/nara/cfr">www.access.gpo.gov/nara/cfr</a>	(888) 293-6498 (202) 512-1530
CRD	Handbook for Concrete and Cement Available from Army Corps of Engineers Waterways Experiment Station <a href="http://www.wes.army.mil">www.wes.army.mil</a>	(601) 634-2355
DOD	Department of Defense Military Specifications and Standards Available from Department of Defense Single Stock Point <a href="http://www.dodssp.daps.mil">www.dodssp.daps.mil</a>	(215) 697-6257

Cal Poly Humboldt  
Deck Rehabilitation  
1485-0001

- C. Undefined Abbreviations, Acronyms, Names and Terms: Words and terms not otherwise specifically defined in this Section, in the Instructions to Bidders, in the Contract General Conditions, on the Drawings or elsewhere in the Specifications, shall be as customarily defined by trade or industry practice, by reference standard and by specialty dictionaries such as the following:
1. Dictionary of Architecture and Construction, Fourth Edition (Cyril M. Harris, McGraw-Hill Book Company, 2006).
  2. The American Institute of Architects (AIA) Document M101, "Glossary of Construction Industry Terms."
  3. Encyclopedia of Associations, published by Gale Research Co., commonly available in public libraries.

## **PART 2 - PRODUCTS**

Not Applicable to this Section.

## **PART 3 - EXECUTION**

Not Applicable to this Section.

**END OF SECTION**



## **SECTION 01 45 00**

### **QUALITY CONTROL**

#### **PART 1 - GENERAL**

##### **1.1 RELATED DOCUMENTS**

- A. Construction Drawings, Technical Specifications, Addenda, and general provisions of the Contract, including Contract General Conditions and Supplementary General Conditions and other Division 1 Specification Sections, apply to this Section.

##### **1.2 SECTION INCLUDES**

- A. Definitions
- B. Responsibilities
- C. Inspections
- D. Submittals
- E. Regulatory requirements for testing and inspection.
- F. Contractor's quality control.
- G. Quality of the Work.
- H. Inspections and tests by authorities having jurisdiction.
- I. Inspections and tests by serving utilities.
- J. Inspections and tests by manufacturer's representatives.

##### **1.3 RELATED SECTIONS**

- A. Section 01 31 13 - Coordination: Coordination of Work under Contract.
- B. Section 01 41 00 - Regulatory Requirements: Compliance with applicable codes, ordinances and standards.
- C. Section 01 45 29 - Testing Laboratory Services: Selection of independent testing and inspection laboratory; tests and inspections conducted by testing laboratory.
- D. Section 01 60 00 - Product Requirements: Product options, substitutions, transportation and handling requirements, storage and protection requirements, and system completeness requirements.

##### **1.4 DEFINITIONS**

- A. Quality control services include inspections, tests, and related actions, including reports performed by Contractor, by independent agencies, and by governing authorities. They do not include contract enforcement activities performed by University Representative or Architect.
- B. Inspection and testing services are required to verify compliance with requirements specified or indicated. These services do not relieve Contractor of responsibility for compliance with Contract Document

requirements.

1. Specific quality control requirements for individual activities are specified in Sections relative to those activities.
2. Specified inspections, tests, and related actions do not limit Contractor's quality control procedures that facilitate compliance with Contract Document Requirements.
3. Requirements for Contractor to provide quality control services required by University Representative, Architect, or authorities having jurisdiction are not limited by provisions of this Section.

## 1.5 RESPONSIBILITIES

- A. General: Comply with requirements of Contract General Conditions.
- B. Unless otherwise indicated as the responsibility of another identified entity, Trustees will employ and pay for services of independent testing laboratory to perform inspections, tests, and other quality control services specified elsewhere in Contract Documents and required by authorities having jurisdiction.
  1. Where individual Sections specifically indicate that certain inspections, tests, and other quality control services are Contractor's responsibility, Contractor shall employ and pay qualified independent testing agency to perform quality control services. Costs for these services are included in Contract Sum.
    - a. Where Trustees have engaged testing agency for testing and inspecting part of Work, and Contractor is also required to engage entity for same or related element, Contractor shall not employ entity engaged by Trustees, unless agreed to in writing by Trustees.
- C. Retesting: Contractor is responsible for retesting where results of inspections, tests, or other quality control services prove unsatisfactory and indicate noncompliance with Contract Document requirements, regardless of whether original test was Contractor's responsibility.
  1. Cost of retesting Work, revised or replaced by Contractor, is Contractor's responsibility where required tests performed on original Work indicated noncompliance with Contract Document requirements.
- D. Associated Services: Cooperate with agencies performing required inspections, tests, and similar services, and provide reasonable auxiliary services as requested. Notify agency sufficiently in advance of operations to permit assignment of personnel. Auxiliary services required include, but are not limited to, the following:
  1. Provide access to Work.
  2. Furnish incidental labor and facilities necessary to facilitate inspections and tests.
  3. Assist Trustees as requested in taking quantities of representative samples of materials that require testing or assist testing agency in taking samples.
  4. Provide facilities for storage and curing of test samples.
  5. Provide security and protection of samples and test equipment at Project Site.
- E. Duties of Testing Agency: Independent agency engaged to perform inspections, sampling, and testing of materials and construction specified in individual Sections shall cooperate with University

Representative, Architect, and Contractor in performance of agency's duties. Testing agency shall provide qualified personnel to perform required inspections and tests.

1. Agency shall notify University Representative, Architect, and Contractor promptly of irregularities or deficiencies observed in Work during performance of its services.
2. Agency is not authorized to release, revoke, modify, alter, interpret, or expand requirements of Contract Documents or approve or accept any portion of Work.
3. Agency shall not perform any duties of Contractor.

## 1.6 INSPECTIONS

- A. General: All construction work shall be subject to inspection by the Trustees (hereinafter referred to as Owner) and the Architect, and all such construction or work shall remain accessible and exposed for inspection purposes until approved by the Owner.
1. The Owner will provide project personnel, including inspectors, to be available at the project site.
  2. Approval as a result of an inspection shall not be construed to be an approval of any violation of the provisions of the building code or of other ordinances of the California State Building Code or other regulations of Agencies having jurisdiction over this project, including plans and specifications. Inspections presuming to give authority to violate or cancel the provisions of code or contract documents shall not be valid.
  3. It shall be the duty of the contractor to cause the work to remain accessible and exposed for inspection purposes. Neither the Inspector, Trustees, nor Architect shall be liable for expense entailed in the removal or replacement of any material required to allow inspection.
- B. Inspection Requests: It shall be the duty of Contractor to notify the Inspector that specific work is ready for inspection. The Owner requires that every request for inspection be filed at least two working days (48 hours) before such inspection is desired. Such requests shall be submitted in writing, using the inspection request form included at the end of this section.
- C. Approval Required: Work shall not be done beyond the point indicated in each successive inspection without first obtaining the approval of the Inspector. The Inspector, upon notification, shall make the requested inspections and shall either indicate in writing that a specific portion of the construction is satisfactory as completed, or shall notify the Contractor that same fails to comply with plans and specifications. Any portions which do not comply shall be corrected by the Contractor prior to the end of the workday, or a Deficiency Notice will be issued by the Inspector placing the Contractor on notice that the work does not conform to the requirements of the Contract Documents. Such portion of Work shall not be covered or concealed until authorized by the Inspector.
1. There shall be a final inspection and approval of all buildings and structures when completed and ready for occupancy and use.
- D. Inspection Coordination: Contractor shall provide, on a weekly basis, an anticipated Inspection Requirements Schedule, coordinated with the three-week look ahead schedule. The Inspection Requirements Schedule shall show the anticipated inspection needs for the following three weeks to facilitate appropriate campus coordination, as well as mobilization of required inspection staffing.
- E. Required Inspections: Reinforcing steel, structural framework or interior wall and/or ceiling support framing of any part of any building or structure shall not be covered or concealed without first obtaining

the approval of the Inspector.

1. Listed below are the minimum inspection requirements:
  - a. Frame Inspection: To be made after all framing and bracing are in place.
  - e. Gypsum Board Inspection: To be made after all gypsum board, interior and exterior, is in place, but before gypsum board joints and fasteners are taped and finished.
  - f. Waterproofing Inspection: To be made when waterproofing is completed and prior to other finishes are installed.
  - g. Final Inspection: To be made when the building is completed and ready for occupancy.
  - g. Other Inspections: In addition to the inspections specified above, the inspector may make or require other inspections of any construction work to ascertain compliance with the provisions of the plans and specifications.
  - h. Reinspections: A reinspection fee may be assessed for each inspection or reinspection when such portion of work for which inspection is called is not complete, or when corrections called for are not made.
2. The Contractor is responsible for reviewing all of the Contract Documents for any additional inspection requirements.

## 1.7 SUBMITTALS

### A. Reports:

1. Where Trustees are responsible for service, independent testing agency shall submit certified reports electronically (or in writing if necessary), of each inspection, test, or similar service to University Representative and Architect.
2. If Contractor is responsible for service, independent testing agency shall submit certified report electronically (or in writing if necessary) of each inspection, test, or similar service through Contractor for distribution as noted above.
3. Submit additional copies of each written report directly to governing authority when authority so directs.

### B. Report Data: Provide reports electronically of each inspection, test, or similar service including, but not limited to the following:

1. Date of issue.
2. Project title and number.
3. Name, address, and telephone number of testing agency.
4. Dates and locations of samples and tests or inspections.
5. Names of individuals making inspection or test.
6. Designation of Work and test method.

7. Identification of Specification Section.
8. Complete inspection or test data.
9. Test results and interpretation of test results.
10. Ambient conditions at time of sample taking and testing.
11. Comments or professional opinion on whether inspected or tested Work complies with Contract Document requirements.
12. Name and signature of laboratory inspector.
13. Recommendations on retesting.

#### **1.8 REGULATORY REQUIREMENTS FOR TESTING AND INSPECTION**

- A. Building Code Requirements: Comply with requirements for testing and inspections in the California Building Code (CBC), as interpreted by authorities having jurisdiction. Additional requirements for testing and inspection, as adopted by authorities having jurisdiction, shall be included in the Contract Sum and Contract Time.
- B. Requirements of Fire Regulations: Comply with testing and inspection requirements of the Fire Marshal having jurisdiction. All tests and inspections shall be included in Contract Sum and Contract Time.

#### **1.9 CONTRACTOR'S QUALITY CONTROL**

- A. Contractor's Quality Control: Contractor shall ensure that products, services, workmanship and site conditions comply with requirements of the Drawings and Specifications by coordinating, supervising, testing and inspecting the Work and by utilizing only suitably qualified personnel.
- B. Quality Requirements: Work shall be accomplished in accordance with quality requirements of the Drawings and Specifications, including, by reference, all Codes, laws, rules, regulations and standards. When no quality basis is prescribed, the quality shall be in accordance with the best accepted practices of the construction industry for the locale of the Project, for projects of this type.
- C. Quality Control Personnel: Contractor shall employ and assign knowledgeable and skilled personnel as necessary to perform quality control functions to ensure that the Work is provided as required.
- D. Coordination of Field Quality Control: Contractor shall coordinate and schedule field quality control activities of University's independent testing and inspection agency and inspectors from authorities having jurisdiction.

#### **1.10 QUALITY OF THE WORK**

- A. Quality of Products: Unless otherwise indicated or specified, all products shall be new, free of defects and fit for the intended use.
- B. Quality of Installation: All Work shall be produced plumb, level, square and true, or true to indicated angle, and with proper alignment and relationship between the various elements.
- C. Protection of Existing and Completed Work: Take all measures necessary to preserve and protect existing and completed Work free from damage, deterioration, soiling and staining, until Acceptance by the University.

- D. Standards and Code Compliance and Manufacturer's Instructions and Recommendations: Unless more stringent requirements are indicated or specified, comply with manufacturer's instructions and recommendations, reference standards and building code research report requirements in preparing, fabricating, erecting, installing, applying, connecting and finishing Work.
- E. Deviations from Standards and Code Compliance and Manufacturer's Instructions and Recommendations: Document and explain all deviations from reference standards and building code research report requirements and manufacturer's product installation instructions and recommendations, including acknowledgement by the manufacturer that such deviations are acceptable and appropriate for the Project.
- F. Verification of Quality: Work shall be subject to verification of quality by University or Architect in accordance with provisions of the Contract General Conditions.
  - 1. Contractor shall cooperate by making Work available for inspections and observations by University's Representative, Architect and their consultants.
  - 2. Such verification may include mill, plant, shop, or field inspection, as required.
  - 3. Provide access to all parts of the Work, including plants where materials or equipment are manufactured or fabricated.
  - 4. Provide all information and assistance as necessary, including that from subcontractors, fabricators, materials suppliers and manufacturers, for verification of quality by University's Representative or Architect.
  - 5. Contract modifications, if any, resulting from such verification activities shall be governed by applicable provisions in the Contract General Conditions.
- G. Observations by Architect and Architect's Consultants: Periodic and occasional observations of Work in progress will be made by Architect and Architect's consultants as deemed necessary to review progress of Work and general conformance with the design intent.
- H. Limitations on Inspection, Test and Observations: Employment of an independent testing and inspection agency and observations by Architect and Architect's consultants shall not relieve Contractor of the obligation to perform Work in full conformance to all requirements of Contract Documents and applicable Building Code and other regulatory requirements.
- I. Rejection of Work: The University reserves the right to reject any and all Work not in conformance to the requirements of the Contract Documents.
- J. Correction of Non-Conforming Work: Non-conforming Work shall be modified, replaced, repaired or redone by the Contractor at no change in Contract Sum or Contract Time.
- K. Acceptance of Non-Conforming Work: Acceptance of non-conforming Work, without specific written acknowledgement and approval of the University's Representative, shall not relieve the Contractor of the obligation to correct such Work.
- L. Contract Adjustment for Non-conforming Work: Should University's Representative determine that it is not feasible or not in University's interest to require non-conforming Work to be repaired or replaced, an equitable reduction in Contract Sum shall be made by agreement between University's Representative and Contractor. If an equitable amount cannot be agreed upon, a Field Instruction will be issued and the amount in dispute resolved in accordance with applicable provisions of the Contract General Conditions.
- M. Non-Responsibility for Non-Conforming Work: Architect and Architect's consultants disclaim any and all res

ponsibility for Work produced that is not in conformance with the Contract Drawings and Contract Specifications.

#### **1.11 INSPECTIONS AND TESTS BY AUTHORITIES HAVING JURISDICTION**

- A. Inspections and Tests by Authorities Having Jurisdiction: Contractor shall cause all tests and inspections required by authorities having jurisdiction to be made for Work under this Contract.
1. Except as specifically noted, scheduling, coordinating and conducting such inspections and tests shall be solely the Contractor's responsibility.
  2. All time required for inspections and tests by authorities having jurisdiction shall be included in the Contract Time.
  3. Costs for inspections and tests by authorities having jurisdiction will be paid by University.

#### **1.12 INSPECTIONS AND TESTS BY SERVING UTILITIES**

- A. Inspections and Tests by Serving Utilities: Contractor shall cause all tests and inspections required by serving utilities to be made for Work under the Contract.
1. Except as specifically noted, scheduling, coordinating and conducting such inspections and tests shall be solely the Contractor's responsibility. All time required for inspections and tests by serving utilities shall be included in the Contract Time.
  2. Except as specifically noted, all costs for inspections and tests by serving utilities shall be included in the Contract Sum.

#### **1.13 INSPECTIONS AND TESTS BY MANUFACTURER'S REPRESENTATIVES**

- A. Inspections and Tests by Manufacturer's Representatives: Contractor shall cause all specified tests and inspections to be conducted by materials or systems manufacturers. Additionally, all tests and inspections required by materials or systems manufacturers as conditions of warranty or certification of Work shall be made, the cost of which shall be included in the Contract Sum.
1. Scheduling, coordinating and conducting such inspections and tests shall be solely the Contractor's responsibility. All time required for inspections and tests by manufacturer's representatives shall be included in the Contract Time.
  2. All costs for inspections and tests by manufacturer's representatives shall be included in the Contract Sum.

#### **1.14 INSPECTIONS BY INDEPENDENT TESTING AND INSPECTION AGENCY**

- A. Inspections by independent Testing Laboratory: Refer to Section 01 45 29 - Testing Laboratory Services.

### **PART 2 - PRODUCTS**

Not applicable to this Section.

### **PART 3 - EXECUTION**

Not applicable to this Section.

**END OF SECTION**

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## **SECTION 01 45 29**

### **TESTING LABORATORY SERVICES**

#### **PART 1 - GENERAL**

##### **1.1 RELATED DOCUMENTS**

- A. Construction Drawings, Technical Specifications, Addenda, and general provisions of the Contract, including Contract General Conditions and Supplementary General Conditions and other Division 1 Specification Sections, apply to this Section.

##### **1.2 SECTION INCLUDES**

- A. Administrative and procedural requirements for quality control services.
  - 1. Quality control services include inspections and tests and related actions including reports, performed by independent agencies, and governing authorities. They do not include Contract enforcement activities performed by the Trustees or Architect.
  - 2. Inspection and testing services are required to verify compliance with requirements specified or indicated. These services do not relieve the Contractor of responsibility for compliance with Contract Document requirements.

##### **1.3 RELATED SECTIONS**

- A. Section 01 45 00 - Quality Control: General requirements for inspections and tests.
- B. Individual Product Specifications Sections: Specific requirements for inspections and tests.

##### **1.4 RESPONSIBILITIES**

- A. Testing Laboratory: Trustees will engage and pay for the services of an independent agency to perform inspections and tests specified as the Trustees' responsibility.
  - 1. Where the Trustees have engaged a testing agency or other entity for testing and inspection of a part of the Work, and the Contractor is also required to engage an entity for the same or related element, the Contractor shall not employ the entity engaged by the Trustees, unless otherwise agreed in writing with the Trustees.
- B. Retesting: The Contractor is responsible for the cost of retesting where results of required inspections, tests or similar services prove unsatisfactory and do not indicate compliance with Contract Document requirements, regardless of whether the original test was the Contractor's responsibility.
  - 1. Cost of retesting construction revised or replaced by the Contractor is the Contractor's responsibility, where required tests were performed on original construction.
- C. Associated Services: The Contractor shall cooperate with agencies performing required inspections, tests and similar services and provide reasonable auxiliary services as requested.

Cal Poly Humboldt  
Deck Rehabilitation  
1485-0001

- D. Coordination: The Contractor, the Trustees, Inspector, and each agency engaged to perform inspections, testing and similar services shall coordinate the sequence of activities to accommodate required services with a minimum of delay. In addition the Contractor shall coordinate activities to avoid the necessity of removing and replacing construction to accommodate inspections and tests.
1. The Contractor is responsible for communicating to the Inspector the scheduling times for inspections, tests, taking samples and similar activities.
- E. Payment for Testing Laboratory Services:
1. Unless otherwise specified, Trustees will pay for tests and inspections performed by Testing Laboratory, as specified in individual product Sections of the Specifications. Overtime costs due to scheduling for the convenience of the Contractor or to make up for Work behind schedule shall be deducted by Change Order from Contract Sum.
  2. When tests and inspections are required on an overtime basis, initial payment will be made by the Trustees. All costs for overtime testing and inspections shall be paid for by the Contractor and deducted by Change Order from the Contract Sum.
  3. Unless otherwise specified, Contractor shall be back-charged for mileage and travel time for inspection services requiring more than fifty (50) miles from Project site to test products purchased by Contractor.
    - a. Testing laboratory shall forward all billings and records of such costs to University's Representative for approval.
    - b. Such costs, if determined by University's Representative to be attributable to the Contractor under this provision, shall be deducted by Change Order from Contract Sum.
  4. Contractor shall pay all costs for repeated observations, reinspection or retesting by Testing Laboratory due to non-conforming Work. Costs shall be deducted by Change Order from Contract Sum.
  5. Additional Tests, Inspections and Related Services: Contractor shall be charged costs for additional tests, inspections and related services, due to the following. Such costs shall be deducted by Change Order from Contract Sum.
    - a. Work is not ready to inspect when inspectors arrive.
    - b. Failure to properly schedule or notify testing and inspection agency or authorities having jurisdiction.
    - c. Changes in sources, lots or suppliers of products after original tests or inspections.
    - d. Changes in means methods, techniques, sequences and procedures of construction that necessitate additional testing, inspection and related services.
    - e. Changes in mix designs for concrete and mortar after review and acceptance of submitted mix design.
    - f. Multiple off-site fabrication sites.
    - g. Fabrication and installation errors.
    - h. Inefficient, sporadic, or poorly organized manufacturing that causes additional testing costs to be incurred.
- F. Segregation in Billing of Overtime Services: Billings for overtime services shall have straight time and overtime costs segregated and shall have substantiation by detailed explanations justifying necessity of services on overtime basis.
- G. Obligation to Perform Work According to Contract Documents: Employment of Testing Laboratory shall in no way relieve Contractor of obligation to perform Work in accordance with requirements of Contract Documents and applicable Codes.

H. Limits on Testing Laboratory's Authority:

1. Testing Laboratory may not release, revoke, alter, or enlarge on requirements of Contract Documents.
2. Testing Laboratory may not approve or accept any portion of the Work.
3. Testing Laboratory may not assume any duties of Contractor.
4. Testing Laboratory shall have no authority to stop Work.

I. Contractor's Responsibilities to Testing Laboratory: Contractor shall make the Work in all stages of progress available for personal and continuous observation by the Testing Laboratory.

1. Testing Laboratory shall have free access to any and all parts of the Work at all times.
2. Contractor shall provide the Testing Laboratory with reasonable facilities for Testing Laboratory to obtain such information as Testing Laboratory determines is necessary for Testing Laboratory to be kept fully informed of the progress and manner of performance of the Work and character of products, according to Testing Laboratory's duties and responsibilities.
3. Observation and inspection of the Work by Testing Laboratory shall not relieve Contractor from any obligation to fulfill the requirements of the Contract.

J. Retesting: When materials tested fail to meet requirements herein specified, they shall be promptly corrected or removed and replaced and retested in a manner required by University's Representative. Costs involved in retesting shall be deducted by Change Order from Contract Sum.

## 1.5 TESTS AND INSPECTIONS

A. Tests and Inspections, General: All construction work shall be subject to inspection by the Trustees and the Architect and all such construction or work shall remain accessible and exposed for inspection purposes until approved by the Trustees.

1. The Trustees will provide project personnel, including inspectors, to be available at the project site.
2. Approval as a result of an inspection shall not be construed to be an approval of a violation of the provisions of the building code or of other ordinances of the jurisdiction, including plans and specifications. Inspections presuming to give authority to violate or cancel the provisions of code, or of plans and specifications shall not be valid.
3. It shall be the duty of the contractor to cause the work to remain accessible and exposed for inspection purposes. Neither the Inspector nor the Trustees or Architect shall be liable for expense entailed in the removal or replacement of any material required to allow inspection.

B. Inspection Requests: It shall be the duty of the Contractor doing the work to notify the Inspector that such work is ready for inspection. The Trustees require that such work is ready for inspection. The Trustees require that every request for inspection be filed at least two working days before such inspection is desired. Such requests shall be in writing.

C. Approval Required: Work shall not be done beyond the point indicated in each successive inspection without first obtaining the approval of the Inspector. The Inspector, upon notification, shall make the requested inspections and shall either indicate in writing that portion of the construction is satisfactory as completed, or sha

It notify the Contractor that same fails to comply with plans and specifications. Any portions of Work that do not comply shall be corrected by the Contractor, and such portion shall not be covered or concealed until authorized by the Inspector.

1. There shall be a final inspection and approval of all buildings and structures when completed and ready for occupancy and use.
- D. Inspection Coordination: Contractor shall provide, on a weekly basis, an anticipated Inspection Requirements Schedule, coordinated with the three-week look ahead schedule, showing the anticipated inspection needs for the following three weeks to facilitate appropriate campus coordination and interface as well as mobilization of required inspection staffing.
- E. Required Inspections: Reinforcing steel, structural framework, or interior wall and/or ceiling support framing of any part of any building or structure shall not be covered or concealed without first obtaining the approval of the Inspector.
1. Listed below are the minimum inspection requirements:
    - a. Frame Inspection: To be made after all framing and bracing are in place.
    - b. Gypsum Board Inspection: To be made after all gypsum board, interior and exterior, is in place, but before gypsum board joints and fasteners are taped and finished.
    - c. Waterproofing Inspection: To be made when waterproofing is completed and prior to other finishes are installed.
    - d. Final Inspection: To be made when the building is completed and ready for occupancy.
    - e. Other Inspections: In addition to the called inspections specified above, the inspector may make or require other inspections of any construction work to ascertain compliance with the provisions of the plans and specifications.
    - f. Re-inspections: A re-inspection fee may be assessed for each inspection or re-inspection when such portion of work for which inspection is called for but is not complete or when corrections called for are not made.
  2. The Contractor shall be responsible for reviewing all of the Contract Documents for any additional inspection requirements.

## 1.6 SUBMITTALS

- A. Reports: Trustees' independent testing agency shall submit a certified electronic report of each inspection, test or similar service, to the Architect, the Trustees, the Contractor, and the Inspector.
- B. Report Data: Electronically distributed reports of each inspection test or similar service shall include, but not be limited to:

Date of issue  
Project title and number  
Name, address and telephone number of testing agency  
Dates and locations of samples and tests or inspections  
Names of individuals making the inspection or test  
Designation of the Work and test method  
Identification of product and Specification Section  
Complete inspection or test data  
Test results and an interpretation of test results  
Ambient conditions at the time of sample-taking and testing  
Comments or professional opinion as to whether inspected or tested

Cal Poly Humboldt  
Deck Rehabilitation  
1485-0001

Work complies with Contract Document requirements  
Name and signature of laboratory inspector  
Recommendations on retesting.

## **1.7 SCHEDULES FOR TESTING**

- A. Testing and Inspection Schedule: After discussion with University's Representative and Testing Laboratory in advance of performance of testing and inspection services, Contractor shall determine dates and times necessary for Testing Laboratory to schedule performance of required tests and inspections and determine due dates for issuance of reports.
  - 1. Integrate Testing and Inspection Schedule with Construction Schedule requirements specified in the Contract general Conditions.
  - 2. Determine and indicate in Testing and Inspection Schedule necessary time for preparation and submission of reports of tests and inspections.
- B. Revising Testing and Inspection Schedule: When changes of the construction schedule are necessary during construction, coordinate all such changes of schedule with the testing laboratory as required.
- C. Adherence to Testing and Inspection Schedule: When the Testing Laboratory is ready to test according to the determined schedule but is prevented from testing or taking specimens due to incompleteness of the work, all extra costs for testing attributed to the delay may be back-charged to the Contractor and shall not be borne by the University.

## **1.8 CONTRACTOR'S RESPONSIBILITIES**

- A. Contractor's Responsibilities for Inspections and Tests:
  - 1. Notify Project Inspector and Testing Laboratory two working days in advance of expected time for operations requiring inspection and testing services.
  - 2. Deliver to Testing Laboratory or designated location, adequate samples of materials proposed to be used which require advance testing, together with proposed mix designs.
  - 3. Cooperate with University's Representative, Testing Laboratory, Project Inspector, Architect, Architect's consultants and other responsible design professionals. Provide access to Work areas and off-site fabrication and assembly locations, including during weekends and after normal work hours.
  - 4. Provide incidental labor and facilities to provide safe access to Work to be inspected and tested, to obtain and handle samples at the Work site or at source of products to be tested, and to store and cure test samples.
  - 5. Provide at least 15 days in advance of first inspection or test of each type, a schedule of tests or inspections indicating types of tests or inspections and their scheduled dates.
  - 6. Provide two working days notice to University's Representative, Architect and, as applicable, responsible design consultant, of each test and inspection.

## **1.9 INSPECTIONS TESTS BY OTHERS**

- A. Inspections by Others: Refer to Section 01 45 00 - Quality Control for requirements regarding observations and ins

Cal Poly Humboldt  
Deck Rehabilitation  
1485-0001

pections by University's Representative, Architect and Project Inspector.

- B. Tests by Others: Refer to Section 01 45 00 - Quality Control and individual product Specifications Sections for requirements regarding tests and inspections by product manufacturers and others, including serving utilities.

## **PART 2 - PRODUCTS**

Not Applicable to this Section.

## **PART 3 - EXECUTION**

### **3.1 REPAIR AND PROTECTION**

- A. Repair and Protection: Upon completion of inspection, testing, sample-taking and similar services, repair damaged construction and restore substrates and finishes to eliminate deficiencies, including deficiencies in visual qualities of exposed finishes. Comply with Contract Document requirements for "Cutting and Patching."
  - 1. Protect construction exposed by or for quality control service activities, and protect repaired construction.
  - 2. Repair and protection is the Contractor's responsibility, regardless of the assignment of responsibility for inspection, testing or similar services.

**END OF SECTION**

## **SECTION 01 51 00**

### **TEMPORARY UTILITIES**

#### **PART 1 - GENERAL**

##### **1.1 RELATED DOCUMENTS**

- A. Construction Drawings, Technical Specifications, Addenda, and general provisions of the Contract, including Contract General Conditions and Supplementary General Conditions and other Division 1 Specification Sections, apply to this Section.

##### **1.2 SECTION INCLUDES**

- A. Temporary utilities and services, including:
  - 1. Heating and cooling during construction
  - 2. Ventilation during construction
  - 3. Temporary water service
  - 4. Temporary sanitary facilities
  - 5. Temporary power and lighting
  - 6. Construction telephone service.

- B. Removal of temporary utilities.

##### **1.3 RELATED SECTIONS**

- A. Section 01 11 00 - Summary of the Work: Contractor's use of site and premises.

##### **1.4 SUBMITTALS**

- A. Temporary Utilities: Submit reports of tests, inspections, applicable meter readings and similar procedures performed on temporary utilities.

##### **1.5 TEMPORARY UTILITIES AND SERVICES**

- A. Temporary Utilities and Services, General: All utilities and other services necessary for proper performance of the Work shall be provided by Contractor, unless specifically noted otherwise. Refer to Contract General Conditions. Temporary utilities and services shall conform to all applicable requirements of authorities having jurisdiction and serving utility companies and agencies, including the following:
  - 1. Requirements of authorities having jurisdiction, including:
    - a. Cal OSHA
    - b. California Building Code (CBC) requirements
    - c. Health and safety regulations
    - d. Utility agency and company regulations
    - e. Police, Fire Department and Rescue Squad rules
    - f. Environmental protection regulations

2. Standards:
  - a. NFPA Document 241 - Building Construction and Demolition Activities.
  - b. ANSI A10 Series - Safety Requirements for Construction and Demolition.
  - c. NECA Electrical Design Library - Temporary Electrical Facilities.
  - d. Electrical Service: Comply with NEMA, NECA and UL standards and regulations for temporary electric service. Install service in compliance with California Electrical Code (CEC).
- B. Inspections: Arrange for authorities having jurisdiction to inspect and test each temporary utility before use. Obtain required certifications and permits.
- C. Temporary Connections and Fees: Contractor shall arrange for services and pay all fees and service charges for temporary power, water, sewer, gas and other utility services necessary for the Work.
  1. Contractor shall apply for and obtain permits for temporary utilities, including permits for temporary generators, from authorities having jurisdiction.
  2. All costs for temporary connections, including fees charged by serving utilities, shall be included in Contract Sum.
- D. Permanent Connections and Fees: Contractor shall arrange for utility agencies and companies to make permanent connections. University will arrange for permanent utility account and pay permanent connection fees. After Contract Completion review and determination that Work is acceptable, University will pay utility service charges for services delivered through permanent connections, for normal quantities.
- E. Use of Temporary Utilities: Enforce strict discipline in use of temporary utilities to conserve on consumption. Limit use of temporary utilities to essential and intended uses to minimize waste and abuse.

## **1.6 PROJECT CONDITIONS**

- A. Conditions of Use: Keep temporary services and facilities clean and neat in appearance. Operate in a safe and efficient manner. Take necessary fire prevention measures. Do not overload facilities, or permit them to interfere with progress. Do not allow hazardous, dangerous, or unsanitary conditions, or public nuisances to develop or persist on the site.
- B. Contractor shall be responsible for building and individual room security to all areas of work where Contractor or its subcontractors enter and perform work.

## **1.7 HEATING AND COOLING**

- A. Temporary Heating and Cooling: Provide and pay for temporary heating and cooling devices, fuel and related service charges to provide ambient temperatures as required to maintain conditions necessary for proper performance of construction activities.
- B. Use of Permanent Heating and Cooling Systems: Permanent heating and cooling equipment may be used after completion, testing and inspection of systems and approval of code authorities having jurisdiction.
  1. Prior to operation of permanent heating equipment for temporary heating purposes, verify that installation is approved for operation, equipment is lubricated and filters are in place.
  2. Contractor shall provide and pay for operation, maintenance and regular replacement of filters and worn or consumed parts.
  3. Immediately prior to Contract Completion review, change disposable filters and clean permanent filters of equipment used during construction.



- C. Temperature Criteria: Maintain interior ambient temperature of minimum 50 degrees F and maximum 80 degrees F, unless otherwise specified or approved by University's Representative.

## **1.8 VENTILATION DURING CONSTRUCTION**

- A. Ventilation during Construction: Provide and pay for temporary ventilation devices, energy and related service charges.
- B. Use of Permanent Ventilation Systems: The University may use permanent ventilation equipment after completion, testing and inspection of systems and approval by University's Representative and authorities having jurisdiction.
  - 1. Prior to operation of permanent ventilation equipment for ventilation purposes during construction, Contractor shall verify that equipment is lubricated and filters are in place.
  - 2. Contractor shall provide and pay for maintenance and regular replacement of filters and worn or consumed parts of permanent ventilation system using for ventilation during construction.
  - 3. Immediately prior to Contract Completion review, Contractor shall change disposable filters and clean permanent filters of equipment used during construction.
- C. Ventilation Criteria: Ventilate enclosed areas to assist cure of materials, to dissipate humidity and to prevent accumulation of dust, fumes, vapors and gases, as necessary for proper performance of the Work.

## **1.9 TEMPORARY WATER SERVICE**

- A. Temporary Water Service: Contractor shall locate and connect to existing water source for temporary construction water service. Contractor shall comply with the following:
  - 1. Locate and connect to existing water source for temporary construction water service, as acceptable to University's Representative.
  - 2. Extend branch piping with outlets located, so that water is available by use of hoses.
  - 3. Temporary water service piping, valves, fittings and meters shall comply with requirements of the serving water utility and California Plumbing Code (CPC).
  - 4. All costs to establish temporary construction water system shall be included in the Contract Sum, or if so specified, costs shall be paid from Allowance specified in Section 01 21 00 - Allowances.
- B. Use of Permanent Water System: Permanent water system may be used for construction water after completion, sterilization, testing and inspection of system and approval by University's Representative and authorities having jurisdiction.

## **1.10 TEMPORARY SANITARY FACILITIES**

- A. Temporary Sanitary Facilities: Provide and maintain adequate temporary sanitary facilities and enclosures for use by construction personnel.
  - 1. Number of temporary toilets shall be suitable for number of workers.
  - 2. Provide wash-up sink with soap, towels and waste disposal.

- B. Use of Permanent Sanitary Facilities: Do not use permanent sanitary facilities unless approved by University's Representative. Immediately prior to Contract Completion review, thoroughly clean and sanitize permanent sanitary facilities used during construction.

#### **1.11 TEMPORARY POWER AND LIGHTING**

- A. Temporary Power and Lighting, General: Comply with NECA Electrical Design Library - Temporary Electrical Facilities.
- B. Temporary Power: Provide electric service as required for construction operations, with branch wiring and distribution boxes located to provide electrical service for performance of the Work.
  - 1. Provide temporary electric feeder connected to electric utility service at location determined by Contractor and as approved by serving electric utility.
  - 2. Temporary power conduit, raceways, fittings, conductors, panels, connections, disconnects, overcurrent protection, outlets and meters shall comply with requirements of the serving electric utility, California Electrical Code (CEC) and requirements of authorities having jurisdiction.
  - 3. Contractor shall pay all costs to establish temporary electric service, or if so specified, costs of temporary power shall be paid from Allowance specified in Section 01 21 00 - Allowance Procedures.
  - 4. As necessary in order to maintain construction progress, Contractor shall provide and pay all costs associated with generators used for temporary power.
- C. Temporary Lighting: Provide temporary lighting as necessary for proper performance of construction activities and for inspection of the Work.
  - 1. Provide branch wiring from power source to distribution boxes with lighting conductors, pigtails, and lamps as required.
  - 2. Maintain lighting and provide routine repairs.
- D. Protection: Provide weatherproof enclosures for power and lighting components as necessary. Provide overcurrent and ground-fault circuit protection, branch wiring and distribution boxes located to allow convenient and safe service about site of the Work. Provide flexible power cords as required.
- E. Use of Permanent Power and Lighting Systems: Permanent power and lighting systems may be used after completion, testing and inspection of systems and approval by University's Representative and authorities having jurisdiction.
  - 1. Contractor shall maintain lighting and make routine repairs and replacements as necessary.
  - 2. After beneficial use of the facilities has been received, University will pay for reasonable amounts of electricity consumed after permanent power system is operational and approved by authorities having jurisdiction. University shall not pay for the cost of wasted electricity, for example, lighting beyond hours of construction.
- F. Service Disruptions: When necessary for energizing and de-energizing temporary electric power systems, minimize disruption of service to those served by public mains. Schedule transfers at times convenient to University and to occupants.
- G. Relamping: For permanent lighting used during construction, relamp all fixtures immediately prior to Contract Completion (punch list) review.

## **1.12 CONSTRUCTION TELEPHONE SERVICE**

- A. Construction Telephone Service: Provide telephone service to Contractor's field staff by means of cellular telephone or other methods to enable communications between University's Representative, Project Inspector and Contractor.
  - 1. Include voice message services.
  - 2. All costs of construction telephones shall be included in Contract Sum.

## **PART 2 - PRODUCTS**

### **2.1 MATERIALS AND EQUIPMENT**

- A. Materials: Contractor shall provide new materials. If acceptable to the University Representative, undamaged previously used materials in serviceable condition may be used. Provide materials that are suitable for the use intended. Their use and methods of installation shall not create unsafe conditions or violate requirements of applicable codes and standards.
- B. Equipment: Contractor shall provide new equipment; or, if acceptable to the Trustees, Contractor may provide undamaged, previously used equipment in serviceable condition. Provide equipment that is suitable for use intended.

## **PART 3 - EXECUTION**

### **3.1 TEMPORARY UTILITIES INSTALLATION**

- A. Temporary Utilities Installation, General: Contractor shall engage the appropriate local utility company or personnel to install temporary service or connect to existing service.
  - 1. Use Charges: Cost or use charges for temporary facilities are the Contractor's responsibility.
  - 2. Allowance for Utilities Charges: When Contract includes an allowance for metering of utility services, whether through temporary or permanent facilities, unused amount shall be returned to the Trustees by deductive change order.
- B. Water Service: Contractor may take water from the University's systems in such quantities and at such times as they are available. If this is done, Contractor shall provide all temporary materials necessary to extending the utility to where they will be used. Contractor shall install a meter and reimburse the University for any water used. Where sub-metering is not possible or practical, a flat fee may be established and paid to the University.
- C. Temporary Electric Power Service: Contractor may take electricity from the University's system if available. If this is done, Contractor shall provide all equipment, including connections, and other materials necessary for extending the utility lines to where they will be used. Contractor shall coordinate the installation with the University's Representative. Contractor shall install a meter and reimburse the University for any power used. Where sub-metering is not possible or practical, a flat fee may be established and paid to the University.
  - 1. When not available from the University, the Contractor must arrange and pay for electric service through the local utility or furnish his own portable power.
  - 2. All permanent power used by the Contractor prior to Occupancy by the Trustees shall be metered and paid for by the Contractor.

- D. Temporary Telephones: Contractor shall have telephone service available at its business office for the duration of contract where the Contractor and its superintendent may be contacted.
- E. Temporary Fire Protection: Until fire protection needs are supplied by permanent facilities, Contractor shall install and maintain temporary fire protection facilities of the types needed to protect against reasonably predictable and controllable fire losses. Contractor shall comply with NFPA 10 "Standard for Portable Fire Extinguishers," and NFPA 241 "Standard for Safeguarding Construction, Alterations and Demolition Operations." Contractor shall:
  - 1. Locate fire extinguishers where convenient and effective for their intended purpose, but not less than one extinguisher on each floor at or near each usable stairwell.
  - 2. Store combustible materials in containers in fire-safe locations.
  - 3. Maintain unobstructed access to fire extinguishers, fire hydrants, temporary fire protection facilities, stairways and other access routes for fighting fires. Prohibit smoking in hazardous fire exposure areas.
  - 4. Provide supervision of welding operations, combustion type temporary heating units, and similar sources of fire ignition.
- F. Maintenance of Temporary Utilities and Services: Contractor shall maintain temporary utilities and services in good operating condition until removal. Contractor shall protect from utilities and services from environmental and physical damage.

### **3.2 TERMINATION AND REMOVAL OF TEMPORARY UTILITIES AND SERVICES**

- A. Termination and Removal of Temporary Utilities and Services: Unless the Trustees require that it be maintained longer, Contractor shall remove each temporary facility when the need has ended, or when replaced by authorized use of a permanent facility, or no later than Completion. Contractor shall complete or, if necessary, restore permanent construction that may have been delayed because of interference with the temporary facility. At Completion, Contractor shall clean and renovate permanent facilities that have been used during the construction period.
- B. Removal of Temporary Underground Utilities and Restoration: Remove temporary underground utility installations to a minimum depth of two-feet below utility services. Contractor shall:
  - 1. Backfill, compact and re-grade site as necessary to restore areas or to prepare for indicated paving and landscaping.
  - 2. Restore paving damaged by temporary utilities. Refer to requirements specified in Section 01 73 29 - Cutting and Patching Requirements.
- C. Cleaning and Repairs: Contractor shall clean exposed surfaces and repair damage caused by installation and use of temporary utilities and services. Where determined by University's Representative that repair of damage is unsatisfactory-Work, Contractor shall replace construction with matching finishes. Refer to requirements specified in Section 01 73 29 - Cutting and Patching Requirements.

### **END OF SECTION**

## **SECTION 01 52 00**

### **CONSTRUCTION FACILITIES**

#### **PART 1 - GENERAL**

##### **1.1 RELATED DOCUMENTS**

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

##### **1.2 SECTION INCLUDES**

- A. This Section specifies requirements for temporary services and facilities, including utilities, temporary construction fencing, construction and support facilities, security and protection.
- B. Temporary utilities that are required include but are not limited to:
  - 1. Water service and distribution.
  - 2. Temporary electric power and light.
  - 3. Telephone service.
  - 4. Data services.
- C. Temporary construction and support facilities that are required include but are not limited to:
  - 1. Temporary heat
  - 2. Field offices and storage sheds
  - 3. Temporary enclosures
  - 4. Hoists and temporary elevator use
  - 5. Waste disposal services
  - 6. Construction aids and miscellaneous services and facilities.
- D. Security and protection facilities that are required include but are not limited to:
  - 1. Temporary fire protection
  - 2. Barricades, warning signs, lights
  - 3. Environmental protection.
  - 4. Site security for theft.

##### **1.3 ACTION SUBMITTALS**

- A. Layout of Field Offices and Sheds: Within five working days of the Notice-to-Proceed, Contractor shall submit to University's Representative a proposed layout for field offices, sheds and storage areas. University's Representative will review and respond within five working days with comments and directions. Contractor shall comply with directions of University's Representative.
- B. Site Plan: Show temporary facilities, utility hookups, staging areas, and parking areas for construction personnel.

#### **1.4 INFORMATIONAL SUBMITTALS**

- A. Moisture-Protection Plan: Describe procedures and controls for protecting materials and construction from water absorption and damage.
  - 1. Describe delivery, handling, and storage provisions for materials subject to water absorption or water damage.
  - 2. Indicate procedures for discarding water-damaged materials, protocols for mitigating water intrusion into completed Work, and replacing water-damaged Work.
  - 3. Indicate sequencing of work that requires water, such as sprayed fire-resistive materials, plastering, and terrazzo grinding, and describe plans for dealing with water from these operations. Show procedures for verifying that wet construction has dried sufficiently to permit installation of finish materials.
- B. Temporary Utilities: Submit reports of tests, inspections, applicable meter readings and similar procedures performed on temporary utilities.

#### **1.5 QUALITY ASSURANCE**

- A. Regulations: Comply with industry standards and applicable laws and regulations of the authorities having jurisdiction, including but not limited to:
  - 1. Cal OSHA
  - 2. Building Code requirements
  - 3. Health and safety regulations
  - 4. Utility company regulations
  - 5. Police, Fire Department and Rescue Squad rules
  - 6. Environmental protection regulations.
- B. Standards: Comply with NFPA Code 241, "Building Construction and Demolition Operations", ANSI-A10 Series standards for "Safety Requirements for Construction and Demolition", and NECA Electrical Design Library, "Temporary Electrical Facilities".
  - 1. Refer to "Guidelines for Bid Conditions for Temporary Job Utilities and Services", prepared jointly by AGC and ASC, for industry recommendations.
  - 2. Electrical Service: Comply with NEMA, NECA and UL standards and regulations for temporary electric service. Install service in compliance with National Electric Code (NFPA 70).
- C. Inspections: Arrange for authorities having jurisdiction to inspect and test each temporary utility before use. Obtain required certifications and permits.

#### **1.6 PROJECT CONDITIONS**

- A. Conditions of Use: Keep temporary services and facilities clean and neat in appearance. Operate in a safe and efficient manner. Take necessary fire prevention measures. Do not overload facilities, or permit

them to interfere with progress. Do not allow hazardous, dangerous, or unsanitary conditions, or public nuisances to develop or persist on the site.

- B. Contractor shall be responsible for building and individual room security to all areas of work where Contractor or its subcontractors enter and perform work.

## **PART 2 - PRODUCTS**

### **2.1 MATERIALS**

- A. General: Provide new materials; if acceptable to the University Representative, undamaged previously used materials in serviceable condition may be used. Provide materials suitable for the use intended. Their use and methods of installation shall not create unsafe conditions or violate requirements of applicable codes and standards.
- B. Temporary Construction Perimeter Fence - Provide 11-gauge, galvanized 2-inch, chain link fabric fencing 8-feet high with galvanized steel pipe posts, 1-1/2" I.D. for line posts, top posts and bottom posts, and 2-1/2" I.D. for corner posts. All fencing shall be covered with green fabric shade cloth, secured to top and bottom rails through integral metal eyelets. Contractor is responsible to maintain the fence and green shade through the entire duration of the contract. Contractor it is the contractor's responsibility to coordinate and relocate the fence as required for construction.
- C. All work areas within the campus and public spaces shall be fenced with minimum 6 feet chain link portable fence sections, with 1-1/2" top, bottom and side rails. All fencing shall be covered with blue fabric shade cloth material, secured to top, bottom and side rails with integral metal eyelets. Shade cloth shall not be left unsecured. Fencing materials shall be maintained in good, damage free condition at all times.
  - 1. Fencing shall extend around and enclose entire work area, as well as stored materials and equipment.
  - 2. Fencing shall be secured in a closed condition when not required to be open to allow completion of the work. Fencing shall be secured each day at the close of work.
  - 3. The use of alternate materials such as barricades, delineators and caution tape to enclose or delineate work areas will not be accepted.
  - 4. 3 sand bags shall be placed on every stand. Contractor shall replace sand bags whenever a sand bag ruptures.
  - 5. Contractor can tie-back fencing to fixed stakes as required in lieu of sand bags. Tie backs shall not be trip hazards.
  - 6. Plastic water filled K-rail can be used in lieu of fencing when approved in advance by the University.

### **2.2 EQUIPMENT**

- A. General: Provide new equipment; or, if acceptable to the University, Contractor may provide undamaged, previously used equipment in serviceable condition. Provide equipment suitable for use intended.
- B. First Aid Supplies: Comply with governing regulations.

- C. Fire Extinguishers: Provide 2 hand-carried, portable UL-rated, class "A" fire extinguishers for temporary offices and similar spaces. In other locations provide hand-carried, portable, UL- rated, class "ABC" dry chemical extinguishers, or a combination of extinguishers of NFPA recommended classes for the exposures.
- D. Comply with NFPA 10 and 241 for classification, extinguishing agent and size required by location and class of fire exposure.
- E. Temporary lighting: Provide adequate illumination to all areas of the project as required for ingress, egress, and prosecution of the Work. Provide cages where fixtures are exposed to potential breakage.

## **2.3 TEMPORARY FIELD OFFICE FOR OWNER'S USE**

- A. Provide a trailer, construct a separate field office building, or use existing buildings if so designated on the Contract Documents, for the exclusive use of the Owner's Representatives fully equipped and ready for use within fourteen (14) days of the Notice-to-Proceed. The field office, if a trailer, and its appurtenances or accessories shall remain the property of the Contractor.
- B. Building shall be of weather tight construction and contain a minimum of [*Campus shall specify size requirements*] 600 square feet, (12ft. x 50ft.), of floor space. Provide 8-foot minimum ceiling height. Provide two separate offices (minimum 120 square feet), a workroom/meeting room (minimum 240 square feet), and toilet/washroom. Provide restroom inside the building with necessary sewer and water connections for exclusive use of the University. If no sewer connection is available the contractor shall provide a sewage holding tank; and include weekly disposal services. Provide floor-to-ceiling walls to separate the rooms; do not use temporary partitions. Provide interconnecting floors. Provide stairs as required for each door entrance.
- C. Provide at least six windows with security bars in the building, with at least one window for each room. Provide blinds for windows. Provide two entrance doors to the building, one at each end. Provide cylinder lock, and dead bolt and key on each door. Provide six sets of keys to the Project Manager and/or Construction Inspector.
- D. Line walls and ceiling with insulation.
- E. Provide heating and cooling equipment necessary to maintain a uniform indoor temperature of 68 to 72 degrees F
- F. Provide warm white fluorescent light fixtures to evenly illuminate the rooms to a minimum of 50 foot-candles and an average of 70 foot-candles measured at desk height. Provide a minimum 60-watt light fixture in the lavatory facility. Provide light switch in each room.
- G. Provide two duplex 120-volt outlets in each room (one only in restroom).
- H. Provide hot water and cold water, electricity, telephone service with two voice lines and a dedicated fax line. Provide at least one cordless telephone in each office, and an answering machine. Provide bottled drinking water service with hot and cold dispenser.
- I. Contractor shall pay all costs, including but not limited to, trailer rental, electrical service including installation, pole rental, conductor placement/rental, electrical meters, etc, through the duration of the project



- J. Contractor shall pay telephone installation cost (including pole rental, etc.) and monthly service charge for all phone/data lines. The Contractor shall pay for all telephone calls, including local and long distance charges, taxes and all other fees charged by the phone company. The Contractor shall provide two land-lines, one dedicated fax line, and Nextel cellular and Nextel radio service with (818) area code phone numbers.
- K. Provide and install data wiring (CAT6) in the University Trailer as required for both office computers and printers. Contractor shall be required to install a temporary 6sm/6mm fiber optic cable from a location as directed by the University to the Construction Site Trailer for data services, including temporary utility pole rental, patch panels installation, fiber termination, and routing equipment as required to connect the University Trailer to the University Network. Alternatively, provide broadband DSL or cable modem service for the University Trailer (University's choice). For either case, the Contractor is responsible to provide and install routers, cables, software, etc., to provide broadband Internet connections for the computers in the University's Trailer. The Contractor is responsible for all setup charges and monthly service charges payable to third-party broadband service provider (DSL or cable modem), necessary to provide unlimited broadband Internet access to the University's trailer (there is no charge for access to the University network by the University' trailer).

**2.4 ACCESSORY EQUIPMENT** (All equipment indicated below shall be provided by the Contractor).

- A. For each office:
  - 1. One 3' x 6' desk with drawers and locks
  - 2. One cushioned office swivel chair for desk
  - 3. 8 (eight) cushioned chairs for visitors
  - 4. 6 (six) metal filing cabinet, 18"W x 30"D x 52"H, four drawers with locks
  - 5. One bookcase, 12"D x 48"L, with one 12-inch-high shelf and one 18-inch-high shelf
  - 6. One waste basket
  - 7. One 36" plan rack, with six 36" metal stick files.
  - 8. Two wall mounted marker boards, 4'X4' minimum, with all four markers (each color, red, green, blue, black).
- B. For the workroom:
  - 1. Two 4' x 8' flat tables with four cushioned chairs each.
  - 2. Two wastebaskets
  - 3. One plan rack, with five metal stick files
  - 4. One wall-mounted marker board, 4' x 8', with four markers (each color, red, green, blue, and black).
  - 5. One wall-mounted corkboard for thumbtacks, 4' x 4' minimum.
  - 6. Plain paper, programmable high-speed fax with dedicated phone line.
- C. Computers: Provide 2 (two) new computers, at the University's choosing. University will provide product types at a later date. Contractor shall provide an allowance of up to \$2,000 for the purchase of the computers.
- D. Business Machine for copying, scanning, and faxing: Contractor shall provide *[Campus to designate copier equipment]* capable of copying, scanning, faxing in color, for both 8.5" X 11" and 11" X 17", automatic document feeder, collating and stapling capabilities. Contractor to provide maintenance, paper, toner, and all required supplies to operate copy machine throughout the duration of the project. There can be no substitutions of this product as this product is the only certified copier for the University.
- E. Two cordless phones with answering machines or voice mail service.

- F. Provide small refrigerator no less than 2.5 cubic feet.
- G. Provide small emergency first aid kit.
- H. Provide all the above and all office supplies and stationery for University trailer, including, but not limited to, paper, pens, pencils, ink cartridges, laser printer cartridges file folders, binders, etc., for University use throughout the duration of the project at the Contractor expense.
- I. All equipment indicated above shall be new. The Contractor shall maintain or replace failed or malfunctioning equipment within 48-hours (24 hours for computer and printer – related hardware) as directed by the University, or the University reserve the right to lease/purchase replacement equipment at the Contractor's expense.

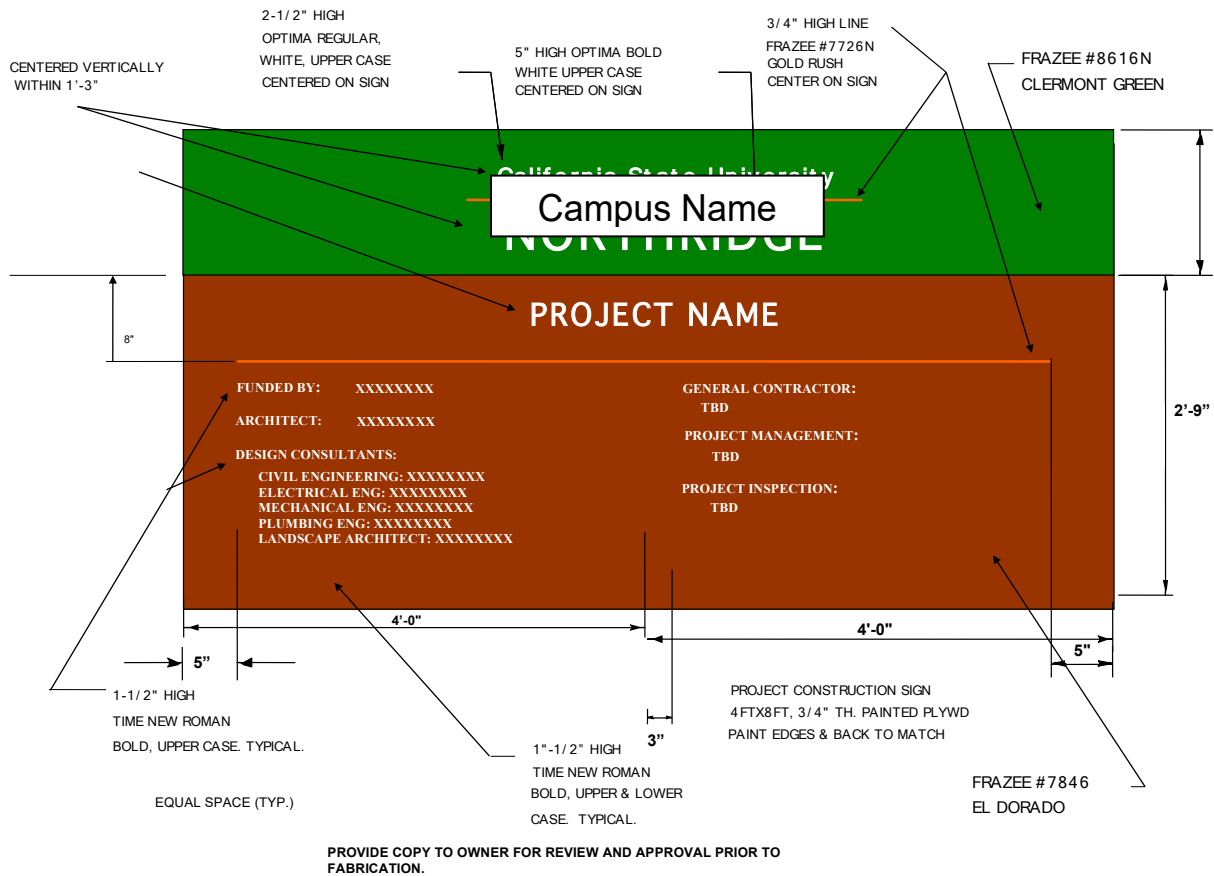
## **2.5 SERVICE CONTRACTS**

- A. Provide weekly janitorial service to include trash removal, floor cleaning and dusting. In addition, the Contractor shall maintain the approach to the field office free from mud and water. Electrical service shall consist of a minimum of 4 circuit, 110 volt, 60-amp service.

## **2.6 PROJECT IDENTIFICATION**

- A. Provide two (2) project signs, constructed with 4' x 8', 3/4 inch thick exterior grade plywood and mounted on two (2) 4" x 4" posts. The signs shall be painted and with exhibit lettering by professional sign painter die cut vinyl, self-adhesive letters and self-adhesive corporate logos, to the University design and colors as described at the end of section.

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Deck Rehabilitation  
1485-0001



- B. List title of project, the name of the University, the Contractor, and Architectural/Engineering team, as well as a Contractor phone number that the community may call with noise complaints 24-hours a day seven days a week. University shall approve signs before installation.
- C. Erect signs on site at locations designated by the University. Install project identification signs within 5 days of Notice-To-Proceed.
- D. No other signs are allowed without University permission except those required by law.

## PART 3 - EXECUTION

### 3.1 INSTALLATION

- A. Use qualified personnel for installation of temporary facilities. Locate facilities where they will serve the Project adequately and result in minimum interference with performance of the Work. Relocate and modify facilities as required.
- B. Provide each facility ready for use when needed to avoid delay. Maintain and modify as required. Do not remove until facilities are no longer needed, or are replaced by authorized use of completed permanent facilities.

### 3.2 TEMPORARY UTILITY INSTALLATION

- A. General: Engage the appropriate local utility company or personnel to install temporary service or connect to existing service.
  - 1. Use Charges: Connection and cost or use charges for temporary facilities are the Contractor's responsibility.
- B. Water Service: Water may be taken from the University's systems in such quantities and at such times as they are available. If this is done, provide all temporary materials necessary to extending the utility to where they will be used. Contractor shall install a meter of type acceptable to the University and reimburse the University for the cost of any water used.
- C. Temporary Electric Power Service: Electricity may be taken from the University's system if available. If this is done, provide all equipment, including connections, and other materials necessary for extending the utility lines to where they will be used. Coordinate the installation with the University Representative. Contractor shall install a meter of type satisfactory to University and reimburse the University for any power used. Where sub-metering is not possible or practical, a flat fee may be established and paid to the University.
  - 1. When not available from the University, the Contractor must arrange and pay for electric service through the local utility or furnish his own portable power.
  - 2. All permanent power used by the Contractor prior to Occupancy by the University shall be metered and paid for by the Contractor.
  - 3. Install electrical power service underground, except where overhead service must be used.
  - 4. Provide weatherproof, grounded electric power service and distribution system of sufficient size, capacity, and power characteristics throughout construction period. As required, the system shall include, but not be limited to, the following: meters, transformers, overload protection disconnects, automatic ground fault interrupters, main distribution switchgear, distribution panels, etc.
  - 5. Install and operate temporary lighting as required for proper security and protection. Provide temporary lighting that will provide adequate illumination for construction operations and traffic conditions.
- D. Temporary Telephones: Contractor shall have telephone facility available at its business office for the duration of contract where the Contractor and its superintendent may be contacted. A pay phone for use of subcontractors is recommended.
- E. Temporary Fire Protection: Until fire protection needs are supplied by permanent facilities, install and maintain temporary fire protection facilities of the types needed to protect against reasonably predictable and controllable fire losses. Comply with NFPA 10 "Standard for Portable Fire Extinguishers," and NFPA 241 "Standard for Safeguarding Construction, Alterations and Demolition Operations".
  - 1. Locate fire extinguishers where convenient and effective for their intended purpose, but not less than one extinguisher on each floor at or near each usable stairwell.
  - 2. Store combustible materials in containers in fire-safe locations.
  - 3. Maintain unobstructed access to fire extinguishers, fire hydrants, temporary fire protection facilities, stairways and other access routes for fighting fires. Prohibit smoking in hazardous fire exposure areas.
  - 4. Provide supervision of welding operations, combustion type temporary heating units, and similar sources of fire ignition.
- F. Work outside defined construction site: Comply with Section 01 55 00, Vehicular and Pedestrian Controls for requirements for all work that impacts areas outside of the Construction site perimeter as

defined in the contract documents. This includes ingress and egress to the site by construction personnel and vehicles.

- G. Environmental Protection: Provide protection, operate temporary facilities and conduct construction in ways and by methods that comply with environmental regulations, and minimize the possibility that air, waterways and subsoil might be contaminated or polluted, or that other undesirable effects might result. Avoid use of tools and equipment that produce harmful noise. Restrict use of noise making tools and equipment to hours that will minimize complaints from persons or firms near the site.
- H. Supervision: Enforce strict discipline in use of temporary facilities. Limit availability of temporary facilities to essential and intended uses to minimize waste and abuse.
- I. Maintenance: Maintain facilities in good operating condition until removal. Protect from damage by freezing temperatures and similar elements.
- J. Termination and Removal: Unless the University require that it be maintained longer, remove each temporary facility when the need has ended, or when replaced by authorized use of a permanent facility, or no later than Completion. Complete or, if necessary, restore permanent construction that may have been delayed because of interference with the temporary facility. Repair damaged Work, clean exposed surfaces and replace construction that cannot be satisfactorily repaired. At Completion, clean and renovate permanent facilities that have been used during the construction period.

### **3.3 SANITARY FACILITIES**

- A. Sanitary facilities include temporary toilets, wash facilities and drinking water fixtures. Comply with regulations and health codes for type, number, location, operation and maintenance of fixtures and facilities. Install where facilities will best serve projects needs.
  - 1. Provide toilet tissue, paper towels, paper cups and similar disposable materials for each facility. Provide covered waste containers for used materials.
  - 2. Contractor shall not use existing campus sanitary facilities at any time.

### **3.4 SUPPORT FACILITIES**

- A. Collection and Disposal of Waste: Collect waste from construction areas and elsewhere daily. Comply with requirements of NFPA 241 for removal of combustible waste material and debris. Enforce requirements strictly. Do not store materials more than seven days during normal weather or 3 days when temperature is expected to rise above 80 degrees F. Handle hazardous, dangerous or unsanitary waste by containerizing properly. Dispose of material lawfully.
  - 1. Furnish equipment necessary for refuse removal. Do not use University disposal bins or trash carts at any time.
- B. Retain local exterminator or pest Control Company to recommend practices to minimize attraction and harboring of rodents, roaches, and other pests. Employ service to perform extermination and control procedures at regular intervals so Project will be free of pests and their residues at Substantial Completion. Perform control operations lawfully, using environmentally safe materials.

### **3.5 SECURITY**

- A. Prior to commencement of the work, initiate a security program and install enclosure fence with lockable entrance gates. Location shall be sufficient to encompass the entire area of construction operation.
  - 1. Install and maintain substantial temporary enclosure of partially completed areas of construction. Provide locking entrances to prevent unauthorized entrance, vandalism, theft and similar violations of security.
  - 2. University will not be liable for damage or loss to the Work due to trespass or theft. In addition, the University or University shall not be liable for loss or damage to Contractor's materials, tools, or equipment. The contractor is solely responsible for the security the contractor's work area.
- B. Security Enclosure and Lockup: Install substantial temporary enclosure of partially completed areas of construction. Provide locking entrances to prevent unauthorized entrance, vandalism, theft and similar violations of security.
  - 1. Storage: Where materials and equipment must be stored, and are of value or attractive for theft, provide a secure lockup. Enforce discipline in connection with the installation and release of material to minimize the opportunity for theft and vandalism.

### **3.6 REMOVAL OF CONSTRUCTION FACILITIES**

- A. Removal of Construction Facilities: Unless otherwise mutually agreed by University's Representative and Contractor, remove temporary materials, equipment, services, and construction prior to Contract Completion review.
  - 1. Coordinate removal with requirements specified in Section 01 51 00 - Temporary Utilities, Section 01 55 00 - Vehicular and Pedestrian Controls and Section 01 57 00 - Temporary Controls.
  - 2. Completely remove in-ground construction facilities to minimum depth of two feet. Backfill, compact and regrade site as necessary to restore areas or to prepare for indicated paving and landscaping.
- B. Cleaning and Repairs: Clean and repair damage caused by installation or use of temporary construction facilities on public and private rights-of-way.

**END OF SECTION**

## SECTION 01 55 00

### VEHICLE AND PEDESTRIAN CONTROLS

#### PART 1 - GENERAL

##### 1.1 RELATED DOCUMENTS

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

##### 1.2 SECTION INCLUDES

- A. Section specifies requirements for construction activities impacting the Campus Community outside the designated construction site, as well as requirements for Contractor ingress to and egress from the project site. Section includes, but is not limited to the following:
  - 1. Construction activities within or adjacent to pedestrian walkways and thoroughfares.
  - 2. Construction within landscape and hardscape areas outside the designated Project site area.
  - 3. Procedures for work within city streets and campus roads.
  - 4. Haul routes and temporary traffic Control.
  - 5. Contractor parking.

##### 1.3 WORK WITHIN AREAS OF PEDESTRIAN ACCESS

- A. General: These requirements apply to all work required on the Campus outside the designated Project Site. Requirements also apply to activities occurring on the Project Site, which impact adjacent areas of the Campus.
- B. Fencing of Work Areas
  - 1. All work areas within the campus and public spaces shall be fenced with **minimum 8 feet chain link portable fence sections**, with 1-1/2" top, bottom and side rails. All fencing shall be covered with blue fabric shade cloth material, secured to top, bottom and side rails with integral metal eyelets. Shade cloth shall not be left unsecured. Fencing materials shall be maintained in good, damage free condition at all times.
    - a. Fencing shall extend around and enclose entire work area, as well as stored materials and equipment.
    - b. Fencing shall be secured in a closed condition when not required to be open to allow completion of the work. Fencing shall be secured each day at the close of work.
    - c. The use of alternate materials such as barricades, delineators and caution tape to enclose or delineate work areas will not be accepted.
    - d. 3 sand bags shall be placed on every stand. Contractor shall replace sand bags whenever a sand bag ruptures.
    - e. Contractor can tie-back fencing to fixed stakes as required in lieu of sand bags. Tie backs shall not be trip hazards.
    - f. Plastic water filled K-rail can be used in lieu of fencing when approved in advance by the University.

C. Sidewalk Closures and Restrictions

1. Use Cal-Trans Standard reflectorized signage where required to indicate closure of sidewalks, temporary revisions to crosswalks and other impacts to normal pedestrian walk routes.
2. Where sidewalks are partially restricted due to construction activities, a minimum width of 48" shall be maintained.
3. Bases for temporary fencing shall not extend into the required walk area.
4. Where portions of a sidewalk are temporarily closed, temporary fencing shall be placed at the nearest intersection to prevent the site impaired from traveling in a direction that will require them to eventually stop and return to said intersection. Pedestrian detour signs and "sidewalk closed" signs shall also be provided at the point of closure.

D. Access for construction equipment and material deliveries

1. All haul routes and delivery routes shall conform to the routes designated in Contractor's approved Work Plans. Refer to Section 01 14 00 for requirements.
2. Times for delivery of materials and hauling shall comply with the requirements of the Contract Documents and approved Contractor Work Plans.
3. No staging or parking of vehicles or construction equipment will be allowed outside the Project Site, except within the work areas designated in the approved Contractor Work Plans.
4. Flagman Requirements
  - a. All major vehicles and equipment using approved haul routes that travel over intercampus pedestrian thoroughfares shall be escorted by at least one flagman until the vehicle or equipment is within the confines of the project site. Contractor is advised that the Campus Community includes a large volume of students and staff with disabilities, including but not limited to wheel chair users, persons with hearing impairments, and persons with sight impairments; for this reason, escorting of equipment and vehicle traffic will be strictly enforced.
    - 1) Flagman shall be trained and shall direct pedestrians and traffic in accordance with the requirements set forth in Article 1.4 below.
  - b. Entry exit gates to the project site shall be left in a closed position at all times, unless a flagman is stationed at the gate to control unauthorized entry into the project site.
5. Maintenance of Thoroughfares
  - a. Pedestrian thoroughfares and crossings shall be maintained in a safe, clean condition, free of dirt, gravel and other debris resulting from construction operations at all times.
  - b. Where work occurs on or adjacent to pedestrian thoroughfares, Contractor shall employ adequate measures (such as sandbagging, earthen barriers, etc.) to ensure that walks are protected from overflow of construction materials or runoff into the pedestrian area.
  - c. Where work occurs on or adjacent to pedestrian thoroughfares, Contractor shall employ adequate measures to ensure that walks are protected from overhead hazards, such as falling debris. Provide covered walkway structures and other measures as required to comply with O.S.H.A. standards.
  - d. Contractor shall confirm local Fire Dept. requirements for access to the construction site and other Campus facilities impacted by the Work throughout the course of construction. Where Fire Dept. access must be maintained at specific areas, Contractor shall tailor the Work Plan and provide necessary temporary measures to accommodate requirement.
6. Trenching Operations
  - a. Where trenching occurs through, across or adjacent to pedestrian thoroughfares, the work shall comply with the approved Work Plan for the area in question.
  - b. Temporary pedestrian crossings required due to trenching operations:
    - 1) Steel plating shall be placed across trenches and trench bracing shall be installed in accordance with W.A.T.C.H. standards as referenced in section 1.04 below.
    - 2) Minimum 6 feet high chain link fencing sections (per paragraph 1.2-B above) shall be installed inside the edge of the plating on each side to clearly delineate the path of travel and prevent pedestrians from stepping into trench area.



- 3) All steel plating shall have beveled edges and shall comply with A.D.A. requirements for path of travel. Edges of plates at each approach shall be painted with a 1" safety yellow contrasting band. Plating shall be anchored in accordance with W.A.T.C.H. standards and carry appropriate traffic ratings where it is required to carry emergency response vehicle traffic.
- 4) The use of barricades, delineators and or caution tape in lieu of the required temporary fencing sections is unacceptable.

## 1.4 WORK WITHIN ROADWAYS AND PARKING AREAS

### A. General Requirements

1. All construction activities which occur within campus roadways and parking areas shall comply with the 2012 version of the City of Los Angeles Work Area Traffic Control Handbook (W.A.T.C.H.) for traffic control, signage and barricading, as supplemented by these specifications. Where conflicts exist between specific requirements, the more stringent requirement shall apply. W.A.T.C.H. standards are available from Building News Inc., 3055 Overland Ave., Los Angeles, Ca., 90034 - Phone: 310/202-7775.
2. Flagman requirements and operations shall comply with W.A.T.C.H. standards and the State of California, Dept. of Transportation "Instructions to Flaggers" - 2012 Edition.
3. Signage: All temporary traffic control signage shall comply with California Vehicle Code Section 21400 and California Dept. of Transportation (Cal-Trans) standards. All signage shall be reflectorized.
4. Where trenches, excavations or other work is required within streets, the Work shall be scheduled so as to maintain a minimum of one open traffic lane at all times. A minimum of two lanes as required allowing safe 2-way traffic shall be restored prior to completion of Contractor's operations each day.
5. All work within University roadways and parking areas requires approval of Contractor's Work Plan prior to commencement. Refer to Section 01 14 00 for Work Restrictions.

### B. Fencing, Barricades and Traffic Plating

1. All work areas shall be fenced in compliance with paragraph 1.3-B above. Modifications to this requirement due to specific access requirements for completion of the work shall be requested by Contractor in the Work Plan Submittal for a designated area.
2. Type I Barricades as referenced in the W.A.T.C.H. standards are not acceptable for use on the Project. Contractor shall use type II or type III barricades where required.
3. Where temporary traffic controls must remain in place overnight or at other times when Contractor is not continuously present in the work area, cones, plastic delineators and other lightweight traffic control devices subject to displacement shall not be used for traffic control.
4. Where temporary fencing and/or barricades remain in place overnight, Type II barricades with flashing amber lights shall be used to delineate the protruding corners of the of the work area enclosure at the approach from each direction.
5. Where trenches or excavations of a depth of 3'-0" or deeper and a width of 2'-0" or greater are directly adjacent to a drive lane, the trench shall be plated in accordance with W.A.T.C.H. standards, or concrete barricades (k-rail) shall be installed to protect vehicle traffic from entering the excavation during times when the work area is not manned by Contractor.
6. Where trenches or excavations of a depth of 4'-0" or greater are directly adjacent to a drive lane or pedestrian walk, the protective fencing shall be a minimum horizontal distance of 4'-0" from the edge of the excavation.
7. All traffic plates shall be beveled in the direction of vehicle traffic and secured in place. Where work occurs at pedestrian crossings, comply with Article 1.3 above.

8. Comply with W.A.T.C.H. standards for sizing of traffic plates and shoring of trenches up to 4' in width. For trenches exceeding 4' in width, Contractor shall engage a Civil Engineer registered in the State of California to design plating and shoring system.

C. Flagman Requirements

1. Whenever existing traffic lanes are altered, contractor shall provide properly equipped and trained flagmen to direct traffic. Comply with W.A.T.C.H. standards and Cal-Trans "Instructions to Flaggers".
2. Whenever a section of two-way traffic is temporarily reduced to one lane, a minimum of two flagmen shall be provided to ensure proper traffic control in each direction. 2-way radio devices shall be used for communication between the flagmen where both direct line of site and audible communication cannot be maintained.
3. Flagmen shall be dedicated solely to traffic and pedestrian control and shall not perform additional duties while assigned as flagmen.

D. Signage

1. Traffic control signage shall be provided as required for safe and proper direction of vehicles and in accordance with the requirements listed in paragraph 1.4-A-3 above.
2. All signage shall be reflectorized.
3. Temporary traffic control signs shall be California Dept. of Transportation standard type as listed in the following schedule.

Sign Type	Designation	Size
Stop	R1R	30 x 30
Speed limit	R2R	24 x 30
Keep right/left	R7R	18 x 24
Do not enter	R11R	24 x 24
No right turn	R16R	24 x 24
No left turn	R17R	24 x 24
No parking	R26DR	12 x 12
No parking/fire lane	R26RFL	12 x 18
No parking anytime	R28R	12 x 18
Yield	R39R	30" triangle
Disabled parking	R99R	12 x 18
Exit only	R108R	18 x 24
Enter only	R109R	18 x 24
No pedestrians	R96R	18 x 18
Use crosswalk	R96BR	18 x 12
Two-way traffic ahead	R40R	24 x 30
Merge	WLR (L) or (R)	24 x 24

E. Haul Routes

1. Haul Routes for Construction activities and delivery of materials shall strictly adhere to routes designated in the contract documents. All vehicles and equipment are required to use designated routes only. Deviations from designated haul routes shall only be permitted where previously authorized in Contractor's approved Work Plans.
2. Continuous or major hauling on campus roads shall be restricted to the hours of 7:00 am through 6:00 p.m. unless otherwise authorized by the University Representative.
3. Contractor shall comply with hauling and truck traffic requirements on all City roads and shall obtain all required permits and authorizations. Weight loads carried by vehicles shall be within capacity recommended by manufacturer and shall comply with applicable laws and regulations relating to allowable capacities for specific roads.

4. Roads shall be maintained in a clean condition at all times. Sweeping of roads shall occur at minimum on a daily basis, or more often as required by continual hauling operations or construction traffic.
5. All loads shall be covered with secured tarpaulins when gravel, asphalt, debris, or other loose materials are removed from or hauled into the Campus.
6. Truck staging shall not occur on any campus road, or City road within the Campus, unless prior authorization is received through approval of the Contractor's Work Plan.
7. Provide protection against damage to existing sidewalks, curbs and gutters and other improvements at locations where construction vehicles enter. Contractor shall be responsible for repair of all damage resulting from its operations. Damage to concrete shall be repaired by replacement of full sections to the nearest existing construction joint in each direction.

F. Emergency Response Access

1. Contractor shall maintain adequate provisions for passage of emergency response vehicles (ambulances, fire trucks etc.) over campus roads and inner-campus thoroughfares at all times.
2. At all times that work is occurring which requires trenching, excavations, or other blockages of any fire lane or emergency access location, Contractor shall have traffic plating and other materials and equipment on hand as required to permit immediate passage of response vehicles in the case of an emergency. At no time shall said blockages be left unmanned.

**1.5 PARKING CONTROL**

- A. Contractor, subcontractors and suppliers shall park within the Construction site and other authorized areas as identified in the Contract Documents.
- B. Any parking in University lots or stalls outside the authorized areas identified in the Contract Documents requires payment of the current University parking fees as evidenced by display of a valid CPH parking permit. Permits may be obtained by purchasing them through the University Dept. of Public Safety.
- C. Contractor, subcontractors and suppliers shall at no time park any vehicle on the inner-campus, outside the confines of the construction site as designated in the Contract Documents. Vehicles in non-compliance will be cited and towed.

**PART 2 - PRODUCTS (Not Used)**

**PART 3 - EXECUTION**

**3.1 MAINTENANCE OF PARKING AND ACCESS ROADS**

- A. Maintenance: Contractor shall maintain traffic and parking areas in a sound condition. Contractor shall repair breaks, potholes, low areas, standing water and other deficiencies, to maintain paving and drainage in original or specified condition.
- B. Cleaning of Sidewalks, Roadways, and Parking Areas: Contractor shall keep public and private rights-of-way and parking areas clear of construction-caused soiling, dust and debris, especially debris hazardous to vehicle tires.
  1. Contractor shall inspect and perform cleaning hourly to ensure entire public commons areas, sidewalks, crosswalks, roadways, haul routes, and parking lots are free of all debris. Contractor shall provide dedicated laborers and equipment as required to ensure areas are kept neat and clean during each day of the contract.

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1485-0001

2. Contractor shall coordinate with requirements specified in Section 01 57 00 - Temporary Controls and Section 01 74 00 - Cleaning Requirements.

**END OF SECTION**

## **SECTION 01 55 29**

### **CONSTRUCTION STAGING AREAS**

#### **PART 1 - GENERAL**

##### **1.1 RELATED DOCUMENTS**

- A. Construction Drawings, Technical Specifications, Addenda, and general provisions of the Contract, including Contract General Conditions and Supplementary General Conditions and other Division 1 Specification Sections, apply to this Section.

##### **1.2 SECTION INCLUDES**

- A. Contractor Staging Area requirements.

##### **1.3 RELATED SECTIONS**

- A. Section 01 11 00 - Summary of the Work: Contractor's use of site and premises.
- B. Section 01 52 00 - Construction Facilities: Field offices and sheds.
- C. Section 01 35 53 - Security
- D. Section 01 55 00 - Vehicular & Pedestrian Controls
- E. Section 01 57 00 - Temporary Controls
- G. Section 01 74 00 - Cleaning Requirements: Periodic cleaning and cleaning for Final Completion review.

##### **1.4 SUBMITTALS**

- A. Shop Drawings: Prior to site mobilization, Contractor shall prepare and submit for review by University's Representative a site plan indicating detailed layout of Contractor Staging Area, including:
  - 1. Temporary utilities
  - 2. Temporary fencing and gates
  - 3. Temporary offices and sheds
  - 4. Construction aids
  - 5. Vehicular access ways and on-site parking
  - 6. Temporary barriers and enclosures
  - 7. Storm water pollution prevention measures

#### **PART 2 - PRODUCTS**

Not applicable to this Section.

#### **PART 3 - EXECUTION**

### **3.1 CONTRACTOR STAGING AREA REQUIREMENTS**

- A. Contractor Staging Areas: Refer to reference drawings included in the set of Contract Drawings for location of Contractor Staging Areas.
  - 1. Contractor shall use only site areas designated specifically by University as Contractor Staging Area for the Project.
  - 2. Contractor Staging Area for the Project shall be clearly indicated on site plan. Contractor shall remove equipment placed or located outside of areas designated for Contractor Staging Area to within Contractor Staging Area at no change in Contract Time and Contract Sum.
  - 3. Contractor shall keep access to Contractor Staging Areas and other construction access ways and thoroughfares clear at all times. Contractor shall provide traffic and parking control signage acceptable to University's Representative.
- B. Cleanliness: Contractor shall keep Staging Area clear of trash and debris and in neat order. Contractor shall be responsible for cleanliness and order of assigned Staging Areas, as acceptable to University's Representative.

### **3.2 REMOVAL OF CONSTRUCTION FACILITIES AND TEMPORARY CONTROLS**

- A. Removal of Construction Facilities and Temporary Controls: Unless otherwise mutually agreed by University's Representative and Contractor, Contractor shall remove temporary materials, equipment, services, and construction prior to Contract Completion review. Contractor shall coordinate removal with requirements specified in Section 01 51 00 - Temporary Utilities, Section 01 52 00 - Construction Facilities, Section 01 55 00 - Vehicular & Pedestrian Controls and Section 01 57 00 - Temporary Controls.
- B. Cleaning and Repairs: Contractor shall clean and repair damage caused by installation or use of temporary facilities on public and private rights-of-way.
- C. Removal of Temporary Utilities and Restoration: Contractor shall remove temporary underground utility installations to a depth of two feet. Backfill, compact and regrade site as necessary to restore areas or to prepare for indicated paving and landscaping.

**END OF SECTION**

## **SECTION 01 56 39**

### **TEMPORARY TREE AND PLANT PROTECTION**

#### **PART 1 - GENERAL**

##### **1.1 RELATED DOCUMENTS**

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

##### **1.2 SECTION INCLUDES**

- A. Requirements to preserve, protect, and prune as necessary existing trees and shrubs, and other vegetation indicated to remain.
- B. All trees and plant materials to remain on site shall be protected from all trades working on the job, and it shall be the Contractor's responsibility to insure that all subcontractors are aware of and held responsible for any damage to existing trees and plant material. In addition, Contractor shall be held responsible to insure that following protective measures are carried out throughout the entire construction period.
- C. Maintenance: Throughout the life of the construction project, the Contractor shall be responsible for overseeing the watering, fertilizing, pruning, and other measures necessary to protect all existing trees, lawns, shrubs, groundcover and other plants.

##### **1.3 RELATED REQUIREMENTS**

- A. Section 01 57 00 – Temporary Controls
- B. Section 01 57 23 – Storm Water Prevention Pollution.
- C. Division 32 – Exterior Improvements: Landscaping specifications related to trees, shrubs and ground covers, as applicable.

##### **1.4 QUALITY ASSURANCE**

- A. Arborist: Contractor shall engage and pay a Certified Arborist who will be responsible for supervising implementation of tree and plant protection measures specified in this Section.
  - 1. Arborist shall be subject to acceptance by University's Representative.
  - 2. Arborist registered by the American Society of Consulting Arborists.
  - 3. Submit evidence contract with acceptable Certified Arborist prior to commencing site mobilization activities.

## **PART 2 - PRODUCTS**

### **2.1 BARRIERS**

- A. Barriers: As specified in Section 01 57 10 – Existing Finish Protection.

### **2.2 FERTILIZER**

- A. Fertilizer: Unless otherwise directed by University's Representative, type and quantity of fertilizer shall be determined by soil agronomist engaged and paid by Contractor, who is acceptable to University's Representative.
  - 1. As basis for bidding, fertilizer shall be Romeo "Greenbelt" 22-14-14 tree fertilizer or approved equal at 4 lb. fertilizer dissolved in 100 gallons water.
- B. Accessory Materials: As determined by Contractor as necessary for sustained health of trees and plants, subject to acceptance by University's Representative. Accessory materials shall include mulch, tree and plant stakes and temporary covers.

## **PART 3 - EXECUTION**

### **3.1 PROTECTION**

- A. Protection: Prior to construction activities, especially demolition and excavation, on the site, Contractor shall submit to University's Representative evidence of a contract with a Certified Arborist who shall be responsible for supervising implementation of the following tree protection measures.
  - 1. Protect all existing trees, shrubs and ground covers from stockpiling, material storage including soil, vehicle parking and driving within the tree drip line. Restrict foot traffic to prevent excessive compacting of soil over root systems.
  - 2. Protect root systems of existing trees, shrubs, and ground covers from damage due to chemically injurious materials in solution caused by runoff and spillage during mixing, placement of construction materials, and drainage from stored materials.
  - 3. Protect root system from flooding, erosion, excessive wetting and drying resulting from de-watering and other operations.
  - 4. Above-ground surface runoff shall not be directed into the tree canopy area from adjacent areas. Ensure that sidewalks or other construction do not trap water near the tree. Coordinate with requirements specified in Section 01 57 00 - Temporary Controls.
  - 5. Protect existing plant materials from unnecessary cutting, breaking and skinning of roots and branches, skinning and bruising of bark.
  - 6. Use no soil sterilants under pavement near existing trees.
  - 7. Do not allow fires under and adjacent to existing trees or plants.
- B. Maintenance: Throughout duration of the Contract, Contractor shall be responsible for irrigation, fertilizing, pruning, and other measures necessary to protect and nurture all existing trees, plants, ground covers and lawns indicated to remain in Project.



### **3.2 PRUNING**

- A. Engage the Consulting Arborist registered by the American Society of Consulting Arborists, or approved equal. Arborist shall direct removal of branches from trees and large shrubs, and correctional pruning and cabling of specified trees that are to remain, if required to clear new construction and where indicated. Arborist shall also direct necessary tree root pruning and relocation work.
- B. Where indicated by University Representative, extend pruning operation to restore natural shape of entire tree using only Western Chapter ISA Pruning Standards.
- C. Cut branches and roots with sharp pruning instruments. Do not break, chop, or mutilate.
- D. Pruning of existing trees shall concern itself with removing all dead wood 1/2" or greater in size, removing vines and/or sucker growth. Tree cavities existing on all oak trees are to be cleaned of wood rot. The procedure for each tree may vary and will need to be approved by the Consulting Arborist prior to commencing work.
- E. Tree limbs in the way of proposed buildings shall only be trimmed by reputable ISA Certified Arborist or ISA Certified Climber and shall approved by Owner's Representative.

### **3.3 IRRIGATION**

- A. Irrigate trees and other vegetation that are to remain as necessary to maintain their health before, during and after the course of the work as directed by the Consulting Arborist. Maintain an irrigation schedule and document. Submit schedule to Owner's Representative for review and acceptance.
- B. If the soil within the drip line of the tree is compacted, then prior to watering or fertilizing trees, the area within the drip line of the tree shall be rototilled to loosely break up the top two (2) inches of existing soil.
- C. All trees shall be deep root watered by the use of an injection needle to a depth of eighteen (18) inches. Needle shall be inserted into the ground five (5) feet apart in concentric rings around the tree; each ring is four (4) feet wider than the previous one. This process shall continue out to the drip line of the tree.
- D. Trees greater than twelve (12) inches in caliper shall be watered during the first month of construction using 800 gallons of water per tree [actual amount TBD]. For trees less than twelve (12) inches in caliper, 600 gallons of water shall be used per tree [actual amount TBD]. This procedure shall be repeated every six (6) months, in addition to the normal watering schedule.

### **3.4 FERTILIZING**

- A. All trees shall be fertilized before, during, and after construction by pumping under pressure directly 18-inches into root zone as directed by Certified Arborist.

### **3.5 EXCAVATION AROUND TREES**

- A. Excavate within drip lines of trees only where indicated.

- B. Where trenching for utilities is required within drip lines, tunnel under and around roots of 2 1/2" diameter or larger by hand digging. Do not cut main lateral roots that are 2" or larger. Cut smaller roots that are smaller than 2" which interfere with installation of new work. Use sharp approved pruning tools. Pipes should be routed into an alternate location to avoid conflict, wherever possible.
- C. Where excavating for new construction is required within drip lines of trees, hand excavate to minimize damage to root systems. Use narrow tine spading forks and comb soil to expose roots. Relocate roots in backfill areas wherever possible. If large, main lateral roots are encountered, expose beyond excavation limits as required to bend and relocate without breaking.
- D. If encountered immediately adjacent to location of new construction and relocation is not practical, cut roots approximately six (6) inches back from new construction. Cover cut ends with plastic sandwich bag.
- E. Do not allow exposed roots to dry out before permanent backfill is placed. Provide temporary earth cover, pack with wet peat moss or four (4) layers of wet untreated burlap and temporarily support, and protect from damage until permanently relocated and covered with backfill. Water to eliminate voids and air pockets.
- F. Thin branching structure in accordance with Western Chapter, ISA Pruning Standards to balance loss to root system caused by damage or cutting of root system. Thinning shall not exceed 30% of existing branching structure.

### **3.6 GRADING AND FILLING AROUND TREES**

- A. Maintain existing grade within drip line of trees unless otherwise indicated. Any grade change shall be limited to six (6) inches of cut or fill from the original grade and shall be accomplished by hand. Under all [*Campus to insert types of trees*] trees there shall be no grade change under at least the inner 50% of the tree canopy.
- B. Lowering Grades: where existing grade is above new finish grade shown around trees, carefully hand excavate within drip line to new grade. Cut roots exposed by excavation to approximately three (3) inches below elevation of new finish grade.
- C. Raising Grades: permitted only as acceptable to University Representative.
- D. If building pads or foundations are to be constructed within the fenced areas or if the existing landscape is to be altered by the addition of fill or reduced by excavation, the University Representative shall be notified prior to this work. Measures as approved by the University Representative, such as small retaining walls or subgrade aeration lines, may be required to mitigate construction procedures affecting the tree.

### **3.7 REPAIR AND REMOVAL OF TREES**

- A. Repair and Removal of Trees: Certified Arborist and University's Representative will determine whether trees shall be restored or removed. Treat and restore trees damaged by construction operations in a manner acceptable to University's Representative. Perform restoration and pruning promptly after damage occurs to prevent progressive deterioration of damaged trees. If trees cannot be restored, equitable adjustment to Contract Sum shall be made to compensate University for loss, in accordance with the Contract General Conditions.

1. Remove dead and damaged trees that are determined by Certified Arborist to be incapable of restoration to normal growth pattern.
2. Contractor shall be liable for all damage and necessary restoration actions to existing trees, including trunk, branches, or roots. Restoration shall be performed under direction of Certified Arborist.

### **3.8 REPAIR AND REPLACEMENT OF SHRUBS AND GROUND COVER**

- A. Repair shrubs and other vegetation damaged by construction operations in a manner acceptable to University Representative. Make repairs promptly after damage occurs to prevent progressive deterioration of damaged plant.
- B. Remove and replace all dead and damaged plants that are determined by the University Representative to be incapable of restoration to normal growth pattern.
  1. Provide new shrubs of same size and species as those replaced or as acceptable to the University Representative.
  2. Plant and maintain as specified under Division 32.
- C. Repairs and Replacements of Shrubs and Ground Cover: Repair shrubs and other vegetation damaged by construction operation in manner acceptable to University's Representative.
  1. Make repairs promptly after damage occurs to prevent progressive deterioration of damaged plant. Remove and replace all dead and damaged plants up to six-inch diameter, which are determined by University's Representative as being incapable of restoration to normal growth pattern.
  2. Provide new shrubs of same size and species as those replaced or as acceptable to the University's Representative.

### **3.9 COMPENSATION TO UNIVERSITY FOR LOST AND DAMAGED TREES**

- A. The Contractor shall be liable for the loss in value to damaged trees and for all repair or replacement costs resulting from construction operations as determined by the University Representative. Because of the irreplaceable nature of many of the existing trees, the amount of assessment shall be determined by the University Representative, depending upon tree species, condition before damage, and location value.
- B. Designated sums shall be governed by applicable provisions of the Contract General Conditions

**END OF SECTION**

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## **SECTION 01 57 00**

### **TEMPORARY CONTROLS**

#### **PART 1 - GENERAL**

##### **1.1 RELATED DOCUMENTS**

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

##### **1.2 SECTION INCLUDES**

- A. The requirements for the following subjects are included in this Section:
  - 1. Environmental Protection Plan
  - 2. Smoke/Odor Control
  - 3. Noise Control
  - 4. Dust and Air Pollution Control
  - 5. Welding and Burning
  - 6. Erosion and Sediment Control
  - 7. Disposal Operations
  - 8. Cultural Resources

##### **1.3 PROTECTION OF EXISTING CONDITIONS**

- A. Protection of Adjacent Facilities: Contractor shall restrict Work to limits indicated on the Drawings and as specified in Section 01 11 00 - Summary of the Work. Protect existing, adjacent facilities from damage, including soiling and debris accumulation.
- B. Video and Photo Record of Existing Conditions: Contractor shall produce video record and photo records of all existing conditions within and adjacent to Project area.
  - 1. Video record shall be made with sound to record comments to identify locations and describe conditions. Photo records shall be made available on a USB drive
  - 2. University's Representative will accompany Contractor during recording of existing conditions but will not direct recording process.
  - 3. Video and photo record shall capture the state of existing features, including but not limited to:
    - a. Paving
    - b. Landscaping
    - c. Building surfaces
    - d. Utilities
    - e. Lighting standards, fencing, signage and other site appurtenances
  - 4. Contractor shall retain one copy and deliver one copy of video and photo record to University's Representative within seven calendar days after they have been produced.
  - 5. Video and photo record shall be used to verify restoration of existing conditions after completion of construction activities.

6. Existing features not recorded shall be restored as directed by University's Representative, including reconstruction and refinishing as determined necessary by University's Representative.
- C. Existing Utilities - Should the Contractor break any utility the contractor should immediately act to repair the utility. Contractor shall continuously work to repair broken utilities to minimize impact to the University.
- D. Contractor shall maintain spare parts and materials to repair all utilities, water lines, sewer lines, etc.

#### **1.4 ENVIRONMENTAL PROTECTION PLAN**

- A. The requirements of the Article are in addition to those of the Contract General Conditions.
- B. During the progress of the work, keep the premises occupied in a neat and clean condition and protect the environment both on site and off site, throughout and upon completion of the construction project.
- C. In coordination with the Campus, develop an Environmental Protection Plan in detail and submit to the University Representative within 30 calendar days from the date of commencement specified in the Notice to Proceed. Distribute the approved plan to all employees and to all subcontractors and their employees. The Environmental Protection Plan shall include, but not be limited to, the following items:
  1. Copies of required permits.
  2. Proposed sanitary landfill site.
  3. Other proposed disposal sites.
  4. Noise Control.
  5. Dust Control.
  6. Erosion and Sediment Control.
  7. Copies of any agreements with public or private landowners regarding equipment, materials storage, borrow sites, fill sites, or disposal sites. Any such agreement made by the Contractor shall be invalid if its execution causes violation of local or regional grading or land use regulations.
  8. Hazardous waste disposal procedures.
- D. Requirements: All operations shall comply with all federal, state and local regulations pertaining to water, air, solid waste and noise pollution.
- E. Definitions of Contaminants:
  1. Sediment: Soil and other debris that have been eroded and transported by runoff water.
  2. Solid waste: rubbish, debris, garbage and other discarded solid materials resulting from construction activities, including a variety of combustible and non-combustible wastes, such as ashes, waste materials that result from construction or maintenance and repair work, leaves and tree trimmings.
  3. Chemical Waste: Includes petroleum products, bituminous materials, salts, acids, alkalis, herbicides, pesticides, disinfectants, organic chemicals and inorganic wastes. Some of the above may be classified as "hazardous."
  4. Sanitary Wastes:
    - a. Sewage: domestic sanitary sewage.
    - b. Garbage: refuse and scraps resulting from preparation, cooking, dispensing and consumption of food.
  5. Hazardous Materials: Except as otherwise specified, in the event the Contractor encounters on the site material reasonable believed to be asbestos, polychlorinated biphenyl (PCB), or other hazardous materials which have not been rendered harmless, the Contractor shall immediately stop

Work in the area affected and report the condition to the University in writing. The Work in the affected area shall not thereafter be resumed except by written agreement of the University and Contractor if in fact the material is asbestos, PCB, or other hazardous materials and has not been rendered harmless. The Work in the affected area shall be resumed in the absence of asbestos, PCB, or other hazardous materials, or when such materials have been rendered harmless.

F. Protection of Natural Resources:

1. General: It is intended that the natural resources within the project boundaries and outside the limits of permanent work performed under this Contract be preserved in their existing condition or be restored to an equivalent or improved condition upon completion of the work. Confine construction activities to areas defined by the public roads, easements, and work area limits shown on the drawings. Except where otherwise noted, return construction areas to their pre-construction elevations. Maintain natural drainage patterns. Conduct construction activities such that ponding of stagnant water conducive to mosquito breeding habitat will not occur at anytime.
2. Land Resources: Do not remove, cut, deface, injure or destroy trees or shrubs outside the work area limits. Do not remove, deface, injure or destroy trees within the work area without permission from the Architect. Such improvements shall be removed and replaced, if required, by the Contractor at his own expense.
  - a. Protection: Protect trees that are located near the limits of the Contractor's work areas which may possibly be defaced, bruised or injured or otherwise damaged by the Contractor's operations. No ropes, cables or guys shall be fastened to or be attached to any existing nearby trees or shrubs for anchorages. No vehicles or equipment shall be parked within the extents of the canopy of any tree.
  - b. Trimming: Refer to Tree and Plant Protection Section 01 56 39.
  - c. Excavation Around Trees: Refer to Tree and Plant Protection 01 56 39.
  - d. Repair or Restoration: Repair or replace any trees or other landscape feature scarred or damaged by equipment or construction operations as specified below. The repair and/or restoration plan shall be reviewed and approved by the University and Architect prior to its initiation.
  - e. Temporary Construction: Remove all signs of temporary construction facilities such as haul roads, work areas, structures, foundations of temporary structures, stockpiles of excess or waste materials, or any other vestiges of construction as directed by the Architect. Level all temporary roads, parking areas and any other areas that have become compacted or shaped. Any unpaved areas where vehicles are operated shall receive a suitable surface treatment or shall be periodically wetted down to prevent construction operations from producing dust damage and nuisance to persons and property, at no additional cost to the University. Keep haul roads clear at all times of any object which creates an unsafe condition. Promptly remove any contaminants or construction materials dropped from construction vehicles. Do not drop mud and debris from construction equipment on public streets. Sweep clean turning areas and pavement entrances as necessary.
3. Water Resources: Investigate and comply with all applicable federal, state and local regulations concerning the discharge (directly or indirectly) of pollutants to the underground and natural waters. Perform all work under this Contract in such a manner that any adverse environmental impacts are reduced to a level that is acceptable to the Architect and regulatory agencies. Refer to Earthwork Section, paragraph on control of water for "dewatering" water disposal requirements.
  - a. Oily Substances: At all times, special measures shall be taken to prevent oily or other hazardous substances from entering the ground, drainage areas or local bodies of water in such quantities as to affect normal use, aesthetics or produce a measurable impact upon the areas. Any soil or water which is contaminated with oily substances due to the Contractor's operations shall be disposed of in accordance with applicable regulations.

## **1.5 SMOKE/ODOR CONTROL**

- A. Primary fresh air intakes to existing buildings must be protected from exhaust from internal combustion engines, paint and solvent fumes and other noxious fumes and vapors.
- B. The Contractor must implement control methods such as snorkels from engines exhausts to 50 feet away from air intakes.
- C. All other activities generating fumes must be limited to a distance of at least 50 feet from the air intake grille.
- D. If fume generating procedures must occur within 50 feet of an air intake the Contractor is responsible for the following:
  - 1. Notify the University Representative at least 14 days in advance.
  - 2. Complete the work when it least impacts the University (evenings, weekends, or particularly windy days).
  - 3. Provide carbon filter media, plastic barriers, or other control methods to assure fresh air only enters into the building ventilation system.

## **1.6 NOISE CONTROL**

- A. The requirements of the Article are in addition to those of Article 4.02 of the Contract General Conditions.
- B. Maximum noise levels within 1,000 feet of any classroom, laboratory, residence, business, adjacent buildings, or other populated area: noise levels for trenchers, pavers, graders and trucks shall not exceed 90 dBA at 50 feet as measured under the noisiest operating conditions. For all other equipment, noise levels shall not exceed 85 dBA at 50 feet.
- C. Equipment: Equip jackhammers with exhaust mufflers and steel muffling sleeves. Air compressors should be of a quiet type such as a "whisperized" compressor. Compressor hoods shall be closed while equipment is in operation. Use electrically powered rather than gasoline or diesel powered forklifts. Provide portable noise barriers around jack hammering, barriers constructed of ¾-inch plywood lined with 1-inch thick fiberglass on work side.
- D. Operations: keep noisy equipment as far as possible from noise-sensitive site boundaries. Machines should not be left idling. Use electric power in lieu of internal combustion engine power wherever possible. Maintain equipment properly to reduce noise from excessive vibration, faulty mufflers, or other sources. All engines shall have properly functioning mufflers.
- E. Scheduling: schedule noisy or potentially disruptive operations so as to minimize their duration at any given location, and to minimize disruption to the adjoining users. Notify the University Representative in advance of performing work creating unusual noise and schedule such work at times mutually agreeable. The University reserves the right to require performance of any noisy and/or potentially disruptive work during off-hours in order to accommodate the Universities operations.
- F. Do not play radios, tape recorders, televisions, and other similar items at construction site.

## **1.7 DUST AND AIR POLLUTION CONTROL**

- A. The requirements of this Article are in addition to those of the Contract General Conditions.



- B. Employ measures to avoid the creation of dust and air pollution.
  - 1. Unpaved areas shall be wetted down, to eliminate dust formation, a minimum of twice a day to reduce particulate matter. When wind velocity exceeds 15 mph, site shall be watered down more frequently.
  - 2. Store all volatile liquids, including fuels or solvents in closed containers.
  - 3. No open burning of debris, lumber or other scrap will be permitted.
  - 4. Properly maintain equipment to reduce gaseous pollutant emissions.
- C. Exposed areas, new driveways and sidewalks shall be seeded, treated with soil binders, or paved as soon as possible.
- D. Cover stockpiles of soil, sand and other loose materials.
- E. Cover trucks hauling soil, debris, sand or other loose materials.
- F. Sweep project area streets at least once daily, or more often as required to maintain streets in a clean condition.
- G. Appoint a dust control monitor to oversee and implement all measures listed in this Article.

#### **1.8 WELDING AND BURNING**

- A. Eliminate welding and burning of steel as much as possible. Where unavoidable, perform welding and burning with all possible precaution to avoid fire hazard. Provide a fire watch for minimum of 30 minutes after burning stops. Provide protection for all adjacent surfaces.

#### **1.9 EROSION AND SEDIMENT CONTROL**

- A. Discharge construction runoff into small drainage's at frequent intervals to avoid build-up of large potentially erosive flows.
- B. Prevent runoff from flowing over unprotected slopes.
- C. Keep disturbed areas to the minimum necessary for construction.
- D. Keep runoff away from disturbed areas during construction.
- E. Direct flows over vegetated areas prior to discharge into public storm drainage systems.
- F. Trap sediment before it leaves the site, using such techniques as check dams, sediment ponds, or siltation fences.
- G. Remove and dispose of all project construction-generated siltation that occurs in offsite retention ponds.
- H. Stabilize disturbed areas as quickly as possible.

#### **1.10 DISPOSAL OPERATIONS**

- A. Solid Waste Management: supply solid waste transfer containers. Daily remove all debris such as spent air filters, oil cartridges, cans, bottles, combustibles and litter. Take care to prevent trash and papers from

blowing onto adjacent property. Encourage personnel to use refuse containers. Convey contents to a sanitary landfill.

- B. Washing of concrete containers where wastewater may reach adjacent property, storm drains or natural watercourses will not be permitted. Remove any excess concrete to the sanitary landfill.
- C. Chemical Waste and Hazardous Materials Management: furnish containers for storage of spent chemicals used during construction operations. Dispose of chemicals and hazardous materials in accordance with applicable regulations.
- D. Garbage: store garbage in covered containers; pick up daily and dispose of in a sanitary landfill.
- E. Dispose of vegetation, weeds, rubble, and other materials removed by the clearing, stripping and grubbing operations off site at a suitable disposal site in accordance with applicable regulations.
- F. Excavated Materials:
  - 1. Native soil complying with the requirements of Earthwork Section, may be used for backfill, fill and embankments as allowed by that section.
  - 2. Spoil Material: remove all material that is excavated in excess of that required for backfill, and such excavated material that is unsuitable for backfill, from the site.
    - a. Excess suitable backfill material shall be hauled off site. No additional compensation will be paid to the Contractor for such off haul. Include all such costs in the lump sum prices bid for the project.
    - b. Unsuitable backfill material will be disposed of off site in accordance with applicable regulations, in a disposal site indicated in the Environmental Protection Plan. Remove rubbish and materials unsuitable for backfill immediately following excavation. Remove material in excess of that required for backfill immediately following backfill operations.
- G. Rubbish shall consist of all materials not classified as suitable materials or rubble and shall include shrubbery, trees, timber, trash and garbage.

## **1.11 CULTURAL RESOURCES**

- A. The requirements of this article are in addition to those of the Contract General Conditions.
- B. The project does not pass through any known archaeological sites. However, it is conceivable that unrecorded archaeological sites could be discovered during construction.
- C. In the event that artifacts, human remains, or other cultural resources are discovered during subsurface excavations at locations of the Work, the Contractor shall protect the discovered items, cease work for a distance of 35 feet radius in the area, notify the Architect and comply with applicable law.
- D. The University may retain an Archaeologist to monitor and recover data and artifacts during period when work has ceased.
- E. All items found which are considered to have archaeological significance are the property of the University.

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**PART 2 - PRODUCTS (Not Used)**

**PART 3 - EXECUTION (Not Used)**

**END OF SECTION**

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## **SECTION 01 57 10**

### **EXISTING FINISH PROTECTION**

#### **GENERAL**

##### **1.1 RELATED DOCUMENTS**

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

##### **1.2 SECTION INCLUDES**

- A. Section specifies the requirements for construction activities impacting the interior and exterior improvements within and adjacent to the construction site. The protection requirements herein are minimum requirements and is/are the contractors responsibility to ensure all aspects of work are protected regardless of the listing within this specification or not. Protection of work is an on-going process whereby the contractor shall adjust, add, change, and replace protection as needed throughout the project to ensure all aspects of work are protected to the greatest possible extent. Section includes but is not limited to the following:
  - 1. Protection of existing finishes within and adjacent to the work area(s).
  - 2. Protection of existing equipment within and adjacent to the work area(s).
  - 3. Protection of completed work.
  - 4. Protection of Building systems, i.e. mechanical, electrical, plumbing utilities and data systems.
  - 5. Protection of ingress and egress pathways.
  - 6. Protection of elevator and lifts.
  - 7. Erection and maintenance of temporary barriers and enclosures.

##### **1.3 CODES AND REGULATIONS**

- A. California Building Code (CBC): Comply with California Building Code (CBC) Chapter 33, Section 3303, Protection of Pedestrians During Construction or Demolition
- B. Fire Regulations: Comply with requirements of fire authorities having jurisdiction, including California Fire Code (CFC) Article 87 during performance of the Work.
- C. Safety Regulations: Comply with requirements of all applicable Federal, State and local safety rules and regulations. Contractor shall be solely responsible for jobsite safety.
- D. Barricades and Barriers: As required by governing authorities having jurisdiction, provide substantial barriers, guardrails and enclosures around Work areas and adjacent to embankments and excavations for protection of workers and the public.

#### 1.4 PRODUCTS

The following products, or approved equals, shall be used in all locations within new work and/or path of travel to, or within existing work, and/or as directed by the University.

- A. Plywood / wood Framing – For use for semi-permanent long term temporary closure and opening protection as directed by the University. Public facing side shall be painted white.
- B. Pro-Tect (www.pro-tect.com) – Floor protection for existing materials and/or newly installed materials.
- C. Pro-Tect EZ Prop System (www.pro-tect.com) – Temporary enclosure for dust control to enclosure interior work space within an existing space.
- D. Pro-Tect 1-2-3 Door Shield (www.pro-tect.com) – Door and jamb protection for use to protect new or existing doors and frames.
- E. Pro-Tect Dust Door with zipper (www.pro-tect.com)
- F. Pro-Tect Corner guards (www.pro-tect.com) – for use to protect existing or new finished wall corners.
- G. Pro-Tect Tacky Mats (www.pro-tect.com) – for use as walk off mats both inside and outside of new to existing work.

#### 1.5 INTERIOR AND EXTERIOR PROTECTION OF EXISTING IMPROVEMENTS

- A. Walking surface protection: Provide non-destructive compatible walking surface protection over all floor finishes remaining in-place during the period of construction
- B. Carpeting: Use Pro-Tect brand adhesive plastic sheeting roller over entire surface, PC60-500 (5' wide) or equal.
- C. Wood, Vinyl or Concrete Flooring: Use RAM BOARD or Pro-Tect Hardboard-WR brand floor over entire surface, HARDBOARD-WR or equal.
- D. Ingress and egress protection: Provide protection for the surfaces of doors, door frames and outside corners.
- E. Door surfaces: Use Pro-Tect brand Door Shield, PTDS.30,.40 or equal.
- F. Door Frames: Use Pro-Tect brand FPB Jamb Protector, FPB60 or equal.
- G. Corner Guards: Use Pro-Tect brand corner guards, PCCG-1 or equal.
- H. Walk-off Mats: Use Pro-Tect brand walk-off mats, PTM-2-3624 or equal.
- I. Stairs: Use Pro-Tect brand red rosin paper with painter's tape, PTRP or equal.
- J. Shoe Covers: Use Pro-Tect brand removable shoe covers when traveling inside the construction area to outside the construction area, PBDG or equal.
- K. Dust and Dirt reduction and elimination: Provide the entry and exit close off protection to eliminate the spread of construction dust and dirt.
- L. Construction Area Entrance: Use Pro-Tect brand Zipper, ZPU-7.25 or equal.

- M. Ceiling Protection: Use Pro-Tect brand Clip and Snap connectors to hold plastic sheeting, PTCSB-1 or PTCSR-1 or equal.
- N. Provide seal-off and/or HEPA filtering of HVAC system air delivery and exhaust systems. The type and location of protection shall be instituted with the consultation of the University facilities maintenance staff's direct input. This protection shall include lighting, HVAC ductwork, audio/visual, laboratory and any other equipment, materials or systems which may be vulnerable to dust and dirt.
- O. Ductwork Closures: Use Pro-Tect brand Duct Shield, PDS24, 36 or equal.
- P. Provide protective coverings over casework, countertops, tables, desk and etc. Countertop/Casework Protection: Use Pro-Tect brand Multi-use Red Film, PMR24, 36, 48 or equal.
- Q. Miscellaneous Protection: Provide protective devices and materials to protect fire sprinkler heads, fire alarm devices and the like. Contact the device manufacturer for the correct protective covers for their devices.
- R. Fire Alarm Devices: Use Simplex brand dustproof device covers. University provided Heat Detectors can replace existing smoke detectors only when approved by the State Fire Marshal.
- S. Elevators and accessibility lifts: Provide floor, wall and ceiling protective devices in all vertical circulation systems. Maintain clear access to the controls for these systems. Use protection cab wall blankets where hooks are available. Where cab wall hooks are not available use MDO plywood connected to bump/hand rails and supported from the cab floor. Rails used for connection shall be first individually protected with a cushioned cover wrap.
- T. Safe Exiting: All protective measures shall be designed, installed and maintained so they do not interfere with the safe exiting of the area's occupants in an emergency. If lighting systems have been disabled, the Contractor shall install temporary construction lighting sufficient to safely perform the work.

#### **1.6 MAINTENANCE OF CONSTRUCTION FACILITIES AND TEMPORARY CONTROLS**

- A. Maintenance: Use all means necessary to maintain temporary barriers and enclosures in proper and safe condition throughout progress of the Work.
- B. Replacement: In the event of loss or damage, promptly restore temporary barriers and enclosures by repair or replacement at no change in the Contract Sum or Contract Time.

#### **1.7 TEMPORARY BARRIERS, ENCLOSURES AND PASSAGEWAYS**

- A. Temporary Barriers, General: Provide temporary fencing, barriers and guardrails as necessary to provide for public safety, to prevent unauthorized entry to construction areas and to protect existing facilities and adjacent properties from damage from construction operations.
  - 1. Note requirements for continued occupancy and use of existing buildings and site areas during construction
  - 2. Comply with applicable requirements of California Building Code (CBC) and authorities having jurisdiction, including industrial safety regulations. Review requirements with University's Representative
  - 3. Maintain unobstructed access to fire extinguishers, fire hydrants, temporary fire-protection facilities, stairways, and other access routes for firefighting
  - 4. Paint temporary barriers and enclosures with appropriate colors, graphics, and warning signs to inform personnel and public of possible hazard
  - 5. Where appropriate and necessary, provide warning lighting, including flashing red or amber lights

- B. Temporary Closures: Provide temporary closures for protection of construction, in progress and completed, from exposure, foul weather, other construction operations, and similar activities. Provide temporary weather-tight enclosure for building exterior
1. Where heating or cooling is needed and permanent enclosure is not complete, provide insulated temporary enclosures. Coordinate closures with ventilating and material drying or curing requirements to avoid dangerous conditions and effects such as mold
  2. Vertical openings: Close openings of 25 sq. ft. (2.3 sq. m) or more with plywood or similar materials. Public facing side shall be painted white.
  3. Horizontal openings: Close ALL openings in floor or roof decks and horizontal surfaces with load-bearing, wood-framed construction.
    - a. Any penetration subject to water infiltration shall be made water tight with protective measures until all work is completed.
  4. Install tarpaulins securely using wood framing and other suitable materials
  5. Where opening size exceeds 64 sq. ft. in area, use fire-retardant-treated framing and plywood. Public facing side shall be painted white.
- C. Temporary Partitions: Erect and maintain temporary partitions and temporary closures to limit dust and dirt migration, including migration into existing facilities, to separate areas from fumes and noise and to maintain fire-rated separations
1. Dust Barriers: Construct dustproof, floor-to-ceiling partitions of not less than nominal 4-inch (100-mm) studs, 2 layers of 3-mil (0.07-mm) polyethylene sheets, inside and outside temporary enclosure.
    - a. Overlap and tape full length of joints
  2. Include 5/8" thick gypsum board at temporary partitions serving as noise barrier
  3. Insulate partitions to minimize noise transmission to adjacent occupied areas
  4. Seal joints and perimeter of temporary partitions
- D. Dust barrier passages: Where passage through dust barrier is necessary, provide gasketed doors or heavy plastic sheets that effectively prevent air passage
1. Construct a vestibule and airlock at each entrance to temporary enclosure with not less than 48" between doors
  2. Maintain water-dampened foot mats in vestibule where passage leads to existing occupied spaces
  3. Equip doors with security locks
- E. Fire-rated temporary partitions: Maintain fire-rated separations, including corridor walls and occupancy separations, by construction of stud partitions with gypsum board faces
1. Construction details shall comply with recognized time-rated fire-resistive construction. Typically, 1-hour rated partitions shall be 2x4 wood studs at 16" on center or 3-1/2" metal studs at 16" on center, with 5/8" thick Type X gypsum board at both faces, with joints filled, taped and topped
  2. Seal partition perimeters with acceptable fire stopping and smoke seal materials
  3. Construct fire-rated temporary partitions whenever existing time-rate fire-resistive construction is removed for 12 hours or more.
- F. HVAC Protection: Provide dust barriers at HVAC return grilles and air inlets to prevent spread of dust and clogging of filters
- G. Temporary Floor Protection: Protect existing floors from soiling and damage
1. Cover floor with 2 layers of 3-mil polyethylene sheets, extending sheets 18" up the side walls
  2. Cover polyethylene sheets with 3/4" fire-retardant plywood
  3. Provide 'sticky' floor mats to clean dust from shoes
- H. Security Closures and Lockup: Provide substantial temporary closures of openings in exterior surfaces and interior areas as appropriate to prevent unauthorized entrance, vandalism, theft and similar violations of security. Provide doors with self-closing hardware and locks.



- I. Weather Closures: Provide temporary weather-tight closures at exterior openings to prevent intrusion of water, to create acceptable working conditions, to protect completed Work and to maintain temporary heating, cooling and ventilation. Provide access doors with self-closing hardware and locks.
- J. Provide temporary lighting, illuminated interior exit signage, non-illuminated directional and instructional signage, and temporary security alarms for temporary exits and exit passageways.
- K. Temporary measures shall suit and connect to existing building systems, and shall be approved by University's Representative and authorities having jurisdiction.

## **1.8 PROTECTION OF INSTALLED WORK**

- A. Protection of Installed Work, General: Provide temporary protection for installed products. Control traffic in immediate area to minimize damage.
- B. Protective Coverings: Provide protective coverings at walls, projections, jambs, sills, and soffits of openings as necessary to prevent damage from construction activities, such as coatings applications, and as necessary to prevent other than normal atmospheric soiling.
  - a. Carpeting: Use Pro-Tect brand adhesive plastic sheeting roller over entire surface, PCD2430 or equal.
  - b. Wood, Vinyl or Concrete Flooring: Use RAM BOARD or Pro-Tect Hardboard-WR brand floor over entire surface, HARDBOARD-WR or equal. Kraft or Red Rosin Paper is NOT Acceptable.
  - c. Door surfaces: Use Pro-Tect brand Door Shield, PTDS.30.40 or equal.
  - d. Door Frames: Use Pro-Tect brand FPB Jamb Protector, FPB60 or equal.
  - e. Corner Guards: Use Pro-Tect brand corner guards, PCCG-1 or equal.
  - f. Casework: Cardboard all vertical and horizontal surfaces
- C. Traffic Protection:
  - a. Protect finished floors, stairs and other surfaces from traffic, soiling, wear and marring.
  - b. Temporary covers shall not slip or tear under normal use

## **1.9 REMOVAL OF TEMPORARY BARRIERS AND ENCLOSURES**

- A. Removal of Temporary Barriers and Enclosures: Unless otherwise mutually agreed by University's Representative and Contractor, remove temporary materials, equipment, services, and construction prior to Contract Completion review.
- B. Cleaning and Repairs: Clean and repair damage, soiling and marring caused by installation or use of temporary barriers and enclosures.

## **END OF SECTION**

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## **SECTION 01 60 00**

### **PRODUCT REQUIREMENTS**

#### **PART 1 - GENERAL**

##### **1.1 RELATED DOCUMENTS**

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

##### **1.2 SECTION INCLUDES**

- A. General requirements for products used for the Work, including:
  - 1. General characteristics of products
  - 2. Product options
  - 3. System completeness
  - 4. Transportation and handling requirements
  - 5. Storage and protection of products
  - 6. Installation of products.

##### **1.3 RELATED REQUIREMENTS**

- A. Section 01 25 00 - Substitution Procedures: Requirements for product substitutions.
- B. Section 01 33 00 - Submittal Procedures: Requirements applicable to submittals for "or equal" and substitute products.

##### **1.4 PRODUCT DELIVERY, STORAGE AND HANDLING**

- A. Deliver, store, and handle products according to manufacturer's recommendations, using means and methods that will prevent damage, deterioration, and loss, including theft.
  - 1. Schedule delivery to minimize long-term storage at site and to prevent overcrowding of construction spaces.
  - 2. Coordinate delivery with installation time to assure minimum holding time for items that are flammable, hazardous, easily damaged, or sensitive to deterioration, theft, and other losses.
  - 3. Deliver products to site in undamaged condition in manufacturer's original sealed container or other packaging system, complete with labels and instructions for handling, storing, unpacking, protecting, and installing.
  - 4. Inspect products upon delivery to ensure compliance with Contract Documents and to ensure that products are undamaged and properly protected.
  - 5. Store products at site in manner that will facilitate inspection and measurement of quantity or counting of units.

6. Store products subject to damage by elements above ground, under cover in weather-tight enclosure, with ventilation adequate to prevent condensation. Maintain temperature and humidity within range required by manufacturer's instructions.

## 1.5 PRODUCT SELECTION

- A. General: Comply with requirements of the Contract General Conditions.
- B. Product Selection Procedures: Contract Documents and governing regulations govern product selection. Procedures governing product selection include following:
  1. General: Comply with requirements of the Contract General Conditions.
  2. Products Specified by Reference Standards or Description Only: Any product meeting those standards or description.
  3. Products Specified by Indicating Basis for Design: Design and approval is based on systems, products, and assemblies of manufacturer indicated. Equivalent systems, products, and assemblies of other named manufacturers may be used, however, Contractor is responsible for additional approvals required, for coordination with remainder of Contract Documents, and for costs of redesign or recalculation required. Comply with Section 01 25 00 to obtain approval for use of unnamed product.
  4. Products Specified by Naming One or More Manufacturers: Products of named manufacturers meeting Specifications. Submit request for substitution for manufacturer not specifically named.
    - a. Products of acceptable manufacturers are subject to requirements of Specifications for specified product.
  5. Products Specified by Naming One or More Manufacturers with No Known Equals: Products of named manufacturers meeting Specifications: no options, no substitutions.
    - a. Products of acceptable manufacturers are subject to requirements of Specifications for specified product.
  6. Descriptive Specification Requirements: Where Specifications describe product or assembly, listing exact characteristics required, with or without use of brand or trade name, provide product or assembly that provides characteristics and otherwise complies with Contract requirements.
  7. Performance Specification Requirements: Where Specifications require compliance with performance requirements, provide products that comply with these requirements and are recommended by manufacturer for application indicated.
    - a. Manufacturer's recommendations may be contained in published product literature or by manufacturer's certification of performance.
  8. Compliance with Standards, Codes, and regulations: Where Specifications only require compliance with imposed code, standard, or regulation, select product that complies with standards, codes, or regulations specified.
  9. Visual Matching: Where Specifications require matching established Sample, Architect's decision will be final on whether proposed product matches satisfactorily.
    - a. Where no product available within specified category matches satisfactorily and complies with other specified requirements, comply with provisions of Section 01 25 00 for selection of matching product in another product category.
  10. Visual Selection: Where specified product requirements include phrase "... as selected from manufacturer's standard colors, patterns, textures..." or similar phrase, select product and manufacturer that complies with other specified requirements. Architect will select color, pattern, and texture from product line selected.

## **PART 2 - PRODUCTS (Not Used)**

## **PART 3 - EXECUTION**

### **3.1 INSTALLATION OF PRODUCTS**

#### **A. Installation of Products:**

1. Contractor shall comply with manufacturer's instructions and recommendations for installation of products, except where more stringent requirements are specified and necessary due to Project conditions or are required by authorities having jurisdiction.
2. Contractor shall anchor each product securely in place, accurately located and aligned with other Work.
3. Contractor shall clean exposed surfaces and provide protection to ensure freedom from damage and deterioration at time of Contract Completion review. Contractor shall refer to additional requirements specified in Section 01 74 00 - Cleaning Requirements.

**END OF SECTION**

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## **SECTION 01 71 00**

### **EXAMINATION AND PREPARATION**

#### **PART 1 - GENERAL**

##### **1.1 RELATED DOCUMENTS**

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

##### **1.2 SECTION INCLUDES**

- A. Requirements for preparation prior to installing, applying and placing products to determine acceptable conditions for the Work.
- B. Layout of the Work and other engineering services necessary to accomplish the Work.

##### **1.3 RELATED REQUIREMENTS**

- A. Section 01 78 10 - Survey and Layout Data: Requirements for survey and layout data submittals.
- B. Individual Division 2 through 33 Product Specification Sections: Specific requirements for preparation prior to performance of the Work.

##### **1.4 LAYOUT OF WORK**

- A. Surveyor: Contractor shall select and pay for services of a land surveyor, registered in the State of California, for proper performance of the Work.
  - 1. Services of surveyor shall be suitable for layout and verification of location of utilities and site elements.
  - 2. For the Project record, Contractor shall submit the name, address and telephone number of land surveyor before starting survey Work.

#### **PART 2 - PRODUCTS**

Not Applicable to this Section.

## **PART 3 - EXECUTION**

### **3.1 PREPARATION**

- A. **Manufacturer's Requirements:** Contractor shall determine product manufacturer's requirements and recommendations prior to commencing Work.
- B. **Preparations:** Contractor shall perform preparation actions according to manufacturer's instructions and recommendations and according to specified procedures.
  - 1. Contractor shall perform surface preparation as necessary to create suitable substrates for application, installation and placement of products.
  - 2. Contractor shall notify University's Representative in writing of unsuitable conditions preventing proper performance of the Work.
- C. **Existing Utility Information:** Contractor shall furnish information to serving utility 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 University's Representative and with authorities having jurisdiction.
- D. **Existing Utility Interruptions:** Contractor shall not interrupt utilities serving facilities occupied by University or others unless permitted under the following conditions and then only after arranging to provide temporary utility services according to requirements indicated:
  - 1. Contractor shall notify University's Representative not less than two working days in advance of proposed utility interruptions.
  - 2. Contractor shall not proceed with utility interruptions without written permission from University's Representative.
- E. **Field Measurements:** Contractor shall take field measurements as required to fit the Work properly. Contractor shall recheck measurements before installing each product. Where portions of the Work are indicated to fit to other construction, Contractor shall verify dimensions of other construction by field measurements before fabrication. Contractor shall coordinate fabrication schedule with construction progress to avoid delaying the Work.
- F. **Space Requirements:** Contractor shall verify space requirements and dimensions of items shown diagrammatically on Drawings.
- G. **Review of Contract Documents and Field Conditions:** Immediately upon discovery of the need for clarification of the Contract Documents, Contractor shall submit a Request for Interpretation (RFI) to Architect. Contractor shall include a detailed description of problem encountered, together with recommendations for changing the Contract Documents. Contractor shall submit requests in accordance with requirements specified in Section 01 26 13 - Requests for Interpretation (RFI), using form as directed by University's Representative.
- H. **Verification of Construction Layout:** Before proceeding to layout the Work, Contractor shall verify layout information shown on Drawings, in relation to the property survey and existing benchmarks, and locate survey reference points. If discrepancies are discovered, Contractor shall promptly notify University's Representative, Architect and Project Inspector.



### **3.2 FIELD ENGINEERING**

- A. Examination: Contractor shall verify locations of survey control and reference points prior to starting Work. If discrepancies are discovered, Contractor shall promptly notify University's Representative, Architect and Project Inspector.
- B. Survey Control and Reference Points: Refer to Article 1.5 in Section 01 78 10 - Survey and Layout Data.

### **3.3 SURVEYING AND FIELD ENGINEERING SERVICES**

- A. Surveying and Field Engineering Services: Contractor shall provide surveying and field engineering services as necessary for performance of the Work. Refer to Section 01 78 10 - Survey and Layout Data.
  - 1. Contractor shall be responsible for the accuracy and adequacy of surveying and field engineering services.
  - 2. Contractor shall utilize recognized engineering practices.
  - 3. Contractor shall check the location, level and plumb, of every major element as the Work progresses.
  - 4. Contractor shall preserve construction survey stakes and marks for the duration of their usefulness.
  - 5. If construction survey stakes are lost or disturbed, and require replacement, Contractor shall perform replacement at no change in Contract Sum and Contract Time.
  - 6. Contractor shall excavate all holes necessary for line and grade stakes.
- B. Surveying for Layout and Control of the Work: Contractor shall establish elevations, lines and levels for all Work under the Contract. Contractor shall locate and lay out by instrumentation and similar appropriate means:
  - 1. Site improvements, including pavements, curbs, headers, sewers, storm drains, structures, and paving. Note on Project Record Drawings utility locations, slopes and invert elevations.
  - 2. Stakes for cutting, filling, grading and topsoil placement, to establish finished grade or flow line indicated on Contract Drawings.
    - a. Contractor shall preserve construction survey stakes and marks for the duration of their usefulness.
    - b. If construction survey stakes are lost or disturbed, and require replacement, Contractor shall perform replacement at no change in Contract Sum and Contract Time.
    - c. Contractor shall excavate all holes necessary for line and grade stakes.
  - 3. Grid or axis for structures, building foundation, column locations and ground floor elevations.
  - 4. Contractor shall establish benchmarks and control points to set lines and levels at each story of construction and elsewhere as needed to locate each element of Project.
  - 5. Contractor shall establish dimensions within tolerances indicated. Contractor shall not scale Drawings to obtain required dimensions.
  - 6. Contractor shall inform installers of lines and levels to which they must comply.
  - 7. When deviations from required lines and levels exceed allowable tolerances, Contractor shall notify University's Representative, Architect and Project Inspector.
  - 8. Contractor shall close site surveys with an error of closure equal to or less than the standard established by authorities having jurisdiction.
- C. Monuments: Contractor shall establish a minimum of two permanent monuments on site, referenced to established control points. Contractor shall record locations, with horizontal and vertical data, on Project Record Drawings.
  - 1. In accordance with Business and Professions Code section 8772, any monument set by a licensed land surveyor or registered civil engineer to mark or reference a point on a property or land line shall be permanently and visibly marked or tagged with the certificate number of the surveyor or

civil engineer setting it, each number preceded by the letters "L.S." or "R.C.E." respectively, as the case may be, or, if the monument is set by a public agency, it shall be marked with the name of the agency and the political subdivision it serves.

2. Nothing in this Section shall prevent the inclusion of other information on the tag, which will assist in the tracing, or location of survey records, which relate to the tagged monument.
  3. Contractor shall ensure that centerline ties filed with the County Surveyor will be checked for compliance with this law.
- D. Site Grading Verification: Upon completion of grading, Contractor shall survey graded areas and establish that elevations are correct and within acceptable tolerances for paving and finish grading.
- E. Verification of Work: Contractor shall periodically verify layout and completed conditions of the Work by same means.

#### **END OF SECTION**

## SECTION 01 73 00

### EXECUTION REQUIREMENTS

#### PART 1 - GENERAL

##### 1.1 RELATED DOCUMENTS

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

##### 1.2 SECTION INCLUDES

- A. General requirements for installing, applying and placing products.
- B. General requirements for correction of defective Work.

##### 1.3 RELATED REQUIREMENTS

- A. Individual Division 2 through 33 Product Specification Sections: Specific requirements for installing, applying and placing products.

##### 1.4 EXECUTION

- A. Manufacturer's Requirements: Contractor shall determine product manufacturer's requirements and recommendations prior to commencing Work.
- B. Execution: Contractor shall perform installation, application and placement actions according to manufacturer's instructions and recommendations and according to specified procedures.
  - 1. Contractor shall perform surface preparation as necessary to create suitable substrates for application, installation and placement of products.
  - 2. Contractor shall notify University's Representative in writing of unsuitable conditions preventing proper performance of the Work.

#### PART 2 - PRODUCTS (Not Used)

#### PART 3 - EXECUTION

##### 3.1 INSTALLATION, APPLICATION AND PLACEMENT OF PRODUCTS

- A. Manufacturer's Instructions: Contractor shall comply with manufacturer's written instructions and recommendations for installing, applying, placing and finishing products.

- B. Installation, Application and Placement, General: Contractor shall locate the Work and components of the Work accurately, in correct alignment, orientation and elevation, as indicated.
  - 1. Contractor shall make vertical work plumb and make horizontal work level.
  - 2. Where space is limited, Contractor shall install components to maximize space available for maintenance and ease of removal for replacement.
  - 3. Contractor shall install products at the time and under conditions that will ensure the best possible results. Contractor shall maintain conditions required for product performance until acceptance of the Work.
  - 4. Contractor shall conduct construction operations so no part of the Work is subjected to damaging operations or loading in excess of that expected during normal conditions of occupancy.
- C. Tools and Equipment: Contractor shall not use tools or equipment that produce harmful noise levels.
- D. Anchors and Fasteners: Contractor shall provide anchors and fasteners as required to anchor each component securely in place, accurately located and aligned with other portions of the Work.
  - 1. Mounting Heights: Where mounting heights are not indicated, Contractor shall mount components at heights directed by Architect.
  - 2. Contractor shall allow for building movement, including thermal expansion and contraction.
- E. Joints: Contractor shall make joints of uniform width. Where joint locations in exposed work are not indicated, Contractor shall arrange joints for the best visual effect. Contractor shall fit exposed connections together to form hairline joints.
- F. Hazardous Materials: Contractor shall use products, cleaners, and installation materials that are not considered hazardous.
- G. Cleaning: Contractor shall comply with requirements specified in Section 01 74 00 - Cleaning Requirements. See individual product Specifications Sections for specific cleaning procedures to be performed.
- H. Protection: Contractor shall provide barriers, covers and other protective devices as recommended by manufacturer and complying with general requirements specified in Section 01 71 00 – Examination and Preparation Requirements.
  - 1. Contractor shall comply with manufacturer's written instructions for temperature and relative humidity.
  - 2. See individual product Specifications Sections for specific protective measures to be provided.
- I. Limiting Exposures: Contractor shall supervise construction operations to assure that no part of the construction, completed or in progress, is subject to harmful, dangerous, damaging, or otherwise deleterious exposure during the construction period.

### 3.2 UNIVERSITY-INSTALLED PRODUCTS

- A. Not used.

### 3.3 CORRECTION OF THE WORK

- A. Correction of the Work, General: Contractor shall repair or remove and replace defective construction. Contractor shall restore damaged substrates and finishes to match original and new surrounding construction.
1. Contractor shall comply with requirements in Section 01 73 29 - Cutting and Patching Requirements.
  2. Repairing shall include replacing defective parts, refinishing damaged surfaces, touching up with matching materials, and properly adjusting operating equipment.
  3. Contractor shall remove and replace damaged surfaces that are exposed to view if surfaces cannot be repaired without visible evidence of repair.
  4. Contractor shall repair components that do not operate properly. Remove and replace operating components that cannot be repaired.
  5. Contractor shall remove and replace chipped, scratched, and broken glass.
- B. Restoration of Existing Conditions: Contractor shall restore permanent facilities used during construction to their original condition or to match new construction.

**END OF SECTION**

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## SECTION 01 73 29

### CUTTING AND PATCHING REQUIREMENTS

#### PART 1 - GENERAL

##### 1.1 RELATED DOCUMENTS

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

##### 1.2 SECTION INCLUDES

- A. This section specifies administrative and procedural requirements for cutting and patching.
- B. Work included in this Section:
  - 1. Cutting and patching not required to be performed as part of the Work specified in other Sections.
  - 2. Cutting and patching existing construction altered or disturbed to accommodate new construction.
  - 3. Cutting and patching existing construction damaged or defaced during new construction as required to restore to existing or better condition at the time of award of Contract.
  - 4. Cutting and patching required to:
    - a. Install or correct non-coordinated Work.
    - b. Remove and replace defective and non-conforming Work.
    - c. Remove samples of installed Work for testing.
  - 5. All concrete sidewalk, driveways, approaches shall be removed and replaced scoreline-to-scoreline. Partial removal and saw cutting is no allowed. Contractor shall match existing concrete thickness when replacing any removed section.
- C. Refer to other Sections and drawings for specific requirements of the extent and limitations applicable to cutting and patching, demolishing, or altering existing construction of individual parts of the Work.
  - 1. Requirements of this Section also apply to mechanical and electrical installations. (Refer to Division 22, Division 23 and Division 26 Sections for other requirements and limitations applicable to cutting and patching mechanical and electrical installations).

##### 1.3 SUBMITTALS

- A. Cutting and Patching Proposal: Where approval of procedures for cutting and patching is required before proceeding, submit a proposal describing procedures well in advance of the time cutting and patching will be performed and request approval to proceed. Include the following information, as applicable, in the proposal:
  - 1. Describe the extent of cutting and patching required and how it is to be performed.
  - 2. Describe anticipated results in terms of changes to existing construction; include changes to structural elements and operating components as well as changes in the building's appearance and other significant visual elements.
  - 3. List products to be used and firms or entities that will perform work.
  - 4. Indicate dates when cutting and patching is to be performed.

5. List utilities that will be disturbed or affected, including those that will be relocated and those that will be temporarily out-of-service. Indicate how long service will be disrupted.
6. Where cutting and patching involves addition of reinforcement to structural elements, submit details to show how reinforcement is integrated with the original structure.
7. Approval by the Architect to proceed with cutting and patching does not waive the Architect's right to later require complete removal and replacement of a part of the Work found to be unsatisfactory.
8. Effects on University operations and on concurrent operations construction by other contractors.

#### 1.4 QUALITY ASSURANCE

- A. Requirements for Structural Work: Do not cut and patch structural elements in a manner that would reduce their load-carrying capacity or load-deflection ratio.
  1. Obtain approval from the Architect of the cutting and patching proposal before cutting and patching the following structural elements:
    - Bearing and retaining walls
    - Structural concrete
    - Structural steel
    - Lintels
    - Timber and primary wood framing
    - Structural decking
    - Stair systems
    - Miscellaneous structural metals
    - Equipment supports
    - Piping, ductwork, vessels and equipment
- B. Operational and Safety Limitations: Do not cut and patch operating elements or safety-related components in a manner that would result in reducing their capacity to perform as intended, or result in increased maintenance, or decreased operational life or safety.
  1. Obtain approval of the cutting and patching proposal before cutting and patching the following operating elements or safety-related systems:
    - Primary operational systems and equipment
    - Air or smoke barriers
    - Water, moisture, or vapor barriers
    - Membranes and flashings
    - Fire protection systems
    - Noise and vibration control elements and systems
    - Control systems
    - Communication systems
    - Electrical wiring systems
- C. Visual Requirements: Do not cut and patch construction exposed on the exterior or in occupied spaces, in a manner that would, in the Architect's opinion, reduce the building's aesthetic qualities, or result in visual evidence of cutting and patching. Remove and replace work cut and patched in a visually unsatisfactory manner.
- D. If possible retain the original installer or fabricator throughout construction phases to cut and patch the following categories of exposed work, or if it is not possible to engage the original installer or fabricator, Contractor shall engage another recognized experienced and specialized firm:
  - Concrete finishes
  - Masonry



Stucco and ornamental plaster  
Acoustical ceilings  
Painting  
Wall covering  
HVAC enclosures, cabinets or covers

## **PART 2 - PRODUCTS**

### **2.1 MATERIALS**

- A. Use materials that are identical to existing materials unless not available. If identical materials are not available or cannot be used where exposed surfaces are involved, use materials that match existing adjacent surfaces to the fullest extent possible with regard to visual effect. BEFORE PROCEEDING CONTRACTOR SHALL OBTAIN APPROVAL OF THE ARCHITECT.
- B. Use materials whose installed performance will equal or surpass that of existing materials.

## **PART 3 - EXECUTION**

### **3.1 INSPECTION**

- A. Before cutting existing surfaces, examine surfaces to be cut and patched and conditions under which cutting and patching is to be performed. Take corrective action before proceeding, if unsafe or unsatisfactory conditions are encountered. Inspect existing conditions prior to commencing Work, including elements subject to damage or movement during cutting and patching.
  - 1. Before proceeding, meet at the site with parties involved in cutting and patching, including asbestos abatement, mechanical and electrical trades. Review areas of potential interference and conflict. Coordinate procedures and resolve potential conflicts before proceeding.
  - 2. Beginning of cutting or patching shall be interpreted to mean that existing conditions were found by Contractor to be acceptable.
  - 3. After uncovering existing Work, Contractor shall inspect conditions affecting proper accomplishment of Work.

### **3.2 PREPARATION**

- A. Temporary Support: Provide temporary support of Work to be cut where required.
- B. Protection: Protect existing construction during cutting and patching to prevent damage. Provide protection from adverse weather conditions for portions of the Project that might be exposed during cutting and patching operations.
- C. Avoid interference with use of adjoining areas or interruption of free passage to adjoining areas.
- D. Take all precautions necessary to avoid cutting existing pipe, conduit or ductwork serving the building, but scheduled to be removed or relocated until provisions have been made to bypass them.

### 3.3 PERFORMANCE

#### A. General

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

#### B. Cutting

1. Cut existing construction using methods least likely to damage elements to be retained or adjoining construction. Where possible review proposed procedures with the original installer; comply with the original installer's recommendations.
2. In general, where cutting is required use hand or small power tools designed for sawing or grinding, not hammering and chopping. Cut holes and slots neatly to size required with minimum disturbance of adjacent surfaces. Temporarily cover openings when not in use.
3. To avoid marring existing finished surfaces, cut or drill from the exposed or finished side into concealed surfaces.
4. Cut through concrete and masonry using a cutting machine such as carborundum saw or diamond core drill.
5. By-pass utility services such as pipe or conduit, before cutting, where services are shown or required to be removed, relocated or abandoned. Cut-off pipe or conduit in walls or partitions to be removed. Cap, valve or plug and seal the remaining portion of pipe or conduit to prevent entrance of moisture or other foreign matter after by-passing and cutting.
6. Provide fire-safe seals to maintain fire rating at all penetrations.

#### C. Patching

1. Patch with durable seams that are as invisible as possible. Comply with specified tolerances.
2. Where feasible, inspect and test patched areas to demonstrate integrity of the installation.
3. 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.
4. Where removal of walls or partitions extends one finished area into another, patch and repair floor and wall surfaces in the new space to provide an even surface of uniform color and appearance. Remove existing floor and wall coverings and replace with new materials if necessary to achieve uniform color and appearance.
5. Where patching occurs in a smooth painted surface, extend final paint coat over entire unbroken wall section containing the patch, after the patched area has received primer and second coat.
6. Patch, repair or re-hang existing ceilings as necessary to provide an even plane surface of uniform appearance.
7. **Replace concrete walkways to nearest construction joint. Any required repair to a portion of a walkway panel shall require full replacement of said panel from joint to joint in both the north-south and east-west direction.**

- D. Plaster Installation: Comply with manufacturer's instructions and install thickness and coats as indicated.

### 3.4 CLEANING

- A. Thoroughly clean areas and spaces where cutting and patching is performed or used as access. Remove completely paint, mortar, oils, putty and items of similar nature. Thoroughly clean piping, conduit and similar features before painting or other finishing is applied. Restore damaged pipe covering to its original condition.

Cal Poly Humboldt  
Deck Rehabilitation  
1485-0001

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## **SECTION 01 74 00**

### **CLEANING REQUIREMENTS**

#### **PART 1 - GENERAL**

##### **1.1 RELATED DOCUMENTS**

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

##### **1.2 SECTION INCLUDES**

- A. Cleaning during construction.
- B. Cleaning for Contract Completion review and final acceptance of the Work.

##### **1.3 RELATED REQUIREMENTS**

- A. Additional Requirements: Cleaning for specific products or elements of Work are described in individual product Specification Sections in Divisions 2 through 33. Contractor shall comply also with University's Contractor Safety Handbook.

##### **1.4 SUBMITTALS**

- A. Product List: Contractor shall submit complete list of all cleaning agents and materials for University's Representative's review and approval.
- B. Cleaning Procedures: Contractor shall submit description of cleaning processes, agents and materials to be used for final cleaning of the Work. Processes and degree of cleanliness shall be as directed by University's Representative. All cleaning processes, agents and materials shall be subject to University's Representative's review and approval.

##### **1.5 QUALITY ASSURANCE**

- A. Cleaning and Disposal Requirements, General: Contractor shall conduct cleaning and disposal operations in compliance with all applicable codes, ordinances and regulations, including environmental protection laws, rules and practices.
- B. Cleaning Workers: Contractor shall employ experienced workers or professional cleaners for final cleaning. Contractor shall clean each surface or unit to the condition expected in a normal, commercial building cleaning and maintenance program. Contractor shall comply with manufacturer's instructions.

## **PART 2 - PRODUCTS**

### **2.1 MATERIALS**

- A. Cleaning Agents and Materials: Contractor shall use only those cleaning agents and materials which will not create hazards to health or property and which will not damage or degrade surfaces. Contractor shall:
  - 1. Use only those cleaning agents, materials and methods recommended by manufacturer of the material to be cleaned.
  - 2. Use cleaning materials only on surfaces recommended by cleaning agent manufacturer.

## **PART 3 - EXECUTION**

### **3.1 CLEANING DURING CONSTRUCTION**

- A. Garbage Control: Contractor shall control accumulation of debris, waste materials and rubbish. Periodically, Contractor shall dispose of debris, waste and rubbish off-site in a legal manner.
- B. Cleaning, General: Contractor shall clean sidewalks, driveways and streets frequently to maintain public thoroughfares free of dust, debris and other contaminants.
- C. Cleaning of Existing Facilities: Contractor shall clean surfaces in existing structures where alteration and renovation Work is being performed or where other construction activities have caused soiling and accumulation of dust and debris. Contractor shall:
  - 1. Clean dust and soiling from floor surfaces.
  - 2. Clean dust from horizontal and vertical surfaces.
- D. Parking Area Cleaning: Contractor shall keep parking areas clear of construction debris, especially debris hazardous to vehicle tires.
- E. Thoroughfare Clearing and Cleaning: Contractor shall keep site accessways, parking areas and building access and exit facilities clear of mud, soiling and debris. Contractor shall:
  - 1. Remove mud, soil and debris and dispose in a manner which will not be injurious to persons, property, plant materials and site.
  - 2. Comply with runoff control requirements stated above and as required by governing authorities having jurisdiction.
- F. Cleaning Frequency: At a minimum, Contractor shall clean Work areas daily.
- G. Failure to Clean: Should cleaning by Contractor not be sufficient or acceptable to University's Representative, especially regarding paths of travel, University may engage cleaning service to perform cleaning and deduct costs for such cleaning from sums owed to Contractor.

### **3.2 CONTRACT COMPLETION REVIEW CLEANING, GENERAL**

- A. Contract Completion Review Cleaning, General: Contractor shall execute a thorough cleaning prior to Contract Completion review by University's Representative and Architect. Contractor shall complete final cleaning before submitting final Application for Payment. Contractor shall:

1. Conduct cleaning in compliance with regulations of authorities having jurisdiction and industrial safety standards for cleaning.
2. Employ professional building cleaners to thoroughly clean building.
3. Complete cleaning operations specified below before requesting inspection for Certification of Completion. Contractor shall:
  - a. Clean exposed exterior and interior hard-surfaced finishes to a dust-free condition, free of stains, films and similar foreign substances. Leave concrete floors broom clean.
  - b. Wipe surfaces of mechanical and electrical equipment. Remove excess lubrication and other substances. Clean plumbing fixtures to a sanitary condition. Clean light fixtures and lamps.
  - c. Clean the site, including landscape development areas, of rubbish, litter and foreign substances. Sweep paved areas broom clean; remove stains, spills and other foreign deposits.

B. Waste Disposal, Contractor shall:

1. Remove waste materials from the site and conduct disposal in a lawful manner.
2. Do not burn waste materials.
3. Do not bury debris or excess materials on the University property.
4. Do not discharge volatile, harmful or hazardous materials into drainage systems.
5. Where extra materials of value remaining after completion of associated work have become the University's property, arrange for disposition of these materials as directed.

### 3.3 INTERIOR CLEANING

A. Interior Cleaning, Contractor shall:

1. Clean each surface or unit to the condition expected in a normal, commercial building cleaning and maintenance program.
2. Remove labels that are not permanent labels.
3. Remove grease, mastic, adhesives, dust, dirt, stains, fingerprints, labels, and other foreign materials from all visible interior and exterior surfaces.
4. Remove dust from all horizontal surfaces not exposed to view, including light fixtures, ledges and plumbing fixtures.
5. Clean all horizontal surfaces to dust-free condition, including tops of door and window frames, tops of doors and interiors of cabinets and casework.
6. Remove waste and surplus materials, rubbish and temporary construction facilities, utilities and controls.

B. Floor Cleaning: At unoccupied spaces, Contractor shall leave concrete floors broom clean.

### 3.4 EXTERIOR CLEANING

A. Building Exterior Cleaning: Contractor shall clean exterior of adjacent facilities where construction activities have caused soiling and accumulation of dust and debris. Contractor shall:

1. Remove labels that are not permanent labels.
2. Wash down exterior surfaces to remove dust.
3. Clean exterior surfaces of mud and other soiling.
4. Clean exterior side of windows, storefronts and curtainwalls, including window framing.

B. Glass and Mirror Cleaning: Contractor shall clean all glass. Contractor shall replace chipped or broken glass and other damaged transparent materials.

- C. Site Cleaning: Contractor shall broom clean exterior paved surfaces. Contractor shall rake clean other surfaces of the grounds. Contractor shall:
  - 1. Wash down and scrub where necessary all paving soiled as a result of construction activities. Thoroughly remove mortar droppings, paint splatters, stains and adhered soil.
  - 2. Remove from the site all construction waste, unused materials, excess soil and other debris resulting from the Work. Legally dispose of waste.

### **3.5 CLEANING INSPECTION**

- A. Cleaning Inspection: Prior to Final Payment or acceptance by University for partial occupancy or beneficial use of the premises, Contractor and University's Representative shall jointly conduct an inspection of interior and exterior surfaces to verify that entire Work is acceptably clean.
- B. Inadequate Cleaning: Should final cleaning be inadequate, as determined by University's Representative, and Contractor fails to correct conditions, University may engage cleaning service under separate contract and deduct cost from Contract Sum.

### **END OF SECTION**



## **SECTION 01 74 19 CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL**

### **PART 1 - GENERAL**

#### **1.1 RELATED DOCUMENTS**

Construction Drawings, Technical Specifications, Addenda, and general provisions of the Contract, including Contract General Conditions and Supplementary General Conditions and other Division 01 Specification Sections, apply to this Section.

#### **1.2 SUMMARY**

Section includes requirements and procedures for ensuring optimal diversion of construction and demolition (C&D) waste materials generated by the Work from landfill disposal within the limits of the Construction Schedule and Contract Sum.

- A. California State law (Public Resources Code sections 40000 *et seq.*) requires the California State University to develop source reduction, re-use, recycling, and composting programs to divert 75% of all solid waste from landfill disposal by 2020. Construction waste materials generated by the Work are targeted to achieve and maintain these diversion rates.
- B. The Work of this Contract requires that a minimum of 65% by weight of the construction and demolition materials generated in the Work is diverted from landfill disposal through a combination of re-use and recycling activities (2016 California Green Building Standards Code, Section 5.408).
- C. For LEED® projects, requirements for submittal of LEED documentation in compliance with the Materials and Resources category, Construction and Demolition Waste Management credit.
- D. Requirements for submittal of Contractor's Construction Waste and Recycling Plan prior to the commencement of the Work.
- E. Contractor's quantitative reports for construction waste materials as a condition of approval of the third progress payment.

#### **1.3 DEFINITIONS**

- A. Class III Landfill: A landfill that accepts non-hazardous resources such as household, commercial, and industrial waste, resulting from construction, remodeling, repair, and demolition operations. A Class III landfill must have a solid waste facilities permit from CalRecycle and is regulated by the Enforcement Agency (EA).
- B. Construction and Demolition Debris: Building materials and solid waste resulting from construction, remodeling, repair, cleanup, or demolition operations that are not hazardous as defined in California Code of Regulations, Title 22, and Section 66261.3 *et seq.* This term includes, but is not limited to, asphalt concrete, Portland cement concrete, brick, lumber, gypsum wallboard, cardboard and other associated packaging, roofing material, ceramic tile, carpeting, plastic pipe, and steel. The debris may be commingled with rock, soil, tree stumps, and other vegetative matter resulting from land clearing and landscaping for construction or land development projects.
- C. C&D Recycling Center: A facility that receives only C&D material that has been separated for reuse prior to receipt, in which the residual (disposed) amount of waste in the material is less than 10% of the amount separated for reuse by weight.

- D. Disposal. Final deposition of construction and demolition or inert debris into land, including stockpiling onto land of construction and demolition debris that has not been sorted for further processing or resale, if such stockpiling is for a period of time greater than 30 days; and construction and demolition debris that has been sorted for further processing or resale, if such stockpiling is for a period of time greater than one year, or stockpiling onto land of inert debris that is for a period of time greater than one year.
- E. Enforcement Agency. Enforcement agency as defined [i.e. in Public Resources Code 40130].
- F. Inert Disposal Facility or Inert Waste Landfill: A disposal facility that accepts only inert waste such as soil and rock, fully cured asphalt paving, uncontaminated concrete (including fiberglass or steel reinforcing rods embedded in the concrete), brick, glass, and ceramics, for land disposal.
- G. Mixed Debris: Loads that include commingled recyclable and non-recyclable materials generated at the construction site.
- H. Mixed Debris Recycling Facility: A processing facility that accepts loads of commingled construction and demolition debris for the purpose of recovering re-usable and recyclable materials and disposing the non-recyclable residual materials.
- I. Recycling: The process of sorting, cleansing, treating and reconstituting materials for the purpose of using the altered form in the manufacture of a new product. Recycling does not include burning, incinerating or thermally destroying solid waste.
- J. Reuse. The use, in the same or similar form as it was produced, of a material which might otherwise be discarded.
- K. Separated for Reuse. Materials, including commingled recyclables, that have been separated or kept separate from the solid waste stream for the purpose of additional sorting or processing those materials for reuse or recycling in order to return them to the economic mainstream in the form of raw material for new, reused, or reconstituted products which meet the quality standards necessary to be used in the marketplace, and includes materials that have been "source separated."
- L. Solid Waste: All putrescible and non-putrescible solid, semisolid, and liquid wastes, including garbage, trash, refuse, paper, rubbish, ashes, industrial wastes, demolition and construction wastes, abandoned vehicles and parts thereof, discarded home and industrial appliances, dewatered, treated, or chemically fixed sewage sludge which is not hazardous waste, manure, vegetable or animal solid and semisolid wastes, and other discarded solid and semisolid wastes. "Solid waste" does not include hazardous waste, radioactive waste, or medical waste as defined or regulated by State law.
- M. Source-Separated: Materials, including commingled recyclables, that have been separated or kept separate from the solid waste stream at the point of generation for the purpose of additional sorting or processing of those materials for reuse or recycling in order to return them to the economic mainstream in the form of raw materials for new, reused, or reconstituted products which meet the quality standards necessary to be used in the marketplace.
- N. Waste Hauler: A company that possesses a valid permit from the local waste management authority to collect and transport solid wastes from individuals or businesses for the purpose of recycling or disposal in the locality.

#### 1.4 SUBMITTALS

- A. Contractor's Construction Waste and Recycling Plan
  - 1. Review Contract Documents and estimate the types and quantities of materials under the Work that are anticipated to be feasible for on-site processing, source separation for re-use or recycling. Indicate

the procedures that will be implemented in this program to effect jobsite source separation, such as, identifying a convenient location where dumpsters would be located, putting signage to identify materials to be placed in dumpsters, etc.

2. Prior to commencing the Work, submit Contractor's Construction Waste and Recycling Plan. Submit in format provided (**Section 01 74 19A**). The Plan must include, but is not limited to the following:
  - a. Contractor's name and project identification information;
  - b. Procedures to be used;
  - c. Materials to be re-used and recycled;
  - d. Estimated quantities of materials;
  - e. Names and locations of re-use and recycling facilities/sites;
  - f. Tonnage calculations that demonstrate that Contractor will re-use and recycle a minimum 65% by weight of the construction waste materials generated in the Work.
3. Contractor's Construction Waste and Recycling Plan must be approved by the Construction Administrator prior to the start of Work.
4. Contractor's Construction Waste and Recycling Plan will not otherwise relieve the Contractor of responsibility for adequate and continuing control of pollutants and other environmental protection measures.

**B. Contractor's Reuse, Recycling, and Disposal Report**

1. Submit Contractor's Reuse, Recycling, and Disposal Report on the form provided (**Section 01 74 19B**) with each application for progress payment. Failure to submit the form and its supporting documentation will render the application for progress payment incomplete and delay progress payments. If applicable, include manifests, weight tickets, receipts, and invoices specifically identifying the Project for re-used and recycled materials:
  - a. Reuse of building materials or salvage items on site (i.e. crushed base or red clay brick).
  - b. Salvaging building materials or salvage items at an off-site salvage or reuse center (i.e. lighting, fixtures).
  - c. Recycling source separated materials on site (i.e. crushing asphalt/ concrete for base course, or grinding for mulch).
  - d. Recycling source separated material at an offsite recycling center (i.e. scrap metal or green materials).
  - e. Use of material as Alternative Daily Cover (ADC) at landfills.
  - f. Delivery of soils or mixed inert material to an inert landfill for disposal (inert fill).
  - g. Disposal at a landfill or transfer station (where no recycling takes place).
  - h. Other (describe).
2. Contractor's Reuse, Recycling, and Disposal Report must quantify all materials generated in the Work, disposed in [Class III] landfills, or diverted from disposal through recycling. Indicate zero (0) if there is no quantity to report for a type of material.
3. As indicated on the form:
  - i. Report disposal or recycling either in tons or in cubic yards: if scales are available at disposal or recycling facility, report in tons; otherwise, report in cubic yards. Report in units for salvage items when no tonnage or cubic yard measurement is feasible.
  - j. Indicate locations to which materials are delivered for reuse, salvage, recycling, accepted as daily cover, inert backfill, or disposal in landfills or transfer stations.
  - k. Provide legible copies of weigh tickets, receipts, or invoices that specifically identify the project generating the material. Said documents must be from recyclers and/or disposal site operators that can legally accept the materials for the purpose of re-use, recycling, or disposal.
4. Indicate project title, project number, progress payment number, name of the company completing the Contractor's Report and compiling backup documentation, the printed name, signature, and daytime phone number of the person completing the form, the beginning and ending dates of the period covered on the Contractor's Report, and the date that the Contractor's Report is completed.

**C. For LEED Projects, complete the LEED Construction and Demolition Waste Management Calculator in format provided under the most current version of the U.S. Green Building Council's Leadership in Energy**

and Environmental Design (LEED) program. Include a signed cover letter with calculation summary on company letterhead.

1. Certify that the project has completed a waste management plan and diverted construction, demolition, and land clearing waste to uses other than landfill.
2. Provide quantities of diverted materials and means of diversion in accordance with the results table in the LEED Construction and Demolition Waste Management Calculator.
3. Indicate how and where waste was diverted.
4. Indicate quantities of waste diverted in tons [or cubic yards].
5. Letter will also include: Total quantity of diverted waste, total quantity of waste, and the percentage of waste diverted.
6. Include name, organization, and role in project. Provide signature and date completed.
7. Include legible copies of weigh tickets, receipts, or invoices that specifically identify the project generating the material. Said documents must be from recyclers and/or disposal site operators that can legally accept the materials for the purpose of re-use, recycling, or disposal.

## **PART 2 - PRODUCTS (Not Used)**

## **PART 3 - EXECUTION**

### **3.1 SALVAGE, RE-USE, RECYCLING AND PROCEDURES**

- A. Identify re-use, salvage, and recycling facilities.
- B. Develop and implement procedures to re-use, salvage, and recycle new construction and excavation materials, based on the Contract Documents, the Contractor's Construction Waste and Recycling Plan, estimated quantities of available materials, and availability of recycling facilities. Procedures may include on-site recycling, source separated recycling, and/or mixed debris recycling efforts.
  1. Identify materials that are feasible for salvage, determine requirements for site storage, and transportation of materials to a salvage facility.
  2. Source separate new construction, excavation and demolition materials including, but not limited to the following types:
    - a. Asphalt.
    - b. Concrete, concrete block, slump stone (decorative concrete block), and rocks.
    - c. Drywall.
    - d. Green materials (i.e. tree trimmings and land clearing debris).
    - e. Metal (ferrous and non-ferrous).
    - f. Miscellaneous construction debris.
    - g. Paper or cardboard.
    - h. Red clay brick.
    - i. Reuse or salvage materials
    - j. Soils.
    - k. Wire and cable.
    - l. Wood.
    - m. Other (describe)
  3. Miscellaneous Construction Debris: Develop and implement a program to transport loads of mixed (commingled) new construction materials that cannot be feasibly source separated to a mixed materials recycling facility.

### **3.2 DISPOSAL OPERATIONS AND WASTE HAULING**

- A. Legally transport and dispose of materials that cannot be delivered to a source separated or mixed recycling facility to a transfer station or disposal facility that can legally accept the materials for the purpose of disposal.
- B. Use a permitted waste hauler or Contractor's trucking services and personnel. To confirm valid permitted status of waste haulers, contact the local solid waste authority.
- C. Become familiar with the conditions for acceptance of new construction, excavation and demolition materials at recycling facilities, and prior to delivering materials.
- D. Deliver to facilities that can legally accept new construction, excavation and demolition materials for purpose of re-use, recycling, composting, or disposal.
- E. Do not burn, bury or otherwise dispose of solid waste on the project job-site.

### **3.3 RE-USE AND DONATION OPTIONS**

- A. Implement a re-use program to the greatest extent feasible. Options may include:
  - 1. California Materials Exchange (CAL-MAX) is a free program sponsored by CalRecycle and is designed to help connect businesses, organizations, manufacturers, schools, and individuals with the most effective online resources for exchanging materials. Go to <http://www.calrecycle.ca.gov/CalMAX/>. Public Surplus is a government agency surplus auction system used by many universities. Go to <https://www.publicsurplus.com> for more information.

### **3.4 REVENUE**

- A. Revenues or other savings obtained from recycled, re-used, or salvaged materials shall accrue to Contractor unless otherwise noted in the Contract Documents.

**END OF SECTION**

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**SECTION 01 74 19A**  
**CONTRACTOR'S CONSTRUCTION WASTE AND RECYCLING PLAN**  
(Submit After Award of Contract and Prior to Start of Work)

Project Title:						
Contract or Work Order No.:						
Contractor's Name:						
Street Address:						
City:			State:		Zip:	
Phone: ( )			Fax: ( )			
E-Mail Address:						
Prepared by: (Print Name)						
Date Submitted:						
Project Period:		From:			TO:	
Reuse, Recycling or Disposal Processes To Be Used						
Describe the types of recycling processes or disposal activities that will be used for material generated in the project. Indicate the type of process or activity by number, types of materials, and estimated quantities that will be recycled or disposed in the sections below:						
01 - Reuse of building materials or salvage items on site (i.e. crushed base or red clay brick)						
02 - Salvaging building materials or salvage items at an off site salvage or re-use center (i.e. lighting, fixtures)						
03 - Recycling source separated materials on site (i.e. crushing asphalt/concrete for reuse or grinding for mulch)						
04 - Recycling source separated materials at an off site recycling center (i.e. scrap metal or green matls)						
05 - Recycling commingled loads of C&D matls at an off site mixed debris recycling center or transfer station						
06 - Recycling material as Alternative Daily Cover at landfills						
07 - Delivery of soils or mixed inerts to an inert landfill for disposal (inert fill).						
08 - Disposal at a landfill or transfer station.						
09 - Other (please describe) _____						
Types of Material To Be Generated						
<i>Use these codes to indicate the types of material that will be generated on the project</i>						
A = Asphalt		C = Concrete		M = Metals		I = Mixed Inert    G = Green Matls
D = Drywall		P/C=Paper/Cardboard		W/C = Wire/Cable		S= Soils (Non Hazardous)
M/C = Miscellaneous Construction Debris		R = Reuse/Salvage		W = Wood		O = Other (describe)
Facilities Used: Provide Name of Facility and Location (City)						
Total Truck Loads: Provide Number of Trucks Hauled from Site During Reporting Period						
Total Quantities: If scales are available at sites, report in tons. If not, quantify by cubic yards. For salvage/reuse items, quantify by estimated weight (or units).						
SECTION I - RE-USED/RECYCLED MATERIALS						
<i>Include all recycling activities for source separated or mixed material recycling centers where recycling will occur.</i>						
Type of	Type	Facility to be Used,	Total Truck	Total Quantities		
Material	of Activity	Location	Loads	Tons	Cubic YD	Other Wt.
(ex.) M	04	ABC Metals, Los Angeles	24	355		
a. Total Diversion			-	-	-	-

SECTION 01 74 19A  
CONTRACTOR'S CONSTRUCTION WASTE AND RECYCLING PLAN  
Continued

SECTION II - DISPOSED MATERIALS						
<i>Include all disposal activities for landfills, transfer stations, or inert landfills where no recycling will occur.</i>						
Type of Material	Type of Activity	Facility to be Used, Location	Total Truck Loads	Total Quantities		
				Tons	Cubic YD	Other Wt.
(ex.) D	08	DEF Landfill, Los Angeles	2	35		
b. Total Disposal				-	-	-

SECTION III - TOTAL MATERIALS GENERATED						
<i>This section calculates the total materials to be generated during the project period (Reuse/Recycle + Disposal = Generation)</i>						
				Tons	Cubic YD	Other Wt.
a. Total Reused/Recycled				-	-	-
b. Total Disposed				-	-	-
c. Total Generated				-	-	-

SECTION IV - CONTRACTOR'S LANDFILL DIVERSION RATE CALCULATION						
<i>Add totals from Section I + Section II</i>						
		Tons	Cubic Yards	Other Wt.		
a. Materials Re-Used and Recycled		-				
b. Materials Disposed		-				
c. Total Materials Generated (a. + b. = c.)		-	-	-		
d. Landfill Diversion Rate (Tons Only)*		#DIV/0!				

\* Use tons only to calculate recycling percentages: Tons Reused/Recycled/Tons Generated = % Recycled

Contractor's Comments (Provide any additional information pertinent to planned reuse, recycling, or disposal activities):

Notes:

- Suggested Conversion Factors: From Cubic Yards to Tons (Use when scales are not available)  
Asphalt: .61 (ex. 1000 CY Asphalt = 610 tons. Applies to broken chunks of asphalt)  
Concrete: .93 (ex. 1000 CY Concrete = 930 tons. Applies to broken chunks of concrete)  
Ferrous Metals: .22 (ex. 1000 CY Ferrous Metal = 220 tons)  
Non-Ferrous Metals: .10 (ex. 1000 CY Non-Ferrous Metals = 100 tons)

Drywall Scrap: .20  
Wood Scrap: .16



**SECTION 01 74 19B**  
**CONTRACTOR'S REUSE, RECYCLING, AND DISPOSAL REPORT**  
(Submit With Each Progress Payment)

Project Name and Number:		
Contract or Work Order No.:		
Contractor's Name:		
Street Address:		
City:	State:	Zip:
Phone: ( )	Fax: ( )	
E-Mail Address:		
Prepared by: (Print Name)		

Date Submitted:		
Period Covered:	From:	To:

**Reuse, Recycling or Disposal Processes Used**

*Describe the types of recycling processes or disposal activities used for material generated in the project. Indicate the type of process or activity by number, types of materials, and quantities that were recycled or disposed in the sections below:*

- 01 - Reuse of building materials or salvage items on site (i.e. crushed base or red clay brick)
- 02 - Salvaging building materials or salvage items at an off site salvage or re-use center (i.e. lighting, fixtures)
- 03 - Recycling source separated materials on site (i.e. crushing asphalt/concrete for reuse or grinding for mulch)
- 04 - Recycling source separated materials at an off site recycling center (i.e. scrap metal or green matls)
- 05 - Recycling commingled loads of C&D materials at an off site mixed debris recycling center or transfer station
- 06 - Recycling material as Alternative Daily Cover at landfills
- 07 - Delivery of soils or mixed inerts to an inert landfill for disposal (inert fill).
- 08 - Disposal at a landfill or transfer station.
- 09 - Other (please describe) \_\_\_\_\_

**Types of Material Generated**

*Use these codes to indicate the types of material that were generated on the project*

A = Asphalt	C = Concrete	M = Metals	I = Mixed Inert	G = Green Materials
D = Drywall	P/C=Paper/Cardboard	W/C = Wire/Cable	S= Soils (Non Hazardous)	
M/C = Miscellaneous Construction Debris	R = Reuse/Salvage	W = Wood	O = Other (describe)	

Facilities Used: Provide name of facility and location (City)

Total Truck Loads: Provide number of trucks hauled from site during reporting period

Total Quantities: If scales are available at sites, report in tons. If not, quantify by cubic yards. For salvage/reuse items, quantify by estimated weight (or units).

**SECTION I - RE-USED/RECYCLED MATERIALS**

*Include all recycling activities for source separated or mixed material recycling centers where recycling occurred.*

Type of Material	Type of Activity	Facilities Used, Location	Total Truck Loads	Total Quantities		
				Tons	Cubic Yds	Other Wt.
(ex.) M	04	ABC Metals, Los Angeles	24	355		
<b>a. Total Diversion</b>			-	-	-	-

SECTION 01 74 19B CONTRACTOR'S REUSE, RECYCLING, AND DISPOSAL REPORT (continued)						
Project Name and Number:						
Contract or Work Order No.:						
SECTION II - DISPOSED MATERIALS						
<i>Include all disposal activities for landfills, transfer stations, or inert landfills where no recycling occurred.</i>						
Type of Material	Type of Activity	Facilities Used, Location	Total Truck Loads	Total Quantities		
				Tons	Cubic Yds	Other Wt.
(ex.) D	08	DEF Landfill, Los Angeles	2	35		
b. Total Disposal				-	-	-
SECTION III - TOTAL MATERIALS GENERATED						
<i>This section calculates the total materials generated during the project period (Reuse/Recycle + Disposal = Generation)</i>						
				Tons	Cubic Yds	Other Wt.
a. Total Reused/Recycled				-	-	-
b. Total Disposed				-	-	-
c. Total Generated				-	-	-
SECTION IV - CONTRACTOR'S LANDFILL DIVERSION RATE CALCULATION						
<i>Add totals from Section I + Section II</i>						
			Tons	Cubic Yds	Other Wt.	
a. Materials Re-Used and Recycled			-			
b. Materials Disposed			-			
c. Total Materials Generated (a. + b. = c.)			-	-	-	
d. Landfill Diversion Rate (Tons Only)*			#DIV/0!			
* Use tons only to calculate recycling percentages: Tons Reused/Recycled/Tons Generated = % Recycled						
Contractor's Comments (Provide any additional information pertinent to planned reuse, recycling, or disposal activities):						
<b>Note:</b> Suggested Conversion Factors: From Cubic Yards to Tons (Use when scales are not available) Asphalt: .61 (ex. 1000 CY Asphalt = 610 tons. Applies to broken chunks of asphalt) Concrete: .93 (ex. 1000 CY Concrete = 930 tons. Applies to broken chunks of concrete) Ferrous Metals: .22 (ex. 1000 CY Ferrous Metal = 220 tons) Non-Ferrous Metals: .10 (ex. 1000 CY Non-Ferrous Metals = 100 tons)						
				Drywall Scrap: .20 Wood Scrap: .16		

## **SECTION 01 77 00**

### **CLOSEOUT PROCEDURES**

#### **PART 1 - GENERAL**

##### **1.1 RELATED DOCUMENTS**

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

##### **1.2 SECTION INCLUDES**

- A. This Section specifies administrative and procedural requirements for project closeout, including but not limited to:
  - 1. Final inspection procedures.
  - 2. Operating and maintenance manual submittal
  - 3. HVAC balance report
  - 4. Spare parts/materials
  - 5. Keys/keying
  - 6. Submittal of warranties
  - 7. Training
  - 8. As-built drawings
  - 9. As-built schedule
  - 10. State Fire Marshal inspection
  - 11. Elevator inspection
  - 12. Other regulatory inspections
  - 13. Removal of temporary facilities
  - 14. Final cleaning and pest control
  - 15. Landscape maintenance
  - 16. Commissioning/equipment startup

##### **1.3 PUNCH LIST INSPECTION**

- A. When each building/phase is, in the opinion of the Contractor, complete in all respects, the Contractor shall call for a punch-list inspection.
- B. Inspection Procedures: On receipt of a request for inspection, the University Representative will schedule the Inspection. The Architect will then perform a preliminary walk-through. If, in the judgment of the University Representative and the Architect, the project is not sufficiently complete in all respects, the University Representative will so advise the Contractor and discontinue the inspection.
  - 1. The University Representative and Architect will repeat inspection when requested and assured that the work has been completed.
  - 2. Results of the completed inspection will form the basis of requirements for final acceptance punch-list.

#### **1.4 RECORD DOCUMENT SUBMITTALS**

- A. General: Do not use record documents set as a working drawing set for construction purposes. Protect from deterioration and loss in a secure, fire-resistive location. Provide access to record documents for The University' and the Architect's reference during normal working hours throughout the course of the Project.
- B. Record Drawings: Maintain a clean, undamaged set of blue or black line prints of Contract Drawings and Shop Drawings. Mark the set to show the actual installation where the installation varies from the Work as originally shown or specified. Mark whichever drawing is most capable of showing conditions fully and accurately; where Shop Drawings are used, record a cross-reference at the corresponding location on the Contract Drawings. Give particular attention to concealed elements that would be difficult to measure and record at a later date.
  - 1. Mark record sets with red erasable pencil; use other colors to distinguish between variations in separate categories of the work.
  - 2. Mark new information that is important to the University, but was not shown on Contract Drawings or Shop Drawings. Show all utilities, obstructions, etc. not previously noted in the Contract Documents, but discovered through completion of the work.
  - 3. Note related Change Order, Field Instruction and RFI numbers where applicable.
  - 4. Update Record Drawings at a minimum of once per week throughout the course of the Project.
  - 5. Organize record drawing sheets into manageable sets, bind with durable paper cover sheets, and print suitable titles, dates and other identification on the cover of each set.
  - 6. Upon completion of the work, submit Record Drawings to the University Representative for further processing.
- C. Record Specifications: Maintain one complete copy of the Project Specifications, including addenda, and one copy of other written construction documents such as Change Orders, Field Instructions, RFI's and modifications issued in printed form during construction. Mark these documents to show substantial variations in actual work performed in comparison with the text of the Specifications and modifications. Give particular attention to substitutions, selection of options and similar information on elements that are concealed or cannot otherwise be readily discerned later by direct observation. Note related record drawing information and Product Data.
  - 1. Upon completion of the work, submit record Specifications to the Architect for the University's records.
- D. Operating and Maintenance Manuals: Submit one (1) set to the Architect for review and approval. Once approved send one hard copy set and one electronic set to the University with a transmittal to be signed and accepted by the Construction Administrator.

#### **1.5 CLOSEOUT PROCEDURES: CLOSEOUT MEETING**

- A. The University Representative will call for a Project closeout meeting approximately four to six weeks prior to the anticipated completion date.
  - 1. At this meeting, a completion Action List will be prepared listing all major items to be completed prior to the issuance of the Notice of Completion.
  - 2. The Action List shall assign a responsibility and a projected completion date to each item.
  - 3. The Contractor shall be solely responsible for the timely completion of all required closeout items.

## 1.6 FINAL CLEANING

- A. General Cleaning: General cleaning during the construction period is required by the General Conditions and included in Section 01 52 00, Construction Facilities.
- B. Cleaning Standards: Employ experienced workers or professional cleaners for final cleaning. Clean each surface or unit to the condition expected in a normal, commercial building cleaning and maintenance program. Comply with manufacturer's instructions.
  - 1. Complete the following cleaning operations before requesting inspection for Certification of Completion.
    - a. Remove labels that are not permanent labels. Remove temporary protective coverings from finish hardware, toilet accessories and other items.
    - b. Clean transparent materials, including mirrors and glass in doors and windows (inside and outside). Remove glazing compound and other substances that are noticeable vision-obscuring materials. Replace chipped or broken glass and other damaged transparent materials.
    - c. Clean exposed exterior and interior hard-surfaced finishes to a dust-free condition, free of stains, films and similar foreign substances. Restore reflective surfaces to their original reflective condition.
    - d. Leave concrete floors broom clean. Thoroughly clean all finish flooring materials in accordance with manufacturer recommendations to as-new condition. Remove any stains, films, or foreign materials. Thoroughly vacuum all carpets and shampoo if necessary.
    - e. Wipe surfaces of mechanical and electrical equipment. Remove excess lubrication and other substances. Clean and polish plumbing fixtures to a sanitary condition. Clean light fixtures, lamps and lenses.
    - f. Clean the site, including landscape development areas, of rubbish, litter and foreign substances. Sweep paved areas broom clean; remove stains, spills and other foreign deposits.
- C. Pest Control: Engage an experienced licensed exterminator to make a final inspection, and rid the project of rodents, insects and other pests.
- D. Removal of Protection: Remove temporary protection and facilities installed for protection of the work during construction and repair site to previous conditions.
- E. Compliance: Comply with regulations of authorities having jurisdiction and safety standards for cleaning. Do not burn waste materials. Do not bury debris or excess materials on the Owner's property. Do not discharge volatile, harmful or dangerous materials into drainage systems. Remove waste materials from the site and dispose of in a lawful manner. Where extra materials of value remaining after completion of associated work have become the University's property, arrange for disposition of these materials as directed.

## 1.7 FINAL ACCEPTANCE

- A. Preliminary Procedures: Before requesting final inspection for certification of University and Architect's final acceptance, complete the following:
  - 1. Submit a certified copy of the Architect's final inspection list of items to be completed or corrected, stating that each item has been completed or otherwise resolved for acceptance, and the list has been endorsed and dated by the Architect and the University Representative.

- B. Re-inspection Procedure: The University and Architect will re-inspect the work upon receipt of notice that the work, including inspection list items from earlier inspections, has been completed, except items whose completion has been delayed because of circumstances acceptable to the University.
1. Upon completion of re-inspection, the Architect will prepare and submit to the University, a certificate of final acceptance, or advise the Contractor of work that is incomplete or of obligations that have not been fulfilled but are required for final acceptance.
  2. Upon final acceptance by the University and the Architect, the University Representative will then prepare a letter to the University stating that the project has been constructed in accordance with the contract documents and is complete in all respects.
- C. Completion Schedule: All punch list corrections shall be completed by Contractor within 30 days after Substantial Completion or the contract completion date, whichever is earlier. The University reserve the right to complete any outstanding punch list work remaining after the thirty-day period at Contractor's expense.
- D. Additional Inspections: Should additional re-inspections be required, Contractor shall reimburse University for University Representative's and Architect's account for time spent in conducting additional re-inspections at a rate of 3.2 times rate of Direct Personnel Expense (DPE). Direct Personnel Expense is defined as direct salaries of University Representative's and Architect's personnel engaged on Project and portion of costs of mandatory and customary contributions and benefits related thereto, including employment taxes and other statutory benefits, insurance, sick leave, holidays, vacations, pensions, and similar contributions and benefits.

## **1.8 FINAL PAYMENT**

- A. Final Payment: After completion of all items listed for completion and correction and after submission of all documents and products and after final cleaning, Contractor shall submit final Application for Payment, identifying total adjusted Contract Sum, previous payments and sum remaining due. Payment will not be made until the following are accomplished:
1. All Project Record Documents have been received and accepted by the Architect.
  2. All extra materials and maintenance stock have been transferred and accepted by University.
  3. All warranty documents and operation, maintenance data, service agreements, maintenance contracts and salvage materials have been received and accepted by University's Representative.

## **PART 2 - PRODUCTS (Not Used)**

## **PART 3 - EXECUTION (Not Used)**

**END OF SECTION**

## **SECTION 01 78 10**

### **SURVEY AND LAYOUT DATA**

#### **PART 1 - GENERAL**

##### **1.1 RELATED DOCUMENTS**

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

##### **1.2 SECTION INCLUDES**

- A. Administrative requirements for survey and layout data submittals.

##### **1.3 RELATED REQUIREMENTS**

- A. Section 01 71 00 – Examination & Preparation Requirements: Layout of the Work and other engineering services required for accomplishing the Work.
- B. Section 01 77 00 - Contract Closeout Procedures: Submittals for occupancy, Acceptance and Final Payment.

##### **1.4 LAYOUT OF THE WORK**

- A. Responsibility for Layout of the Work: Contractor shall be solely responsible for complete, timely and accurate layout of the Work including, but not necessarily limited to, horizontal and vertical control and dimensional coordination as necessary to construct the Work in accordance with the Contract Documents. Contractor shall:
  - 1. Employ a Land Surveyor or a Civil Engineer, registered in the State of California, to perform survey work.
  - 2. Employ a Professional Engineer, of the discipline required for the specific service on the Project, and licensed in the State of California where required in the specifications in Divisions 2 through 33.

##### **1.5 PROJECT SURVEY CONTROL POINTS**

- A. Survey Reference Points: Existing basic horizontal and vertical control points are shown on the Contract Documents, or location of control points will be furnished by the University Representative. Contractor shall use the University Survey, provided by the University Representative, as the Basis of Bearings for survey horizontal control, and shall tie at least one Project site control point to a point on the University Survey. NAVD 29 and NAD 83 shall be used for vertical and horizontal control. Contractor shall:
  - 1. Locate and protect control points prior to starting site work, and preserve all permanent reference points during construction.
  - 2. Make no changes or relocations without prior written notice to Architect.

3. Report to University Representative and Architect when any reference point is lost or destroyed. Lost or destroyed reference control points
  4. Require a surveyor to replace project control points, which may be lost or destroyed. Establish replacements based on original survey control.
- B. Contractor shall establish a minimum of two permanent benchmarks on the project site that are referenced to control points identified in the Contract Documents. Document horizontal and vertical location of benchmarks on the project record documents.

## **1.6 SUBMITTALS**

- A. Submit, name, address, and telephone number of Surveyor before starting survey work.
- B. On request of Architect, submit documentation to verify accuracy of field engineering work.
- C. Submit certificate signed by the Land Surveyor, licensed to practice in the State of California, certifying that elevations and locations of improvements are in conformance with the requirements of the Contract Documents.

## **1.7 SURVEY RECORD DOCUMENTS**

- A. Survey Record Documents: Contractor shall maintain a complete and accurate log of control and survey work as Work progresses. Upon completion of foundation walls, infrastructure, and major site improvements, Contractor shall prepare a certified survey illustrating dimensions (horizontal NAD 83 and vertical NAVD 29), locations, angles and elevations of new construction and site work. The certified survey shall also document existing infrastructure encountered during construction. Contractor shall submit survey record documents as specified in Section 01 77 00 - Contract Closeout Procedures.
- B. Locations provided on the certified survey shall be provided by a licensed land surveyor and coordinated with the control points tied to the University Record of Survey as per paragraph 1.4-A above.
- C. For each new Project utility or improvement which is not to be owned and maintained by the University, Contractor shall provide a legal description and plot, stamped and signed by a properly licensed surveyor or Civil Engineer, and which will use the University Record of Survey as the Basis of Bearings and will provide a Point of Commencement shown on said Record of Survey.

## **1.8 CONTRACTOR'S REVIEW**

- A. Scope of Contractor's Review: Contractor shall review Survey and layout data prior to submission for University's review or filing. Contractor shall sign each submittal copy certifying that:
  1. Field measurements have been determined and verified.
  2. Field construction criteria have been verified.
  3. Conformance with Drawings and Specifications requirements is confirmed.
- B. Contractor's Review Action: Contractor shall indicate clearly on survey and layout data whether the dimensions and coordinates are in compliance with Contract requirements. Contractor shall note clearly and sign each submittal certifying that reported data "Conforms" or "Does Not Conform".
- C. Changes and Deviations: Contractor shall identify all deviations from requirements of Drawings and Specifications. Changes in the Work shall not be authorized by submittals review actions. No review



action, implicit or explicit, shall be interpreted to authorized changes in the Work. Changes shall only be authorized by separate written Change Order or Field Instruction, in accordance with the Contract General Conditions.

#### **1.9 REVIEWS BY UNIVERSITY'S REPRESENTATIVE AND ARCHITECT**

- A. Reviews by University's Representative and Architect, General: Reviews of survey and layout data by University's Representative and Architect, or other responsible design professional, shall be only for general conformance with the design concept and requirements based on the information presented. Neither Architect nor other responsible design professional shall verify submitted survey and layout data.
- B. Contract Requirements: Reviews by University's Representative, Architect or other responsible design professional shall not relieve the Contractor from compliance with requirements of the Drawings and Specifications. Changes shall only be authorized by separate written Change Order or Field Instruction, in accordance with the Contract General Conditions.

#### **PART 2 - PRODUCTS (Not Used)**

#### **PART 3 - EXECUTION (Not Used)**

**END OF SECTION**

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## **SECTION 01 78 23**

### **OPERATION AND MAINTENANCE DATA**

#### **PART 1 - GENERAL**

##### **1.1 RELATED DOCUMENTS**

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

##### **1.2 SECTION INCLUDES**

- A. Format and content of operation and maintenance manuals.
  - 1. Data requirements for materials and finishes.
  - 2. Data requirements for equipment and operating systems.
- B. Instruction of University's personnel.
- C. Submission of operation and maintenance manuals.

##### **1.3 RELATED REQUIREMENTS**

- A. Section 01 31 13 - Coordination: Coordination documents and models prepared for performance of the Work, to be incorporated into operation and maintenance data submitted to University's Representative at Contract closeout.
- B. Product Specifications Sections in Divisions 2 through 33: Specific requirements for operation and maintenance data.

##### **1.4 QUALITY ASSURANCE**

- A. Preparation of data shall be done by personnel:
  - 1. Trained and experienced in maintenance and operation of described products.
  - 2. Familiar with requirements of this Section.
  - 3. Skilled as technical writer to the extent required to communicate essential data.
  - 4. Skilled as draftsman competent to prepare required drawings.

##### **1.5 SUBMITTALS**

- A. Submittal for Review: Contractor shall submit one electronic bookmarked PDF copy to Engineer for review and approval.
- B. Final Submittal: Contractor shall submit one electronic PDF copy and three hard copies prior to submission of final Application for Payment.

## 1.6 SUBMITTAL FORMAT

- A. Format for Operation and Maintenance Data Manuals: Contractor shall prepare data in the form of an instructional manual. Contractor shall comply with the general requirements specified below and comply with specific requirements for types of products in Articles following. See Article titled "SUBMISSION OF OPERATION AND MAINTENANCE MANUALS" for number of copies of manuals.
- B. Electronic File: Contractor shall also provide all operation and maintenance data into a single PDF bookmarked file with a table of contents. The table of contents shall be linked to the various sections in the PDF file.
- C. Hard Copy Format:
  - 1. Size: 8-1/2 in. by 11 in.
  - 2. Paper: Manufacturer's printed data, or neatly typewritten.
  - 3. Drawings:
    - a. Provide reinforced punched binder tab, bind in with text.
    - b. Fold larger drawings to size of text pages.
  - 4. Provide fly-leaf for each separate product, or each piece of operating equipment.
  - 5. Organize manual in order of specification Divisions and Sections.
    - a. Provide typed description of product, and major component parts of equipment.
    - b. Provide indexed tabs.
  - 6. Cover: Identify each volume with typed or printed title, "Operating and Maintenance Instructions". List:
    - a. Title of Project
    - b. Identity of separate structure as applicable.
    - c. Identity of general subject matter covered in the manual.
  - 7. Binders:
    - a. Commercial quality three-ring binders with durable and cleanable plastic covers.
    - b. Maximum ring size: 2 inches per 170 sheets
    - c. When multiple binders are used, correlate the data into related consistent groupings.

## 1.7 CONTENT OF MANUAL

- A. Neatly typewritten table of contents for each volume, arranged in systematic order.
  - 1. Include name of Contractor, name of responsible principal, address and telephone number.
  - 2. Include a list of each product required to be included, indexed to content of the volume.
  - 3. List, with each product, the name, address and telephone number of:
    - a. Subcontractor or installer.
    - b. Maintenance contractor, as appropriate.
    - c. Local source of supply for replacement parts.
  - 4. Identify each product-by-product name and other identifying symbols as set forth in Contract Documents.
- B. Product Data:
  - 1. Include only those sheets that are pertinent to the specific product.
  - 2. Annotate each sheet to:
    - a. Clearly identify specific product or part installed.
    - b. Clearly identify data applicable to installation.
    - c. Delete references to inapplicable information.
- C. Drawings:

1. Supplement product data with drawings as necessary to clearly illustrate:
    - a. Relations of Component parts of equipment and systems.
    - b. Control and flow diagrams.
  2. Coordinate drawings with information in Project Record Documents to assure correct illustration of completed installation.
    - a. Do not use Project Record Documents as maintenance drawings.
- D. Provide written text as required to supplement product data for the particular installation:
1. Organize in a consistent format under separate headings for different procedures.
  2. Provide logical sequence of instructions for each procedure.
- E. Provide a copy of each warranty, bond and service contract issued.
1. Provide information sheet for Owner's personnel, including:
    - a. Proper procedures in event of failure.
    - b. Instances that might affect validity of warranties or bonds.
- F. Provide a copy of each Material Safety Data Sheet (MSDS) received with products or materials delivered to the site for incorporation into the Project, for Owner's future reference.

## **1.8 MANUAL FOR MATERIALS AND FINISHES**

- A. Content, for architectural products, applied materials and finishes:
1. Manufacturer's data, giving full information on products.
    - a. Catalog number, size, and composition.
    - b. Color and texture designations.
    - c. Information required for re-ordering special manufactured products.
  2. Instructions for care and maintenance.
    - a. Manufacturer's recommendation for types of cleaning agents and methods.
    - b. Cautions against cleaning agents and methods that are detrimental to the product.
    - c. Recommended schedule for cleaning and maintenance.
- B. Content, for moisture-protection and weather-exposed products:
1. Manufacturer's data, giving full information on products.
    - a. Applicable standards.
    - b. Chemical composition.
    - c. Details of installation.
  2. Instructions for inspection, maintenance, and repair.
- C. Additional requirements for maintenance data: Refer to other sections of Specifications.

## **1.9 MANUAL FOR EQUIPMENT AND SYSTEMS**

- A. Content for each unit of equipment and system, shall be as follows (as appropriate):
1. Description of unit and component parts
    - a. Function, normal operating characteristics, and limiting conditions
    - b. Performance curves, engineering data and tests
    - c. Complete nomenclature and commercial number of replaceable parts
  2. Operating Procedures:
    - a. Start-up, break-in, routine and normal operating instructions

- b. Regulation, control, stopping, shutdown, and emergency instructions
    - c. Seasonal operating instructions
    - d. Special operating instructions
  3. Maintenance Procedures:
    - a. Routine operations
    - b. Guide to "trouble shooting"
    - c. Disassembly, repair and re-assembly
    - d. Alignment, adjusting and checking
  4. Servicing and lubrication schedule.
    - a. List of lubricants required
    - b. Servicing schedule
  5. Manufacturer's printed operating and maintenance instructions
  6. Description of sequence of operation by control manufacturer
  7. Original manufacturer's parts list, illustrations, assembly drawings and diagrams required for Maintenance
    - a. Predicted life of parts subject to wear
    - b. Items recommended to be stocked as spare parts
  8. As-installed control diagrams by controls manufacturer
  9. Each contractor's coordination drawings
    - a. As-installed color-coded piping diagrams
  10. Charts of valve tag numbers, with location and function of each valve
  11. List of original manufacturer's spare parts, manufacturer's current prices, and recommended quantities to be maintained in storage
  12. Other data as required under pertinent sections of specifications
- B. Content, for each electric and electronic system, as appropriate:
  1. Description of system and component parts
    - a. Function, normal operating characteristics and limiting conditions
    - b. Performance curves, engineering data and tests
    - c. Complete nomenclature and commercial number of replaceable parts
  2. Circuit directories of panel boards.
    - a. Electrical service
    - b. Controls
    - c. Communications
  3. As-installed color coded wiring diagrams
  4. Operating procedures:
    - a. Routine and normal operating instructions
    - b. Sequences required
    - c. Special operating instructions
  5. Maintenance procedures:
    - a. Routine operations
    - b. Guide to "trouble-shooting."
    - c. Disassembly, repair and reassembly.
    - d. Adjustment and checking.
  6. Manufacturer's printed operating and maintenance instructions.
  7. List of original manufacturer's spare parts, manufacturer's current prices, and recommended quantities to be maintained in storage.
  8. Other data as required under pertinent sections of specifications.
- C. Prepare and include additional data when the need for such data becomes apparent during instruction of Owner's personnel.

- D. Additional requirements for operating and maintenance data: As required by other sections of specifications.

#### **1.10 INSTRUCTION OF UNIVERSITY PERSONNEL**

- A. Operating and maintenance manual shall constitute the basis of instruction.
  - 1. Review contents of manual with personnel in full detail to explain all aspects of operations and maintenance.
- B. Complete additional training as specified in other sections of the Specifications. Refer to Section 01 75 00, Starting and Adjusting Procedures.

#### **PART 2 - PRODUCTS (Not Used)**

#### **PART 3 - EXECUTION (Not Used)**

**END OF SECTION**

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## **SECTION 01 78 36**

### **WARRANTIES**

#### **PART 1 - GENERAL**

##### **1.1 RELATED DOCUMENTS**

- A. Construction Drawings, Technical Specifications, Addenda, and general provisions of the Contract, including Contract General Conditions and Supplementary General Conditions and other Division 1 Specification Sections, apply to this Section.

##### **1.2 SECTION INCLUDES**

- A. This Section specifies general administrative and procedural requirements for warranties and bonds required by the Contract Documents, including manufacturers' standard guaranties, warranties on products and special warranties.
- B. Refer to the General conditions for terms of the Contractor's special warranty of workmanship and materials.
- C. Specific requirements for warranties for the work and products and installations that are specified to be guaranteed or warranted are included in the individual Sections of Divisions 2 through 16.
- D. Certifications and other commitments and agreements for continuing services to the University are specified elsewhere in the Contract Documents.
- E. Disclaimers and Limitations: Manufacturer's disclaimers and limitations on product warranties do not relieve the Contractor of the warranty on the work that incorporates the products, nor does it relieve suppliers, manufacturers, and subcontractors required to countersign special warranties with the Contractor.

##### **1.3 RELATED REQUIREMENTS**

- A. Section 01 77 00 - Contract Closeout Procedures: General requirements for closeout of the Contract.
- B. Section 01 78 23 - Operation and Maintenance Data: Operating and maintenance data binders, to include copies of warranties and bonds.
- C. Product Specification Sections in Divisions 2 through 33: Special Project warranty requirements for specific products or elements of the Work; commitments and agreements for continuing services to University.

##### **1.4 DEFINITIONS**

- A. The terms product guaranty or warranty are synonymous for this Project and shall be taken to mean the required guaranty or warranty required by the Contract General Conditions or by the Contract Drawings or Specifications.

- B. Standard Product Warranties are pre-printed written warranties published by individual manufacturers for particular products and are specifically endorsed by the manufacturer to the University.
- C. Special Warranties are written warranties required by or incorporated in the Contract Documents, either to extend time limits provided by standard warranties or to provide greater rights for the University. Special Warranties shall be in writing.

## **1.5 WARRANTY REQUIREMENTS**

- A. Related Damages and Losses: When correcting warranted work that has failed, remove and replace other work that has been damaged as a result of such failure or that must be removed and replaced to provide access for correction of warranted work.
- B. Reinstatement of Warranty: When work covered by a warranty has failed and been corrected by replacement or rebuilding, reinstate the warranty by written endorsement. The reinstated warranty shall be equal to the original warranty with an equitable adjustment for depreciation.
- C. Replacement Cost: Upon determination that work covered by a warranty has failed, replace or rebuild the work to an acceptable condition complying with requirements of Contract Documents. The Contractor is responsible for the cost of replacing or rebuilding defective work regardless of whether the University has benefited from use of the work through a portion of its anticipated useful service life.
- D. University's Recourse: Written warranties made to the University are in addition to implied warranties, and shall not limit the duties, obligations, rights and remedies otherwise available under the law, nor shall warranty periods be interpreted as limitations on time in which the University can enforce such other duties, obligations, rights, or remedies.
  - 1. Rejection of Warranties: The University reserves the right to reject warranties and to limit selections to products with warranties not in conflict with requirements of the Contract Documents.
- E. The University reserves the right to refuse to accept work for the Project where a special warranty, certification, or similar commitment is required on such work or part of the work, until evidence is presented that entities required to countersign such commitments are willing to do so.

## **1.6 SUBMITTALS**

- A. Submit a copy of the Standard or Special written warranties to the University for each Specification Section as part of the complete submittal package for review and approval by the University.
- B. Submit written warranties to the University prior to the date of acceptance by the University. Submittal of the project Guarantees and Warranties is a requirement precedent to the filing of the Notice of Completion by the University.
  - 1. When a designated portion of the work is completed and occupied or used by the University, by separate agreement with the Contractor during the construction period but prior to acceptance of the entire project, Contractor shall submit properly executed warranties to the University within fifteen days of occupancy or use of that designated portion of the work.
- C. When a special warranty is required to be executed by the Contractor, or the Contractor and a subcontractor, supplier or manufacturer, prepare a written document that contains appropriate terms and identification, ready for execution by the required parties. Submit a draft to the University for approval prior to final execution.

- D. Form of Submittal: At Final Completion, compile two copies of each required warranty and bond properly executed by the Contractor, or by the Contractor, subcontractor, supplier, or manufacturer. Organize the warranty documents into an orderly sequence based on the table of contents of the Project Manual. Use guarantee form at the end of this Section.
- E. Bind warranties and bonds in heavy-duty, commercial quality, durable 3-ring vinyl covered loose-leaf binders, thickness as necessary to accommodate contents, and sized to receive 8-1/2-inch by 11-inch paper.
  - 1. Provide heavy paper dividers with celluloid covered tabs for each separate warranty. Mark the 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 of the installer.
  - 2. Identify each binder on the front and the spine with the typed or printed title "WARRANTIES & GUARANTEES ", the Project title or name, and the name of the Contractor.
  - 3. When operating and maintenance manuals are required for warranted construction, provide additional copies of each required warranty, as necessary, for inclusion in each required manual.

**PART 2 - PRODUCTS (Not Used)**

**PART 3 - EXECUTION (Not Used)**

Cal Poly Humboldt  
Deck Rehabilitation  
1485-0001



PROJECT \_\_\_\_\_  
CONTRACTOR \_\_\_\_\_  
ARCHITECT \_\_\_\_\_

PROJECT No. \_\_\_\_\_  
CONTRACT No. \_\_\_\_\_  
DATE \_\_\_\_\_

### GUARANTEE QUALITY AND PERFORMANCE

We the undersigned hereby guarantee that the:

which we have installed on the subject campus has been done in accordance with the plans and specifications and that all the work as installed will fulfill the requirements of the guarantees included in the specifications. We further agree to repair or replace any or all of our work, together with any other adjacent work which may be displaced in so doing, that may prove to be defective in its materials, workmanship or installation within a period of \_\_\_\_\_ year(s) from the date of official acceptance of the project as complete, by the Trustees of the California State University or any Officer or Employee authorized to act on its behalf. The repairs or replacement shall be done without any expense whatsoever to the Trustees of the California State University, ordinary wear and tear and unusual abuse or neglect excepted. Within \_\_\_\_\_ days after being notified in writing by the Trustees of any defects in the work, we agree to commence and prosecute the work necessary with due diligence in order to fulfill the terms of this guarantee, and to complete the work within a reasonable period of time, and in the even of our failure to so comply, we, separately and collectively, do hereby authorize the Trustees of the California State University to proceed to have such work done at our expense and will honor and pay the costs thereof upon demand.

By: _____ Subcontractor or Supplier	Date: _____
By: _____ General Contractor	Date: _____

*Construction Mgmt.  
702.19 • 6/07*

**END OF SECTION**

WARRANTIES  
01 78 36 - 4

## **SECTION 01 78 39**

### **PROJECT RECORD DOCUMENTS**

#### **PART 1 - GENERAL**

##### **1.1 RELATED DOCUMENTS**

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

##### **1.2 SECTION INCLUDES**

- A. Requirements for Project Record Documents to be submitted for Contract closeout.

##### **1.3 PROJECT RECORD DOCUMENTS**

- A. General:
  - 1. Contractor shall not use Record Documents for construction purposes.
  - 2. Contractor shall protect from deterioration and loss in a secure, fire-resistive location; provide access to Record Documents for the University's and the Architect's reference during normal working hours.
  - 3. Contractor shall keep Project Record Documents current, as they will be reviewed for completeness by Architect, Inspector, and University's Representative as condition for certification of each Progress Payment Application.
- B. Record Drawings: Contractor shall record information continuously as Work progresses. Contractor shall not conceal Work permanently until all required information is recorded. Contractor shall:
  - 1. Maintain a clean, undamaged set of blue or black line white-prints of Contract Drawings and Shop Drawings. Mark the set to show the actual installation where the installation varies substantially from the Work as originally shown. Mark whichever drawing is most capable of showing conditions fully and accurately.
  - 2. Where Shop Drawings are used, record a cross-reference at the corresponding location on the Contract Drawings. Give particular attention to concealed elements that would be difficult to measure and record at a later date.
  - 3. Legibly and to scale, mark record sets with red erasable pencil. Use other colors to distinguish between variations in separate categories of the work.
  - 4. Mark new information that is important to the University, but was not shown on Contract Drawings or Shop Drawings. Record actual construction, including:
    - a. GPS X, Y and Z coordinate of manholes interior corner and each utilidor where it leaves the steam manhole.
    - b. The following for underground utilities and valves installed and encountered:
      - 1) Shoot horizontal centerline, width and vertical top of pipe/utility locations and valves, referenced to permanent ground improvements along with GPS X, Y and Z coordinates.
      - 2) Service type.

- 3) Pipe/utility size.
      - 4) Pipe/utility material.
    - c. Field changes of dimension and detail.
    - d. Details not on original Contract Drawings. Application of copies of details produced and provided by Architect during construction will be accepted.
  5. Note related Change Order numbers where applicable.
  6. Organize record drawing sheets into manageable sets, bind with durable paper cover sheets, and print suitable titles, dates and other identification on the cover of each set.
  7. Store Record Documents separate from documents used for construction.
- C. Record Specifications: Contractor shall record changes made by Addenda and Change Orders. Contractor shall legibly mark and record in red ink actual Products installed or used, including:
1. Manufacturer's name and product model or catalog number.
  2. Product substitutions or alternates utilized.
- D. Record Photos: Contractor shall photograph all work before covering up, including:
1. All open trenches and manholes shall be photographed.
  2. All exposed utilities should be identified in the photos.
  3. Show photographs locations on Record Drawings.
- E. Initial Submission:
1. Prior to the date of the Notice of Completion, Contractor shall submit color PDF scanned record prints and one paper-copy set of marked Record Documents to Architect for review, approval and further processing.
  2. Prior to the date of the Notice of Completion, Contractor shall submit annotated PDF electronic file and one paper-copy set of marked Record Specifications to Architect for review, approval and further processing.
  3. Architect will indicate whether general scope of changes, additional information recorded, and quality of mark-ups are acceptable.
- F. Final Submission:
1. Submit color PDF scanned record prints and two paper-copy sets of marked Record Documents.
  2. Print each drawing, whether or not changes and additional information were recorded.
  3. Submit annotated PDF electronic file and one paper-copy set of marked Record Specifications.
  4. Submit annotated PDF electronic file and one paper-copy set of Record Photographs.

## **PART 2 - PRODUCTS (Not Used)**

## **PART 3 - EXECUTION (Not Used)**

**END OF SECTION**

**SECTION 02 41 00A**

**CONTRACTOR'S BUILDING DEMOLITION WASTE AND RECYCLING PLAN**

*(Submit After Award of Contract and Prior to Start of Work)*

Project Name and Number:		
Contract or Work Order No.:		
Contractor's Name:		
Street Address:		
City:	State:	Zip:
Phone: ( )	Fax: ( )	
E-Mail Address:		
Prepared by: (Print Name)		

Date Submitted:		
Project Period:	From:	To:

**Reuse, Recycling or Disposal Processes to be Used**

*Describe the types of recycling processes or disposal activities that will be used for material generated in the project. Indicate the type of process or activity by number, types of materials, and estimated quantities that will be recycled or disposed in the sections below:*

- 01 - Reuse of building materials or salvage items on site (i.e. crushed base or red clay brick)
- 02 - Salvaging building materials or salvage items at an off site salvage or re-use center (i.e. lighting, fixtures)
- 03 - Recycling source separated materials on site (i.e. crushing asphalt/concrete for reuse or grinding for mulch)
- 04 - Recycling source separated materials at an off site recycling center (i.e. scrap metal or green materials)
- 05 - Recycling commingled loads of demolition matls at an off site mixed debris recycling center or transfer station
- 06 - Recycling material as Alternative Daily Cover at landfills
- 07 - Delivery of soils or mixed inerts to an inert landfill for disposal (inert fill).
- 08 - Disposal at a landfill or transfer station.
- 09 - Other (please describe) \_\_\_\_\_

**Types of Material To Be Generated**

*Use these codes to indicate the types of material that will be generated on the project*

A = Asphalt	C = Concrete	M = Metals	I = Mixed Inert	G = Green Materials
D = Drywall	P/C=Paper/Cardboard	W/C = Wire/Cable	S= Soils (Non Hazardous)	
M/C = Miscellaneous Construction Debris	R = Reuse/Salvage	W = Wood	O = Other (describe)	

Facilities Used: Provide name of facility and location (City)

Total Truck Loads: Provide number of trucks hauled from site during reporting period

Total Quantities: If scales are available at sites, report in tons. If not, quantify by cubic yards. For salvage/reuse items, quantify by estimated weight (or units).

**SECTION I - RE-USED/RECYCLED MATERIALS**

*Include all recycling activities for source separated or mixed material recycling centers where recycling will occur.*

Type of Material	Type of Activity	Facility to be Used, Location	Total Truck Loads	Total Quantities		
				Tons	Cubic Yds	Other Wt.
(ex.) M	04	ABC Metals, Los Angeles	24	355		
<b>a. Total Diversion</b>			-	-	-	-

SECTION 02 41 00A						
CONTRACTOR'S BUILDING DEMOLITION WASTE AND RECYCLING PLAN (continued)						
Project Name and Number:						
Contract or Work Order No.:						
SECTION II - DISPOSED MATERIALS						
<i>Include all disposal activities for landfills, transfer stations, or inert landfills where no recycling will occur.</i>						
Type of Material	Type of Activity	Facility to be Used, Location	Total Truck Loads	Total Quantities		
				Tons	Cubic Yds	Other Wt.
(ex.) D	08	DEF Landfill, Los Angeles	2	35		
b. Total Disposal				-	-	-
SECTION III - TOTAL MATERIALS GENERATED						
<i>This section calculates the total materials to be generated during the project period (Reuse/Recycle + Disposal = Generation)</i>						
				Tons	Cubic Yds	Other Wt.
a. Total Reused/Recycled				-	-	-
b. Total Disposed				-	-	-
c. Total Generated				-	-	-
SECTION IV - CONTRACTOR'S LANDFILL DIVERSION RATE CALCULATION						
<i>Add totals from Section I + Section II</i>						
		Tons	Cubic Yds	Other Wt.		
a. Materials Re-Used and Recycled		-				
b. Materials Disposed		-				
c. Total Materials Generated (a. + b. = c.)		-	-	-		
d. Landfill Diversion Rate (Tons Only)*		#DIV/0!				
* Use tons only to calculate recycling percentages: Tons Reused/Recycled/Tons Generated = % Recycled						
Contractor's Comments (Provide any additional information pertinent to planned reuse, recycling, or disposal activities):						
<b>Note:</b> Suggested Conversion Factors: From Cubic Yards to Tons (Use when scales are not available) Asphalt: .61 (ex. 1000 CY Asphalt = 610 tons. Applies to broken chunks of asphalt) Concrete: .93 (ex. 1000 CY Concrete = 930 tons. Applies to broken chunks of concrete) Ferrous Metals: .22 (ex. 1000 CY Ferrous Metal = 220 tons) Non-Ferrous Metals: .10 (ex. 1000 CY Non-Ferrous Metals = 100 tons)						
				Drywall Scrap: .20 Wood Scrap: .16		



**SECTION 02 41 00B BUILDING DEMOLITION**  
**CONTRACTOR'S REUSE, RECYCLING, AND DISPOSAL REPORT**  
(Submit With Each Progress Payment)

Project Name and Number:		
Contract or Work Order No.:		
Contractor's Name:		
Street Address:		
City:	State:	Zip:
Phone: ( )	Fax: ( )	
E-Mail Address:		
Prepared by: (Print Name)		

Date Submitted:		
Period Covered:	From:	To:

**Reuse, Recycling or Disposal Processes Used**

*Describe the types of recycling processes or disposal activities used for material generated in the project. Indicate the type of process or activity by number, types of materials, and quantities that were recycled or disposed in the sections below:*

- 01 - Reuse of building materials or salvage items on site (i.e. crushed base or red clay brick)
- 02 - Salvaging building materials or salvage items at an off site salvage or re-use center (i.e. lighting, fixtures)
- 03 - Recycling source separated materials on site (i.e. crushing asphalt/concrete for reuse or grinding for mulch)
- 04 - Recycling source separated materials at an off site recycling center (i.e. scrap metal or green matls)
- 05 - Recycling commingled loads of C&D materials at an off site mixed debris recycling center or transfer station
- 06 - Recycling material as Alternative Daily Cover at landfills
- 07 - Delivery of soils or mixed inerts to an inert landfill for disposal (inert fill).
- 08 - Disposal at a landfill or transfer station.
- 09 - Other (please describe) \_\_\_\_\_

**Types of Material Generated**

*Use these codes to indicate the types of material that were generated on the project*

A = Asphalt	C = Concrete	M = Metals	I = Mixed Inert	G = Green Materials
D = Drywall	P/C=Paper/Cardboard	W/C = Wire/Cable	S= Soils (Non Hazardous)	
M/C = Miscellaneous Construction Debris	R = Reuse/Salvage	W = Wood	O = Other (describe)	

Facilities Used: Provide name of facility and location (City)

Total Truck Loads: Provide number of trucks hauled from site during reporting period

Total Quantities: If scales are available at sites, report in tons. If not, quantify by cubic yards. For salvage/reuse items, quantify by estimated weight (or units).

**SECTION I - RE-USED/RECYCLED MATERIALS**

*Include all recycling activities for source separated or mixed material recycling centers where recycling occurred.*

Type of Material	Type of Activity	Facilities Used, Location	Total Truck Loads	Total Quantities		
				Tons	Cubic Yds	Other Wt.
(ex.) M	04	ABC Metals, Los Angeles	24	355		
<b>a. Total Diversion</b>			-	-	-	-

SECTION 02 41 00B BUILDING DEMOLITION						
CONTRACTOR'S REUSE, RECYCLING, AND DISPOSAL REPORT (continued)						
Project Name and Number:						
Contract or Work Order No.:						
SECTION II - DISPOSED MATERIALS						
<i>Include all disposal activities for landfills, transfer stations, or inert landfills where no recycling occurred.</i>						
Type of Material	Type of Activity	Facilities Used, Location	Total Truck Loads	Total Quantities		
				Tons	Cubic Yds	Other Wt.
(ex.) D	08	DEF Landfill, Los Angeles	2	35		
b. Total Disposal				-	-	-
SECTION III - TOTAL MATERIALS GENERATED						
<i>This section calculates the total materials generated during the project period (Reuse/Recycle + Disposal = Generation)</i>						
				Tons	Cubic Yds	Other Wt.
a. Total Reused/Recycled				-	-	-
b. Total Disposed				-	-	-
c. Total Generated				-	-	-
SECTION IV - CONTRACTOR'S LANDFILL DIVERSION RATE CALCULATION						
<i>Add totals from Section I + Section II</i>						
			Tons	Cubic Yds	Other Wt.	
a. Materials Re-Used and Recycled			-			
b. Materials Disposed			-			
c. Total Materials Generated (a. + b. = c.)			-	-	-	
d. Landfill Diversion Rate (Tons Only)*			#DIV/0!			
* Use tons only to calculate recycling percentages: Tons Reused/Recycled/Tons Generated = % Recycled						
Contractor's Comments (Provide any additional information pertinent to planned reuse, recycling, or disposal activities):						
<b>Note:</b> Suggested Conversion Factors: From Cubic Yards to Tons (Use when scales are not available) Asphalt: .61 (ex. 1000 CY Asphalt = 610 tons. Applies to broken chunks of asphalt) Concrete: .93 (ex. 1000 CY Concrete = 930 tons. Applies to broken chunks of concrete) Ferrous Metals: .22 (ex. 1000 CY Ferrous Metal = 220 tons) Non-Ferrous Metals: .10 (ex. 1000 CY Non-Ferrous Metals = 100 tons)						
				Drywall Scrap: .20 Wood Scrap: .16		

## SECTION 02 41 19

### SELECTIVE DEMOLITION

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

##### 1.3 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 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.

##### 1.4 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.

#### 1.5 CLOSEOUT SUBMITTALS

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

#### 1.6 FIELD CONDITIONS

- A. Notify Architect of discrepancies between existing conditions and Drawings before proceeding with selective demolition.
- B. Storage or sale of removed items or materials on-site is not permitted.
- C. 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.

### 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 ASSE A10.6 and NFPA 241.

### PART 3 - EXECUTION

#### 3.1 EXAMINATION

- A. 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.
- B. Verify that hazardous materials have been remediated before proceeding with building demolition operations.

#### 3.2 UTILITY SERVICES AND MECHANICAL/ELECTRICAL SYSTEMS

- A. Existing Services/Systems to Remain: Maintain services/systems indicated to remain and protect them against damage.

### 3.3 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 adequate ventilation when using cutting torches.
  6. Remove decayed, vermin-infested, or otherwise dangerous or unsuitable materials and promptly dispose of off-site.
  7. Remove structural framing members and lower to ground by method suitable to avoid free fall and to prevent ground impact or dust generation.
  8. Locate selective demolition equipment and remove debris and materials so as not to impose excessive loads on supporting walls, floors, or framing.
  9. Dispose of demolished items and materials promptly. Comply with requirements in Section 01 74 19 "Construction Waste Management and Disposal".
- 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 on-site or as otherwise designated by Owner.
  5. Protect items from damage during transport and storage.
- 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 reinstalled in their original locations after selective demolition operations are complete.

#### 3.4 SELECTIVE DEMOLITION PROCEDURES FOR SPECIFIC MATERIALS

- A. 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.

#### 3.5 DISPOSAL OF DEMOLISHED MATERIALS

- A. Remove demolition waste materials from Project site and recycle or dispose of them according to Section 01 74 19 "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.
- B. Burning: Do not burn demolished materials.

#### 3.6 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.

END OF SECTION

## SECTION 03 35 01

### MISCELLANEOUS CONCRETE FINISHING

#### PART 1 - GENERAL

##### 1.1 RELATED DOCUMENTS

- A. Drawing and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

##### 1.2 SUMMARY

- A. Section Includes:
  - 1. Miscellaneous provisions for concrete finishing not covered in other Sections.
- B. Related Requirements:
  - 1. Division 03 Sections for concrete, to be finished in this Section.

##### 1.3 REFERENCES

- A. See Section 01 42 00 References.
- B. Codes:
  - 1. California Building Code (CBC): Title 24 Part 2.
  - 2. California Green Building Standards Code (CALGreen): Title 24 Part 11.

#### PART 2 - PRODUCTS NOT USED

#### PART 3 - EXECUTION

##### 3.1 MISCELLANEOUS CONCRETE FINISHING

- A. Provide the following:
  - 1. Broom finish for applications requiring pedestrian traffic coating.
    - a. See Section 07 18 00 "Pedestrian Traffic Coatings" for additional concrete substrate requirements.

END OF SECTION



## SECTION 03 35 46

### CONCRETE TOPICAL TREATMENTS

#### 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. Surface treatments for concrete floors and slabs:
    - a. Densifiers / hardeners / sealers.
    - b. Stains.
    - c. Sealers.
- B. Related Requirements:
  - 1. Section 03 30 00 "Cast-In-Place Concrete", for finishing of concrete surface to tolerance; floating, troweling, and similar operations; curing.

##### 1.3 REFERENCES

- A. See Section 01 42 00 "References".
- B. Codes:
  - 1. California Building Code (CBC): Title 24 Part 2.
  - 2. California Green Building Standards Code (CALGreen): Title 24 Part 11.

##### 1.4 SUBMITTALS, GENERAL

- A. See Section 01 33 00 "Submittal Procedures".

##### 1.5 ACTION SUBMITTALS

- A. Product Data: For each item to be installed.
  - 1. Manufacturer's published data on each finishing product, including information on compatibility of different products and limitations.

- B. Manufacturer's Installation Instructions.
- C. Maintenance Data: Provide data on maintenance and renewal of applied finishes.

#### 1.6 INFORMATIONAL SUBMITTALS

- A. Qualifications: For manufacturer and installer.

#### 1.7 QUALITY ASSURANCE

- A. Qualifications:
  - 1. Manufacturer: 15 years experience in manufacturing products specified in this Section.
  - 2. Installer: Successful completion of minimum 5 projects of similar size and complexity to Project scope.
- B. Coordination:
  - 1. Coordinate the work of this Section with concrete floor placement and curing.
- C. Mockups:
  - 1. Provide finish mockup.
  - 2. Mockup Size: 9 square feet.
  - 3. Locate as directed by Owner or Architect.
  - 4. Mockup may remain as part of the finished Work.

#### 1.8 DELIVERY, STORAGE, AND HANDLING

- A. See Section 01 60 00 "Product Requirements".
- B. Deliver materials in manufacturer's sealed packaging, including application instructions.
- C. Store in unopened packaging in clean, dry environment protected from sunlight at 40 degrees F to 85 degrees F. Prevent materials from freezing.
- D. Store tightly sealed materials off ground and away from moisture, direct sunlight, extreme heat, and freezing temperatures.
- E. Packaging Waste Management: See Section 01 74 19 "Construction Waste Management and Disposal".

1.9 FIELD CONDITIONS

- A. Maintain ambient temperature of 50 degrees F minimum.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Slip Resistance: Dynamic coefficient of friction (DCOF) of finished floor to be minimum 0.42.

2.2 DENSIFIERS / HARDENERS / SEALERS

- A. Liquid Densifier / Hardener / Sealer: Penetrating water-soluble compound that reacts with concrete, filling the pores and dustproofing. Product is applied to concrete after set. Provides abrasion and chemical resistance for interior and exterior applications.

1. Basis of Design Manufacturer and Product:

- a. BASF, MasterKure HD 200WB.

2. Subject to compliance with requirements, acceptable manufacturers include:

- a. Ardex.  
b. W.R. Meadows.  
c. Substitutions: See Section 01 25 00 "Substitution Procedures".

3. Physical Properties:

- a. Compressive Strength (ASTM C109): 6,000 psi.  
b. Color: Clear.

2.3 STAINS

- A. Concrete Stain: UV-resistant, translucent, penetrating compound for interior or exterior use; must be finished with a compatible sealer.

1. Basis of Design Manufacturer and Product:

- a. H&C Decorative Concrete (Sherwin Williams), Infusion Water-Based Semi-Transparent Decorative Stain.

2. Subject to compliance with requirements, acceptable manufacturers include:

- a. Americrete.  
b. L.M. Scofield Company (Sika).  
c. Substitutions: See Section 01 25 00 "Substitution Procedures".

3. Physical Properties:

- a. Composition: Water-based, non-reactive or reactive.
- b. Color: As selected by Architect from manufacturer's standard colors.

2.4 SEALERS

A. Sealer: Transparent, non-yellowing, water-based coating. Compliant with stain.

1. Basis of Design Manufacturer and Product:

- a. H&C Decorative Concrete (Sherwin Williams), Clearprotect 2-Part Polyurethane Clear Coat Water-Based.

2. Subject to compliance with requirements, acceptable manufacturers include:

- a. Advanced Chemical Technologies.
- b. BASF
- c. Sherwin Williams.
- d. Sika.
- e. W.R. Meadows.
- f. Substitutions: See Section 01 25 00 "Substitution Procedures".

3. Physical Properties:

- a. Composition: Water-based polyurethane.
- b. Finish: Satin.
- c. Pencil Hardness (ASTM D3363): 4H.

B. Slip-Resistant Additive: Micronized polymer granules to be mixed into sealer prior to application.

1. Basis of Design Manufacturer and Product:

- a. H&C Decorative Concrete (Sherwin Williams), Sharkgrip.
- b. Substitutions: See Section 01 25 00 "Substitution Procedures".

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Verify that floor surfaces are acceptable to receive the work of this section.
- B. Verify that water vapor emission from concrete and relative humidity in concrete are within limits established by coating manufacturers.
- C. Verify that flaws in concrete have been patched and joints filled with methods and materials suitable for further finishes.

- D. Verify that surface is free of previous coatings, sealers, curing compounds, water repellents, laitance, efflorescence, fats, oils, grease, wax, soluble salts, residues from cleaning agents, and other impediments to adhesion.

### 3.2 APPLICATION, GENERAL

- A. Apply materials in accordance with manufacturer's instructions.
  - 1. Match approved mockups for color, special effects, sealing and workmanship.
- B. Protect adjacent non-coated areas from drips, overflow, and overspray. Immediately remove excess material.
- C. Allow finished installation to dry for duration specified in writing by manufacturer before allowing foot traffic.

### 3.3 DENSIFIERS / HARDENERS / SEALERS APPLICATION

- A. Allow finished concrete to cure until all surface water has evaporated and the surface will not be damaged by application procedures.
- B. Apply product to finished, damp concrete surfaces with low pressure sprayer. Keep the surface wet with product for minimum 30 minutes by spraying additional product or by brooming excess product from wet areas.
- C. Once product begins to penetrate and react, mist the surface lightly with clean water and brush or broom into surface to aid in penetration / reaction.
- D. After 30 minutes, product will begin to gel. Brush or broom surface for up to 15 additional minutes.
- E. Flush the surface with water to remove excess product. Finish with a damp mop. Do not allow any product residue to dry on the surface.

### 3.4 QUALITY CONTROL

- A. Finish floor slip resistance testing: See Section 01 45 00 "Quality Control".
  - 1. Floors which do not pass testing will require modification to meet slip resistance minimum threshold.

### 3.5 PROTECTION

- A. Provide barrier or other delineation to prevent damage to installed Work from subsequent construction activities, during and after product curing.

END OF SECTION

## SECTION 05 52 13

### PIPE AND TUBE RAILINGS

#### 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 pipe and tube railings.
- B. Related Requirements:
  - 1. Section 05 73 00 "Decorative Metal Railings" for ornamental railings fabricated from pipes and tubes.

##### 1.3 REFERENCES

- A. California Building Code (CBC): Title 24 Part 2.
- B. California Residential Code (CRC): Title 24 Part 2.5.
- C. ADA Standards - Americans with Disabilities Act (ADA) Standards for Accessible Design.

##### 1.4 COORDINATION

- A. Coordinate selection of shop primers with topcoats to be applied over them. Comply with paint and coating manufacturers' written recommendations to ensure that shop primers and topcoats are compatible with one another.
- B. Coordinate installation of anchorages for railings. 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 Project site in time for installation.
- C. Schedule installation so wall attachments are made only to completed walls. Do not support railings temporarily by any means that do not satisfy structural performance requirements.

## 1.5 SUBMITTALS

- A. Product Data: For the following:
  - 1. Manufacturer's product lines of mechanically connected railings.
  - 2. Railing brackets.
  - 3. Grout, anchoring cement, and paint products.
- B. Shop Drawings: Include plans, elevations, sections, details, and attachments to other work.
- C. Samples: For each type of exposed finish required.
- D. Delegated-Design Submittal: For railings, including analysis data signed and sealed by the qualified professional engineer responsible for their preparation.

## 1.6 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For testing agency.
- B. Welding certificates.
- C. Mill Certificates: For Type 316 stainless steel, signed by manufacturers of stainless-steel products certifying that products furnished comply with requirements.
- D. Paint Compatibility Certificates: From manufacturers of topcoats applied over shop primers certifying that shop primers are compatible with topcoats.
- E. Product Test Reports: For pipe and tube railings, for tests performed by a qualified testing agency, according to ASTM E 894 and ASTM E 935.
- F. Evaluation Reports: For post-installed anchors, from ICC-ES.

## 1.7 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."
  - 3. AWS D1.6/D1.6M, "Structural Welding Code - Stainless Steel."

## 1.8 DELIVERY, STORAGE, AND HANDLING

- A. See Section 01 60 00 - Product Requirements.
- B. Protect mechanical finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.



## 1.9 FIELD CONDITIONS

- A. Field Measurements: Verify actual locations of walls and other construction contiguous with metal fabrications by field measurements before fabrication.

## PART 2 - PRODUCTS

### 2.1 PERFORMANCE REQUIREMENTS

- A. Delegated Design: Engage a qualified professional engineer, as defined in Section 01 40 00 "Quality Requirements," to design railings, including attachment to building construction.
- B. Structural Performance: Railings, including attachment to building construction, shall withstand the effects of gravity loads and the following loads and stresses within limits and under conditions indicated:
  - 1. Top Rails of Guards:
    - a. Uniform load of 50 lbf/ ft. applied in any direction.
    - b. Concentrated load of 200 lbf applied in any direction.
    - c. Uniform and concentrated loads need not be assumed to act concurrently.
  - 2. Infill of Guards:
    - a. Concentrated load of 50 lbf applied horizontally on an area of 1 sq. ft..
    - b. Infill load and other loads need not be assumed to act concurrently.
- C. 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 MANUFACTURERS

- A. Source Limitations: Obtain each type of railing from single source from single manufacturer.

### 2.3 METALS, GENERAL

- A. Metal Surfaces, General: Provide materials with smooth surfaces, without seam marks, roller marks, rolled trade names, stains, discolorations, or blemishes.
- B. Brackets, Flanges, and Anchors: Cast or formed metal of same type of material and finish as supported rails unless otherwise indicated.

1. Provide type of bracket with [flange tapped for concealed anchorage to threaded hanger bolt] [predrilled hole for exposed bolt anchorage] and that provides 1-1/2-inch clearance from inside face of handrail to finished wall surface.

## 2.4 STEEL AND IRON

- A. Tubing: ASTM A 500 (cold formed) or ASTM A 513.
- B. Pipe: ASTM A 53/A 53M, Type F or Type S, Grade A, Standard Weight (Schedule 40), unless another grade and weight are required by structural loads.
  1. Provide galvanized finish for exterior installations and where indicated.
- C. Plates, Shapes, and Bars: ASTM A 36/A 36M.

## 2.5 FASTENERS

- A. General: Provide the following:
  1. Hot-Dip Galvanized Railings: Type 304 stainless-steel or hot-dip zinc-coated steel fasteners complying with ASTM A 153/A 153M or ASTM F 2329 for zinc coating.
  2. Provide exposed fasteners with finish matching appearance, including color and texture, of railings.
- B. Fasteners for Anchoring Railings to Other Construction: Select fasteners of type, grade, and class required to produce connections suitable for anchoring railings to other types of construction indicated and capable of withstanding design loads.
- C. Post-Installed Anchors: Torque-controlled expansion anchors or chemical anchors capable of sustaining, without failure, a load equal to 6 times the load imposed when installed in unit masonry and 4 times the load imposed when installed in concrete, as determined by testing according to ASTM E 488/E 488M, conducted by a qualified independent testing agency.
  1. Material for Interior Locations: Carbon-steel components zinc-plated to comply with ASTM B 633 or ASTM F 1941, Class Fe/Zn 5, unless otherwise indicated.
  2. Material for Exterior Locations and Where Stainless Steel Is Indicated:
    - a. Alloy Group 1 stainless-steel bolts, ASTM F 593, and nuts, ASTM F 594.
    - b. Corrosive Environments: Use Alloy Group 2. See Section 05 05 23 "Metal Fastenings" for additional information.

## 2.6 MISCELLANEOUS MATERIALS

- A. Welding Rods and Bare Electrodes: Select according to AWS specifications for metal alloy welded.

- B. Etching Cleaner for Galvanized Metal: Complying with MPI#25.
- C. Galvanizing Repair Paint: High-zinc-dust-content paint complying with SSPC-Paint 20 and compatible with paints specified to be used over it.
- D. Shop Primers: Provide primers that comply with Section 09 91 13 "Exterior Painting" and Section 09 91 23 "Interior Painting."
  - 1. Shop Primer for Galvanized Steel: Primer formulated for exterior use over zinc-coated metal and compatible with finish paint systems indicated.
- E. Intermediate Coats and Topcoats: Provide products that comply with Section 09 91 13 "Exterior Painting" and Section 09 91 23 "Interior Painting."
- F. Bituminous Paint: Cold-applied asphalt emulsion complying with ASTM D 1187/D 1187M.
- G. Nonshrink, Nonmetallic Grout: Factory-packaged, nonstaining, noncorrosive, nongaseous grout complying with ASTM C 1107/C 1107M. Provide grout specifically recommended by manufacturer for interior and exterior applications.
- H. Anchoring Cement: Factory-packaged, nonshrink, nonstaining, hydraulic-controlled expansion cement formulation for mixing with water at Project site to create pourable anchoring, patching, and grouting compound.
  - 1. Water-Resistant Product: At exterior locations and where indicated, provide formulation that is resistant to erosion from water exposure without needing protection by a sealer or waterproof coating and that is recommended by manufacturer for exterior use.

## 2.7 FABRICATION

- A. General: Fabricate railings to comply with requirements indicated for design, dimensions, member sizes and spacing, details, finish, and anchorage, but not less than that required to support structural loads.
- B. Shop assemble railings to greatest extent possible to minimize field splicing and assembly. Disassemble units only as necessary for shipping and handling limitations. Clearly mark units for reassembly and coordinated installation. Use connections that maintain structural value of joined pieces.
- C. Cut, drill, and punch metals cleanly and accurately. Remove burrs and ease edges to a radius of approximately 1/32 inch unless otherwise indicated. Remove sharp or rough areas on exposed surfaces.
- D. Form work true to line and level with accurate angles and surfaces.
- E. Fabricate connections that are exposed to weather in a manner that excludes water. Provide weep holes where water may accumulate.

- F. Cut, reinforce, drill, and tap as indicated to receive finish hardware, screws, and similar items.
- G. Connections: Fabricate railings with either welded or nonwelded connections unless otherwise indicated.
- H. Welded Connections for Steel and Stainless Steel: Cope components at connections to provide close fit, or use fittings designed for this purpose. Weld all around at connections, including at fittings.
  - 1. Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals.
  - 2. Obtain fusion without undercut or overlap.
  - 3. Remove flux immediately.
  - 4. At exposed connections, finish exposed surfaces smooth and blended so no roughness shows after finishing and welded surface matches contours of adjoining surfaces.
- I. Nonwelded Connections: Connect members with concealed mechanical fasteners and fittings. Fabricate members and fittings to produce flush, smooth, rigid, hairline joints.
  - 1. Fabricate splice joints for field connection using an epoxy structural adhesive if this is manufacturer's standard splicing method.
- J. Form Changes in Direction as Follows:
  - 1. By radius bends of radius indicated or by inserting prefabricated elbow fittings of radius indicated.
- K. For changes in direction made by bending, use jigs to produce uniform curvature for each repetitive configuration required. Maintain cross section of member throughout entire bend without buckling, twisting, cracking, or otherwise deforming exposed surfaces of components.
- L. Close exposed ends of railing members with prefabricated end fittings.
- M. Provide wall returns at ends of wall-mounted handrails unless otherwise indicated. Close ends of returns unless clearance between end of rail and wall is 1/4 inch or less.
- N. Brackets, Flanges, Fittings, and Anchors: Provide wall brackets, flanges, miscellaneous fittings, and anchors to interconnect railing members to other work unless otherwise indicated.
  - 1. At brackets and fittings fastened to plaster or gypsum board partitions, provide crush-resistant fillers or other means to transfer loads through wall finishes to structural supports and prevent bracket or fitting rotation and crushing of substrate.
- O. Provide inserts and other anchorage devices for connecting railings to concrete or masonry work. Fabricate anchorage devices capable of withstanding loads imposed by railings. Coordinate anchorage devices with supporting structure.

- P. For railing posts set in concrete, provide stainless-steel sleeves not less than 6 inches long with inside dimensions not less than 1/2 inch greater than outside dimensions of post, with metal plate forming bottom closure.
- Q. Toe Boards: Where indicated, provide toe boards at railings around openings and at edge of open-sided floors and platforms. Fabricate to dimensions and details indicated.

## 2.8 STEEL AND IRON FINISHES

- A. Galvanized Railings:
  - 1. Hot-dip galvanize exterior steel railings, including hardware, after fabrication.
  - 2. Comply with ASTM A 123/A 123M for hot-dip galvanized railings.
  - 3. Comply with ASTM A 153/A 153M for hot-dip galvanized hardware.
  - 4. Do not quench or apply post-galvanizing treatments that might interfere with paint adhesion.
  - 5. Fill vent and drain holes that are exposed in the finished Work, unless indicated to remain as weep holes, by plugging with zinc solder and filing off smooth.
- B. For galvanized railings, provide hot-dip galvanized fittings, brackets, fasteners, sleeves, and other ferrous components.
- C. Preparing Galvanized Railings for Shop Priming: After galvanizing, thoroughly clean railings of grease, dirt, oil, flux, and other foreign matter, and treat with etching cleaner.
- D. Preparation for Shop Priming: Prepare uncoated ferrous-metal surfaces to comply with SSPC-SP 6/NACE No. 3, "Commercial Blast Cleaning."
  - 1. Exterior Railings: SSPC-SP 6/NACE No. 3, "Commercial Blast Cleaning."
  - 2. Railings Indicated to Receive Zinc-Rich Primer: SSPC-SP 6/NACE No. 3, "Commercial Blast Cleaning."
  - 3. Other Railings: SSPC-SP 3, "Power Tool Cleaning."
- E. Primer Application: Apply shop primer to prepared surfaces of railings unless otherwise indicated. Comply with requirements in SSPC-PA 1, "Shop, Field, and Maintenance Painting of Steel," for shop painting. Primer need not be applied to surfaces to be embedded in concrete or masonry.
  - 1. Shop prime uncoated railings with primers specified in Section 09 91 13 "Exterior Painting" and Section 09 91 23 "Interior Painting" unless indicated.
- F. Shop- or Field-Painted Finish: Comply with Section 09 91 13 "Exterior Painting."
  - 1. Color: As selected by Architect from manufacturer's full range.

## PART 3 - EXECUTION

### 3.1 EXAMINATION

- A. Examine plaster and gypsum board assemblies, where reinforced to receive anchors, to verify that locations of concealed reinforcements are clearly marked for Installer. Locate reinforcements and mark locations if not already done.

### 3.2 INSTALLATION, GENERAL

- A. Fit exposed connections together to form tight, hairline joints.
- B. Perform cutting, drilling, and fitting required for installing railings. Set railings accurately in location, alignment, and elevation; measured from established lines and levels and free of rack.
  - 1. Do not weld, cut, or abrade surfaces of railing components that are coated or finished after fabrication and that are intended for field connection by mechanical or other means without further cutting or fitting.
  - 2. Set posts plumb within a tolerance of 1/16 inch in 3 feet.
  - 3. Align rails so variations from level for horizontal members and variations from parallel with rake of steps and ramps for sloping members do not exceed 1/4 inch in 12 feet.
- C. Control of Corrosion: Prevent galvanic action and other forms of corrosion by insulating metals and other materials from direct contact with incompatible materials.
  - 1. Coat, with a heavy coat of bituminous paint, concealed surfaces of aluminum that are in contact with grout, concrete, masonry, wood, or dissimilar metals.
- D. Adjust railings before anchoring to ensure matching alignment at abutting joints.
- E. Fastening to In-Place Construction: Use anchorage devices and fasteners where necessary for securing railings and for properly transferring loads to in-place construction.

### 3.3 RAILING CONNECTIONS

- A. Nonwelded Connections: Use mechanical or adhesive joints for permanently connecting railing components. Seal recessed holes of exposed locking screws using plastic cement filler colored to match finish of railings.
- B. Welded Connections: Use fully welded joints for permanently connecting railing components. Comply with requirements for welded connections in "Fabrication" Article whether welding is performed in the shop or in the field.

- C. Expansion Joints: Install expansion joints at locations indicated but not farther apart than required to accommodate thermal movement. Provide slip-joint internal sleeve extending 2 inches beyond joint on either side, fasten internal sleeve securely to one side, and locate joint within 6 inches of post.

### 3.4 ANCHORING POSTS

- A. Use metal sleeves preset and anchored into concrete for installing posts. After posts are inserted into sleeves, fill annular space between post and sleeve with nonshrink, nonmetallic grout or anchoring cement, mixed and placed to comply with anchoring material manufacturer's written instructions.
- B. Form or core-drill holes not less than 5 inches deep and 3/4 inch larger than OD of post for installing posts in concrete. Clean holes of loose material, insert posts, and fill annular space between post and concrete with nonshrink, nonmetallic grout or anchoring cement, mixed and placed to comply with anchoring material manufacturer's written instructions.
- C. Leave anchorage joint exposed with 1/8-inch buildup, sloped away from post.

### 3.5 ATTACHING RAILINGS

- A. Anchor railing ends at walls with round flanges anchored to wall construction and welded to railing ends or connected to railing ends using nonwelded connections.
- B. Anchor railing ends to metal surfaces with flanges bolted to metal surfaces and welded to railing ends or connected to railing ends using nonwelded connections.
- C. Secure wall brackets and railing end flanges to building construction as follows:
  - 1. For concrete and solid masonry anchorage, use drilled-in expansion shields and hanger or lag bolts.
  - 2. For hollow masonry anchorage, use toggle bolts.
  - 3. For wood stud partitions, use hanger or lag bolts set into studs or wood backing between studs. Coordinate with carpentry work to locate backing members.
  - 4. For steel-framed partitions, use self-tapping screws fastened to steel framing or to concealed steel reinforcements.

### 3.6 ADJUSTING AND CLEANING

- A. Touchup Painting: Cleaning and touchup painting of field welds, bolted connections, and abraded areas of shop paint are specified in Section 09 91 13 "Exterior Painting" and Section 09 91 23 "Interior Painting."
- B. Galvanized Surfaces: Clean field welds, bolted connections, and abraded areas, and repair galvanizing to comply with ASTM A 780/A 780M.

3.7 PROTECTION

- A. Protect finishes of railings from damage during construction period with temporary protective coverings approved by railing manufacturer. Remove protective coverings at time of Substantial Completion.

END OF SECTION



## SECTION 05 73 00

### DECORATIVE METAL RAILINGS

#### 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 decorative railings.

##### 1.3 REFERENCES

- A. ASTM C1107/C1107M - Standard Specification for Packaged Dry, Hydraulic-Cement Grout (Nonshrink).
- B. ASTM E894 - Standard Test Method for Anchorage of Permanent Metal Railing Systems and Rails for Buildings.
- C. ASTM E935 - Standard Test Methods for Performance of Permanent Metal Railing Systems and Rails for Buildings.

##### 1.4 DEFINITIONS

- A. Railings: Guards, handrails, and similar devices used for protection of occupants at open-sided floor areas and for pedestrian guidance and support, visual separation, or wall protection.

##### 1.5 COORDINATION AND SCHEDULING

- A. Coordinate selection of shop primers with topcoats to be applied over them. Comply with paint and coating manufacturers' written instructions to ensure that shop primers and topcoats are compatible.
- B. Coordinate installation of anchorages for railings. 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 items to Project site in time for installation.

- C. Schedule installation so wall attachments are made only to completed walls. Do not support railings temporarily by any means that do not meet structural performance requirements.

#### 1.6 SUBMITTALS

- A. Product Data: For all items to be used.
- B. Shop Drawings: Include plans, elevations, sections, and attachment details.
- C. Samples for Verification: For each type of exposed finish required.
- D. Delegated-Design Submittal: For installed products indicated to comply with performance requirements and design criteria, including analysis data signed and sealed by the qualified professional engineer responsible for their preparation.

#### 1.7 INFORMATIONAL SUBMITTALS

- A. Product Test Reports: Based on evaluation of comprehensive tests performed by a qualified testing agency, according to ASTM E894 and ASTM E935.
- B. Evaluation Reports: For post-installed anchors, from ICC-ES.

#### 1.8 FIELD CONDITIONS

- A. Field Measurements: Verify actual locations of walls and other construction contiguous with railings by field measurements before fabrication and indicate measurements on Shop Drawings.

### PART 2 - PRODUCTS

#### 2.1 PERFORMANCE REQUIREMENTS

- A. Delegated Design: Engage a qualified professional engineer, as defined in Section 01 40 00 "Quality Requirements," to design railings, including attachment to building construction.
- B. General: In engineering railings to withstand structural loads indicated, determine allowable design working stresses of railing materials based on the following:
  - 1. Aluminum: The lesser of minimum yield strength divided by 1.65 or minimum ultimate tensile strength divided by 1.95.
  - 2. Copper Alloys: 60 percent of minimum yield strength.
  - 3. Stainless Steel: 60 percent of minimum yield strength.

4. Steel: 72 percent of minimum yield strength.
- C. Structural Performance: Railings, including attachment to building construction, shall withstand the effects of gravity loads and the following loads and stresses within limits and under conditions indicated:
1. Handrails and Top Rails of Guards:
    - a. Uniform load of 50 lbf/ft. applied in any direction.
    - b. Concentrated load of 200 lbf applied in any direction.
    - c. Uniform and concentrated loads need not be assumed to act concurrently.
  2. Infill of Guards:
    - a. Concentrated load of 50 lbf applied horizontally on an area of 1 square foot.
    - b. Infill load and other loads need not be assumed to act concurrently.
- D. Thermal Movements: Allow for thermal movements from ambient and surface temperature changes acting on exterior railings by preventing buckling, opening of joints, overstressing of components, failure of connections, and other detrimental effects.
1. Temperature Change: 120 deg F, ambient; 180 deg F, material surfaces.
- 2.2 STEEL DECORATIVE RAILINGS
- A. Components:
1. Infill: Pickets, 3/4 inch.
  2. Mounting Style: As shown on Architectural drawings.
- 2.3 METALS, GENERAL
- A. Metal Surfaces, General: Provide materials with smooth surfaces, without seam marks, roller marks, rolled trade names, stains, discolorations, or blemishes.
- B. Brackets, Flanges, and Anchors: Same metal and finish as supported rails unless otherwise indicated.
- 2.4 STEEL AND IRON
- A. Tubing: ASTM A500/A500M (cold formed) or ASTM A513.
- B. Bars: Hot-rolled, carbon steel complying with ASTM A29/A29M, Grade 1010.
- C. Plates, Shapes, and Bars: ASTM A36/A36M.

## 2.5 FASTENERS

- A. Fastener Materials: Unless otherwise indicated, provide the following:
  - 1. Uncoated Steel Components: Plated-steel fasteners complying with ASTM B 633, Class Fe/Zn 25 for electrodeposited zinc coating where concealed; Type 316 stainless-steel fasteners where exposed.
  - 2. Galvanized-Steel Components: Plated-steel fasteners complying with ASTM B 633, Class Fe/Zn 25 for electrodeposited zinc coating.
- B. Fasteners for Anchoring to Other Construction: Select fasteners of type, grade, and class required to produce connections suitable for anchoring railings to other types of construction indicated and capable of withstanding design loads.
- C. Provide concealed fasteners for interconnecting railing components and for attaching railings to other work unless exposed fasteners are the standard fastening method for railings indicated.
- D. Post-Installed Anchors: Fastener systems with working capacity greater than or equal to the design load, according to an evaluation report acceptable to authorities having jurisdiction, based on ICC-ES AC193 or ICC-ES AC308.

## 2.6 MISCELLANEOUS MATERIALS

- A. Anchoring Cement: Factory-packaged, nonshrink, nonstaining, hydraulic-controlled expansion cement formulation for mixing with water at Project site to create pourable anchoring, patching, and grouting compound.
  - 1. Water-Resistant Product: At exterior locations provide formulation that is resistant to erosion from water exposure without needing protection by a sealer or waterproof coating and that is recommended by manufacturer for exterior use.

## 2.7 FABRICATION

- A. General: Fabricate railings to comply with requirements indicated for design, dimensions, member sizes and spacing, details, finish, and anchorage, but not less than that required to support structural loads.
- B. Assemble railings in the shop to greatest extent possible to minimize field splicing and assembly. Disassemble units only as necessary for shipping and handling limitations. Clearly mark units for reassembly and coordinated installation. Use connections that maintain structural value of joined pieces.
- C. Cut, drill, and punch metals cleanly and accurately. Remove burrs and ease edges to a radius of approximately 1/32 inch unless otherwise indicated. Remove sharp or rough areas on exposed surfaces.
- D. Form work true to line and level with accurate angles and surfaces.

- E. Fabricate connections that will be exposed to weather in a manner to exclude water. Provide weep holes where water may accumulate. Locate weep holes in inconspicuous locations.
- F. Cut, reinforce, drill, and tap as indicated to receive finish hardware, screws, and similar items.
- G. Welded Connections: Cope components at connections to provide close fit, or use fittings designed for this purpose. Weld all around at connections, including at fittings.
  - 1. Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals.
  - 2. Obtain fusion without undercut or overlap.
  - 3. Remove flux immediately.
  - 4. At exposed connections, finish exposed welds to comply with NOMMA's "Voluntary Joint Finish Standards" for Type 1 welds; no evidence of a welded joint.
- H. Mechanical Connections: Connect members with concealed mechanical fasteners and fittings. Fabricate members and fittings to produce flush, smooth, rigid, hairline joints.
  - 1. Fabricate splice joints for field connection using an epoxy structural adhesive if this is manufacturer's standard splicing method.
- I. Close exposed ends of hollow railing members with prefabricated end fittings.
- J. Provide wall returns at ends of wall-mounted handrails unless otherwise indicated. Close ends of returns.
- K. Brackets, Flanges, Fittings, and Anchors: Provide wall brackets, flanges, miscellaneous fittings, and anchors to interconnect railing members to other work unless otherwise indicated.
  - 1. At brackets and fittings fastened to plaster or gypsum board partitions, provide crush-resistant fillers, or other means to transfer loads through wall finishes to structural supports and to prevent bracket or fitting rotation and crushing of substrate.
- L. Provide inserts and other anchorage devices for connecting railings to concrete or masonry work. Fabricate anchorage devices capable of withstanding loads imposed by railings. Coordinate anchorage devices with supporting structure.
- M. For railing posts set in concrete, provide stainless-steel sleeves not less than 6 inches long with inside dimensions not less than 1/2 inch greater than outside dimensions of post, with metal plate forming bottom closure.
- N. Toe Boards: Where indicated, provide toe boards at railings around openings and at edge of open-sided floors and platforms. Fabricate to dimensions and details indicated.

## 2.8 GENERAL FINISH REQUIREMENTS

- A. Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" recommendations for applying and designating finishes.
- B. Protect mechanical finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipment.
- C. Appearance of Finished Work: Noticeable variations in same piece are not acceptable. Variations in appearance of abutting or adjacent pieces are acceptable if they are within one-half of the range of approved Samples. Variations in appearance of other components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.
- D. Provide exposed fasteners with finish matching appearance, including color and texture, of railings.

## 2.9 STEEL FINISHES

- A. Galvanized Railings:
  - 1. Hot-dip galvanize exterior steel and iron railings, including hardware, after fabrication.
  - 2. Comply with ASTM A 123/A 123M for hot-dip galvanized railings.
  - 3. Comply with ASTM A 153/A 153M for hot-dip galvanized hardware.
  - 4. Do not quench or apply post-galvanizing treatments that might interfere with paint adhesion.
  - 5. Fill vent and drain holes that are exposed in the finished Work, unless indicated to remain as weep holes, by plugging with zinc solder and filing off smooth.
- B. For galvanized railings, provide hot-dip galvanized fittings, brackets, fasteners, sleeves, and other ferrous components.
- C. Preparing Galvanized Railings for Shop Priming: After galvanizing, thoroughly clean railings of grease, dirt, oil, flux, and other foreign matter, and treat with etching cleaner.
- D. Preparing Nongalvanized Items for Shop Priming: Prepare uncoated ferrous-metal surfaces to comply with requirements indicated below:
  - 1. Railings Indicated to Receive Zinc-Rich Primer: SSPC-SP 6/NACE No. 3, "Commercial Blast Cleaning."
- E. Primer Application: Apply shop primer to prepared surfaces of railings unless otherwise indicated. Comply with requirements in SSPC-PA 1, "Paint Application Specification No. 1: Shop, Field, and Maintenance Painting of Steel," for shop painting. Primer need not be applied to surfaces to be embedded in concrete or masonry.
  - 1. Shop prime uncoated railings with primers specified in Section 09 91 13 "Exterior Painting".

F. Shop-Painted Finish: Comply with Section 09 91 13 "Exterior Painting."

1. Color: As selected by Architect from manufacturer's full range.

## 2.10 ALUMINUM FINISHES

A. Finish designations prefixed by AA comply with the system established by the Aluminum Association for designating aluminum finishes.

B. Clear Anodic Finish: AAMA 611, AA-M12C22A41, Class I, 0.018 mm or thicker.

## PART 3 - EXECUTION

### 3.1 EXAMINATION

A. Examine substrate with Installer to verify that railing attachment locations are properly prepared and reinforced to receive railing.

### 3.2 INSTALLATION, GENERAL

A. Install railings per approved shop drawings and manufacturer's installation instructions.

B. Fit exposed connections together to form tight, hairline joints.

C. Perform cutting, drilling, and fitting required for installing railings. Set railings accurately in location, alignment, and elevation; measured from established lines and levels and free of rack.

1. Do not weld, cut, or abrade surfaces of railing components that have been coated or finished after fabrication and that are intended for field connection by mechanical or other means without further cutting or fitting.
2. Set posts plumb within a tolerance of 1/16 inch in 3 feet.
3. Align rails so variations from level for horizontal members and variations from parallel with rake of steps and ramps for sloping members do not exceed 1/4 inch in 12 feet.

D. Control of Corrosion: Prevent galvanic action and other forms of corrosion by insulating metals and other materials from direct contact with incompatible materials.

1. Coat concealed surfaces of aluminum and copper alloys that will be in contact with grout, concrete, masonry, wood, or dissimilar metals, with a heavy coat of bituminous paint.

E. Adjust railings before anchoring to ensure matching alignment at abutting joints.

- F. Fastening to In-Place Construction: Use anchorage devices and fasteners where necessary for securing railings and for properly transferring loads to in-place construction.
- G. Anchor posts and rails per manufacturer's instructions and approved shop drawings.

### 3.3 RAILING CONNECTIONS

- A. Nonwelded Connections: Use mechanical or adhesive joints for permanently connecting railing components. Use wood blocks and padding to prevent damage to railing members and fittings. Seal recessed holes of exposed locking screws using plastic cement filler colored to match finish of railings.
- B. Welded Connections: Use fully welded joints for permanently connecting railing components. Comply with requirements for welded connections in "Fabrication" Article whether welding is performed in the shop or in the field.
- C. Expansion Joints: Install expansion joints at locations indicated but not farther apart than required to accommodate thermal movement. Provide slip-joint internal sleeve extending 2 inches beyond joint on either side, fasten internal sleeve securely to one side, and locate joint within 6 inches of post.

### 3.4 CLEANING

- A. Clean aluminum and stainless steel by washing thoroughly with clean water and soap, rinsing with clean water, and wiping dry.
- B. Touchup Painting: Immediately after erection, clean field welds, bolted connections, and abraded areas of shop paint, and paint exposed areas with the same material used for shop painting to comply with SSPC-PA 1 for touching up shop-painted surfaces.
- C. Galvanized Surfaces: Clean field welds, bolted connections, and abraded areas and repair galvanizing to comply with ASTM A 780/A 780M.
- D. Clean and polish glass glazing as recommended in writing by manufacturer. Wash both exposed surfaces in each area of Project not more than four days before date scheduled for inspections that establish date of Substantial Completion

### 3.5 PROTECTION

- A. Protect finishes of railings from damage during construction period with temporary protective coverings approved by railing manufacturer. Remove protective coverings at time of Substantial Completion.
- B. Restore finishes damaged during installation and construction period so no evidence remains of correction work. Return items that cannot be refinished in the field to the shop; make required alterations and refinish entire unit, or provide new units.



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## SECTION 06 05 73

### WOOD TREATMENT

#### 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. Wood preservative treatment.

##### 1.3 REFERENCES

- A. See Section 01 42 00 "References".
- B. Codes:
  - 1. California Building Code (CBC): Title 24 Part 2.
  - 2. California Green Building Standards Code (CALGreen), Title 24 Part 11.
- C. Reference Standards:
  - 1. ASTM D2898: Standard Practice for Accelerated Weathering of Fire-Retardant-Treated Wood for Fire Testing.
  - 2. ASTM E84: Standard Test Method for Surface Burning Characteristics of Building Materials.
  - 3. AWPA M4: Standard for the Care of Preservative-Treated Wood Products.
  - 4. AWPA N1: All Millwork Products - Preservative Treatment by Nonpressure Process.
  - 5. AWPA U1: Use Category System - User Specification for Treated Wood.

##### 1.4 SUBMITTALS, GENERAL

- A. See Section 01 33 00 "Submittal Procedures".

##### 1.5 ACTION SUBMITTALS

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

1. Wood-Preservative Treatment:

- a. Include data and warranty information from chemical-treatment manufacturer and certification by treating plant that treated materials comply with requirements.
- b. Indicate type of preservative used and net amount of preservative retained.
- c. Include chemical-treatment manufacturer's written instructions for finishing treated material and manufacturer's written warranty.

1.6 DELIVERY, STORAGE, & HANDLING

- A. See Section 01 60 00 "Product Requirements".
- B. Packaging Waste Management: See Section 01 74 19 "Construction Waste Management and Disposal".

PART 2 - PRODUCTS

2.1 REGULATORY REQUIREMENTS

- A. See Section 01 41 00 "Regulatory Requirements".

2.2 PRESERVATIVE-TREATED-WOOD MATERIALS

- A. Preservative-Treated-Wood Materials: Provide with water-repellent preservative treatment complying with AWP A N1 (dip, spray, flood, or vacuum-pressure treatment).
  1. Preservative Chemicals: 3-iodo-2-propynyl butyl carbamate (IPBC).
  2. Use chemical formulations that do not bleed through or otherwise adversely affect finishes. Do not use colorants in solution to distinguish treated material from untreated material.
- B. Blocking, Shims, and Nailers: Provide with water-repellent preservative treatment by pressure process, AWP A U1; Use Category UC3b.
  1. Kiln-dry lumber after treatment to a maximum moisture content of 19 percent.
  2. Preservative Chemicals: Acceptable to authorities having jurisdiction and containing no arsenic or chromium.
  3. Mark lumber with treatment quality mark of an inspection agency approved by the American Lumber Standards Committee's (ALSC) Board of Review.
- C. Extent of Preservative-Treated Wood Materials:
  1. Exterior woodwork.
  2. Interior architectural woodwork in contact with concrete or masonry.
  3. Items indicated to be fire-retardant treated do not receive preservative treatment.

D. Items fabricated from the following wood species need not be treated:

1. Redwood.
2. Western red cedar.

### PART 3 - EXECUTION

#### 3.1 INSTALLATION

- A. Preservative-Treated Wood Materials: Where field cut or drilled, treat cut ends and drilled holes according to AWPAC M4.

#### 3.2 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.

END OF SECTION

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## SECTION 07 14 16 - COLD FLUID APPLIED WATERPROOFING

### PART 1 - GENERAL

#### 1.1 SUMMARY

- A. This Section includes:
  - 1. An adhered cold fluid-applied two-component waterproofing system including all applicable flashings, reinforcement and sealants with overlying drainage course at the following locations and as indicated on the drawings:
    - a. Balcony Deck, as indicated on Drawings

#### 1.2 PERFORMANCE REQUIREMENTS

- A. Provide waterproofing membrane that prevents the passage of water.
- B. Furnish and install a completed waterproofing assembly including primer, waterproofing membrane, flashings, and sealants. To ensure total system compatibility, all products must be purchased from a single-source manufacturer, or approved by manufacturer in writing for use with membrane assembly.

#### 1.3 ACTION SUBMITTALS

- A. Product Data: For each type of product specified. Include the following:
  - 1. Manufacturer's written instructions for evaluating, preparing, and treating substrate, technical data, and tested physical and performance properties.
  - 2. Manufacturer's written instructions for installation of waterproofing and component materials.
  - 3. Technical information including instructions for handling and storing each material.
  - 4. Material Safety Data Sheets, if applicable
- B. Shop Drawings: Show locations and extent of waterproofing. Include details for substrate joints and cracks, sheet flashings, penetrations, and other termination conditions.
- C. Samples: For the following products:
  - 1. Membrane-reinforcing fabric, 10 by 8 inches (250 by 200 mm).
  - 2. Drainmat panel, 4 by 4 inches (100 by 100 mm).
  - 3. 6-by-6-inch square of cured waterproofing membrane.

#### 1.4 INFORMATIONAL SUBMITTALS

- A. Submit Qualification Data of firms and persons specified in the “Quality Assurance” Article to demonstrate
  - 1. For products required to be installed by workers approved by product manufacturers, include letters of acceptance by product Manufacturers certifying that applicators are approved to apply their products.
- B. Product Certificates: Signed by Manufacturers certifying that products furnished comply with requirements and are recommended by Manufacturer for uses indicated.

#### 1.5 QUALITY ASSURANCE

- A. Applicator Qualifications: Engage an experienced applicator to perform Work of this Section who has specialized in installing the specified product; who is approved, authorized, or licensed by the Manufacturer to install Manufacturer's product; and who is eligible to receive the standard waterproofing
  - 1. Company specializing in performing the Work of this Section with minimum five (5) years of experience.
  - 2. Applicator shall submit documentation from the membrane manufacturer to verify Contractor's status as a locally based, approved applicator for warranted installations of the product the Installer intends to use.
- B. Manufacturer Qualifications: Company specializing in manufacturing the Products specified in this Section with minimum Five (5) years of experience.
  - 1. Manufacturer shall have factory-trained representatives who are available for consultation and Project site inspection at no additional cost.
- C. Membrane Integrity Installing and Testing Firm Qualifications: Engage an independent testing agency to observe and conduct membrane integrity test and provide reports indicating testing procedure, methodology and results. Testing firm to have a minimum five (5) year record of satisfactory experience.
- D. Source Limitations: All components must be obtained as a single-source from the Membrane Manufacturer to ensure total system compatibility and integrity.
- E. Mockups: Before beginning installation, install waterproofing to 100 sq. ft. (9.3 sq. m) of deck and wall to demonstrate surface preparation, crack and joint treatment, corner treatment, thickness, texture, and execution quality.
  - 1. Mock-ups to be tested for adhesion per pre-construction testing requirements.
  - 2. Approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.
- F.



G.

H. Preinstallation Conference:

1. Meet with Owner; Architect; testing and inspecting agency representative; membrane system installer; waterproofing system manufacturer's representative; and installers whose work interfaces with or affects waterproofing, including installers of waterproofing accessories and equipment.
2. Review requirements for waterproofing, including surface preparation specified under other Sections, substrate condition and pretreatment, minimum curing period, forecasted weather conditions, special details and sheet flashings, installation procedures, testing and inspection procedures, and protection and repairs.

I. All Work shall be subject to acceptance by the Owner and Architect. All Work that does not comply with the intent of the Specifications shall be corrected by the Contractor.

#### 1.6 PRECONSTRUCTION TESTING

A. Preconstruction Testing: Perform the following tests on field mockups. Tests shall be witnessed by waterproofing manufacturer's technical representative and Architect. Advise Architect 7 days before testing takes place.

1. Adhesion Testing: Perform pull-tab adhesion testing as follows:
  - a. Place a reinforcing strip of fabric embedded in waterproofing at same depth as reinforcement layer in actual installation, with a pull tab left exposed. Allow waterproofing to cure.
  - b. Tab shall be pulled until membrane fails. A failure by membrane tearing (cohesive failure) indicates bond adhesion to substrate is stronger than internal bond, and is considered a "pass."
  - c. An adhesive failure, in which the entire membrane tears away from the substrate, is a "fail."
  - d. Subsequent to a "fail," measures shall be taken as recommended by membrane manufacturer to ensure that adhesive bond to substrate remains intact even when membrane tears internally.
  - e. New mockups shall be retested until membrane passes.
  - f. Measures taken to ensure membrane bond to substrate shall be documented and implemented on full waterproofing membrane installation.
  - g.
  - h.
  - i.

#### 1.7 DELIVERY, STORAGE AND HANDLING

A. Deliver materials to Project site in original containers with seals unbroken, labeled with Manufacturer's name, product brand name and type, date of manufacture, UL labels, and directions for storing and mixing with other components.

1. Manufacturer's brand name and stock number.
  2. Product name or title of material.
  3. Date of manufacture and shelf life.
- B. Store materials in their original undamaged containers in a clean, dry location protected from water and direct sunlight and within the temperature range required by Waterproofing Manufacturer. Materials shall be stored in a neat, safe manner, not to exceed the allowable structural capacity of the storage area.
- C. Remove and replace liquid materials that cannot be applied within their stated shelf life.
- D. Store all adhesives at temperatures between 60°F (15.5°C) and 80°F (26.6°C). If exposed to lower temperatures, restore materials to 60°F (15.5°C) minimum temperature before using.
- E. Follow Manufacturer's directions for protection of materials prior to and during installation. Do not use materials that have been damaged to the point that they will not perform as specified.
- 1.8 PROJECT CONDITIONS
- A. Environmental Limitations: Apply waterproofing within the range of ambient and substrate temperatures recommended by Waterproofing Manufacturer. Do not apply waterproofing to a damp or wet substrate, when relative humidity exceeds 85 percent, or when temperatures are less than 5 deg F (3 deg C) above dew point.
1. Do not apply waterproofing in snow, rain, fog or mist, or when such weather conditions are imminent during application and curing period.
- B. Maintain adequate ventilation during application and curing of waterproofing materials.
- C. Over its service life, do not expose membrane or accessories to a constant temperature in excess of 180°F (82°C) (i.e., hot pipes and vents or direct steam venting, etc.).
- D. Do not allow waste products (petroleum, grease, oil, solvents, vegetable or mineral oil, animal fat, etc.) to come in contact with the membrane. Any exposure to foreign materials or chemical discharges must be presented to Membrane Manufacturer for evaluation to determine any impact on the waterproof membrane assembly performance.
- E. General Contractor shall assure adequate protection during installation of the waterproofing assembly.

## 1.9 WARRANTY

- A. General: Warranty 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. Special Installer's Warranty: Written waterproofing Installer's warranty, signed by Installer, covering Work of this Section, for warranty period of two (2) years.
  - 1. Warranty includes removing and reinstalling waterproofing membrane, protection course, drainage course, and concrete topping slab.
  - 2. Upon completion of the work, the Installer must supply the Owner with a single-source warranty of U.S. origin direct from the Manufacturer.
- C. Special Manufacturer's Warranty: Written warranty, signed by Waterproofing Manufacturer agreeing to repair or replace waterproofing system that does not comply with requirements or that does not remain watertight within specified warranty period.
  - 1. Warranty Period: For watertightness warranty; includes labor and material, ten (10) years after date of Substantial Completion.

## PART 2 - PRODUCTS

### 2.1 WATERPROOFING SYSTEM

- A. Basis of Design: Two-Component, Fluid-Applied Modified Polyurethane Elastomeric Waterproofing System: Comply with ASTM C 836 and with manufacturer's written physical requirements.
  - 1. Products: Subject to compliance with requirements, provide the following:
    - a. CIM Industries, Inc.; CIM 1000.

### 2.2 AUXILIARY MATERIALS

- A. General: Provide auxiliary materials recommended by manufacturer to be compatible with one another and with waterproofing, as demonstrated by waterproofing manufacturer, based on testing and field experience.
- B. Primer: Manufacturer's standard, factory-formulated polyurethane or epoxy primer, meeting VOC limitations and recommended for substrate by waterproofing Manufacturer.
- C. Reinforcing Fabric:
  - 1. Nonwoven, needle-punched white polyester fabric, manufacturer's standard weight.

2. Products: Subject to compliance with requirements, provide the following:
    - a. CIM Industries, Inc.; CIM Scrim: Stitch bonded polyester.
  - D. Metal Termination Bars: Waterproofing manufacturer's standard aluminum or stainless steel termination bar, with stainless steel fasteners.
  - E. Cleaner: Solvent based cleaner for tools and membrane tie-ins and neutral cleaner for membrane, as recommended by manufacturer.
  - F. Sealants: Manufacturer's recommended sealant for use indicated.
  - G. Bonding Agent:
    1. Manufacturer's recommended bonding agent.
    2. Products: Subject to compliance with requirements, provide the following:
      - a. CIM Industries, Inc.; CIM Bonding Agent.
  - H. Aggregate: (16/30) mesh oven dried silica (quartz) sand
  - I. Other Materials:
    1. Provide other materials, not specifically described but required for a complete and proper installation, as selected by the Contractor and approved by the membrane system manufacturer as compatible, subject to review of the Architect.
- 2.3 PROTECTION COURSE
- A. Protection Course: ASTM D 6506, semirigid sheets of fiberglass or mineral-reinforced asphaltic core, pressure laminated between two asphalt-saturated fibrous liners and as follows:
    1. 1. Adhesive: Rubber-based solvent type recommended by waterproofing manufacturer for type of protection course.
- 2.4 PREFABRICATED DRAINAGE COURSE
- A. A composite drainage system consisting of a three-dimensional, crush-proof, drainage core and a filter fabric; with the following physical properties:
    1. Compressive Strength: ASTM D-1621. - 30,000 psf min.
    - 2.
    - 3.
    - 4.
    - 5.
    6. Flow, Q @ 3600 psf & hydraulic gradient of 1: ASTM D-4716. - 7 gpm/ft width min.
    7. Products; subject to compliance with requirements, provide one of the following:

- a. Bonar Building Products; Enkadrain 3811R
- b. JDR Enterprises, Inc.; J-Drain 1000

## PART 3 - EXECUTION

### 3.1 EXAMINATION

- A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements and other conditions affecting performance.
  - 1. Verify that concrete or concrete repair has cured and aged for minimum time period recommended by Waterproofing Manufacturer.
  - 2. Verify that substrate is visibly dry and free of moisture. Test for capillary moisture by plastic sheet method according to ASTM D 4263.
  - 3. 3. Verify the concrete has a #3-4 ICRI CSP and a minimum compressive strength of 3000 psi
- B. Proceed with installation only after unsatisfactory conditions have been corrected according to the manufacturer's application guidelines for material installation.

### 3.2 INTERFACE WITH OTHER WORK

- A. Sequencing of Work: Coordinate sequencing of waterproofing work with work of other sections that form portions of building envelope moisture control to ensure that expansion joints, flashings and transition materials can be properly installed and inspected.
- B. Subsequent Work: Coordinate waterproofing work with work of other sections installed subsequent to waterproofing to ensure complete inspection of installed waterproofing and sealing of waterproofing penetrations necessitated by subsequent work.

### 3.3 PREPARATION

- A. Clean and prepare substrate according to Manufacturer's written instructions. Provide clean, dust-free, and dry substrate for waterproofing application.
  - 1. The contractor shall determine the condition of the existing structural deck/substrate. All defects in the deck or substrate shall be corrected before waterproofing work commences. Areas of deteriorated deck/substrate, porous or other affected materials must be removed and replaced with new to match existing.
  - 2. 2. Prepare flashing substrates as required for application of new waterproofing membrane flashings.
  - 3. Remove all ponded water, snow, frost and/or ice from the work substrate prior to installing new waterproofing materials.

4. The final substrate for waterproofing shall be clean, dry, free of loose, spalled or weak material including coatings, mineral aggregate, and flood coat/gravel surfacing, oil, grease, contaminants, abrupt changes in level, waterproofing agents, curing compounds, and free of projections which could damage membrane materials.
- B. Mask-off adjoining surfaces not receiving waterproofing to prevent spillage and overspray affecting other construction.
- C. Close-off deck drains and other deck penetrations to prevent spillage and migration of waterproofing fluids.

### 3.4 MEMBRANE APPLICATION

- A. Apply primer to and wood surfaces at a minimum of 5-mils wet thickness. A uniform membrane free of holidays or pinholes is necessary to minimize outgassing effects during the application of the membrane to porous surfaces such as concrete. Surfaces may require additional coats to obtain a pinhole free finish. Apply bonding agent in accordance with Manufacturer's instructions to cleaned steel surfaces. Apply primer to cleaned steel surfaces if membrane cannot be applied before the formation of flash rust. Apply primer only in decreasing temperature to minimize outgassing. Consult with Manufacturer if this cannot be achieved.
- B. Allow primer to cure in accordance with Manufacturer's instructions before application of membrane.
- C. Apply membrane in accordance with Manufacturer's instructions.
- D. Keep material containers tightly closed until ready for use.
- E. Keep equipment, air supplies, and application surfaces dry.
- F. Mix and apply when membrane is above 60°F (15°C).
- G. Do not use adulterants, thinners, or cutback solutions.
- H. Blend and mix 2-component materials in accordance with Manufacturer's instructions. Do not hand-mix components.
- I. Maintain air supply for material spray application free of oil and water in accordance with ASTM D4285.
- J. Apply membrane directly to a clean and dry surface or to reinforcing fabric.
- K. Apply a 6-to-12-inch wide strip of joint cover sheet over cracks over 1/8-inch wide, non-working joints, and edge metal. Adhere center joint cover sheet over all joints by applying a tack coat of the membrane.

- L. Apply sufficient membrane to achieve wet film thickness as recommended by the manufacturer and as indicated in the drawings. Apply primer only in decreasing temperature to minimize outgassing. Consult with Manufacturer if this cannot be achieved.
- M. Apply first coat of waterproofing, embed membrane-reinforcing fabric, and apply second coat of waterproofing within recoat window to completely saturate reinforcing fabric and to obtain a seamless reinforced membrane free of entrapped gases, with a minimum dry film total thickness of 120 mils.
- N. Joint Lines:
  - 1. Prepare for joint lines should rain or other conditions require work stoppage or extended delay.
  - 2. Install joint lines clean and straight. Install overlap 6-inches minimum to ensure an impervious joint.
  - 3. Severely abrade with wire brush or sandpaper and apply bonding agent to all areas where the membrane has cured beyond its recoat window.
- O. Recoating:
  - 1. Recoat the membrane system within the recoat window to obtain maximum interlayer adhesion to build specific thickness.
  - 2. Non-Immersion Service: Severely abrade with wire brush or surface grinder, apply bonding agent, and recoat, if membrane has cured more than the recoat window. Acceptable adhesion can only be achieved through aggressive abrading.

### 3.5 PROTECTION LAYER INSTALLATION

- A. Install protection course over waterproofing membrane according to manufacturer's written instructions and before beginning subsequent construction operations.
- B. Clean and dry membrane before applying adhesive and setting protection course in adhesive.
- C. Apply adhesive at a rate of 2.0 to 2.5 gallons per 100 square feet.
- D. Set protection board course into adhesive after tack occurs. Apply sheets with 3" side and end-laps adhesively sealed.

### 3.6 DRAINAGE COURSE

- A. General:
  - 1. Examine the area to be covered with subsequent topping materials in order to insure that all areas have received the membrane, the membrane is free of damage, it is properly protected, and all flashing has been properly installed, before placing the drainage course.

2. It is recommended that the drainage course and other subsequent topping materials be installed as each section is completed.

B. Prefabricated Drainage Course Placement:

1. Install drainage course on in accordance with the Manufacturer's recommendations.
2. Layout and position drainage course and allow to lay flat. Cut and fit drainage course to perimeter and penetrations.
3. Bond all geotextile overlap edges to adjacent drainage core geotextile with an acceptable adhesive to insure geotextile integrity.
4. Protect installed molded-sheet drainage panels during subsequent construction.
5. Place subsequent topping materials as soon as possible.

3.7 FIELD QUALITY CONTROL

A. Engage independent Installation and Testing Firm to perform membrane integrity testing, electronic field vector mapping (EFVM). Perform testing in accordance with membrane integrity test system manufacturer's recommendations.

1. Perform testing following adequate precipitation or wet membrane adequately to enable accurate testing.
2. Membrane integrity test System: Conductor cable, placed on top of membrane, delivering direct current tension to membrane surface, enabling inspection and isolation of points of moisture infiltration through membrane to conductive substrate under membrane.
3. Initial Membrane Test: Perform initial membrane integrity test upon completion of membrane and integrity test system installation and prior to installation of membrane over-burden.
4. Identify locations of membrane leaks; record locations and document with photographs. Submit test reports to Architect.
5. Confirm completed repair of identified leaks and retest to verify water tightness of membrane.

3.8 CURING AND PROTECTING

A. Cure waterproofing according to Manufacturer's written recommendations, taking care to prevent contamination and damage during application stages and curing.

1. Do not permit foot or traffic on unprotected membrane.

B. Curing Time:

1. Allow sufficient time for the membrane to cure before placing into service, per manufacturer's written instructions.

C. Protect waterproofing from damage and wear during remainder of construction period.

D.



- E.
- F. Protect work of other trades from damage. Correct damage by cleaning, repairing, replacing, and recoating as approved by Architect. Leave in an undamaged condition.

### 3.9 CLEANING

- A. Cleanup: At end of each workday, remove rubbish, empty cans, rags, and other discarded materials from Project site.
- B. Collect waste material that may constitute a fire hazard, place in closed metal containers and remove daily from site.
- C. Clean off excess products smears adjacent surfaces as the Work progresses by methods and with cleaning materials approved in writing by Manufacturers.
- D. Clean spillage from adjacent construction using cleaning agents and procedures recommended by Manufacturer of affected construction. Restore to original condition or replace with new materials to the satisfaction of the Architect.
- E. Contractor shall replace all materials in kind that are damaged during Work of this Section.
- F. Legally dispose of debris in accordance with Local, State, and Federal regulations.
- G. Upon completion of the Work, remove all debris and surplus items from the site.

END OF SECTION

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## SECTION 07 25 00

### WEATHER BARRIERS

#### PART 1 - GENERAL

##### 1.1 SUMMARY

A. This Section includes the following including primers and other components:

1. Weather barriers.
2. UV-resistant, self-adhering air barrier.
3. Self-adhering flashing
4. High temperature self-adhering flashing
5. Non-adhesive flexible flashing
6. Penetration flashing

B. Perform mockups as described in the Contract Documents.

##### 1.2 DEFINITIONS

A. Water-Resistive Barrier Material: A material behind an exterior wall covering that is intended to resist liquid water that has penetrated behind the exterior covering from further intruding into the exterior wall assembly (CBC Chapter 2 "Definitions").

1. A water-resistive-barrier does not meet the performance requirements of an air barrier.

##### 1.3 SUBMITTALS

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

B. Certifications: Submit letter from manufacturer confirming that Contractor of the specified products is a certified applicator in good standing with the manufacturer and qualified to perform the specified work and able to receive the required warranties.

##### 1.4 QUALITY ASSURANCE

A. Mockups: Prior to installation, install mockups of self-adhering flashings, non-adhesive flexible flashings, weather-resistive barrier(s) and sheet metal flashings, for each type of opening.

1. Install stand-alone mockups.
2. Weather-resistive barrier, sheet metal and finish installers shall be present at mockup.
3. Mockup openings until mockups are in compliance with Contract Documents.

- B. Applicator: Company specializing in performing the work of this section with minimum (5) years' documented experience on similar projects with a record of successful in-service performance.
- C. Single-Source Responsibility: Obtain weather barrier and each type of flexible flashing material from single source providing consistent quality in performance and appearance without delaying progress of the Work.

#### 1.5 DELIVERY, STORAGE, AND HANDLING

- A. Deliver materials to the Project site in manufacturer's original, unopened packages and containers bearing the manufacturer's name and label, and the following information:
  - 1. Product name or title of material.
  - 2. Manufacturer's stock number and date of manufacture.
  - 3. Contents by volume, for pigment and vehicle constituents.
  - 4. Application instructions.
  - 5. Handling instructions and precautions.
  - 6. VOC content.
- B. Store materials in original, undamaged containers in clean, dry, protected location on raised platforms with weather protective coverings, within temperature range required by manufacturer. Protect stored materials from direct sunlight. Flexible flashing manufacturer's standard packaging and covering is not considered adequate weather protection.
- C. Maintain containers in a clean condition, free of foreign materials and residue.
- D. Protect materials from freezing.
- E. Keep storage area neat and orderly.
- F. Remove oily rags and waste daily.
- G. Store rolls on end.

#### 1.6 WARRANTY

- A. Weather Resistive Barrier Warranty: Manufacturer will pay the cost of materials and labor to correct problems found to be caused solely by the failure of the manufacturer's product to perform to manufacturer's published specifications.
  - 1. Warranty Period: Fifteen (15) years from date of substantial completion.
  - 2. Warranty Period: Fifteen (15) years from date of substantial completion.
- B. Installer Warranty: Installer's warranty in which installer agrees to repair or replace flexible flashings and penetration flashings that fail in materials or workmanship within the specified warranty period. Repair or replacement shall include entire assembly including, but not limited to, flashings and accessories.

1. Warranty Period: Five (5) years from date of Substantial Completion.

## PART 2 - PRODUCTS

### 2.1 MECHANICALLY-FASTENED WEATHER RESISTIVE BARRIERS

#### A. Air and Water Barrier (Layer 1):

1. Basis of Design Manufacturer and Product:
  - a. Fortifiber, WeatherSmart Drainable.
2. Subject to compliance with requirements, acceptable manufacturers and products include:
  - a. DuPont, Tyvek CommercialWrap D.
  - b. Substitutions: See Section 01 25 00 "Substitution Procedures".
3. Physical Properties:
  - a. Meets the criteria for air barrier material per California Energy Code 140.3-(a) / 9. "Air Barrier" / A.). Refer to Definitions above.
  - b. Product is part of air barrier assembly.
  - c. Product also functions as a water-resistive barrier.

#### B. Building Paper (Layer 2): Where required to provide bond breaker behind exterior wall finishes using cement plaster.

1. Basis of Design Manufacturer and Product:
  - a. Fortifiber, Super Jumbo Tex.
  - b. Substitutions: See Section 01 25 00 "Substitution Procedures".

#### C. Fasteners For Attaching Weather Resistive Barrier To Substrates: Provide single chisel stainless steel staples.

### 2.2 UV-RESISTANT, SELF-ADHERED AIR BARRIER

#### A. General: UV-resistant, self-adhered air barrier is required at open-joint rainscreen applications.

#### B. Basis of Design Manufacturer and Product:

1. VaproShield, RevealShield SA.
2. No known substitutions.
3. Substitutions: See Section 01 25 00 "Substitution Procedures".

#### C. Physical Properties:

Cal Poly Humboldt  
Deck Rehabilitation  
LPAS Project #1485-0001

WEATHER BARRIERS  
07 25 00 - 3

1. Color: Black.
2. UV Stability (AC38, Section 4.1.2): Pass.
3. Exposure:
  - a. Without Cladding: 12 months.
  - b. Allowable Cladding Joint Width: 2 inches maximum.
  - c. Allowable Cladding Open Area: 40 percent maximum area of total elevation.

## 2.3 SELF-ADHERING FLASHING

- A. Self-Adhering Flashing (SAF): Provide self-adhering flashing for integrating weather resistive barrier to wall penetrations, openings, and flashings.

1. Product: Fortiflash 40 mil; Fortifiber.
  - a. Provide 25 mil at openings including window and door openings.
2. Primer: Fortifiber Primer; Fortifiber.
3. Ripcord: Products with ripcord are not permitted.

## 2.4 HIGH TEMPERATURE SELF-ADHERING FLASHING

- A. High Temperature Self-Adhering Flashing (SAF): Provide high temperature rated self-adhering flashing for integrating weather resistive barrier to wall penetrations, openings, and flashings under sheet metal and where indicated.

1. Product: Fortiflash Butyl; Fortifiber.
2. Thickness: 30-mils.
3. Ripcord: Products with ripcord are not permitted.

- B. Primer: Fortifiber Primer; Fortifiber.

1. Perma-A-Barrier WB Primer; GCP Applied Technologies for use with GCP Applied Technologies flashing.

## 2.5 NON-ADHESIVE FLEXIBLE FLASHING

- A. Multi-layer composite of heavy-duty polypropylene fabric.

1. Product: Moistop PF; Fortifiber.

- B. Fasteners: Stainless steel staples.

## 2.6 PENETRATION FLASHING

- A. Penetration Flashing: Prefabricated penetration flashing.

1. Product: Quickflash Weatherproofing Products, Inc.
  2. Models: As Recommended by manufacturer for type and size of penetration.
- B. Fasteners: Hot-dipped galvanized ring shanked nails by Maze Nails.

## 2.7 ACCESSORIES

- A. General: Provide all accessories as recommended in writing by air barrier manufacturer to produce a complete air barrier assembly, and as required to achieve the specified warranties.
- B. Sealant: One-component polyurethane, moisture curing, non-sag sealant.
1. By air barrier manufacturer, or approved in writing by air barrier manufacturer.
  2. See Section 01 61 16 "Material Contaminant Restrictions" for maximum allowable VOC content.
- C. Flashing Corners: Flexible flashing manufacturer's prefabricated corner flashing for flashing of openings.
- D. Self-Adhered Air Barrier Primer: Confirm the need for primer, specific to Project scope and substrate, with membrane manufacturer.
- E. Liquid Membrane: Manufacturer's standard, to fill gaps and as otherwise required to maintain air barrier integrity.

## PART 3 - EXECUTION

### 3.1 EXAMINATION

- A. Examine substrates and conditions, with the Applicator present for compliance with application requirements.
- B. Surfaces shall be dry before materials are installed.
- C. Notify the Consultant in writing of anticipated problems using products specified over existing substrates.
- D. Begin application only after unsatisfactory conditions have been corrected and surfaces to receive materials are dry.
- E. Start of application within a particular area will be construed as the Applicator's acceptance of surface conditions.

### 3.2 PREPARATION

- A. Surface Preparation: Clean and prepare surfaces to be receiving materials according to the manufacturers' written instructions for the particular substrate conditions and as specified.
  - 1. Remove efflorescence, chalk, dust, dirt, release agents, grease, oils, and similar conditions by water blasting followed by a clear water rinse.
  - 2. Remove mildew and neutralize surfaces according to manufacturer's written recommendations before patching materials are applied.
  - 3. Do not apply materials over surfaces where moisture content exceeds that permitted in manufacturer's written instructions.
  - 4. Schedule cleaning and materials application so dust and other contaminants will not fall on wet, newly applied primer.

### 3.3 INSTALLATION, GENERAL

- A. General Installation: Install in accordance with manufacturers' written instructions and recommendations.
- B. Ensure that flexible flashing adheres continuously to substrate, and is free from bubbles, fishmouths, creases and other irregularities that affect monolithic adhesion and installation.
- C. Install self-adhering flashing at inside corners, outside corners, behind stucco accessories, at penetrations, and to strip in drip/weep screeds.

### 3.4 SEQUENCING

- A. Installer weather barrier and apply flashings to weather barrier to create a full, water-shedding plane.
- B. At plaster locations, provide building paper over fully flashed weather barrier. Do not install any flashings to building paper.

### 3.5 WEATHER RESISTIVE BARRIER INSTALLATION

- A. Install weather resistive barrier in accordance with manufacturer's written instructions and "best- practice" recommendations.
- B. Ensure substrate is properly installed, free of projections and irregularities that may be detrimental to proper installation of the weather resistant barrier.
- C. Install barrier over substrate, starting at the bottom of a wall, shingling upwards. Cover rough window and door openings.



1. Shingle (to shed water) to provide 100 percent sheathing coverage behind cement plaster.
  2. Attach barrier tight to substrate, free of voids, wrinkles, buckles and fishmouths.
  3. Overlap corners a minimum of 6 inches.
  4. Lap requirements:
    - a. 6 inch vertical overlap.
    - b. 3 inch horizontal overlap.
  5. Fasten so that barrier is tight against substrate.
  6. Cover barrier within 30 days of installation. Material must be removed and reinstalled beyond 30 days at no cost to the Owner.
  7. Integrate weather resistive barrier with self-adhering flashings at window, doors, penetrations and where indicated.
- D. Inspect and repair barrier prior to application of lath and plaster. Install additional barrier material at tears, perforations, water damaged and/or other similar damage for a water shedding assembly.

### 3.6 BUILDING PAPER INSTALLATION

- A. Apply building paper shingled in same manner as weather barrier. Ensure building paper fully separates plaster from flexible flashings.

### 3.7 SELF-ADHERING AIR BARRIER INSTALLATION

- A. Install primer if required by manufacturer for substrate and Project conditions.
- B. Starting at the lowest point of substrate to receive membrane, unroll approximately 6 inches of material and position it onto the substrate. Remove release film and press membrane firmly into place. Unroll additional material onto the approved substrate while removing release film. Hand wipe the material into place to ensure full contact of membrane to the substrate.
- C. Using a two-handed rubber roller, firmly apply pressure to sufficiently work out any entrapped air and secure a tight permanent bond to the substrate.
- D. Accurately align sheets and maintain 2-1/2 inch minimum lap widths and end laps. Overlap and seal seams, and stagger end laps to ensure airtight installation.
1. Apply sheets in shingled manner to shed water.
- E. Apply continuous membrane sheets onto accessory strips bridging movement joints.
- F. Wall Openings: Continue membrane into framed openings to the inside face of framing.
1. Install components according to membrane manufacturer's instructions for weather-tight seal at openings..

### 3.8 SELF ADHERING FLASHING INSTALLATION

- A. General Installation: Install in accordance with manufacturer's recommendations.
  - 1. High-temperature self-adhering flashing shall be installed behind sheet metal and other surfaces that will exceed temperature limits of non-high-temperature rated self-adhering flashing. Comply with manufacturer's written requirements including temperature limits of self-adhering flashing products.
  - 2. Self-adhering flashing shall not be installed in areas where it will be exposed to direct sunlight.
  - 3. Comply with temperature restrictions of self-adhering flashing manufacturer for installation; use primer rather than nails for installing underlayment at low temperatures.
  - 4. Install self-adhering flashings for a watertight installation.
- B. Prepare substrate to receive flashing in accordance with manufacturer's recommendations.
  - 1. Clear loose debris or dust.
  - 2. Wipe area with a clean cloth or brush.
- C. Apply primer at all at all locations to receive self-adhering flashing.
  - 1. Allow primer to dry completely before installing flashing.
  - 2. Re-prime if primer becomes contaminated with dust or dirt.
- D. Use a hand roller acceptable to the manufacturer to secure membrane firmly in place, eliminating wrinkles and air pockets.
  - 1. Apply in shingle fashion to shed water, with end laps of not less than 6 inches staggered 24 inches between courses. Overlap side edges not less than 3-1/2 inches. Roll laps with roller. Cover self-adhering flashing within 14 days.
  - 2. Wrinkles shall be cut out and repaired in accordance with manufacturer's recommendations.
- E. Inside and Outside Corners:
  - 1. Install 18 inch wide flashing strip over weather resistant barrier, centered over corner.
- F. Window Openings: Unless otherwise shown or noted:
  - 1. Adhere minimum 9-inch wide strip of self-adhering flashing onto substrate as indicated on drawings at jamb. Adhere larger size self-adhering flashing if indicated on the Drawings.
  - 2. Adhere strip of self-adhering flashing onto window sill, over non-adhesive flashing, mostly covering non-adhesive flashing, and up 8 inches on each jamb.
  - 3. Properly lap flashing to shed water. Install at sill condition first, jambs second and head condition last.
  - 4. Install additional self-adhering flashing where indicated in the Drawings.

5. Install self-adhering butterflies, corner patches and other shapes where indicated and as required for a watertight installation at windows.

### 3.9 NON-ADHESIVE FLASHING INSTALLATION

- A. Prepare substrate to receive flashing in accordance with manufacturer's recommendations.
  1. Clear loose debris or dust.
  2. Wipe area with a clean cloth or brush.
- B. Fasten non-adhering flashing to substrate with as few fasteners as needed to secure non-adhering flashing to the substrate unless more stringent fastening is indicated in the Contract Drawings or required by the manufacturer. Fasten only where non-adhering flashing will be covered by self-adhering flashing.
- C. Lap sill pan over non-adhesive flashing minimum 2 inches.
- D. Install non-adhesive flashing 12 inches wide, 12 inches past end of jamb or penetration.

### 3.10 PENETRATION FLASHING INSTALLATION

- A. Install prefabricated flashing panels over penetrations and interlace with weather resistive barrier in accordance with the manufacturer's recommendations.
- B. Fasten penetration flashing only where will be covered by self-adhering flashing.
- C. Strip in prefabricated penetration flashing along top and sides with self-adhering flashing prior to installation of weather-resistive barrier.
- D. Where prefabricated penetration flashing is not indicated, adhere self-adhering flashing 4 inches above penetration and 3 inches below penetration, lapped onto non-adhered flexible flashing or weather-resistive barrier below penetration.
- E. Install prefabricated penetration flashing where it can be sized properly for penetration. Install penetration flashings at the following conditions:
  1. Electrical panels
  2. Box penetrations
  3. Vent penetrations
  4. Pipe penetrations
  5. Conduit penetrations
  6. A/C lines
  7. Misc. penetrations and where indicated.

### 3.11 FIELD QUALITY CONTROL

- A. The Owner reserves the right to invoke the following test procedure at any time and as often as the Owner deems necessary:
  - 1. The Owner will engage the services of a qualified independent testing and inspecting agency to sample materials used. Samples of material delivered to the Project will be taken, identified, sealed, and certified in presence of the Contractor.
  - 2. The testing and inspecting agency will perform appropriate tests, as required by the Owner.
  - 3. If results show materials do not comply with requirements, the Contractor may be directed to stop work, remove noncomplying materials, pay for testing, correct substrates, re-prime surfaces as required and install materials to replace those not complying with requirements.

### 3.12 CLEANING

- A. Cleanup: At end of each workday, remove rubbish, empty cans, rags, and other discarded materials from the Project site.

### 3.13 PROTECTION

- A. Protect work of other trades from damage. Correct damage by cleaning, repairing and replacing as approved by the Waterproofing Consultant. Leave in an undamaged condition.
- B. Provide protection of installed materials from water infiltration into or behind them.
- C. Provide protection from dust, dirt, precipitation, and freezing.
- D. Provide protection of installed primer from dust, dirt, precipitation, freezing and continuous high humidity.

### 3.14 REPAIRS

- A. Repair or replace damaged Work and Work not in compliance with requirements of the Contract Documents at no additional cost to Owner.

END OF SECTION

## **SECTION 07 46 46**

### **FIBER CEMENT SIDING**

#### **PART 1 - GENERAL**

##### **1.1 SECTION INCLUDES**

- A. Fiber cement siding.

##### **1.2 RELATED REQUIREMENTS**

- A. Section 07 25 00 - Weather Barriers: Weather barrier under siding.

##### **1.3 REFERENCE STANDARDS**

- A. ASTM C1186 - Standard Specification for Flat Fiber Cement Sheets.
- B. ASTM E136 - Standard Test Method for Behavior of Materials in a Vertical Tube Furnace At 750 Degrees C.
- C. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials.

##### **1.4 SUBMITTALS**

- A. See Section 01 33 00 - Submittal Procedures.
- B. Product Data: Submit manufacturer's data sheets on each product to be used, including:
  - 1. Manufacturer's requirements for related materials to be installed by others.
  - 2. Preparation instructions and recommendations.
  - 3. Storage and handling requirements and recommendations.
  - 4. Installation methods, including nail patterns.
- C. Maintenance Instructions: Periodic inspection recommendations and maintenance procedures.
- D. Warranty: Submit copy of manufacturer's warranty, made out in Owner's name, showing that it has been registered with manufacturer.

##### **1.5 DELIVERY, STORAGE, AND HANDLING**

- A. Store products under waterproof cover and elevated above grade, on a flat surface.

## **1.6 WARRANTY**

- A. Provide manufacturer's limited 30 year product warranty.
- B. Provide manufacturer's limited 15 year finish warranty.

## **PART 2 - PRODUCTS**

### **2.1 MANUFACTURERS**

- A. Sole Source: Provide fiber cement products from single manufacturer,
- B. Basis of Design Manufacturer: James Hardie.
- C. Subject to compliance with requirements, acceptable manufacturers include:
  - 1. Allura.
  - 2. CertainTeed.
  - 3. GAF.
  - 4. Nichiha.
  - 5. Substitutions: See Section 01 25 00 "Substitution Procedures".

### **2.2 FIBER CEMENT SIDING**

- A. Siding: Individual horizontal boards with machined edges, for nail attachment.
  - 1. Basis of Design Manufacturer and Product: James Hardie, HardiePlank Lap Siding.
    - a. Texture: Select Cedarmill.
    - b. Panel Size: As selected by Architect from manufacturer's standard range.
- B. Soffit Panels: Individual boards with machined edges and factory-drilled ventilation holes, for nail attachment.
  - 1. Basis of Design Manufacturer and Product: James Hardie, HardieSoffit Panels.
    - a. Vented-Cedarmill and Non-Vented Cedarmill panel
  - 2. Physical Properties: Match lap siding above.

### **2.3 FINISH**

- A. Factory Finish: Soffit Panels utilize Manufacturer's proprietary factory-installed multi-coat, heat cured finish.
  - 1. Color: As selected by Architect from manufacturer's standard range.

## 2. ACCESSORIES

- B. Trim: Factory Primed and paint ready..
- C. Fasteners: Galvanized or corrosion resistant; length as required to penetrate minimum 1-1/4 inch.

## PART 3 - EXECUTION

### 3.1 EXAMINATION

- A. Examine substrate, clean and repair as required to eliminate conditions that would be detrimental to proper installation.
- B. Verify that weather barrier/waterproofing has been installed over substrate completely and correctly.
- C. Do not begin until unacceptable conditions have been corrected.

### 3.2 PREPARATION

- A. Install Sheet Metal Flashing:
  - 1. Above door trim and casings.
  - 2. Above horizontal trim in field of siding.

### 3.3 INSTALLATION

- A. Install in accordance with manufacturer's instructions and recommendations.
  - 1. Read warranty and conform to terms necessary to maintain warranty coverage.
  - 2. Install in accordance with conditions stated in model code evaluation report applicable to location of project.
  - 3. Use trim details indicated on drawings.
  - 4. Touch up field cut edges before installing.
  - 5. Pre-drill nail holes if necessary to prevent breakage.
- B. Over Wood Studs without Sheathing: Install siding over weather-resistive barrier, fastened into studs.
- C. Over Wood and Wood-Composite Sheathing: Fasten siding through sheathing into studs.
- D. Allow space for thermal movement between both ends of siding panels that butt against trim; seal joint between panel and trim with specified sealant.

- E. Provide joints between adjacent panels of siding as recommended by manufacturer to allow for expansion of material.
- F. Exterior Soffit Vents: Install according to manufacturer's written instructions and in locations indicated on drawings, and provide vent area indicated on drawings.
- G. After installation, seal joints except lap joints of lap siding; seal around penetrations, and paint exposed cut edges.

### **3.4 PROTECTION**

- A. Protect installed products until Date of Substantial Completion.
- B. Touch-up, repair or replace damaged products before Date of Substantial Completion.

END OF SECTION



## **SECTION 07 62 00**

### **SHEET METAL FLASHING AND TRIM**

#### **PART 1 - GENERAL**

##### **1.1 SECTION INCLUDES**

- A. Fabricated sheet metal items, including flashings, counterflashings, and scuppers, other items noted on the drawings.
- B. Self-adhered flexible flashing.
- C. Sealants for joints within sheet metal fabrications.
- D. Precast concrete splash pads.

##### **1.2 RELATED REQUIREMENTS**

- A. Section 07 92 00 - Joint Sealants: Sealing non-lap joints between sheet metal fabrications and adjacent construction.
- B. Section 09 06 90.23 Paints and Coatings
- C. Section 09 96 00 - High Performance Coatings

##### **1.3 REFERENCE STANDARDS**

- A. AAMA 2604 - Voluntary Specification, Performance Requirements and Test Procedures for High Performance Organic Coatings on Aluminum Extrusions and Panels.
- B. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
- C. ASTM B32 - Standard Specification for Solder Metal.
- D. ASTM C920 - Standard Specification for Elastomeric Joint Sealants.
- E. ASTM D4586/D4586M - Standard Specification for Asphalt Roof Cement, Asbestos-Free.
- F. SMACNA (ASMM) - Architectural Sheet Metal Manual.

#### **1.4 ADMINISTRATIVE REQUIREMENTS**

- A. Preinstallation Meeting: Convene one week before starting work of this section.

#### **1.5 SUBMITTALS**

- A. See Section 01 33 00 - Submittal Procedures.
- B. Product Data: For manufactured products.
- C. Shop Drawings: Indicate material profile, jointing pattern, jointing details, fastening methods, flashings, terminations, and installation details.

#### **1.6 QUALITY ASSURANCE**

- A. Perform work in accordance with SMACNA (ASMM) and CDA A4050 requirements and standard details, except as otherwise indicated.

#### **1.7 DELIVERY, STORAGE, AND HANDLING**

- A. Stack material to prevent twisting, bending, and abrasion, and to provide ventilation. Slope metal sheets to ensure drainage.
- B. Prevent contact with materials that could cause discoloration or staining.

### **PART 2 - PRODUCTS**

#### **2.1 SHEET MATERIALS**

- A. Galvanized Steel: ASTM A653/A653M, with G90/Z275 zinc coating; minimum 24 gage, (0.0239 inch) thick base metal.

#### **2.2 ACCESSORIES**

- A. Fasteners: Galvanized steel, with soft neoprene washers.
- B. Primer: Zinc chromate type.
- C. Protective Backing Paint: Zinc molybdate alkyd.
- D. Sealant to be Concealed in Completed Work: Non-curing butyl sealant.
- E. Sealant to be Exposed in Completed Work: ASTM C920; elastomeric sealant, 100 percent silicone with minimum movement capability of plus/minus 25 percent and recommended by manufacturer for substrates to be sealed; clear.

- F. Sealant: As specified in Section 07 92 00.
- G. Plastic Cement: ASTM D4586/D4586M, Type I.
- H. Solder: ASTM B32; Sn50 type.
- I. Self-Adhered Flexible Flashing Primer: Manufacturer's standard, as required by substrate.
- J. Liquid Flashing: Manufacturer's standard, compatible with self-adhered flexible flashing and air barrier membrane.

### **2.3 FABRICATION**

- A. Form sections true to shape, accurate in size, square, and free from distortion or defects.
- B. Form pieces in longest possible lengths.
- C. Hem exposed edges on underside 1/2 inch; miter and seam corners.
- D. Form material with flat lock seams, except where otherwise indicated; at moving joints, use sealed lapped, bayonet-type or interlocking hooked seams.
- E. Fabricate corners from one piece with minimum 18 inch long legs; seam for rigidity, seal with sealant.
- F. Fabricate flashings to allow toe to extend 2 inches over roofing gravel. Return and brake hemmed edges.

## **PART 3 - EXECUTION**

### **3.1 EXAMINATION**

- A. Verify roof openings, curbs, pipes, sleeves, ducts, and vents through roof are solidly set, reglets in place, and nailing strips located.
- B. Verify roofing termination and base flashings are in place, sealed, and secure.

### **3.2 PREPARATION**

- A. Install starter and edge strips, and cleats before starting installation.
- B. Back paint concealed metal surfaces with protective backing paint to a minimum dry film thickness of 15 mil.

### **3.3      INSTALLATION**

- A.    Secure flashings in place using concealed fasteners, and use exposed fasteners only where permitted..
- B.    Apply plastic cement compound between metal flashings and felt flashings.
- C.    Fit flashings tight in place; make corners square, surfaces true and straight in planes, and lines accurate to profiles.
- D.    Solder metal joints for full metal surface contact, and after soldering wash metal clean with neutralizing solution and rinse with water.
- E.    Secure downspouts in place with concealed fasteners.
- F.    Set splash pads under downspouts.

END OF SECTION

## SECTION 07 62 15 - COPPER FLASHING AND TRIM

### PART 1 - GENERAL

#### 1.1 RELATED DOCUMENTS

- A. Drawing and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

#### 1.2 SUMMARY

- A. Section Includes shop and field formed copper accessories and trim.
- B. Related Requirements:
  - 1. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to work of this Section.
- C. Sealants are generally specified in Division 07 Section, "Joint Sealants."

#### 1.3 COORDINATION

- A. Coordinate work of this section with interfacing and adjacent work for proper sequencing. Ensure weather resistance and durability of work and protection of materials and finishes.

#### 1.4 PERFORMANCE REQUIREMENTS

- A. Installation Requirements: Fabricator is responsible for installing system, including anchorage to substrate and necessary modifications to meet specified and drawn requirements and maintain visual design concepts in accordance with Contract Documents and following installation methods as stipulated in the "Copper in Architecture" handbook published by the Copper Development Association (CDA).
  - 1. Drawings are diagrammatic and are intended to establish basic dimension of units, sight lines, and profiles of units.
  - 2. Make modifications only to meet field conditions and to ensure fitting of system components.
  - 3. Obtain Architect's approval of modifications.
  - 4. Provide concealed fastening wherever possible.
  - 5. Attachment considerations: Account for site peculiarities and expansion and contraction movements so there is no possibility of loosening, weakening and fracturing connection between units and building structure or between components themselves.

6. Obtain Architect's approval for connections to building elements at locations other than indicated in Drawings.
7. Accommodate building structure deflections in system connections to structure.

B. Performance Requirements:

1. System shall accommodate movement of components without buckling, failure of joint seals, undue stress on fasteners, or other detrimental effects when subjected to seasonal temperature changes and live loads.
2. Design system capable of withstanding building code requirements for negative wind pressure.

1.5 SUBMITTALS

- A. General: Submit the following in accordance with Conditions of Contract and Division 01 Specification Sections.
- B. Product data for flashing, metal, and accessories: Manufacturer's technical product data, installation instructions and general recommendations for each specified sheet material and fabricated product.
- C. Samples of the following flashing, sheet metal and accessories:
  1. 6-inch (150 mm) or 12-inch (300 mm) long samples of fabricated products exposed as finished work. Provide complete with specified finish.

1.6 CLOSEOUT SUBMITTALS

- A. Maintenance Data: ... maintenance manuals.

1.7 MAINTENANCE MATERIAL SUBMITTALS

- A. Provide maintenance data in Operations and Maintenance manual for maintaining applied coatings on copper panels.

1.8 QUALITY ASSURANCE

- A. Fabricator's Qualifications: Company specializing in copper flashing and trim work with three years experience in similar size and type of installations.
- B. Installer: A firm with 3 years of successful experience with installation of copper flashing and trim work of type and scope equivalent to Work of this Section

- 1.9 Industry Standard: Except as otherwise shown or specified, comply with applicable recommendations and details of the "Copper in Architecture" handbook published by the Copper Development Association (CDA). Conform to dimensions and profiles shown. DELIVERY, STORAGE AND HANDLING
- A. Packing, Shipping, Handling, and Unloading: Protect finish metal faces.
  - B. Acceptance at Site: Examine each component and accessory as delivered and confirm that material and finish is undamaged. Do not accept or install damaged materials.
  - C. Storage and Protection:
    - 1. Stack pre-formed material to prevent twisting, bending, and abrasions.
    - 2. Provide ventilation.
    - 3. Prevent contact with materials which may cause discoloration or staining.
- 1.10 WARRANTY
- A. Warrant installed flashing, copings, gravel stops, and trim components to be free from defects in material and workmanship for period of 2 years.
  - B. Include coverage against leakage and damages to finishes.

## PART 2 - PRODUCTS

- 2.1 FLASHING AND TRIM MATERIALS
- A. Copper: ASTM B370; temper H00 (cold-rolled) except where temper 060 is required for forming;
    - 1. 16 oz. per sq. ft. (0.0216-inch thick) (0.55 mm) except as otherwise indicated.
    - 2. Material: Copper sheet with 060 temper conforming to ASTM B370 bonded with a proprietary rubber based adhesive, between two layers of fiberglass fabric weighing not less than 0.3 oz/sq.ft./layer with a minimum of 20x20 threads per inch.
  - B. Available Products: Subject to compliance with requirements, products that may be incorporated in the Work include, but are not limited to, the following:
  - C. Products: Subject to compliance with requirements, provide one of the following:
    - 1. Copper Sealtite 2000, Advanced Building Products, Inc.
    - 2. Multi-Flash 500 Series Asphalt Free, York Manufacturing, Inc.
- 2.2 ACCESSORIES
- A. Solder: ASTM B32; Provide 50-50 tin/lead or lead free alternative of similar or greater strength solder.

- B. Flux: Muriatic acid neutralized with zinc or approved brand of soldering flux.
- C. Fasteners: Same metal as flashing/sheet metal or other non-corrosive metal as recommended by sheet manufacturer. Match finish of exposed heads with material being fastened.
- D. Joint Sealant: One-part, copper compatible elastomeric polyurethane, polysulfide, butyl or silicone rubber sealant as tested by sealant manufacturer for copper substrates. Refer to Division 07.
- E. Adhesives: Type recommended by flashing sheet manufacturer for waterproof/weather-resistant seaming and adhesive application of and compatibility with flashing sheet.
- F. High Temperature Grade Water Barrier Underlayment: Cold applied, self-adhering membrane composed of a high density, cross laminated polyethylene film coated on one side with a layer of butyl rubber or high temperature asphalt adhesive. Provide primer when recommended by water barrier manufacturer.

## 2.3 FABRICATION

- A. General Metal Fabrication: Shop-fabricate work to greatest extent possible. Comply with details shown and with applicable requirements of Copper Development Association (CDA) "Copper in Architecture" handbook and other recognized industry practices. Fabricate for waterproof and weather-resistant performance, with expansion provisions for running work, sufficient to permanently prevent leakage, damage, or deterioration of the work. Form work to fit substrates. Comply with material manufacturer instructions and recommendations for forming material. Form exposed copper work without excessive oil-canning, buckling, and tool marks, true to line and levels indicated, with exposed edges folded back to form hems.
  - 1. Fabricate to allow for adjustments in field for proper anchoring and joining.
  - 2. Form sections true to shape, accurate in size, square, free from distortion and defects.
  - 3. Cleats: Fabricate cleats of same material as sheet, interlockable with sheet in accordance with CDA recommendations.
  - 4. Fabricate corners from one piece with minimum 18 inch (450 mm) long legs; solder for rigidity if required; seal non-soldered weather joints with sealant.
- B. Seams: Fabricate nonmoving seams with flat-lock seams where possible. Tin edges and cleats to be seamed, form seams, and solder. Where soldered flat-lock seams are not possible, use soldered riveted lap seams joints for additional strength.
- C. Expansion Provisions: Where lapped or bayonet-type expansion provisions in work cannot be used or would not be sufficiently water/weatherproof, form expansion joints of intermeshing hooked flanges, not less than 1-inch (25 mm) deep, filled with mastic sealant (concealed within joints).
- D. Sealant Joints: Where movable, nonexpansion type joints are indicated or required for proper performance of work, form metal to provide for proper installation of elastomeric sealant, in compliance with CDA standards.



## 2.4 FINISHES, GENERAL

- A. Natural weathering mill finished copper. No applied finish.

## PART 3 - EXECUTION

### 3.1 PREPARATION

- A. General: Examine conditions and proceed with work when substrates are ready.
- B. Confirm that substrate system is even, smooth, sound, clean, dry, and free from defects.

### 3.2 INSTALLATION

- A. General: Except as otherwise indicated, comply with manufacturer's installation instructions and recommendations and with the "Copper in Architecture" handbook published by the Copper Development Association (CDA). Anchor units of work securely in place by methods indicated, providing for thermal expansion of units; conceal fasteners where possible, and set units true to line and level as indicated. Install work with laps, joints, and seams that will be permanently watertight and weatherproof.
  - 1. Install units plumb, level, square, and free from warp or twist while maintaining dimensional tolerances and alignment with surrounding construction.
  - 2. Fit flashings tight in place. Make corners square, surfaces true and straight in planes, and lines accurate to profiles
  - 3. Miter, lap seam and close corner joints with solder. Seal seams and joints watertight.
  - 4. Install expansion joints at frequency recommended by CDA. Do not fasten moving seams such that movement is restricted.
- B. Underlayment: Where installation is to be directly on cementitious or wood substrates, install red rosin paper slip sheet over layer of asphalt saturated felt.
- C. Bed flanges of work in a thick coat of bituminous roofing cement where required for waterproof performance.
- D. Coping, and Fascia/Gravel Stops:
  - 1. Space seams: 10'-0" (3000 mm) o.c. maximum.
  - 2. Lock exterior edges over continuous cleats to secure to substrate.
  - 3. Slope towards inside of parapet, 1/2 inch (13 mm) minimum, unless indicated otherwise.
  - 4. Lock interior edges to substrate with cleats spaced at 12 inch (300) mm centers.
  - 5. Provide drainage system at seams to prevent water infiltration.

### 3.3 ADJUSTING AND CLEANING

- A. Remove protective film (if any) from exposed surfaces of copper promptly upon installation. Strip with care to avoid damage to finishes.
- B. Clean exposed copper surfaces, removing substances that might cause abnormal discoloration of metal.
- C. Upon completion of each area of soldering, carefully remove flux and other residue from surfaces. Neutralize acid flux by washing with baking soda solution, and then flushing with clear water rinse. Use special care to neutralize and clean crevices.
- D. Clean exposed metal surfaces of substances that would interfere with normal oxidation and weathering.

### 3.4 PROTECTION

- A. Advise Contractor of required procedures for surveillance and protection of flashings and sheet metal work during construction to ensure that work will be without damage or deterioration other than natural weathering at time of Substantial Completion.

END OF SECTION

## SECTION 07 92 00

### 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. Exterior joint sealants.
  - 2. Interior joint sealants.
  - 3. Backing materials.

##### 1.3 REFERENCES

- A. See Section 01 42 00 "Referencess".
- B. Codes:
  - 1. California Building Code (CBC): Title 24 Part 2.
  - 2. California Energy Code, Title 24 Part 6.
  - 3. California Green Building Standards Code (CALGreen): Title 24 Part 11.
- C. Reference Standards:
  - 1. ASTM C834: Standard Specification for Latex Sealants.
  - 2. ASTM C910: Standard Test Method for Bond and Cohesion of One-Part Elastomeric Solvent Release-Type Sealants.
  - 3. ASTM C1193: Standard Guide for Use of Joint Sealants.
  - 4. ASTM C1311: Standard Specification for Solvent Release Sealants.
  - 5. ASTM C1330: Standard Specification for Cylindrical Sealant Backing for Use with Cold Liquid-Applied Sealants.
  - 6. ASTM C1472: Standard Guide for Calculating Movement and Other Effects When Establishing Sealant Joint Width.
- D. Definitions:
  - 1. Movement Joint:

#### 1.4 SUBMITTALS, GENERAL

- A. See Section 01 33 00 "Submittal Procedures".

#### 1.5 DELIVERY, STORAGE, & HANDLING

- A. See Section 01 60 00 "Product Requirements".
- B. Store joint sealants and backing materials to prevent freezing.
- C. Packaging Waste Management: See Section 01 74 19 "Construction Waste Management and Disposal".

#### 1.6 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.

### PART 2 - PRODUCTS

#### 2.1 REGULATORY REQUIREMENTS

- A. See Section 01 41 00 "Regulatory Requirements".

#### 2.2 PERFORMANCE REQUIREMENTS

- A. Movement Joints: Joint sealant assemblies, including materials and installation, to withstand movement. Refer to "Movement Joints" article below for additional information.

#### 2.3 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.

## 2.4 MANUFACTURERS

- A. Basis of Design Manufacturer:
  - 1. Tremco.
- B. Subject to compliance with requirements, acceptable manufacturers include:
  - 1. BASF Construction Chemicals.
  - 2. Dowsil (formerly Dow Corning).
  - 3. Pecora Corporation.
  - 4. Sika.
  - 5. Substitutions: See Section 01 25 00 "Substitution Procedures".

## 2.5 EXTERIOR JOINT SEALANTS

- A. Horizontal traffic surfaces.
  - 1. Joint Locations:
    - a. Joints between different materials listed above.
  - 2. Joint Sealant: Urethane, M, P, 50, T, NT. Multicomponent, pourable, plus 50 percent and minus 50 percent movement capability, traffic- and nontraffic-use, urethane joint sealant; ASTM C920, Type M, Grade P, Class 50, Uses T and NT.
  - 3. Basis of Design Manufacturer and Product:
    - a. Tremco, Vulkem 45 SSL and Vulkem 445SSL.
    - b. Substitutions: See Section 01 25 00 "Substitution Procedures".
- B. Horizontal traffic surfaces subject to water immersion.
  - 1. Joint Locations:
    - a. Joint Locations as described in the construction documents.
  - 2. Joint Sealant: Urethane, immersible, S, P, 25, T, NT, I. Immersible, single-component, pourable, plus 25 percent and minus 25 percent movement capability, traffic- and nontraffic-use, urethane joint sealant; ASTM C920, Type S, Grade P, Class 25, Uses T, NT, and I.
  - 3. Basis of Design Manufacturer and Product:
    - a. Tremco, Dymonic 100.
    - b. Substitutions: See Section 01 25 00 "Substitution Procedures".
- C. Vertical surfaces and horizontal non-traffic 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. Ceiling and other overhead surface control and expansion joints.
  - d. Exterior glass mat sheathing joints.
2. Joint Sealant: Silicone, nonstaining, S, NS, 50, NT. Nonstaining, 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.
  3. Basis of Design Manufacturer and Product:
    - a. Tremco, Spectrum 1.
    - b. Substitutions: See Section 01 25 00 "Substitution Procedures".

D. Concealed mastics.

1. Joint Locations:
  - a. Aluminum thresholds.
  - b. Sill plates.
2. Joint Sealant: Butyl-rubber based. ASTM C1311.
3. Basis of Design Manufacturer and Product:
  - a. Tremco, Butyl Sealant.
  - b. Substitutions: See Section 01 25 00 "Substitution Procedures".

2.6 INTERIOR JOINT SEALANTS

A. Vertical surfaces and horizontal non-traffic surfaces.

1. Joint Locations:
  - a. Exterior wall, exposed interior surfaces, control and expansion joints.
2. Joint Sealant: 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.
3. Basis of Design Manufacturer and Product:
  - a. Tremco, Dymonic 100.
  - b. Substitutions: See Section 01 25 00 "Substitution Procedures".

B. Vertical surfaces and horizontal non-traffic surfaces not subject to significant movement.

1. Joint Locations:
  - a. Exterior wall, exposed interior surfaces, control joints.

- b. Perimeter joints between interior wall surfaces and frames of interior doors, windows, and elevator entrances.
- 2. Joint Sealant: Acrylic latex. ASTM C834, Type OP, Grade NF.
- 3. Basis of Design Manufacturer and Product:
  - a. Tremco, Tremflex 834.
  - b. Substitutions: See Section 01 25 00 "Substitution Procedures".

## 2.7 SOURCE QUALITY CONTROL

- A. Preconstruction Testing: See Section 01 45 00 "Quality Control" for additional information.
  - 1. Provide samples of project-specific materials to sealant manufacturer for adhesion, compatibility, and stain testing prior to mockup construction.
  - 2. Confirm suitability of sealant material for intended use, including but not limited to:
    - a. Freeze / thaw.
    - b. High temperatures.
    - c. Liquid immersion.

## PART 3 - EXECUTION

### 3.1 EXAMINATION

- A. See Section 01 73 00 "Execution".
- B. 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.
- C. 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 the following:
    - a. Exterior insulation and finish systems.
  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.
- 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.

### 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.
1. Refer to "Movement Joints" article below for additional information.
- 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 MOVEMENT JOINTS

- A. Provide movement joints to alleviate pressure from building movement, compliant with ASTM C1193. Movement joints to be designed for compression, extension, longitudinal extension, and transverse extension. Width and depth of movement joints to meet requirements of ASTM C1472.

### 3.5 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.

### 3.6 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.

END OF SECTION

## SECTION 09 06 90.23

### PAINTS AND COATINGS SCHEDULE

#### PART 1 - GENERAL

##### 1.1 RELATED DOCUMENTS

- A. Drawing and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

##### 1.2 SUMMARY

- A. Section Includes:
  - 1. Schedule of paints and coatings for this Project.

##### 1.3 REFERENCES

- A. See Section 01 42 00 "References".
- B. Codes:
  - 1. California Building Code (CBC): Title 24 Part 2.
  - 2. California Residential Code (CRC): Title 24 Part 2.5.
  - 3. California Green Building Standards Code (CALGreen): Title 24 Part 11.

#### PART 2 - PRODUCTS

##### 2.1 PAINTS AND COATINGS, GENERAL

- A. Refer to the drawings for paints and coatings locations, colors, and sheens.
- B. Bring conflicts to the attention of the Architect using Request for Information (RFI).
  - 1. See Section 01 31 00 "Project Management and Coordination" for additional information.

##### 2.2 PAINTS AND COATINGS SCHEDULE

- A. Section 09 91 13 "Exterior Painting":

1. Field-applied exterior paint systems.
- B. Section 09 91 23 "Interior Painting":
  1. Field-applied interior paint systems.
- C. Section 09 96 00 "High-Performance Coatings":
  1. Field-applied high-performance coating systems.

PART 3 - EXECUTION  
NOT USED

END OF SECTION

## SECTION 09 91 13

### EXTERIOR 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 surface preparation and the application of paint systems on the following exterior substrates:
  - 1. Concrete.
  - 2. Fiber-cement board.
  - 3. Steel.
  - 4. Galvanized steel.
  - 5. Wood.
- B. Related Requirements:
  - 1. Section 09 93 00 "Staining and Transparent Finishing" for surface preparation and the application of wood stains and transparent finishes on exterior wood substrates.
  - 2. Section 09 96 00 "High-Performance Coatings".

##### 1.3 REFERENCES

- A. Codes:
  - 1. California Building Code (CBC): Title 24 Part 2.
  - 2. California Residential Code (CRC): Title 24 Part 2.5.
  - 3. California Green Building Standards Code (CALGreen), Title 24 Part 11.
- B. Reference Standards:
  - 1. Master Painters Institute (MPI): Architectural Painting Specification Manual.
- C. Definitions:
  - 1. Master Painters Institute (MPI) gloss levels, according to ASTM D 523:

- a. MPI Gloss Level 1: Not more than five units at 60 degrees and 10 units at 85 degrees.
- b. MPI Gloss Level 2: Not more than 10 units at 60 degrees and 10 to 35 units at 85 degrees.
- c. MPI Gloss Level 3: 10 to 25 units at 60 degrees and 10 to 35 units at 85 degrees.
- d. MPI Gloss Level 4: 20 to 35 units at 60 degrees and not less than 35 units at 85 degrees.
- e. MPI Gloss Level 5: 35 to 70 units at 60 degrees.
- f. MPI Gloss Level 6: 70 to 85 units at 60 degrees.
- g. MPI Gloss Level 7: More than 85 units at 60 degrees.

#### 1.4 SUBMITTALS, GENERAL

- A. See Section 01 33 00 "Submittal Procedures".

#### 1.5 ACTION SUBMITTALS

- A. Product Data: For each type of product. Include preparation requirements and application instructions.
  - 1. Include printout of current "MPI Approved Products List" for each product category specified, with the proposed product highlighted.
- B. Samples for Initial Selection: For each type of topcoat product.
- C. Samples for Verification: For each type of paint system and each color and gloss of topcoat.
  - 1. Submit Samples on rigid backing, 8 inches square.
  - 2. Apply coats on Samples in steps to show each coat required for system.
  - 3. Label each coat of each Sample.
  - 4. Label each Sample for location and application area.

#### 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. Paint: 5 percent, but not less than 1 gallon of each material and color applied.

#### 1.7 DELIVERY, STORAGE, AND HANDLING

- A. See Section 01 60 00 "Product Requirements".

- B. 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.
- C. Packaging Waste Management: See Section 01 74 19 "Construction Waste Management and Disposal".

#### 1.8 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 in snow, rain, fog, or mist; when relative humidity exceeds 85 percent; at temperatures less than 5 deg F above the dew point; or to damp or wet surfaces.

### PART 2 - PRODUCTS

#### 2.1 REGULATORY REQUIREMENTS

- A. See Section 01 41 00 "Regulatory Requirements".
- B. See Section 01 61 16 "Material Contaminant Restrictions" for maximum allowable VOC content for paints and coatings.

#### 2.2 MANUFACTURERS

- A. Basis of Design Manufacturer:
  - 1. Sherwin Williams (S-W shown below).
  - 2. Substitutions not permitted.

#### 2.3 PAINT SYSTEMS

- A. Refer to schedule at the end of Part 3 of this Section.
- B. Refer to Drawings for level of finish gloss for each substrate. If information is not provided on the Drawings, Interior Designer or Architect to select.

#### 2.4 PAINT, GENERAL

- A. MPI Standards: Products shall comply with MPI standards indicated and shall be listed in its "MPI Approved Products Lists."

B. 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.

C. Colors: As shown on the Construction Drawings or as otherwise selected by Architect or Interior Designer from manufacturer's full range.

2.5 SOURCE QUALITY CONTROL

A. Testing of Paint Materials: Owner reserves the right to invoke the following procedure:

1. Owner will engage the services of a qualified testing agency to sample paint materials. Contractor will be notified in advance and may be present when samples are taken. If paint materials have already been delivered to Project site, samples may be taken at Project site. Samples will be identified, sealed, and certified by testing agency.
2. Testing agency will perform tests for compliance with product requirements.
3. Owner may direct Contractor to stop applying paints if test results show materials being used do not comply with product requirements. Contractor shall remove noncomplying paint materials from Project site, pay for testing, and repaint surfaces painted with rejected materials. Contractor will be required to remove rejected materials from previously painted surfaces if, on repainting with complying materials, the two paints are incompatible.

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. Concrete: 12 percent.
  2. Fiber-Cement Board: 12 percent.
  3. Wood: 15 percent.
- C. Verify suitability of substrates, including surface conditions and compatibility, with existing finishes and primers.
- D. 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 in "MPI Architectural Painting Specification Manual" 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.
- 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. Concrete Substrates: Remove release agents, curing compounds, efflorescence, and chalk. Do not paint surfaces if moisture content or alkalinity of surfaces to be painted exceeds that permitted in manufacturer's written instructions.
- E. Masonry Substrates: Remove efflorescence and chalk. Do not paint surfaces if moisture content or alkalinity of surfaces or mortar joints exceeds that permitted in manufacturer's written instructions.
- F. Steel Substrates: Remove rust, loose mill scale, and shop primer if any. Clean using methods recommended in writing by paint manufacturer.
- G. 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.
- H. 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.
- I. Aluminum Substrates: Remove loose surface oxidation.
- J. Wood Substrates:
  1. Scrape and clean knots. Before applying primer, apply coat of knot sealer recommended in writing by topcoat manufacturer for exterior use in paint system indicated.
  2. Sand surfaces that will be exposed to view, and dust off.
  3. Prime edges, ends, faces, undersides, and backsides of wood.

4. After priming, fill holes and imperfections in the finish surfaces with putty or plastic wood filler. Sand smooth when dried.
- K. Plastic Trim Fabrication Substrates: Remove dust, dirt, and other foreign material that might impair bond of paints to substrates.

### 3.3 APPLICATION

- A. Apply paints according to manufacturer's written instructions and recommendations in "MPI Architectural Painting Specification Manual."
  1. Use applicators and techniques suited for paint and substrate indicated.
  2. Paint surfaces behind movable items same as similar exposed surfaces. Before final installation, paint surfaces behind permanently fixed items with prime coat only.
  3. Paint both sides and edges of exterior doors and entire exposed surface of exterior door frames.
  4. Paint entire exposed surface of window frames and sashes.
  5. Do not paint over labels of independent testing agencies or equipment name, identification, performance rating, or nomenclature plates.
  6. Primers specified in painting schedules may be omitted on items that are factory primed or factory finished if acceptable to topcoat manufacturers.
- B. Tint undercoats same color as topcoat, but tint each undercoat a lighter shade to facilitate identification of each coat if multiple coats of same material are to be applied. 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. Painting Fire Suppression, Plumbing, HVAC, Electrical, Communication, and Electronic Safety and Security Work:
  1. Paint the following work where exposed to view:
    - a. Equipment, including panelboards and switch gear.
    - b. Uninsulated metal piping.
    - c. Uninsulated plastic piping.
    - d. Pipe hangers and supports.
    - e. Metal conduit.
    - f. Plastic conduit.
    - g. Tanks that do not have factory-applied final finishes.

### 3.4 FIELD QUALITY CONTROL

- A. 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.

### 3.5 CLEANING AND PROTECTION

- A. At end of each workday, remove rubbish, empty cans, rags, and other discarded materials from Project site.
- 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.

### 3.6 EXTERIOR PAINTING SCHEDULE

- A. Concrete Substrates, Nontraffic Surfaces:
  - 1. Water-Based Light Industrial Coating System [MPI EXT 3.1C]:
    - a. Prime Coat: Primer, alkali resistant, water based, MPI #3.
      - 1) S-W, PrepRite ProBlock Interior / Exterior Latex Primer / Sealer B51W00620.
    - b. Intermediate Coat: Light industrial coating, exterior, water based, matching topcoat.
    - c. Topcoat: Light industrial coating, exterior, water based (MPI Gloss Level 3), MPI #161.
      - 1) S-W, Pro Industrial DTM Acrylic Eg-Shel B66W01251.
    - d. Topcoat: Light industrial coating, exterior, water based, semi-gloss (MPI Gloss Level 5), MPI #163.
      - 1) S-W, Pro Industrial DTM Semi-Gloss B66W01151.

- e. Topcoat: Light industrial coating, exterior, water based, gloss (MPI Gloss Level 6), MPI #164.
  - 1) S-W, Pro Industrial DTM Acrylic Gloss B66W01051.
- 2. Self-Cleaning Light Industrial System [MPI #10]:
  - a. Self-Priming Base Coat:
    - 1) S-W, Loxon Self-Cleaning Acrylic LX13W0051.
  - b. Topcoat:
    - 1) S-W, Loxon Self-Cleaning Acrylic LX13W0051.
- B. Cement Board Substrates:
  - 1. Water-Based Light Industrial Coating System [MPI EXT 3.3C]:
    - a. Prime Coat: Primer, alkali resistant, water based, MPI #3.
    - b. S-W, PrepRite ProBlock Interior/Exterior Latex Primer/Sealer B51W00620.
    - c. Intermediate Coat: Light industrial coating, exterior, water based, matching topcoat.
    - d. Topcoat: Light industrial coating, exterior, water based (MPI Gloss Level 3), MPI #161.
      - 1) S-W, Pro Industrial DTM Acrylic Eg-Shel B66W01251.
    - e. Topcoat: Light industrial coating, exterior, water based, semi-gloss (MPI Gloss Level 5), MPI #163.
      - 1) S-W, Pro Industrial DTM Semi-Gloss B66W01151.
    - f. Topcoat: Light industrial coating, exterior, water based, gloss (MPI Gloss Level 6), MPI #164.
      - 1) S-W, Pro Industrial DTM Acrylic Gloss B66W01051.
- C. CMU Substrates:
  - 1. Water-Based Light Industrial Coating System [MPI EXT 4.2C]:
    - a. Prime Coat: Block filler, latex, interior/exterior, MPI #4.
      - 1) S-W, Conflex Block Filler B25.
    - b. Intermediate Coat: Light industrial coating, exterior, water based, matching topcoat.
    - c. Topcoat: Light industrial coating, exterior, water based (MPI Gloss Level 3), MPI #161.

- 1) S-W, Pro Industrial DTM Acrylic Eg-Shel B66W01251.
- d. Topcoat: Light industrial coating, exterior, water based, semi-gloss (MPI Gloss Level 5), MPI #163.
  - 1) S-W, Pro Industrial DTM Semi-Gloss B66W01151.
- e. Topcoat: Light industrial coating, exterior, water based, gloss (MPI Gloss Level 6), MPI #164.
  - 1) S-W, Pro Industrial DTM Acrylic Gloss B66W01051.

D. Steel Substrates:

- 1. Water-Based Light Industrial Coating System[ MPI EXT 5.1B] [MPI EXT 5.1C] [MPI EXT 5.1M] [MPI EXT 5.1N]:
  - a. Prime Coat: Primer, zinc rich, inorganic, MPI #19.
    - 1) S-W, Zinc Clad XI B69V11/B69D11.
  - b. Prime Coat: Primer, rust inhibitive, water based, MPI #107.
    - 1) S-W, Pro Industrial Pro-Cryl Universal Primer B66W01310 .
  - c. Prime Coat: Shop primer specified in Section where substrate is specified.
  - d. Intermediate Coat: Light industrial coating, exterior, water based, matching topcoat.
  - e. Topcoat: Light industrial coating, exterior, water based (MPI Gloss Level 3), MPI #161.
    - 1) S-W, Pro Industrial DTM Acrylic Eg-Shel, B66W01251.
  - f. Topcoat: Light industrial coating, exterior, water based, semi-gloss (MPI Gloss Level 5), MPI #163.
    - 1) S-W, Pro Industrial DTM Semi-Gloss B66W01151.
  - g. Topcoat: Light industrial coating, exterior, water based, gloss (MPI Gloss Level 6), MPI #164.
    - 1) S-W, Pro Industrial DTM Acrylic Gloss B66W01051.

E. Galvanized Steel Substrates:

- 1. Water-Based Light Industrial Coating System [MPI EXT 5.3G] [MPI EXT 5.3J] [MPI EXT 5.3K]:
  - a. Prime Coat: Primer, galvanized, water based, MPI #134.
    - 1) S-W, Pro Industrial DTM Acrylic Primer/Finish B66W00011.

- b. Intermediate Coat: Light industrial coating, exterior, water based, matching topcoat.
- c. Topcoat: Light industrial coating, exterior, water based (MPI Gloss Level 3), MPI #161.
  - 1) S-W, Pro Industrial DTM Acrylic Eg-Shel B66W01251.
- d. Topcoat: Light industrial coating, exterior, water based, semi-gloss (MPI Gloss Level 5), MPI #163.
  - 1) S-W, Pro Industrial DTM Semi-Gloss B66W01151.
- e. Topcoat: Light industrial coating, exterior, water based, gloss (MPI Gloss Level 6), MPI #164.
  - 1) S-W, Pro Industrial DTM Acrylic Gloss B66W01051.

F. Aluminum Substrates:

- 1. Water-Based Light Industrial Coating System [MPI EXT 5.4G]:
  - a. Prime Coat: Primer, quick dry, for aluminum, MPI #107.
    - 1) S-W, Pro Industrial Pro-Cryl Universal Primer B66W01310.
  - b. Intermediate Coat: Light industrial coating, exterior, water based, matching topcoat.
  - c. Topcoat: Light industrial coating, exterior, water based (MPI Gloss Level 3), MPI #161.
    - 1) S-W, Pro Industrial DTM Acrylic Eg-Shel, B66W01251.
  - d. Topcoat: Light industrial coating, exterior, water based, semi-gloss (MPI Gloss Level 5), MPI #163.
    - 1) S-W, Pro Industrial DTM Semi-Gloss B66W01151.
  - e. Topcoat: Light industrial coating, exterior, water based, gloss (MPI Gloss Level 6), MPI #164.
    - 1) S-W, Pro Industrial DTM Acrylic Gloss B66W01051.

G. Wood Substrates: Glued-laminated construction.

- 1. Latex over Latex Primer System [MPI EXT 6.1L]:
  - a. Prime Coat: Primer, latex for exterior wood, MPI #6.
    - 1) S-W, Exterior Latex Wood Primer B51.
  - b. Intermediate Coat: Latex, exterior, matching topcoat.

- c. Topcoat: Latex, exterior, flat (MPI Gloss Level 1), MPI #10.
  - 1) S-W, A-100 Ext Flat.
- d. Topcoat: Latex, exterior, low sheen (MPI Gloss Level 3-4), MPI #15.
  - 1) S-W, A-100 A82 Satin.
- e. Topcoat: Latex, exterior, semi-gloss (MPI Gloss Level 5), MPI #11.
  - 1) S-W, Solo SG A76.
- f. Topcoat: Latex, exterior, gloss (MPI Gloss Level 6), MPI #119.
  - 1) S-W, Pro Industrial DTM Gloss B66.

H. Wood Substrates: Exposed framing.

- 1. Latex over Latex Primer System[ MPI EXT 6.2M]:
  - a. Prime Coat: Primer, latex for exterior wood, MPI #6.
    - 1) S-W, Exterior Latex Wood Primer B42.
  - b. Intermediate Coat: Latex, exterior, matching topcoat.
  - c. Topcoat: Latex, exterior, flat (MPI Gloss Level 1), MPI #10.
    - 1) S-W, A-100 A6.
  - d. Topcoat: Latex, exterior, low sheen (MPI Gloss Level 3-4), MPI #15.
    - 1) S-W, A-100 A82.
  - e. Topcoat: Latex, exterior, semi-gloss (MPI Gloss Level 5), MPI #11.
    - 1) S-W, A-100 A8.
  - f. Topcoat: Latex, exterior, gloss (MPI Gloss Level 6), MPI #119.
    - 1) S-W, Solo A76.

I. Wood Substrates: Wood trim, architectural woodwork, doors, windows, wood board siding, and wood fences.

- 1. Water-Based Light Industrial Coating System [MPI EXT 6.3J]:
  - a. Prime Coat: Primer, alkyd for exterior wood, MPI #6.
    - 1) S-W, Exterior Latex Wood Primer B28.
  - b. Intermediate Coat: Light industrial coating, exterior, water based, matching topcoat.

- c. Topcoat: Light industrial coating, exterior, water based, semi-gloss (MPI Gloss Level 5), MPI #163.
  - 1) S-W, Pro Industrial DTM Semi-Gloss B66W01151.
- d. Topcoat: Light industrial coating, exterior, water based, gloss (MPI Gloss Level 6), MPI #164.
  - 1) S-W, Pro Industrial DTM Acrylic Gloss B66W01051.

J. Wood Substrates: Wood-based panel products.

- 1. Latex over Latex Primer System [MPI EXT 6.4K]:
  - a. Prime Coat: Primer, latex for exterior wood, MPI #6.
    - 1) S-W, Exterior Latex Wood Primer B28.
  - b. Intermediate Coat: Latex, exterior, matching topcoat.
  - c. Topcoat: Latex, exterior, flat (MPI Gloss Level 1), MPI #10.
    - 1) S-W, A-100 A6.
  - d. Topcoat: Latex, exterior, low sheen (MPI Gloss Level 3-4), MPI #15.
    - 1) S-W, A-100 A82.
  - e. Topcoat: Latex, exterior, semi-gloss (MPI Gloss Level 5), MPI #11.
    - 1) S-W, A-100 A8.
  - f. Topcoat: Latex, exterior, gloss (MPI Gloss Level 6), MPI #119.
    - 1) S-W, Solo A76.

K. Fiberglass Substrates:

- 1. Water-Based, Light Industrial Coating System [MPI EXT 6.7C]:
  - a. Prime coat: Primer, bonding, water-based, MPI #17.
    - 1) S-W, Extreme Bond Primer B51W00150.
  - b. Intermediate Coat: Light industrial coating, exterior, water-based, matching topcoat.
  - c. Topcoat: Light industrial coating, exterior, water-based, low sheen (MPI Gloss Level 3), MPI #131.
    - 1) S-W, Pro Industrial Multi Surface Acrylic EG B56W1561.



- d. Topcoat: Light industrial coating, exterior, water-based, semi-gloss (MPI Gloss Level 5), MPI #163.

- 1) S-W, Pro Industrial DTM B66W01151.

L. Portland Cement Plaster (Stucco) Substrates:

- 1. Latex System [MPI EXT 9.1A]:

- a. Prime Coat: Primer, alkali resistant, water-based, MPI #3.

- 1) S-W, Loxon Concrete & Masonry Primer A24W8300 / LX02W0050.

- b. Intermediate Coat: Latex, exterior, matching topcoat.

- c. Topcoat: Latex, exterior, water-based, non-flat, MPI #41.

- 1) S-W, ConFlex UltraCrete, Fine A44W00801 / CF17W0801.

END OF SECTION

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## SECTION 09 91 23

### 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 surface preparation and the application of paint systems on the following interior substrates:
  - 1. Wood.
  - 2. Gypsum board.

##### 1.3 REFERENCES

- A. California Building Code (CBC): Title 24 Part 2.
- B. California Green Building Standards Code (CALGreen), Title 24 Part 11.
- C. Master Painters Institute (MPI): Architectural Painting Specification Manual.

##### 1.4 DEFINITIONS

- A. Master Painters Institute (MPI) gloss levels, according to ASTM D 523:
  - 1. MPI Gloss Level 1: Not more than five units at 60 degrees and 10 units at 85 degrees.
  - 2. MPI Gloss Level 2: Not more than 10 units at 60 degrees and 10 to 35 units at 85 degrees.
  - 3. MPI Gloss Level 3: 10 to 25 units at 60 degrees and 10 to 35 units at 85 degrees.
  - 4. MPI Gloss Level 4: 20 to 35 units at 60 degrees and not less than 35 units at 85 degrees.
  - 5. MPI Gloss Level 5: 35 to 70 units at 60 degrees.
  - 6. MPI Gloss Level 6: 70 to 85 units at 60 degrees.
  - 7. MPI Gloss Level 7: More than 85 units at 60 degrees.

## 1.5 SUBMITTALS

- A. Product Data: For each type of product. Include preparation requirements and application instructions.
  - 1. Include Printout of current "MPI Approved Products List" for each product category specified, with the proposed product highlighted.
- B. Samples: For each type of paint system and in each color and gloss of topcoat.
  - 1. Submit Samples on rigid backing, 8 inches square.
  - 2. Apply coats on Samples in steps to show each coat required for system.
  - 3. Label each coat of each Sample.
  - 4. Label each Sample for location and application area.

## 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. Paint: 5 percent, but not less than 1 gal. of each material and color applied.

## 1.7 DELIVERY, STORAGE, AND HANDLING

- A. See Section 01 60 00 "Product Requirements".
- B. 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.

## 1.8 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 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 Manufacturer: Sherwin Williams (S-W shown below).
  - 1. Substitutions not permitted.

### 2.2 PAINT SYSTEMS

- A. Refer to schedule at the end of Part 3 of this Section.
- B. Refer to Drawings for level of finish gloss for each substrate. If information is not provided on the Drawings, Interior Designer or Architect to select.

### 2.3 PAINT, GENERAL

- A. MPI Standards: Products shall comply with MPI standards indicated and shall be listed in its "MPI Approved Products Lists."
- B. 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.
- C. Colors: As shown on the Construction Drawings or as otherwise selected by Architect or Interior Designer from manufacturer's full range.

### 2.4 SOURCE QUALITY CONTROL

- A. Testing of Paint Materials: Owner reserves the right to invoke the following procedure:
  - 1. Owner will engage the services of a qualified testing agency to sample paint materials. Contractor will be notified in advance and may be present when samples are taken. If paint materials have already been delivered to Project site, samples may be taken at Project site. Samples will be identified, sealed, and certified by testing agency.
  - 2. Testing agency will perform tests for compliance with product requirements.
  - 3. Owner may direct Contractor to stop applying paints if test results show materials being used do not comply with product requirements. Contractor shall remove noncomplying paint materials from Project site, pay for testing, and repaint surfaces painted with rejected materials. Contractor will be required to remove rejected materials from previously painted surfaces if, on repainting with complying materials, the two paints are incompatible.

## 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.
  - 3. Plaster: 12 percent.
- C. Gypsum Board Substrates: Verify that finishing compound is sanded smooth.
- D. Plaster Substrates: Verify that plaster is fully cured.
- E. Verify suitability of substrates, including surface conditions and compatibility, with existing finishes and primers.
- F. 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 in "MPI Architectural Painting Specification Manual" 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. Wood Substrates:
  - 1. Scrape and clean knots, and apply coat of knot sealer before applying primer.
  - 2. Sand surfaces that will be exposed to view, and dust off.
  - 3. Prime edges, ends, faces, undersides, and backsides of wood.
  - 4. After priming, fill holes and imperfections in the finish surfaces with putty or plastic wood filler. Sand smooth when dried.

### 3.3 APPLICATION

- A. Apply paints according to manufacturer's written instructions and to recommendations in "MPI Manual."
  - 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. Painting Fire Suppression, Plumbing, HVAC, Electrical, Communication, and Electronic Safety and Security Work:
  - 1. Paint the following work where exposed in occupied spaces:
    - a. Equipment, including panelboards.
    - b. Uninsulated metal piping.

- c. Uninsulated plastic piping.
  - d. Pipe hangers and supports.
  - e. Metal conduit.
  - f. Plastic conduit.
  - g. Duct, equipment, and pipe insulation having cotton or canvas insulation covering or other paintable jacket material.
  - h. Other items as directed by Architect.
2. Paint portions of internal surfaces of metal ducts, without liner, behind air inlets and outlets that are visible from occupied spaces.

### 3.4 FIELD QUALITY CONTROL

- A. 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.

### 3.5 CLEANING AND PROTECTION

- A. At end of each workday, remove rubbish, empty cans, rags, and other discarded materials from Project site.
- 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.

### 3.6 INTERIOR PAINTING SCHEDULE

- A. Steel Substrates:
- 1. Water-Based Light Industrial Coating System (MPI INT 5.1B):
    - a. Prime Coat: Primer, rust-inhibitive, water based (MPI #107).
      - 1) S-W, Pro Industrial Pro-Cryl Metal Primer B66W01310.



- b. Intermediate Coat: Light industrial coating, interior, water based, matching topcoat.
- c. Topcoat: Light industrial coating, interior, water based (MPI Gloss Level 3), MPI #151.
  - 1) S-W, Pro Industrial DTM Acrylic Eg-Shel B66W01251.
- d. Topcoat: Light industrial coating, interior, water based, semi-gloss (MPI Gloss Level 5), MPI #153.
  - 1) S-W, Pro Industrial DTM Semi-Gloss B66W00651.
- e. Topcoat: Light industrial coating, interior, water based, gloss (MPI Gloss Level 6), MPI #154.
  - 1) S-W, Pro Industrial DTM Acrylic Gloss B66W00611.
- f. Handrails Only - Topcoat: Light industrial coating, interior, water based (MPI Gloss Level 6), MPI #154.
  - 1) S-W, Sher-Cryl HPA Gloss B66W311.

B. Galvanized-Metal Substrates:

- 1. Water-Based Light Industrial Coating System (MPI INT 5.3B) (MPI INT 5.3K):
  - a. Prime Coat: Primer, galvanized, water based, MPI #107.
    - 1) S-W, Pro Industrial Pro-Cryl Universal Primer B66W01310.
  - b. Intermediate Coat: Light industrial coating, interior, water based, matching topcoat.
  - c. Topcoat: Light industrial coating, interior, water based (MPI Gloss Level 3), MPI #151.
    - 1) S-W, Pro Industrial Acrylic Eg-Shel B66W01251.
  - d. Topcoat: Light industrial coating, interior, water based, semi-gloss (MPI Gloss Level 5), MPI #153.
    - 1) S-W, Pro Industrial Acrylic Semi-Gloss B66W01151.
  - e. Topcoat: Light industrial coating, interior, water based, gloss (MPI Gloss Level 6), MPI #154.
    - 1) S-W, Pro Industrial Acrylic Gloss B66W00611.

C. Wood Substrates: Wood trim, Architectural woodwork, Doors, Windows, and wood board paneling.

- 1. Latex over Latex Primer System MPI INT 6.3T:

- a. Prime Coat: Primer, latex, for interior wood, MPI #39.
    - 1) S-W, PrepRite Pro Block B5100620.
  - b. Topcoat: Latex, interior, flat (MPI Gloss Level 1), MPI #53.
    - 1) S-W, ProMar 200 Zero B30W12651.
  - c. Topcoat: Latex, interior (MPI Gloss Level 2), MPI #44.
    - 1) S-W, ProMar 200 Zero B41W01951.
  - d. Topcoat: Latex, interior (MPI Gloss Level 3), MPI #52.
    - 1) S-W, ProMar 200 Zero B20W01951.
  - e. Topcoat: Latex, interior (MPI Gloss Level 4), MPI #43.
    - 1) S-W, ProMar 200 Zero B31W04651.
  - f. Topcoat: Latex, interior, semi-gloss (MPI Gloss Level 5), MPI #54.
    - 1) S-W, ProMar 200 Zero B21W04651.
  - g. Topcoat: Latex, interior, gloss (MPI Gloss Level 6, except minimum gloss of 65 units at 60 degrees), MPI #114.
    - 1) S-W, Pro Industrial Gloss B66W01501.
2. High-Performance Architectural Latex System MPI INT 6.3A:
- a. Prime Coat: Primer, latex, for interior wood, MPI #39.
    - 1) S-W, PrepRite Pro Block B5100620.
  - b. Topcoat: Latex, interior, high performance architectural (MPI Gloss Level 2), MPI #138.
    - 1) S-W, ProMar 200 Zero HP B41W01951.
  - c. Topcoat: Latex, interior, high performance architectural (MPI Gloss Level 3), MPI #139.
    - 1) S-W, ProMar 200 Zero HP B20W01951.
  - d. Topcoat: Latex, interior, high performance architectural (MPI Gloss Level 4), MPI #140.
    - 1) Valspar, Valspar Reserve Satin 535106.

- e. Topcoat: Latex, interior, high performance architectural, semi-gloss (MPI Gloss Level 5), MPI #141.

- 1) S-W, Pro Industrial Acrylic B66W00651.

D. Wood Substrates: Wood paneling and casework.

1. Latex over Latex Primer System MPI INT 6.4R:

- a. Prime Coat: Primer, latex, for interior wood, MPI #39.

- 1) S-W, PrepRite Pro Block B5100620.

- b. Intermediate Coat: Latex, interior, matching topcoat.

- c. Topcoat: Latex, interior, flat (MPI Gloss Level 1), MPI #53.

- 1) S-W, ProMar 200 Zero VOC B30W12651.

- d. Topcoat: Latex, interior (MPI Gloss Level 2), MPI #44.

- 1) S-W, ProMar 200 Zero VOC B24W02651 / B24WQ2651.

- e. Topcoat: Latex, interior (MPI Gloss Level 3), MPI #52.

- 1) S-W, ProMar 200 Zero VOC B20W01951.

- f. Topcoat: Latex, interior (MPI Gloss Level 4), MPI #43.

- 1) S-W, ProMar 200 Zero VOC B31W04651.

- g. Topcoat: Latex, interior, semi-gloss (MPI Gloss Level 5), MPI #54.

- 1) S-W, ProMar 200 Zero VOC B21W04651.

- h. Topcoat: Latex, interior, gloss (MPI Gloss Level 6, except minimum gloss of 65 units at 60 degrees), MPI #114.

- 1) S-W, Pro Industrial Acrylic B66W00611.

E. Gypsum Board and Plaster Substrates:

1. Institutional Low-Odor/VOC Latex System (MPI INT 9.2M):

- a. Prime Coat: Primer sealer, interior, institutional low odor/VOC, MPI #149.

- 1) S-W, ProMar 200 Zero VOC B28W02600 / B28WQ2600.

- b. Intermediate Coat: Latex, interior, institutional low odor/VOC, matching topcoat.

- c. Topcoat: Latex, interior, institutional low odor/VOC, flat (MPI Gloss Level 1), MPI #143.

- 1) S-W, ProMar 200 Zero VOC B30W12651.
- d. Topcoat: Latex, interior, institutional low odor/VOC (MPI Gloss Level 2), MPI #144.
  - 1) S-W, ProMar 200 Zero VOC B41W01951.
- e. Topcoat: Latex, interior, institutional low odor/VOC (MPI Gloss Level 3), MPI #145.
  - 1) S-W, ProMar 200 Zero VOC B20W01951.
- f. Topcoat: Latex, interior, institutional low odor/VOC, semi-gloss (MPI Gloss Level 5), MPI #147.
  - 1) S-W, Pro Industrial Acrylic Semi-Gloss Coating B66W00651.
- g. Topcoat: Latex, interior, institutional low odor/VOC, gloss (MPI Gloss Level 6), MPI #148.
  - 1) S-W, Pro Industrial Acrylic Gloss Coating B66W00611.

END OF SECTION

## SECTION 09 96 00

### HIGH-PERFORMANCE COATINGS

#### 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. Surface preparation and the application of high-performance coating systems on the following substrates:

- a. Exterior Substrates:

- 1) Concrete, horizontal and vertical surfaces.
      - 2) Steel.
      - 3) Galvanized metal.
      - 4) Aluminum (not anodized or otherwise coated).
      - 5) Wood.
      - 6) Fiberglass.

- b. Interior Substrates:

- 1) Concrete, horizontal and vertical surfaces.
      - 2) Steel.
      - 3) Galvanized metal.
      - 4) Aluminum (not anodized or otherwise coated).

- B. Related Requirements:

- 1. Section 09 91 13 "Exterior Painting" for general field painting.
  - 2. Section 09 91 23 "Interior Painting" for general field painting.

##### 1.3 REFERENCES

- A. See Section 01 42 00 "References".

- B. Codes:

- 1. California Building Code (CBC): Title 24 Part 2.

2. California Residential Code (CRC): Title 24 Part 2.5.
3. California Green Building Standards Code (CALGreen): Title 24 Part 11.

C. Reference Standards:

1. ASTM D523:

D. Definitions:

1. Master Painters Institute (MPI) gloss levels, according to ASTM D523:
  - a. MPI Gloss Level 5: 35 to 70 units at 60 degrees.
  - b. MPI Gloss Level 6: 70 to 85 units at 60 degrees.
  - c. MPI Gloss Level 7: More than 85 units at 60 degrees.

1.4 SUBMITTALS, GENERAL

1. See Section 01 33 00 "Submittal Procedures".
2. See Section 01 61 16 "Material Contaminant Restrictions" for additional submittals.

1.5 ACTION SUBMITTALS

- A. Product Data: For each product to be installed.
1. Include preparation requirements and application instructions.
  2. Include printout of current "MPI Approved Products List" for each product category specified, with the proposed product highlighted.
  3. Indicate VOC content.
- B. Samples for Initial Selection: For each type of topcoat product indicated.
- C. Samples for Verification: For each type of coating system and each color and gloss of topcoat indicated.
1. Submit Samples on rigid backing, 8 inches square.
  2. Apply coats on Samples in steps to show each coat required for system.
  3. Label each coat of each Sample.
  4. Label each Sample for location and application area.
- D. Product List: Cross-reference to coating system and locations of application areas. Use same designations indicated on Drawings and in schedules. Include color designations.

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. Coatings: 5 percent, but not less than 1 gallon of each material and color applied.

## 1.7 QUALITY ASSURANCE

- A. Mockups: See Section 01 43 00 "Quality Assurance".
  1. Provide finish mockup as described in Section 01 43 00, to verify selections made under Sample submittals, to demonstrate aesthetic effects, and to set quality standards for installation.
  2. Architect will select one surface to represent surfaces and conditions for application of each coating system.
    - a. Wall and Ceiling Surfaces: Provide samples of at least 100 sq. ft.
    - b. Other Items: Architect will designate items or areas required.

## 1.8 DELIVERY, STORAGE, AND HANDLING

- A. See Section 01 60 00 "Product Requirements".
- B. 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.
- C. Packaging Waste Management: See Section 01 74 19 "Construction Waste Management and Disposal".

## 1.9 FIELD CONDITIONS

- A. Apply coatings only when temperature of surfaces to be coated and ambient air temperatures are between 50 and 95 deg F.
- B. Do not apply coatings when relative humidity exceeds 85 percent; at temperatures less than 5 deg F above the dew point; or to damp or wet surfaces.
- C. Do not apply exterior coatings in snow, rain, fog, or mist.

## PART 2 - PRODUCTS

### 2.1 REGULATORY REQUIREMENTS

- A. See Section 01 61 16 "Material Contaminant Restrictions", for allowable VOC content.

## 2.2 MANUFACTURERS

### A. Basis of Design Manufacturer:

1. Sherwin Williams (Powdura 5000), S-W shown below.

### B. Subject to compliance with requirements, available manufacturers that may be incorporated into the Work include, but are not limited to:

1. Akzo-Nobel.
2. PPG.
3. Tnemec.
4. Substitutions: See Section 01 25 00 "Substitution Procedures".

## 2.3 HIGH-PERFORMANCE COATING SYSTEMS

### A. Refer to schedule at the end of Part 3 of this Section.

## 2.4 HIGH-PERFORMANCE COATINGS, GENERAL

### A. MPI Standards: Products shall comply with MPI standards indicated and shall be listed in its "MPI Approved Products Lists."

### B. 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.
3. Products shall be of same manufacturer for each coat in a coating system.

### C. Colors: As selected by Architect from manufacturer's full range.

## 2.5 SOURCE QUALITY CONTROL

### A. Testing of Coating Materials: Owner reserves the right to invoke the following procedure:

1. Owner will engage the services of a qualified testing agency to sample coating materials. Contractor will be notified in advance and may be present when samples are taken. If coating materials have already been delivered to Project site, samples may be taken at Project site. Samples will be identified, sealed, and certified by testing agency.
2. Testing agency will perform tests for compliance with product requirements.



3. Owner may direct Contractor to stop applying coatings if test results show materials being used do not comply with product requirements. Contractor shall remove noncomplying coating materials from Project site, pay for testing, and recoat surfaces coated with rejected materials. Contractor will be required to remove rejected materials from previously coated surfaces if, on recoating with complying materials, the two coatings are incompatible.

### PART 3 - EXECUTION

#### 3.1 EXAMINATION

- A. See Section 01 73 00 "Execution".
- B. Examine substrates and conditions, with Applicator present, for compliance with requirements for maximum moisture content and other conditions affecting performance of the Work.
- C. Maximum Moisture Content of Substrates: When measured with an electronic moisture meter as follows:
  1. Concrete: 12 percent.
  2. Fiber-Cement Board: 12 percent.
  3. Masonry (Clay and CMUs): 12 percent.
  4. Wood: 15 percent.
- 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 in "MPI Architectural Painting Specification Manual" applicable to substrates and coating 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 coatings, 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 coating systems indicated.
- D. Concrete Substrates: Remove release agents, curing compounds, efflorescence, and chalk. Do not coat surfaces if moisture content or alkalinity of surfaces to be coated exceeds that permitted in manufacturer's written instructions.
  - 1. Clean surfaces with pressurized water. Use pressure range of 1500 to 4000 psi at 6 to 12 inches.
- E. Masonry Substrates: Remove efflorescence and chalk. Do not coat surfaces if moisture content, alkalinity of surfaces, or alkalinity of mortar joints exceeds that permitted in manufacturer's written instructions.
  - 1. Clean surfaces with pressurized water. Use pressure range of 100 to 600 psi at 6 to 12 inches.
- F. Steel Substrates: See Section 05 05 13 "Shop-Applied Coatings for Metal".
  - 1. Remove rust, loose mill scale, and shop primer if any. Clean using methods recommended in writing by paint manufacturer.
- G. 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.
- H. 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 coatings.
- I. Aluminum Substrates: Remove loose surface oxidation.
- J. Wood Substrates: See Section 06 05 83 "Shop-Applied Wood Coatings".

### 3.3 APPLICATION

- A. Apply high-performance coatings according to manufacturer's written instructions and recommendations in "MPI Architectural Painting Specification Manual."
  - 1. Use applicators and techniques suited for coating and substrate indicated.
  - 2. Coat surfaces behind movable equipment and furniture same as similar exposed surfaces. Before final installation, coat surfaces behind permanently fixed equipment or furniture with prime coat only.
  - 3. Coat backsides of access panels, removable or hinged covers, and similar hinged items to match exposed surfaces.
  - 4. Do not apply coatings over labels of independent testing agencies or equipment name, identification, performance rating, or nomenclature plates.

- B. Tint each undercoat a lighter shade to facilitate identification of each coat if multiple coats of the same material are to be applied. Tint undercoats to match color of finish coat, but provide sufficient difference in shade of undercoats to distinguish each separate coat.
- C. If undercoats or other conditions show through final coat, apply additional coats until cured film has a uniform coating finish, color, and appearance.
- D. Apply coatings to produce surface films without cloudiness, spotting, holidays, laps, brush marks, runs, sags, ropiness, or other surface imperfections. Produce sharp glass lines and color breaks.

#### 3.4 FIELD QUALITY CONTROL

- A. Dry Film Thickness Testing: Owner may engage the services of a qualified testing and inspecting agency to inspect and test coatings for dry film thickness.
  - 1. Contractor shall touch up and restore coated surfaces damaged by testing.
  - 2. If test results show that dry film thickness of applied coating does not comply with coating manufacturer's written recommendations, Contractor shall pay for testing and apply additional coats as needed to provide dry film thickness that complies with coating manufacturer's written recommendations.

#### 3.5 CLEANING AND PROTECTION

- A. At end of each workday, remove rubbish, empty cans, rags, and other discarded materials from Project site.
- B. After completing coating application, clean spattered surfaces. Remove spattered coatings by washing, scraping, or other methods. Do not scratch or damage adjacent finished surfaces.
- C. Protect work of other trades against damage from coating operation. Correct damage to work of other trades by cleaning, repairing, replacing, and recoating, 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 coated surfaces.

#### 3.6 EXTERIOR HIGH-PERFORMANCE COATING SCHEDULE

- A. Concrete Substrates, Vertical Surfaces:
  - 1. Pigmented Polyurethane over Epoxy System [MPI EXT 3.1M]:
    - a. Prime Coat: Epoxy, matching intermediate coat.
    - b. Intermediate Coat: Epoxy, gloss [MPI #120].

- 1) S-W, Macropoxy 646 Fast Cure Epoxy B58W00610/B58V00600.
- c. 2 Topcoats: Polyurethane, two component, pigmented, gloss (MPI Gloss Level 6).
  - 1) S-W, Pro Industrial Waterbased Acrolon 100.

B. Concrete Substrates, Horizontal Surfaces:

- 1. Epoxy Non-Slip Deck Coating System [MPI EXT 3.2C]:
  - a. Prime Coat: As recommended in writing by topcoat manufacturer.
  - b. Intermediate Coat: As recommended in writing by topcoat manufacturer.
  - c. Topcoat: Epoxy deck coating (slip resistant) [MPI #72].
    - 1) S-W, Armorseal 8100.

C. Steel Substrates:

- 1. Pigmented Polyurethane over Epoxy System [MPI EXT 5.1H]:
  - a. Prime Coat: Primer, epoxy, anti-corrosive, for metal [MPI #120].
    - 1) S-W, Macropoxy 646-100 B58W00610/B58V00600.
  - b. First and Second Topcoat: Polyurethane, two component, pigmented, gloss (MPI Gloss Level 6) [MPI #72].
    - 1) S-W, Pro Industrial Waterbased Acrolon 100.
- 2. Pigmented Polyurethane over Epoxy Zinc-Rich Primer System [MPI EXT 5.1P]:
  - a. Prime Coat: Primer, zinc rich, epoxy [MPI #20].
    - 1) S-W, Zinc Clad 4100, B69.
  - b. 2 Topcoat: Polyurethane, two component, pigmented, gloss (MPI Gloss Level 6) [MPI #72].
    - 1) S-W, Pro Industrial Waterbased Acrolon 100.
- 3. Pigmented Polyurethane over Inorganic Zinc-Rich Primer and High-Build Epoxy System [MPI EXT 5.1L]:
  - a. Prime Coat: Primer, zinc rich, inorganic [MPI #19].
    - 1) S-W, Zinc-Clad B69.
  - b. Intermediate Coat: Epoxy, high build, low gloss [MPI #108].
    - 1) S-W, Macropoxy 646-100 B58W00610/B58V00600.

- c. Topcoat: Polyurethane, two component, pigmented, gloss (MPI Gloss Level 6) [MPI #72].

- 1) S-W, Pro Industrial Waterbased Acrolon 100.

D. Galvanized-Metal Substrates:

1. Pigmented Polyurethane over Epoxy Primer System [MPI EXT 5.3L]:

- a. Prime Coat: Primer, epoxy, anti-corrosive, for metal [MPI #120].

- 1) S-W, Macropoxy 646-100 B58W00610/B58V00600.

- b. Intermediate Coat: Polyurethane, two component, pigmented, gloss matching topcoat.

- c. Topcoat: Polyurethane, two component, pigmented, gloss (MPI Gloss Level 6) [MPI #72].

- 1) S-W, Pro Industrial Waterbased Acrolon 100.

2. Pigmented Polyurethane over Vinyl Wash Primer and Epoxy Primer System [MPI EXT 5.3D]:

- a. Prime Coat: Primer, vinyl wash [MPI #80].

- 1) S-W, Industrial Wash Primer E90 E90G16/V93V17.

- b. Intermediate Coat: Primer, epoxy, anti-corrosive, for metal [MPI #101].

- 1) S-W, Macropoxy 646-100 B58W00610/B58V00600.

- c. First and Second Topcoat: Polyurethane, two component, pigmented, gloss (MPI Gloss Level 6) [MPI #72].

- 1) S-W, Pro Industrial Waterbased Acrolon 100.

E. Aluminum (Not Anodized or Otherwise Coated) Substrates:

1. Pigmented Polyurethane over Epoxy System [MPI EXT 5.4B]:

- a. Prime Coat: Primer, vinyl wash [MPI #80].

- 1) S-W, Industrial Wash Primer E90 E90G16/V93V17.

- b. First and Second Topcoat: Polyurethane, two component, pigmented, gloss (MPI Gloss Level 6) [MPI #72].

- 1) S-W, Pro Industrial Waterbased Acrolon 100.

F. Wood Substrates: Glued-laminated construction.

1. Pigmented Polyurethane System [MPI EXT 6.1J]:
  - a. Prime Coat: Polyurethane, two component, pigmented, gloss, matching topcoat.
  - b. Intermediate Coat: Polyurethane, two component, pigmented, gloss, matching topcoat.
  - c. Topcoat: Polyurethane, two component, pigmented, gloss (MPI Gloss Level 6) [MPI #72].
    - 1) S-W, Pro Industrial Waterbased Acrolon 100.
- G. Wood Substrates: Exposed framing.
  1. Pigmented Polyurethane System [MPI EXT 6.2J]:
    - a. Prime Coat: Per Manufacturer of Polyurethane topcoat.
    - b. Intermediate Coat: Polyurethane, two component, pigmented, gloss, matching topcoat.
    - c. Topcoat: Polyurethane, two component, pigmented, gloss (MPI Gloss Level 6) [MPI #72].
      - 1) S-W, Pro Industrial Waterbased Acrolon 100.
- H. Wood Substrates: Wood trim, architectural woodwork, doors, windows, wood board siding, and wood fences.
  1. Pigmented Polyurethane System [MPI EXT 6.3H]:
    - a. Prime Coat: Polyurethane, two component, pigmented, gloss, matching topcoat.
    - b. Intermediate Coat: Polyurethane, two component, pigmented, gloss, matching topcoat.
    - c. Topcoat: Polyurethane, two component, pigmented, gloss (MPI Gloss Level 6) [MPI #72].
      - 1) S-W, Pro Industrial Waterbased Acrolon 100.
- I. Fiberglass Substrates:
  1. Pigmented Polyurethane over Epoxy System [MPI EXT 6.7D]:
    - a. Prime Coat: Epoxy, matching intermediate coat.
    - b. Intermediate Coat: Epoxy, High Build, Self Priming, Low Gloss. [MPI #120].
      - 1) S-W, Macropoxy 646-100 B58W00610/B58V00600.
    - c. Topcoat: Polyurethane, two component, pigmented, gloss (MPI Gloss Level 6) [MPI #72].
      - 1) S-W, Pro Industrial Waterbased Acrolon 100.

### 3.7 INTERIOR HIGH-PERFORMANCE COATING SCHEDULE

#### A. Concrete Substrates, Vertical and Horizontal Surfaces:

1. Pigmented Polyurethane System [MPI INT 3.2D]:
  - a. Prime Coat: Epoxy, High Build, Self Priming, Low Gloss [MPI #120].
    - 1) S-W, Macropoxy 646-100 B58W00610/B58V00600.
  - b. Topcoat: Polyurethane, two component, pigmented, gloss (MPI Gloss Level 6) [MPI #72].
    - 1) S-W, Pro Industrial Waterbased Acrolon 100.

#### B. Steel Substrates:

1. Pigmented Polyurethane over Epoxy Primer System [MPI INT 5.1F]:
  - a. Prime Coat: Primer, epoxy, anti-corrosive, for metal [MPI #120].
    - 1) S-W, Macropoxy 646-100 B58W00610/B58V00600.
  - b. Topcoat: Polyurethane, two component, pigmented, gloss (MPI Gloss Level 6) [MPI #72].
    - 1) S-W, Pro Industrial Waterbased Acrolon 100.

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