

# **PROJECT MANUAL**

FOR

POMONA CENTRALIZED SERVICE CENTER  
EMERGENCY SHELTER SHADE STRUCTURES

## **OWNER**

CITY OF POMONA  
505 SOUTH GAREY AVENUE  
POMONA, CA 91769

## **ARCHITECT**

WLC ARCHITECTS, INC.  
8163 ROCHESTER AVENUE, SUITE 100  
RANCHO CUCAMONGA, CA 91730  
(909) 987-0909

PROJECT 2010500  
APRIL 2020

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EMERGENCY SHELTER SHADE STRUCTURES

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NOT USED

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NOT USED

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NOT USED

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NOT USED

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NOT USED

**DIVISION 48 ELECTRICAL POWER GENERATION**

---

NOT USED

**DIVISION 49 RESERVED**

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NOT USED

**SECTION 01 11 00**

SUMMARY OF WORK

1. PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Work Included.
- B. Work under separate contracts.
- C. Work by Owner.
- D. Owner furnished products.
- E. Contractor use of site.
- F. Work Sequence.
- G. Owner occupancy.
- H. Work restrictions.

1.2 WORK INCLUDED

- A. Work of this Contract comprises general construction of multiple shade structures located at 1400 East Mission Avenue, Pomona, CA 91767 for the City of Pomona, Owner.
- B. Construct the work under a single lump sum contract.

1.3 WORK UNDER SEPARATE CONTRACTS

- A. General: Cooperate fully with separate contractors so work on those contracts may be carried out smoothly, without interfering with or delaying work under this Contract. Coordinate the Work of this Contract with work performed under separate contracts.

1.4 WORK BY OWNER

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

1.5 OWNER FURNISHED PRODUCTS

- A. Items noted "OFCI" (Owner-Furnished Contractor Installed) will be furnished by Owner and installed by Contractor.
- B. Items noted "OFOI" (Owner-Furnished Owner Installed) will be furnished by Owner and installed by Owner.
- C. Owner's Responsibilities:
  - 1. Arrange for and deliver Owner reviewed Shop Drawings, Product Data, and Samples to Contractor.
  - 2. Arrange and pay for Product delivery to site.
  - 3. On delivery, inspect Products jointly with Contractor.
  - 4. Submit claims for transportation damage and replace damaged, defective, or deficient items.



5. Arrange for manufacturer's warranties, inspections, and service.

D. Contractor's Responsibilities:

1. Review Owner reviewed Shop Drawings, Product Data, and Samples.
2. Receive and unload Products at site; inspect for completeness or damage, jointly with Owner.
3. Handle, store, install and finish Products.
4. Repair or replace items damaged after receipt.

1.6 CONTRACTOR USE OF SITE

A. Limit use of site to allow:

1. Owner occupancy.
2. Use of site by public.

B. Construction Operations: Limited to area indicated on drawings.

1.7 OWNER OCCUPANCY

- A. Partial Owner Occupancy: Owner will occupy the entire site and premises during entire construction period, with the exception of areas under construction.
- B. Owner Occupancy of Completed Areas of Construction: Owner reserves the right to occupy and to place and install equipment in completed areas of building, before Substantial Completion, 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.
- C. Architect will prepare a Certificate of Substantial Completion for each specific portion of the Work to be occupied before Owner occupancy.
- D. Obtain a Certificate of Occupancy from authorities having jurisdiction before Owner occupancy.
- E. Before partial Owner occupancy, mechanical and electrical systems shall be fully operational, and required tests and inspections shall be successfully completed. On occupancy, Owner will operate and maintain mechanical and electrical systems serving occupied portions of building.
- F. On occupancy, Owner will assume responsibility for maintenance and custodial service for occupied portions of building.
- G. Cooperate with Owner during construction operations to minimize conflicts and facilitate Owner usage.
- H. Perform the Work so as not to interfere with Owner's day-to-day operations.
- I. Maintain existing exits, unless otherwise indicated.
- J. Provide not less than 72 hours notice to Owner of activities that will affect Owner's operations.

1.8 WORK RESTRICTIONS

- A. On-Site Work Hours: Work shall be generally performed during normal business working hours, Monday through Friday, except as otherwise indicated or required to conform to construction schedule and labor codes.
  1. Weekend Hours: 7:00 a.m. - 5:00 p.m.

2. Early Morning Hours: 7:00 a.m. - 5:00 p.m.
  3. Hours for Noisy Operations: 8:00 a.m. - 5:00 p.m.
- B. Existing Utility Interruptions: Do not interrupt utilities serving facilities occupied by Owner or others unless permitted to do so and then only after arranging to provide temporary utility services according to requirements indicated.
1. Notify Architect not less than 5 days in advance of proposed utility interruptions. Do not proceed with utility interruptions without Architect's permission.

2. PART 2 PRODUCTS

Not Used

3. PART 3 EXECUTION

Not Used

END OF SECTION

**SECTION 01 20 00**

PRICE AND PAYMENT PROCEDURES

1. PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Cash allowances.
- B. Contingency allowances.
- C. Schedule of Values.
- D. Application for Payment.
- E. Defect assessment.
- F. Non-payment for rejected work.
- G. Change procedures.
- H. Alternates.
- I. Unit prices.

1.2 CASH ALLOWANCES

- A. Include in the contract sum all cash allowances stated herein.
- B. Items covered by cash allowances shall be supplied for such amounts and by such persons as the Owner may direct, but the Contractor shall not be required to employ persons or entities against which the Contractor makes reasonable objection.
- C. Costs Included in Cash Allowances: Cost of Product to Contractor or Subcontractor, less applicable trade discounts; delivery to site and applicable taxes.
- D. Costs Not Included in the Cash Allowance: Product handling at the site, including unloading, uncrating, and storage; protection of products from elements and from damage; labor for installation and finishing; and overhead profit and other expenses contemplated. These expenses shall be included in the contract sum and not in the allowance.
- E. Funds will be drawn from cash allowance amount only by written authorization of the Owner.
- F. At closeout of contract, funds remaining in cash allowance amount will be credited to Owner by change order.
- G. Whenever costs are more than cash allowance amount, the contract amount will be adjusted accordingly by change order.
- H. Contractor Responsibilities:
  - 1. Assist Architect in selection of products and suppliers.
  - 2. Obtain proposals from suppliers and offer recommendations.
  - 3. On notification of selection by Owner, execute agreement with designated supplier.
  - 4. Arrange for and process shop drawings, product data, and samples. Arrange for delivery and product handling at site.

5. Promptly inspect products upon delivery for completeness, damage, and defects. Submit claims for damage.

### 1.3 CONTINGENCY ALLOWANCE:

- A. Include in the contract sum all contingency allowances stated herein.
- B. Costs included in contingency allowance: Cost of work to Contractor or subcontractor, less applicable trade discounts; delivery to site and applicable taxes; product handling, including unloading, uncrating, and storage; protection of products from damage; labor for installation and finishing; reasonable overhead and profit and other expenses required by work.
- C. Funds will be drawn from contingency allowance amount only by written authorization of Owner.
- D. At closeout of Contract, funds remaining in contingency allowance amount will be credited to Owner by Change Order.
- E. Whenever costs are more than contingency allowance amount, the Contract amount will be adjusted accordingly by Change order.
- F. Contractor Responsibilities:
  1. Assist Architect in selection of products and suppliers.
  2. Obtain proposals from suppliers and offer recommendations.
  3. On notification of selection by Owner, execute agreement with designated supplier.
  4. Arrange for and process shop drawings, product data, and samples. Arrange for delivery of product to site.
  5. Promptly inspect products upon delivery for completeness, damage, and defects. Submit claims for damage.
- G. Contingency Allowance: A stipulated sum of \$60,000.00.

### 1.4 SCHEDULE OF VALUES

- A. Submit Schedule of Values for approval in duplicate within fourteen days after receipt of Notice to Proceed.
- B. Format: Submit typed schedule based upon the Table of Contents of this Project Manual. Identify each line item with number and title of the major specification Section.
- C. Include in each line item, the amount of Allowances specified in this Section.
- D. Include within each line item, a directly proportional amount of Contractor's overhead and profit.
- E. Revise schedule to list approved Change Orders, on continuation sheet, with each Application For Payment.

### 1.5 APPLICATIONS FOR PAYMENT

- A. Submit six copies of each application on AIA Form G702 - Application and Certificate for Payment and AIA Form G703 Continuation Sheet.
- B. Content and Format: Utilize Schedule of Values for listing items in Application for Payment.
- C. Payment Application Times: The date for each progress payment is indicated in the General Conditions of the Contract.
- D. Payment Application Periods: The period of construction covered by each application for payment is the period indicated in the General Conditions of the Contract.

- E. Application Preparation: Complete every entry on form. Notarize and execute by a person authorized to sign legal documents. Architect will return incomplete applications without action.
- F. Waiver of Stop Notices: With each application for payment, submit waivers of stop notices from subcontractors for construction period covered by previous application.
- G. Final Payment: As specified in the General Conditions of the Contract and in Section 01 77 00 - Closeout Procedures.
- H. Refer to the General Conditions of the Contract for additional payment provisions.

#### 1.6 DEFECT ASSESSMENT

- A. Replace the Work, or portions of the Work, not conforming to specified requirements.
- B. If, in the opinion of the Architect, it is not practical to remove and replace the Work, the Architect will direct one of the following remedies:
  - 1. The defective Work may remain, but the listed schedule of value will be adjusted to a new value at the discretion of the Architect.
  - 2. The defective Work will be partially repaired to the instructions and satisfaction of the Architect and the listed schedule of value will be adjusted to reflect a new value at the discretion of the Architect.

#### 1.7 NON-PAYMENT FOR REJECTED WORK

- A. Payment will not be made for any of the following:
  - 1. Products wasted or disposed of in a manner that is not acceptable.
  - 2. Products determined to be unacceptable before or after placement.
  - 3. Products not completely unloaded from the transporting vehicle.
  - 4. Products placed beyond the lines and levels of the required work.
  - 5. Products remaining on hand after completion of the work.
  - 6. Loading, hauling and disposing of rejected products.

#### 1.8 CHANGE PROCEDURES

- A. The Architect will advise of minor changes in the Work not involving an adjustment to Contract Sum/Price or Contract Time as authorized by AIA A201 Article 7.4 on AIA Form G710 Architect's Supplemental Instructions.
- B. The Architect may issue a Proposal Request which includes a detailed description of a proposed change with supplementary or revised Drawings and specifications. Proposal Requests are for information only and are not to be considered instructions to stop the work or to execute the proposed change. Contractor will prepare and submit a detailed estimate within 14 days.
- C. Any change in the Work which involves the adjustment to contract sum/price or contract time shall be properly certified by the Contractor as indicated in the General Conditions of the contract.
- D. The Contractor may propose a change by submitting a Change Order Request to the Architect, describing the proposed change and its full effect on the Work. Include a statement describing the reason for the change, and the effect on the Contract Sum and Contract Time with full documentation and a statement describing the effect on Work by separate or other contractors.

- E. Stipulated Sum Change Order: Based on Proposal Request and Contractor's fixed price quotation or Contractor's Change Order Request as approved by Architect.
- F. Construction Change Directive: Architect may issue a directive, signed by the Owner and Architect, instructing the Contractor to proceed with a change in the Work, for subsequent inclusion in a Change Order. Document will describe changes in the Work, and designate method of determining any change in Contract Sum or Contract Time. Promptly execute the change.
- G. Allowance Adjustment: Adjustment of allowance amounts shall be based upon a properly documented and detailed Change Order Request which substantiates distribution of allowance amounts and actual costs of work in place.
- H. Change Order Forms: AIA G701 Change Order.
- I. Execution of Change Orders: Architect will issue Change Orders for signatures of parties as provided in the General Conditions of the Contract.
- J. Promptly revise Schedule of Values and Application for Payment forms to record each authorized Change Order as a separate line item and adjust the Contract Sum.
- K. Promptly revise progress schedules to reflect any changes in Contract Time, revise sub-schedules to adjust times for other items of work affected by the change and resubmit.
- L. Promptly enter changes in Project Record Documents.

#### 1.9 ALTERNATES

- A. An alternate is an amount proposed by the bidder and stated on the Bid Form for certain work defined herein that may be added to the Base Bid amount if the Owner decides to accept a corresponding change in either the amount of construction to be completed, or in the products, materials, equipment, systems, or installation methods described in the Contract Documents.
- B. The cost for each Alternate is the net addition to the Contract Sum to incorporate the Alternate into the Work.
- C. Include as part of each Alternate, miscellaneous devices, accessory objects, and similar items incidental to or required for a complete installation whether or not specifically mentioned as part of the Alternate.
- D. Alternates quoted on Bid Forms will be reviewed and accepted or rejected at the Owner's option. Accepted Alternates will be identified in Owner-Contractor Agreement.
- E. Coordinate related work and modify surrounding work as required to integrate the Work of each Alternate.
- F. Execute accepted alternates under the same conditions as other work of this Contract.
- G. Schedule of Alternates:
  - 1. Alternate No. 1: Day Use Shade Shelter. Alternate includes all shade shelter structural design, fabrication, and installation, including all identified electrical and low voltage work as identified on the plans. Location of this shelter is the east central 100' x 44' canopy just north of Building D.
  - 2. Alternate No. 2: Kennel Shade Shelter. Alternate includes all shade shelter structural design, fabrication, and installation, including all identified electrical and low voltage work as identified on the plans. Location of this shelter is the south 40' x 40' canopy on the south end of Building C, located between Grids H-C and I-C.
  - 3. Alternate No. 3: Waiting Area Shade Shelter. Alternate includes all shade shelter structural design, fabrication, and installation, including all identified electrical and low voltage work as identified on the plans. Location of this shelter is the south 22' x 14' cantilever canopy located in the Building C Courtyard between Buildings C and D.

#### 1.10 UNIT PRICES

- A. A unit price is an amount proposed by the bidder and stated on the Bid Form as a price per unit of measurement for materials or services that will be added to or deducted from the Contract Sum by change order in the event the estimated quantities of work required by the Contract Documents are increased or decreased.
- B. Unit prices shall include all necessary material, overhead, profit and applicable taxes.
- C. The Owner reserves the right to reject the Contractor's measurement of work-in-place that involves use of established prices, and to have this work measured by an independent surveyor acceptable to the Contractor at the Owner's expense.
- D. Refer to individual specification sections for construction activities requiring the establishment of unit prices.
- E. Specification sections referenced in the Schedule of Unit Prices contain requirements for materials and methods described under each unit price.

#### 2. PART 2 PRODUCTS

Not Used

#### 3. PART 3 EXECUTION

Not Used

END OF SECTION

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**SCHEDULE OF VALUES FORMAT\***

Project: Pomona Centralized Service Center Emergency Shelter Shade Structures  
 Contractor: \_\_\_\_\_  
 Date: \_\_\_\_\_

Item Description	Amount
------------------	--------

- |                                      |  |
|--------------------------------------|--|
| 1. Mobilization and initial expenses |  |
| 2. General Conditions                |  |
| Temporary Utilities                  |  |
| Engineering Layout                   |  |
| Temporary Construction/Dust Control  |  |
| General Clean Up/Trash Removal       |  |
| Project Manager/Supervision/Truck    |  |
| Rental Equipment                     |  |
| 3. Bonds and Insurance               |  |
| 4. SITE WORK                         |  |
| Demolition/Removal                   |  |
| Site                                 |  |
| Building(s)                          |  |
| Site Preparation                     |  |
| General Brush and Tree Clearing      |  |
| Earthwork                            |  |
| Site Improvements                    |  |
| Termite/Weed Treatment               |  |
| AC Paving/Base/Striping              |  |
| Concrete Curb/Gutters                |  |
| Concrete Retaining Walls             |  |
| Concrete Paving                      |  |
| Concrete Site Stairs                 |  |
| Masonry Garden Walls                 |  |
| Chain Link Fences/Gates              |  |
| Wrought Iron Fences/Gates            |  |
| Irrigation                           |  |
| Planting                             |  |
| Site Equipment (misc)                |  |
| Site Utilities                       |  |
| Fire Hydrants                        |  |
| Fire Lines                           |  |
| Storm Drainage                       |  |
| Site Water                           |  |
| Site Gas                             |  |
| Site Sewer                           |  |
| Electrical Site Service/Lighting     |  |

Item Description	Amount
Off-site Work	
AC Paving/Base	
Concrete Curb/Gutters	
Irrigation	
Planting	
Fire Hydrants	
Fire Lines	
Storm Drainage	
Site Water	
Site Gas	
Site Sewer	
Street Lights	
Other	
5. FOUNDATIONS	
Wall Foundations	
Column Foundations	
Special Foundations	
Other	
6. SUBSTRUCTURE	
Slab on Grade	
Trenches/pits/bases	
Basement Excavation/Walls	
Subgrade Moisture Protection	
Other	
7. SUPERSTRUCTURE	
Columns and Beams	
Concrete Columns/Beams	
Masonry Columns	
Steel Columns/Beams	
Wood Columns/Beams	
Glue Laminated Beams	
Structural Walls	
Concrete Walls	
Masonry Walls	
Wood Framed Walls	
Floor Construction	
Concrete Cast in Place	
Steel Deck/Framing	
Trusses	
Wood Framed Floors	
Roof Construction	
Concrete Cast in Place	
Steel Deck/Framing	
Trusses	
Wood Framed Roofs	
Stairs	
Other	

**Item Description****Amount**

## 8. EXTERIOR CLOSURE

- Exterior Walls/Soffits
  - Sandblast Concrete Seal/Paint
  - Sandblast Masonry Seal/Paint
  - Glass Block
  - Metal Studs
  - Wood Studs
  - Exterior Plaster
  - Exterior Insulation
- Windows/Frames/Glazing
  - Steel Windows/Glazing
  - Aluminum Windows/Glazing
  - Store Front/Glazing
- Doors
  - Metal Doors/Frames
  - Wood Doors/Frames
  - Aluminum Doors/Frames/Glazing
  - Sectional Doors/Frames
  - Roll Up Doors/Frames
  - Store Front
- Frames
- Hardware
- Insulation
  - Thermal Wall
  - Sound Wall
- Sealants/Caulking
- Other

## 9. ROOFING

- Roof Coverings and Flashing
  - Built Up Roofing
  - Single Ply
  - Preformed Metal
  - Asphalt Shingle
  - Clay/Concrete Tile
  - Roof Walkway System
- Roof Insulation and Fill
  - Lightweight Concrete
  - Insulating Concrete Fill
  - Rigid Insulation
- Flashing and Trim
- Roof Openings
  - Roof Hatches
  - Smoke Hatches
  - Skylights
  - Skyroofs/Walls
  - Ladders to Roof
- Other

**Item Description****Amount**

---

**10. INTERIOR CONSTRUCTION**

- Fixed Partitions
  - Metal Studs
  - Wood Studs
  - Gypsum Board
  - Interior Plaster
- Movable Partitions
- Compartments & Cubicles
- Toilet Partitions
- Interior Doors
  - Wood Doors
  - Metal Doors
  - Aluminum Doors
  - Roll Up Doors
  - Special Doors
- Frames
- Interior Finishes
  - Painting
  - Walls
  - Ceiling
  - Vinyl Wall Coverings
  - Ceramic Tile
  - Fiberglass Reinforced Panels
  - Concrete Sealer
  - Vinyl Sheet/Tile
  - Rubber Flooring
  - Carpet
  - Wood Flooring
  - Suspended Acoustical Ceiling System
  - Suspended Gypsum Ceiling System
- Specialties
  - Chalkboard/Markerboard/Tackboards
  - Cabinets
  - Toilet Room Accessories
  - Graphics and Signage
  - Other

**11. CONVEYING SYSTEMS**

- Elevators
- Moving Stairs and Walks
- Pneumatic Tube Systems
- Lifts, Hoists, and Cranes
  - Wheel Chair Lift
  - Dock Leveler/Bumpers
  - Automotive Hoists (single)
  - Two Post Hoist (twin)
- Other

**Item Description****Amount**

---

**12. EQUIPMENT**

- Library
  - Book Theft System
  - Fixed Book Shelves
  - Rolling Book Shelves
- Multipurpose/Stage
  - Fireproof Curtain
  - Projection Screen(s)
  - Folding Tables/Benches
- Athletic
  - Steel Athletic Lockers
  - Basketball Backstops
  - Bleachers
  - Pool
- Classroom
  - Window Coverings
  - Book Lockers
- Food Service
  - Kitchen Equipment
  - Walk in Freezer/Refrigerator
- Other

**13. MECHANICAL**

- Plumbing
  - Supply Service
  - Disposal Service
  - Rainwater Service
  - Gas Service
  - Finish Fixtures
- Fire Protection
  - Sprinklers
  - Fire Extinguishers
- HVAC System
  - Equipment
  - Ductwork/Distribution
  - System Controls
  - Testing and Balancing
- Other

**14. ELECTRICAL**

- Distribution
- Lighting and Power
- Special Systems
  - Alarm System
  - Communications
  - Emergency System
- Other

**Item Description****Amount**

---

**15. SPECIAL CONSTRUCTION**

Miscellaneous Special Construction

TOTAL COST

\$ \_\_\_\_\_

\*The above categories may be subdivided and items added if the overall order remains the same and the subtotal cost for each category complies with the format as shown. Items not applicable to a particular job may be deleted from this list. Overhead and profit shall be a combined mark up and added proportionally to each line item.

## SECTION 01 25 13

### PRODUCT SUBSTITUTION PROCEDURES

#### 1. PART 1 GENERAL

##### 1.1 SECTION INCLUDES

- A. Product options.
- B. Substitution procedures.

##### 1.2 DEFINITIONS

- A. Requests for changes in products, materials, or equipment required by Contract Documents proposed by the Contractor prior to and after award of the Contract are considered requests for substitutions. The following are not considered substitutions:
  - 1. Revisions to Contract Documents requested by the Owner or Architect.
  - 2. Specified options of products, materials, and equipment included in Contract Documents.

##### 1.3 PRODUCT OPTIONS

- A. Products Specified by Reference Standards or by Description Only: Any product meeting those standards or description.
- B. Products Specified by Naming One or More Manufacturers with Provision for Substitution: Products of manufacturers named and meeting specifications with substitution of products or manufacturer only when submitted under provisions of this section.
- C. Products Specified by Naming One or More Manufacturers without Provision for Substitution: No substitution allowed.

##### 1.4 LIMITATIONS ON SUBSTITUTIONS SUBMITTED PRIOR TO THE RECEIPT OF BIDS

- A. The Bid shall be based upon the standards of quality established by those items of equipment and/or materials which are specifically identified in the Contract Documents.
- B. The opportunity to request a substitution is not for the convenience of the Bidder to request acceptance of equipment and/or materials which may be more familiar or have a lesser cost.
- C. Architect may consider requests for substitutions of specified equipment and/or materials only when requests are received by Architect prior to the date established for the receipt of bids as stipulated in Document 00 21 13 - Instructions to Bidders.
- D. Consideration by Architect of a substitution request will be made only if request is made in strict conformance with provisions of this section.
- E. Burden of proof of merit of requested substitution is the responsibility of the entity requesting the substitution.
- F. It is the sole responsibility of the entity requesting the substitution to establish proper content of submittal for requests for substitutions. Incomplete submittals will be rejected.
- G. Architect's decision on substitution requests are final and do not require documentation or justification.
- H. When substitution is not accepted, provide specified product.
- I. Substitute products shall not be included within the bid without written acceptance by Addendum.

## 1.5 LIMITATIONS ON SUBSTITUTIONS SUBMITTED AFTER THE AWARD OF THE CONTRACT

- A. The Contract is based upon the standards of quality established by those items of equipment and/or materials which are specifically identified in the Contract Documents.
- B. The opportunity to request a substitution is not for the convenience of the Contractor to request acceptance of equipment and/or materials which may be more familiar or have a lesser cost.
- C. Consideration by Architect of substitution requests received after the established date of the receipt of bids or contract award will only be made when one or more of the following conditions are met and documented:
  - 1. Specified item fails to comply with regulatory requirements.
  - 2. Specified item has been discontinued.
  - 3. Specified item, through no fault of the Contractor, is unavailable in the time frame required to meet project schedule.
  - 4. Specified item, through subsequent information disclosure, will not perform properly or fit in designated space.
  - 5. Manufacturer declares specified product to be unsuitable for use intended or refuses to warrant installation of product.
  - 6. Substitution would be, in the sole judgement of the Architect, a substantial benefit to the Owner in terms of cost, time, energy conservation, or other consideration of merit.
- D. Notwithstanding the provisions of Article 1.4 of this section and the above, the Architect may consider a substitution request after the date of the receipt of bids or contract award, if in the sole discretion of the Architect, there appears to be just cause for such a request. The acceptance of such a late request does not waive any other requirement as stated herein.
- E. Consideration by Architect of a substitution request will be made only if request is made in strict conformance with provisions of this section.
- F. Substitutions will not be considered when they are indicated or implied on shop drawings or product data submittals without separate written request as required by provisions of this section.
- G. Review of shop drawings does not constitute acceptance of substitutions indicated or implied on shop drawings.
- H. Substitutions will not be considered when requested or submitted directly by subcontractor or supplier.
- I. Substitutions will not be considered as a result of the failure to pursue the work promptly or coordinate activities properly.
- J. Burden of proof of merit of requested substitution is the responsibility of the Contractor.
- K. It is the sole responsibility of the Contractor to establish proper content of submittal for requests for substitutions. Incomplete submittals will be rejected.
- L. Owner shall receive full benefit of any cost reduction as a result of any request for substitution.
- M. Architect's decision on substitution requests is final and does not require documentation or justification.
- N. When substitution is not accepted, provide specified product.
- O. Substitute products shall not be ordered or installed without written acceptance.



## 1.6 REGULATORY REQUIREMENTS

- A. It shall be the responsibility of the entity requesting the substitution to obtain all regulatory approvals required for proposed substitutions.
- B. All regulatory approvals shall be obtained for proposed substitutions prior to submittal of substitution request to Architect.
- C. All costs incurred by the Owner in obtaining regulatory approvals for proposed substitutions to include the costs of the Architect and any authority having jurisdiction over the project shall be reimbursed to the Owner. Costs of these services shall be reimbursed regardless of final acceptance or rejection of substitution.

## 1.7 SUBSTITUTION REPRESENTATION

- A. In submitting a request for substitution, the entity requesting the substitution makes the representation that he or she:
  - 1. Has investigated the proposed substitution and has determined that it meets or exceeds the quality level of the specified product.
  - 2. Will provide the same warranty or guarantee for the substitution as for the specified product.
  - 3. Will coordinate installation and make changes to other work which may be required for the work to be completed with no additional cost to the Owner.
  - 4. Waives claims for additional cost or time extension which may subsequently become apparent.
  - 5. Will reimburse Owner for the cost of Architect's review or redesign services associated with substitution request.

## 1.8 SUBMITTAL PROCEDURE

- A. Submit each Substitution Request in conformance with the requirements of this section.
- B. Assemble complete Substitution Request into a single bookmarked Portable Document Format (PDF) file.
- C. Transit electronic PDF files via Architect's Project Collaboration Site address or designated email address.
- D. Submit request with Architect's Substitution Request Form. Form may be obtained at the office of the Architect. Substitution requests received without request form will be returned unreviewed.
- E. Limit each request to one proposed substitution.
- F. Request to include sufficient data so that direct comparison of proposed substitution can be made.
- G. Provide complete documentation for each request. Documentation shall include the following information, as appropriate, as a minimum:
  - 1. Statement of cause for substitution request.
  - 2. Identify product by specification section and article number.
  - 3. Provide manufacturer's name, address, and phone number. List fabricators, suppliers, and installers as appropriate.
  - 4. List similar projects where proposed substitution has been used, dates of installation and names of Architect and Owner.
  - 5. List availability of maintenance services and replacement materials.
  - 6. Documented or confirmation of regulatory approval.

7. Product data, including drawings and descriptions of products.
  8. Fabrication and installation procedures.
  9. Samples of proposed substitutions.
  10. Itemized comparison of significant qualities of the proposed substitution with those of the product specified. Significant qualities may include size, weight, durability, performance requirements and visual effects.
  11. Coordination information, including a list of changes or modifications needed to other items of work that will become necessary to accommodate proposed substitution.
  12. Statement on the substitutions effect on the construction schedule.
  13. Cost information including a proposal of the net change, if any, in the Contract sum if the substitution is submitted after the receipt of bids or contract award.
  14. Certification that the substitution is equal to or better in every respect to that required by the Contract Documents and that substitution will perform adequately in the application intended.
  15. Waiver of right to additional payment or time that may subsequently become necessary because of failure of substitution to perform adequately.
- H. Inadequate warranty, vagueness of submittal, failure to meet specified requirements, or submittal of insufficient data will be cause for rejection of substitution request.

#### 1.9 ARCHITECT'S REVIEW

- A. Within 14 days of receipt of request for substitution, the Architect will accept or reject proposed substitution.
- B. If a decision on a substitution cannot be made within the time allocated, the product specified shall be used.
- C. There shall be no claim for additional time for review of proposed substitutions.
- D. Final acceptance of a substitution submitted prior to the date established for the receipt of bids will be in the form of an Addendum.
- E. Final acceptance of a substitution submitted after the award of the contract will be in the form of a Change Order.

#### 2. PART 2 PRODUCTS

Not Used.

#### 3. PART 3 EXECUTION

Not Used.

END OF SECTION

## SECTION 01 31 00

### PROJECT MANAGEMENT AND COORDINATION

#### 1. PART 1 GENERAL

##### 1.1 SECTION INCLUDES

- A. Coordination.
- B. Preconstruction conference.
- C. Progress meetings.
- D. Request for Information (RFIs).
- E. Preinstallation conferences.
- F. Closeout conference.
- G. Post construction dedication.

##### 1.2 DEFINITIONS

- A. RFI - Request from Contractor seeking additional information, interpretation or clarification of the Contract Documents.

##### 1.3 COORDINATION

- A. Coordinate scheduling, submittals, and Work of the various Sections of Specifications to assure efficient and orderly sequence of installation of interdependent construction elements, with provisions for accommodating items installed later.
- B. Coordinate construction operations of the different Sections of the Specifications to ensure efficient and orderly installation of each part of the Work.
- C. Prior to commencement of a particular type or kind of work examine relevant information, contract documents and subsequent data issued to the project.
- D. Verify that utility requirement characteristics of operating equipment are compatible with building utilities. Coordinate work of various Sections having interdependent responsibilities for installing, connecting to, and placing in service, such equipment.
- E. Coordinate space requirements and installation of mechanical and electrical work which are indicated diagrammatically on Drawings. Follow routing shown for pipes, ducts, and conduit, as closely as practicable; place runs parallel with line of building. Utilize spaces efficiently to maximize accessibility for other installations, for maintenance, and for repairs.
- F. In finished areas except as otherwise indicated, conceal pipes, ducts, and wiring within the construction. Coordinate locations of fixtures and outlets with finish elements.
- G. In locations where several elements of mechanical and electrical work must be sequenced and positioned with precision in order to fit into available space, prepare coordination drawings showing the actual conditions required for the installation. Prepare coordination drawings prior to purchasing, fabricating or installing any of the elements required to be coordinated.
- H. Closing up of walls, partitions or furred spaces, backfilling and other covering up operations shall not proceed until all enclosed or covered work and inspections have been completed. Verify before proceeding.
- I. Coordinate completion and clean up of Work of separate sections in preparation for Substantial Completion and for portions of Work designated for Owners occupancy.

- J. After Owner occupancy of premises, coordinate access to site for correction of defective Work and Work not in accordance with Contract Documents, to minimize disruption of Owner's activities.
- K. Coordinate all utility company work in accordance with the General Conditions.
- L. Coordinate field engineering with the provisions of Section 01 73 00.

#### 1.4 PRECONSTRUCTION CONFERENCE

- A. Architect will schedule a conference immediately after receipt of fully executed contract documents prior to project mobilization.
- B. Mandatory Attendance: Owner, Owner's Resident Inspector, Owner's Testing Laboratory Representative, Architect, Contractor, Contractor's Project Manager and Contractor's Job Superintendent.
- C. Optional Attendance: Architect's consultants, subcontractors and utility company representatives.
- D. Architect will preside at conference, record minutes and distribute copies.
- E. Agenda:
  - 1. Execution of Owner-Contractor Agreement.
  - 2. Issue Notice to Proceed.
  - 3. Submission of executed bonds and insurance certificates.
  - 4. Distribution of Contract Documents.
  - 5. Federal and State labor law requirements applicable to Contract.
  - 6. Submission of list of Subcontractors, list of Products, schedule of values, and progress schedule.
  - 7. Designation of responsible personnel representing the parties.
  - 8. Procedures and processing of RFIs, field decisions, submittals, substitutions, applications for payments, proposal requests, Change Orders and Contract closeout procedures.
  - 9. Procedures for testing and inspection.
  - 10. Temporary facilities and controls.
  - 11. Procedures for moisture and mold control.
  - 12. Procedures for disruptions and shutdowns.
  - 13. Scheduling.
  - 14. Critical work sequence and long lead items.
  - 15. Work restrictions and working hours.
  - 16. Progress meetings.
  - 17. Use of site.
  - 18. Storage.
  - 19. Authorities having jurisdiction over project.
  - 20. Owner occupancy requirements.

21. Construction waste management.
22. SWPPP requirements.
23. Preparation of Record Drawings.
24. Security.
25. Parking availability.
26. Progress cleaning.

#### 1.5 PROGRESS MEETINGS

- A. Architect will schedule and administer meetings throughout progress of the Work at maximum twice a month intervals.
- B. Architect will make arrangements for meetings, prepare agenda, preside at meetings, record minutes (Field Reports), and distribute copies.
- C. Attendance Required: Job superintendent, major Subcontractors and suppliers, Owner, Owner's Inspector, and Architect, as appropriate to agenda topics for each meeting.
- D. Agenda:
  1. Review minutes of previous meetings. (Field Reports)
  2. Review of Work progress.
  3. Field observations, problems, and decisions.
  4. Identification of problems which impede planned progress.
  5. Review of submittals schedule and status of submittals.
  6. Requests For Information (RFIs).
  7. Status of Proposal Requests (PRs).
  8. Status of Change Order Requests (CORs).
  9. Status of Change Orders (Cos).
  10. Status of corrective or deficient items.
  11. Review of off-site fabrication and delivery schedules.
  12. Maintenance of construction schedule.
  13. Corrective measures to regain projected schedules.
  14. Planned progress during succeeding work period.
  15. Coordination of projected progress.
  16. Maintenance of quality and work standards.
  17. Effect of proposed changes on progress schedule and coordination.
  18. Temporary facilities and controls.

19. Progress cleaning.
20. Other business relating to Work.

#### 1.6 REQUEST FOR INFORMATION (RFI'S)

- A. Procedure: Immediately on discovery of the need for additional information, interpretation of the Contract Documents, and if not possible to request interpretation at Progress Meeting, prepare and submit an RFI in the form specified.
  1. RFIs shall originate with Contractor. RFIs submitted by entities other than Contractor will be returned with no response.
  2. Coordinate and submit RFIs in a prompt manner so as to avoid delays in Contractor's work or work of subcontractors.
  3. Each RFI shall address only one subject matter.
- B. Content of the RFI: Include a detailed, legible description of item needing interpretation and the following:
  1. Date.
  2. Project name.
  3. Owner's name.
  4. Name of Contractor.
  5. Name of Architect.
  6. RFI number, numbered sequentially.
  7. Specification Section number and title and related paragraphs, as appropriate.
  8. Drawing number and detail references, as appropriate.
  9. Field dimensions and conditions, as appropriate.
  10. Contractor's suggested solution(s). If Contractor's solution(s) impact the Contract Time or the Contract Sum, Contractor shall state impact in the RFI.
  11. Contractor's signature.
  12. Attachments: Include drawings, descriptions, measurements, photos, Product Data, Shop Drawings, and other information necessary to fully describe items needing interpretation. Supplementary drawings prepared by Contractor shall include dimensions, thicknesses, structural grid references, and details of affected materials, assemblies, and attachments.
- C. Hard-Copy RFIs: Identify each page of attachments with the RFI number and sequential page number.
- D. Software-Generated RFIs: Software-generated form with substantially the same content as indicated above. Attachments shall be electronic files in a format that will allow electronic editing by the Architect.
- E. Architect's Action: Architect will review each RFI, determine action required, and return it. Allow fifteen days for Architect's response for each RFI. RFIs received after 1:00 p.m. will be considered as received the following working day. If the RFI is required to be forwarded to a consultant, subconsultant, or Owner for a response, the response time will be twenty five days.
  1. The following RFIs will be returned without action:
    - (a) Requests for approval of submittals.

- (b) Requests for approval of substitutions.
  - (c) Requests for information already indicated in the Contract Documents.
  - (d) Requests for coordination information which is the responsibility of the Contractor.
  - (e) Requests for adjustments in the Contract Time or the Contract Sum.
  - (f) Requests for interpretation of Architect's actions on submittals and substitutions.
  - (g) Incomplete RFIs or RFIs with numerous errors.
2. Architect's action may include a request for additional information, in which case Architect's allowable time for response will start again.
  3. Architect's review of or response to RFIs shall not constitute an approval, direction, or procedure related to construction means, methods, techniques, sequences, or procedures of Contractor.
  4. Architect's review of or response to RFIs shall not constitute an approval, direction, or procedure related to the construction site safety precautions, procedures or methodology of Contractor.
  5. Architect's action on RFIs that may result in a change to the Contract Time or the Contract Sum may be eligible for Contractor to submit Change Order Request according to Division 01 Section 01 20 00 - Price and Payment Procedures.
    - (a) If Contractor believes the RFI response warrants change in the Contract Time or the Contract Sum, notify Architect in writing within five days of receipt of the RFI response.
    - (b) Under no circumstances is the Architect's review of or response to RFIs to be considered an authorization to depart from the Contract Documents or an authorization to perform extra work.
- F. On receipt of Architect's action immediately distribute the RFI response to affected parties.
- G. Review response and notify Architect within three days if Contractor disagrees with response.

#### 1.7 PREINSTALLATION CONFERENCES

- A. When required in individual specification Section, convene a preinstallation conference prior to commencing work of the Section. Refer to individual specification section for timing requirements of conference.
- B. Require attendance of parties directly affecting, or affected by, work of the specific Section.
- C. Notify Architect a minimum of seven days in advance of meeting date.
- D. Preinstallation conference to coincide with regularly scheduled progress meeting.
- E. Prepare agenda, preside at conference, record minutes, and distribute copies within two days after conference to participants.
- F. Agenda:
  1. Review of Contract Documents.
  2. Manufacturer's recommendations.
  3. Status of submittals.
  4. Related RFIs.
  5. Related Change Orders.

6. Schedule of work activities.
7. Deliveries of materials and equipment.
8. Sequence of operation.
9. Acceptable substrates.
10. Interface requirements.
11. Possible conflicts.
12. Access.
13. Site utilization.
14. Tests and inspections.
15. Review of Mockups.
16. Temporary facilities and controls.
17. Quality and work standards.
18. Weather limitations.

#### 1.8 PROJECT CLOSEOUT CONFERENCE

- A. Architect will schedule a project closeout conference, at a time convenient to Owner and Contractor, but no later than 90 days prior to the scheduled date of Substantial Completion.
- B. Mandatory Attendance: Owner, Owner's Resident Inspector, Owner's Testing Laboratory, Architect, and Contractor.
- C. Architect will preside at conference, record minutes, and distribute copies.
- D. Refer to Section 01 77 00 for additional closeout requirements.
- E. Agenda: Discuss items of significance that could affect or delay Project closeout, including the following:
  1. Submittal procedures for closeout documents.
  2. Preparation of Record Documents.
  3. Procedures required prior to review for Substantial Completion and for final review for acceptance.
  4. Submittal of written warranties.
  5. Requirements for preparing operations and maintenance data.
  6. Requirements for delivery of material samples, attic stock, and spare parts.
  7. Requirements for demonstration and training.
  8. Preparation of Contractor's punch list.
  9. Procedures for processing Applications for Payment at Substantial Completion and for final payment.
  10. Coordination of separate contracts.
  11. Owner's partial occupancy requirements.



12. Installation of Owner's furniture, fixtures, and equipment.
13. Responsibility for removing temporary facilities and controls.

#### 1.9 POST CONSTRUCTION DEDICATION

- A. Attendance Required: Project superintendent, project manager, major subcontractors, Owner and Architect.
- B. Preparation prior to Dedication:
  1. Assist Owner in operation of mechanical systems.
  2. Verify operation and adjust controls for communication systems.
  3. Assist Owner in operation of lighting systems.

#### 2. PART 2 PRODUCTS

Not Used

#### 3. PART 3 EXECUTION

Not Used

END OF SECTION

## SECTION 01 32 17

### CONSTRUCTION SCHEDULE - BAR CHART

#### 1. PART 1 GENERAL

##### 1.1 SECTION INCLUDES

- A. References.
- B. Performance requirements.
- C. Qualifications.
- D. Quality Assurance.
- E. Project record documents.
- F. Submittals.
- G. Review and evaluation.
- H. Format.
- I. Cost and schedule reports.
- J. Early work schedule.
- K. Construction schedule.
- L. Short interval schedule.
- M. Requested time adjustment schedule.
- N. Recovery schedule.
- O. Updating schedules.
- P. Distribution.

##### 1.2 REFERENCES

- A. Construction Planning and Scheduling Manual - A Manual for General Contractors and the Construction Industry, The Associated General Contractors of America (AGC).
- B. National Weather Service - Local Climatological Data.

##### 1.3 PERFORMANCE REQUIREMENTS

- A. Ensure adequate scheduling during construction activities so work may be prosecuted in an orderly and expeditious manner within stipulated Contract Time.
- B. Ensure coordination of Contractor and subcontractors at all levels.
- C. Ensure coordination of submittals, fabrication, delivery, erection, installation, and testing of materials and equipment.
- D. Ensure on-time delivery of Owner furnished materials and equipment.
- E. Ensure coordination of jurisdictional reviews.

- F. Assist in preparation and evaluation of applications for payment.
- G. Assist in monitoring progress of work.
- H. Assist in evaluation of proposed changes to Contract Time.
- I. Assist in evaluation of proposed changes to Construction Schedule.
- J. Assist in detection of schedule delays and identification of corrective actions.

#### 1.4 QUALIFICATIONS

- A. Scheduler: Personnel with 3 years minimum experience in scheduling construction work of a complexity and size comparable to this Project.
- B. Administrative Personnel: 3 years minimum experience in using and monitoring schedules on comparable projects.

#### 1.5 QUALITY ASSURANCE

- A. Perform work in accordance with Construction Planning and Scheduling Manual published by the AGC.
- B. In the event of discrepancy between the AGC publication and this section, provisions of this section shall govern.

#### 1.6 PROJECT RECORD DOCUMENTS

- A. Submit record documents under provisions of Section 01 77 00.
- B. Submit one electronic file and three copies of final Record Construction Schedule which reflects actual construction of this Project.
- C. Record schedule shall be certified for compliance with actual way project was constructed.
- D. Receipt of Record Construction Schedule shall be a condition precedent to any retainage release or final payment.

#### 1.7 SUBMITTALS

- A. Submit under provisions of Section 01 33 00.
- B. Within 7 days from the Notice of Award submit proposed Early Work Schedule and preliminary Cost Report defining activities for first 60 days of Work.
- C. Within 45 days from the Notice of Award submit proposed Construction Schedule and final Cost Report.
- D. Submit updated Construction Schedule at least 10 days prior to each Application for Payment.
- E. Submit Short Interval Schedule at each Construction Progress Meeting.
- F. Submit Time Adjustment Schedule within 10 days of commencement of a claimed delay.
- G. Submit Recovery Schedules as required by completion of work.
- H. Submit one electronic file and three copies of each schedule and cost report.

#### 1.8 REVIEW AND EVALUATION

- A. Early Work Schedule shall be reviewed during Preconstruction Conference with Owner and Architect.

- B. Within 5 days of receipt of Owner and Architect's comments provide satisfactory revision to Early Work Schedule or adequate justification for activities in question.
- C. Acceptance by Owner of corrected Early Work Schedule shall be a condition precedent to making any progress payments for first 60 days of Contract.
- D. Cost loaded values of Early Work Schedule shall be a basis for determining progress payments during first 60 days of Contract.
- E. Participate in joint review of Construction Schedule and Reports with Owner and Architect.
- F. Within 7 days of receipt of Owner and Architect's comments provide satisfactory revision to Construction Schedule or adequate justification for activities in question.
- G. In the event that an activity or element of work is not detected by Owner or Architect review, such omission or error shall be corrected by next scheduled update and shall not affect Contract Time.
- H. Acceptance by Owner of corrected Construction Schedule shall be a condition precedent to making any progress payments after first 60 days of Contract.
- I. Cost-loaded values of Construction Schedule shall be basis for determining progress payments.
- J. Review and acceptance by Owner and Architect of Early Work Schedule or Construction Schedule does not constitute responsibility whatsoever for accuracy or feasibility of schedules nor does such acceptance expressly or impliedly warrant, acknowledge or admit reasonableness of activities, logic, duration, or cost loading stated or implied on schedules.

#### 1.9 FORMAT

- A. Shall be fully developed horizontal bar-chart-type schedule prepared under concepts and methods outlined in AGC Construction Planning and Scheduling Manual.
- B. Provide separate bar for each activity or operation.
- C. Activity shall not have a duration longer than 14 days or a value over \$20,000.00 except non-construction activities for procurement and delivery.
- D. Prepare schedule on sheet of sufficient width to clearly show data.
- E. Provide continuous heavy vertical line identifying first day of week.
- F. Provide continuous subordinate vertical line identifying each day of week.
- G. Identify activities by number, description, and cost.
- H. Show each activity in proper sequence.
- I. Indicate graphically sequences necessary for related activities.
- J. Provide legend of symbols and abbreviations used.

#### 1.10 COST AND SCHEDULE REPORTS

- A. Activity Analysis: Tabulate each activity and identify for each activity:
  - 1. Description.
  - 2. Interface with outside contractors or agencies.
  - 3. Duration.

4. Start date.
5. Finish date.
6. Actual start date.
7. Actual finish date.
8. Monetary value keyed to Schedule of Values.
9. Responsibility.
10. Percentage complete.
11. Variance positive or negative.

B. Cost Report: Tabulate each activity and identify for each activity:

1. Description.
2. Total cost.
3. Percentage complete.
4. Value prior to current period.
5. Value this period.
6. Value to date.

#### 1.11 EARLY WORK SCHEDULE

- A. Shall establish scope of work to be performed during the first 60 days of Contract.
- B. Shall contain the following phases and activities:
  1. Procurement activities to include mobilization, shop drawings and sample submittals.
  2. Identification of key and long-lead elements and realistic delivery dates.
  3. Construction activities in units of whole days limited to 14 days for each activity except non-construction activities for procurement and delivery.
  4. Approximate cost and duration of each activity.
- C. Shall contain seasonal weather considerations. Seasonal rainfall shall be 10 year average for the month as evidenced by Local Climatological Data obtained from U.S. National Weather Service.
- D. Activities shall be incorporated into Construction Schedule.
- E. No application for payment will be evaluated or processed until Early Work Schedule has been submitted and reviewed.
- F. Shall be updated on a monthly basis while Construction Schedule is being developed.
- G. Failure to submit an adequate or accurate Early Work Schedule or failure to submit on established dates will be considered a substantial breach of Contract.

## 1.12 CONSTRUCTION SCHEDULE

- A. Shall include Early Work Schedule as first 60 days of Construction Schedule.
- B. Shall be a fully developed horizontal bar-chart-type schedule.
- C. Shall indicate a completion date for project that is no later than required completion date.
- D. Conform to mandatory dates specified in the contract documents.
- E. Should schedule indicate a completion date earlier than any required completion date, Owner or Architect shall not be liable for any costs should project be unable to be completed by such date.
- F. Seasonal weather shall be considered in planning and scheduling of all work. Seasonal rainfall shall be 10 year average for the month as evidenced by Local Climatological Data obtained from U.S. National Weather Service.
- G. Provide sub-schedules to define critical portions of entire schedule.
- H. Indicate procurement activities, delivery and installation of Owner furnished material and equipment.
- I. Level of detail shall correspond to complexity of work involved.
- J. As developed shall show sequence of activities required for complete performance of Work.
- K. Shall be logical and show a coordinated plan of Work.
- L. Show order of activities. Include specific dates of completion.
- M. Duration of activities shall be coordinated with subcontractors and suppliers and shall be best estimate of time required.
- N. Failure to include any activity shall not be an excuse for completing all work by required completion date.
- O. An activity shall meet the following criteria:
  - 1. Any portion or element of work, action, or reaction that is precisely described, readily identifiable, and is a function of a logical sequential process.
  - 2. Descriptions shall be clear and concise. Beginning and end shall be readily verifiable. Starts and finishes shall be scheduled by logical restraints.
  - 3. Responsibility shall be identified with a single performing entity.
  - 4. Additional codes shall identify building, floor, bid item and CSI classification.
  - 5. Assigned dollar value (cost-loading) of each activity shall cumulatively equal total contract amount. Mobilization, bond and insurance costs shall be separate. General requirement costs, overhead, profit, shall be prorated throughout all activities. Activity costs shall correlate with Schedule of Values.
- P. For major equipment and materials show a sequence of activities including:
  - 1. Preparation of shop drawings and sample submissions.
  - 2. Review of shop drawings and samples.
  - 3. Finish and color selection.
  - 4. Fabrication and delivery.
  - 5. Erection or installation.

6. Testing.

- Q. Include a minimum of 15 days prior to completion date for punch lists and clean up. No other activities shall be scheduled during this period.

1.13 SHORT INTERVAL SCHEDULE

- A. Shall be fully developed horizontal bar-chart-type schedule directly derived from Construction Schedule.
- B. Prepare schedule on sheet of sufficient width to clearly show data.
- C. Identify activities by same description as Construction Schedule.
- D. Show each activity in proper sequence.
- E. Indicate graphically sequences necessary for related activities.
- F. Indicate activities completed or in progress for previous 2 week period.
- G. Indicate activities scheduled for succeeding 2 week period.
- H. Further detail may be added if necessary to monitor schedule.

1.14 REQUESTED TIME ADJUSTMENT SCHEDULE

- A. Updated Construction Schedule shall not show a completion date later than the Contract Time, subject to any time extensions processed as part of a Change Order.
- B. If an extension of time is requested a separate schedule entitled "Requested Time Adjustment Schedule" shall be submitted to Owner and Architect.
- C. Indicate requested adjustments in Contract Time which are due to changes or delays in completion of work.
- D. Extension request shall include forecast of project completion date and actual achievement of any dates listed in Agreement.
- E. To the extent that any requests are pending at time of any Construction Schedule update, Time Adjustment Schedule shall also be updated.
- F. Schedule shall be a fully developed horizontal bar-chart-type schedule.
- G. Accompany schedule with formal written time extension request and detailed impact analysis justifying extension.
- H. Time impact analysis shall demonstrate time impact based upon date of delay, and status of construction at that time.
- I. Activity delays shall not automatically constitute an extension of Contract Time.
- J. Failure of subcontractors shall not be justification for an extension of time.
- K. Extensions will be granted only to extent that time adjustments extend Contract completion date.
- L. Owner shall not have an obligation to consider any time extension request unless requirements of Contract Documents, and specifically, but not limited to these requirements are complied with.
- M. Owner shall not be responsible or liable for any construction acceleration due to failure of Owner to grant time extensions under Contract Documents should requested adjustments in Contract Time not substantially comply with submission and justification requirements of Contract for time extension requests.

- N. In the event a Requested Time Adjustment Schedule and Time Impact Analysis are not submitted within 10 days after commencement of a delay it is mutually agreed that delay does not require a Contract time extension.

#### 1.15 RECOVERY SCHEDULE

- A. When activities are behind Construction Schedule a supplementary Recovery Schedule shall be submitted.
- B. Form and detail shall be sufficient to explain and display how activities will be rescheduled to regain compliance with Construction Schedule.
- C. Maximum duration shall be one month and shall coincide with payment period.
- D. Ten days prior to expiration of Recovery Schedule verification to determine if activities have regained compliance with Construction Schedule will be made. Based upon this verification the following will occur:
  - 1. Supplemental Recovery Schedule will be submitted to address subsequent payment period.
  - 2. Construction Schedule will be resumed.

#### 1.16 UPDATING SCHEDULES

- A. Review and update schedule at least 10 days prior to submitting an Application for Payment.
- B. Approved change orders which affect schedule shall be identified as separate new activities.
- C. Change orders of less than \$20,000.00 value or less than 3 days duration need not be shown unless completion date is affected.
- D. Maintain schedule to record actual prosecution and progress.
- E. No other revisions shall be made to schedule unless authorized by Owner.
- F. Provide narrative Progress Report at time of schedule update which details the following:
  - 1. Activities or portions of activities completed during previous reporting period.
  - 2. Actual start dates for activities currently in progress.
  - 3. List of major construction equipment used during reporting period and any equipment idle.
  - 4. Number of personnel by craft engaged on Work during reporting period.
  - 5. Progress analysis describing problem areas.
  - 6. Current and anticipated delay factors and their impact.
  - 7. Proposed corrective actions for Recovery Schedule.
  - 8. Proposed modifications, additions, deletions and changes in Construction Schedule.
- G. Schedule update will form basis upon which progress payments will be made.
- H. Owner will not be obligated to review or process Application for Payment until schedule and Progress Report have been submitted.

#### 1.17 DISTRIBUTION

- A. Following joint review and acceptance of updated schedules distribute copies to Owner, Architect, and all other concerned parties.



B. Instruct recipients to promptly report in writing any problem anticipated by projections shown in schedule.

2. PART 2 PRODUCTS

Not Used

3. PART 3 EXECUTION

Not Used

END OF SECTION

## SECTION 01 33 00

### SUBMITTAL PROCEDURES

#### 1. PART 1 GENERAL

##### 1.1 SECTION INCLUDES

- A. Related submittals.
- B. Architect's digital data files.
- C. Proposed products list.
- D. Processing time.
- E. Submittal review.
- F. Submittal procedures - paper submittals.
- G. Shop drawings - paper submittals.
- H. Submittal procedures - electronic submittals.
- I. Shop drawings - electronic submittals.
- J. Product data.
- K. Samples.
- L. Manufacturers' instructions.
- M. Manufacturers' certificates.
- N. Deferred approval requirements.
- O. Submittal schedule.

##### 1.2 RELATED SUBMITTALS

- A. Progress Payments: Section 01 20 00 - Price and Payment Procedures.
- B. Schedule of Values: Section 01 20 00 - Price and Payment Procedures.
- C. Substitutions: Section 01 25 13 – Product Substitution Procedures.
- D. Coordination Drawings: Section 01 31 00 - Project Management and Coordination.
- E. Construction Schedule: Section 01 32 17 - Construction Schedule - Bar Chart.
- F. Tests and Inspections: Section 01 45 29 – Testing Laboratory Services.
- G. Certified Final Property Survey: Section 01 73 00 – Execution Requirements.
- H. Waste Reduction Progress Reports: Section 01 74 19 - Construction Waste Management and Disposal.
- I. Closeout Procedures: Section 01 77 00 – Closeout Procedures.
- J. The General Conditions set forth additional requirements for submittals.

### 1.3 ARCHITECT'S DIGITAL DATA FILES

- A. Upon written request, Architect's electronic CAD files will be provided for use in connection with preparation of shop drawings subject to the acceptance of the Architect's standard terms and conditions for electronic file transfer.

### 1.4 PROPOSED PRODUCTS LIST

- A. Within fourteen days after date of Notice to Proceed, submit complete list of major products proposed for use, with name of manufacturer, trade name, model number, and designated specification section of each product.
- B. For products specified only by reference standards, give manufacturer, trade name, model or catalog designation, and reference standards.

### 1.5 PROCESSING TIME

- A. Time period for review of submittals will commence upon receipt of submittal by Architect.
- B. Initial Review: Allow ten working days for each submittal.
- C. Resubmittal Review: Allow ten working days for each resubmittal.
- D. Sequential Review: Allow fifteen working days for initial and resubmittal review of each submittal where review is required by Architect's consultant's, Owner or other parties indicated.
- E. Deferred Approval Review: Allow a minimum of ninety calendar days for each submittal and any subsequent resubmittal review by the City of Pomona Building and Safety Division.

### 1.6 SUBMITTAL REVIEW

- A. The Architect's review is only for general conformance with design concept and Contract requirements. Contractor is responsible for compliance with Contract Documents, dimensions, quantities, fit and coordination with other Work. Review does not authorize substitutions, exclusions and limitations to Contract requirements unless specifically requested by Contractor and acknowledged by Architect.
- B. Definitions for submittal review:
  - 1. Review Completed - Do Not Resubmit: The Work covered by the submittal has been reviewed by the Architect and may proceed provided it complies with the Contract Documents. Final acceptance will depend on that compliance.
  - 2. Revise as Noted - Do Not Resubmit: The Work covered by the submittal has been reviewed by the Architect and may proceed provided it complies both with Architect's notations and corrections on the submittal and the Contract Documents. Final acceptance will depend on that compliance.
  - 3. Revise as Noted - Resubmit for Record: The Work covered by the submittal has been reviewed by the Architect and the submittal is to be revised according to the Architect's notations and corrections and a new submittal is to be made. Do not proceed with the Work covered by the submittal. Once the revised submittal is received it will be reviewed again by the Architect and retained as the record submittal. Once reviewed, the Work may proceed provided it complies with the Contract Documents. Final acceptance will depend on that compliance.
  - 4. Not Acceptable - Make New Submittal: Do not proceed with the Work covered by the submittal. Prepare a new submittal that complies with the Contract Documents. Once the revised submittal is received it will be reviewed again by the Architect. Once reviewed, the Work may proceed provided it complies with the Contract Documents. Final acceptance will depend on that compliance.
  - 5. Comment Box / Line: This line is for the Architect to take other action as may be appropriate for the actual submittal made. Notations may include a request for additional items or a statement regarding the submittal. This area can also be used in conjunction with other boxes that have been marked.

## 1.7 SUBMITTAL PROCEDURES - PAPER SUBMITTALS

- A. Transmit each submittal in conformance with requirements of this section.
- B. Sequentially number the transmittal forms. Resubmittals to have original number with an alphanumeric suffix.
- C. Identify Project and Architect's project number, Contractor, Subcontractor or supplier; pertinent Drawing and detail number(s), and specification Section number, as appropriate.
- D. Apply Contractor's stamp, signed or initialed certifying that review, verification of Products required, field dimensions, adjacent construction Work, and coordination of information is in accordance with the requirements of the Work and Contract Documents. Submittals without Contractor's stamp and signature will be returned without review.
- E. Schedule submittals to expedite the Project, and deliver to Architect at 8163 Rochester Avenue, Suite 100, Rancho Cucamonga, CA 91730. Coordinate submission of related items.
- F. Make submittals in groups containing associated and related items to make sure that information is available for checking each item when it is received.
- G. Submittals for all items requiring color selection must be received before any will be selected.
- H. Architect reserves the right to withhold action on a submittal requiring coordination with other submittals until all related submittals are received.
- I. Make submittals in advance of scheduled dates for installation to allow specified time for review, revisions, and resubmission prior to final review and subsequent placement of orders.
- J. 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 proper processing.
- K. Identify variations from Contract Documents and Product or system limitations which may be detrimental to successful performance of the completed Work.
- L. Provide space for Contractor and Architect review stamps.
- M. Revise and resubmit submittals as required, identify all changes made since previous submittal.
- N. Distribute copies of reviewed submittals to concerned parties. Instruct parties to promptly report any inability to comply with provisions.
- O. Partial submittals will be considered non responsive and will be returned without review.
- P. Submittals not requested will not be recognized or processed. Submittals not requested will be returned without review.
- Q. Architect will not review submittals that contain material safety data sheets (MSDS) and will return them for resubmittal.
- R. Substitutions will not be considered when they are indicated or implied on submittals without separate written request as required by provisions of Section 01 25 13 - Product Substitution Procedures.

## 1.8 SHOP DRAWINGS - PAPER SUBMITTALS

- A. Submit six prints of each drawing. Four copies will be retained by Architect.
- B. Review comments will be shown on returned print. Contractor will make and distribute copies as required for his purpose.
- C. After review, distribute in accordance with article on procedures stated above and provide copies for Record Documents described in Section 01 77 00 - Closeout Procedures.

- D. Do not reproduce Contract Documents or copy standard information and submit as shop drawings.
- E. Standard information prepared without specific reference to project requirements will not be considered a shop drawing.
- F. Do not use or allow others to use shop drawings which have been submitted and have been rejected.

#### 1.9 SUBMITTAL PROCEDURES - ELECTRONIC SUBMITTALS

- A. Transmit each electronic submittal in conformance with requirements of this section.
- B. Submittals for all items requiring color selections will not be accepted as an electronic submittal.
- C. Assemble complete submittal package into a single indexed Portable Document Format ( PDF ) file. File format licensed by Adobe Systems.
- D. Transmit electronic submittals as PDF files via Architect's Project Collaboration Site address or designated e mail address.
- E. Transmittal form for submittals shall be an electronic form acceptable to the Architect which identifies the Project, the Architect's project number, the Contractor, the Subcontractor or material supplier; pertinent Drawing and detail number(s), and specification Sections, as appropriate.
- F. Provide links enabling navigation to each item of submittal package.
- G. Name electronic submittal file with consistent project identifier composed of Architect's project number, Architect's alpha numeric file designation, and specification section number followed by sequential number. (e.g., 1930700-56-SUB - 064116-01.pdf )
- H. Resubmittals shall include an alphabetic suffix after initial point number. (e.g., 1930700-56-SUB – 064116-01-A.pdf)
- I. Resubmittals shall identify all changes made since previous submittal.
- J. Insert Contractor's review stamp to permanently record Contractor's action.
- K. Contractor's stamp shall be signed or initialed certifying that review, verification of Products required, field dimensions, adjacent work, and coordination of information is in accordance with the requirements of the Work and Contract Documents.
- L. Submittals without Contractor's stamp and signature will be returned without review.
- M. Provide space for Architect's electronic review stamp.
- N. Architect reserves the right to withhold action on a submittal requiring coordination with other submittals until all related submittals are received.
- O. Make submittals in advance of scheduled dates for installation to allow specified time for review, revisions, and resubmission prior to final review and subsequent placement of orders.
- P. 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 proper processing.
- Q. Identify variations from Contract Documents and Product or system limitations which may be detrimental to successful performance of the completed Work.
- R. Contractor shall reproduce and distribute copies of reviewed submittals to concerned parties. Instruct parties to promptly report any inability to comply with provisions.
- S. Partial submittals will be considered non responsive and will be returned without review.

- T. Submittals not requested will not be recognized or processed. Submittals not requested will be returned without review.
- U. Architect will not review submittals that contain material data safety sheets (MSDS) and will return them for resubmittal.
- V. Substitutions will not be considered when they are indicated or implied on submittals without separate written request as required by provisions of Section 01 25 13 - Product Substitution Procedures.

#### 1.10 SHOP DRAWINGS - ELECTRONIC SUBMITTALS

- A. Submit electronic copy of shop drawings in PDF format as specified in this section.
- B. Review comments will be indicated on reviewed document.
- C. After review, distribute in accordance with article on procedures stated above and provide copies for Record Documents described in Section 01 77 00 - Closeout Procedures.
- D. Do not reproduce Contract Documents or copy standard information and submit as shop drawings.
- E. Standard information prepared without specific reference to project requirements will not be considered a shop drawing.
- F. Do not use or allow others to use shop drawings which have been submitted and have been rejected.

#### 1.11 PRODUCT DATA

- A. When specified in individual specification sections, submit copies of data for each product which Contractor requires.
- B. Submit six copies of product data made in paper format. Four copies will be retained by Architect.
- C. Electronic submittals for product data will comply with Article for electronic submittal procedures stated in this section.
- D. Mark each copy to identify applicable products, models, options, and other data. Supplement manufacturer's standard data to provide information unique to this Project.
- E. Manufacturer's standard product data or catalogs that do not indicate materials or products that are specific to project will be returned without review.
- F. After review, distribute in accordance with article on procedures stated above and provide copies for Record Documents described in Section 01 77 00 - Closeout Procedures.

#### 1.12 SAMPLES

- A. Submit samples to illustrate functional and aesthetic characteristics of the Product, with integral parts and attachment devices. Coordinate sample submittals for interfacing work.
- B. Include identification on each sample, with full Project information.
- C. Submit the number of samples which Contractor requires, plus two which will be retained by Architect.
- D. Reviewed samples which may be used in the Work are indicated in individual specification Sections.
- E. Submittals for all items requiring color selection must be received before any will be selected.
- F. If a variation in color, pattern, texture or other characteristic is inherent within the material or product submitted, sample shall approximate limits of variation.

### 1.13 MANUFACTURER'S INSTRUCTIONS

- A. When specified in individual specification Sections, submit manufacturer's printed instructions for delivery, storage, assembly, installation, start-up, adjusting, and finishing, in quantities specified for Product Data.
- B. Identify conflicts between manufacturer's instructions and Contract Documents.

### 1.14 MANUFACTURER'S CERTIFICATES

- A. When specified in individual specification Sections, submit manufacturer's certificate to Architect for review, in quantities specified for Product Data.
- B. Indicate material or Product conforms to or exceeds specified requirements. Submit supporting reference date, affidavits, and certifications as appropriate.
- C. Certificates may be recent or previous test results on material or Product, but must be acceptable to Architect.

### 1.15 DEFERRED APPROVAL REQUIREMENTS

- A. Installation of deferred approval items shall not be started until detailed plans, specifications, and engineering calculations have been accepted and signed by the Architect or Engineer in general responsible charge of design and signed by a California registered Architect or professional engineer who has been delegated responsibility covering the work shown on a particular plan or specification and approved by the City of Pomona Building and Safety Division. Deferred approval items for this project are the following items:
  - 1. Pre-Engineered Fabric Shade Canopies - Section 13 34 23.
- B. Deferred approval drawings and specifications become part of the approved documents for the project when they are submitted to and approved by the City of Pomona Building and Safety Division.
- C. Deferred approval items shall be submitted no later than 60 days after Notice to Proceed.
- D. Submit four prints of each drawing.
- E. Submit four copies of calculations, product data and test reports.
- F. Identify and specify all supports, fasteners, spacing, penetrations, etc., for each of the deferred approval items, including calculations for each and all fasteners.
- G. Submit documents to Architect for review.
- H. Documents shall bear the stamp and signature of the Structural, Mechanical, or Electrical Engineer licensed in the State of California who is responsible for the work shown on the documents.
- I. Architect will forward submittal to project Structural, Mechanical, and Electrical Engineer.
- J. Review of project Architect, Structural, Mechanical, and Electrical Engineer is only for conformance with design concept shown on the documents.
- K. After review by Architect/Engineer, Architect will forward two copies of submittal to the City of Pomona Building and Safety Division for approval.
- L. Respond to review comments made by the City of Pomona Building and Safety Division and revise and resubmit submittal for final approval.
- M. Architect will forward two copies of final revised submittal to the City of Pomona Building and Safety Division for approval.
- N. The City of Pomona Building and Safety Division will return one copy of final submittal to the Architect.

- O. Architect will forward one copy of evidence of submittal approval by the City of Pomona Building and Safety Division for final distribution by the Contractor.

2. PART 2 PRODUCTS

Not Used

3. PART 3 EXECUTION

Not Used

END OF SECTION



## SECTION 01 35 16

### ALTERATION PROJECT PROCEDURES

#### 1. PART 1 GENERAL

##### 1.1 SECTION INCLUDES

- A. Products and installation for altering, patching and extending Work.
- B. Transition and adjustments.
- C. Repair of damaged surfaces, finishes, and cleaning.
- D. Fire prevention.

##### 1.2 DEFINITIONS

- A. Protect and Maintain: To remove deteriorating corrosion, reapply protective coatings, and install protective measures such as temporary guards; to provide the least degree of intervention.
- B. Repair: To stabilize, consolidate, or conserve; to retain existing materials and features while employing as little new material as possible. Repair includes patching, piecing-in, splicing, consolidating, or otherwise reinforcing or upgrading materials. Repair also includes limited replacement to match existing, rehabilitation, and reconstruction, with compatible substitute materials for deteriorated or missing parts of features when there are surviving prototypes.
- C. Replace: To duplicate and replace entire features with new material to match existing. Replacement includes the following conditions:
  - 1. Duplication: Includes replacing elements damaged beyond repair or missing. Original material is indicated as the pattern for creating new duplicated elements.
  - 2. Replacement with New Materials: Includes replacement with new material when original material is not available as patterns for creating new duplicated elements.
  - 3. Replacement with Substitute Materials: Includes replacement with compatible substitute materials. Substitute materials are not allowed, unless otherwise indicated.
- D. Remove: To detach items from existing construction and legally dispose of them off-site unless indicated to be removed and salvaged or removed and reinstalled.
- E. Remove and Salvage: To detach items from existing construction and deliver them to Owner.
- F. Remove and Reinstall: To detach items from existing construction, repair and clean them for reuse, and reinstall them where indicated.
- G. Existing to Remain or Retain: Existing items of construction that are not to be removed and that are not otherwise indicated to be removed and salvaged, or removed and reinstalled.
- H. Match Existing: Material that matches existing materials, as much as possible, in species, cut, color, grain, and finish.
- I. Refinish: To remove existing finishes to base material and apply new finish to match original.

##### 1.3 SUBMITTALS

- A. If alternate methods and materials to those indicated are proposed for any work, provide written description of proposed methods and comparable products.

- B. Where existing conditions may be misconstrued as damage caused by alteration procedures submit evidence of adjacent construction before work begins.

#### 1.4 QUALITY ASSURANCE

- A. Qualifications: An experienced firm regularly engaged in similar alteration Work specified in this Section.
- B. Dust and Noise Control: Provide temporary dust and noise-control partitions when required by alteration operations. Do not block means of egress from occupied spaces.
- C. Debris Hauling: Define hauling routes and provide temporary protective coverings.
- D. Fire-Prevention: Comply with NFPA 241 - Standard for Safeguarding Construction, Alteration, and Demolition Operations. Prepare a written plan for preventing fires during prosecution of the Work. Indicate placement of fire extinguishers, rag buckets, and other fire-control devices. Coordinate with Owner's fire-protection equipment. Include fire-watch personnel when required by alteration operations.
- E. Safety and Health Standard: Comply with ANSI/ASSE A10.6, Safety and Health Program Requirements for Demolition Operations.

#### 1.5 FIELD CONDITIONS

- A. Survey of Existing Conditions: Record existing conditions that affect the Work by use of preconstruction photographs.
- B. Discrepancies: Notify Architect of discrepancies between existing conditions and Contract Documents before proceeding with the Work.
- C. Owner's Removal: Before beginning alteration Work, verify with Owner that all items of importance to them have been removed.
- D. Size Limitations of Existing Space: Materials, products, and equipment used for performing Work and for transporting debris, materials, and products shall be of sizes that clear surfaces within existing spaces, areas, rooms and openings.

#### 1.6 PEDESTRIAN AND VEHICULAR CIRCULATION

- A. Coordinate alteration Work with circulation paths.
- B. Circulation patterns cannot be closed off entirely and can only be redirected around small areas.
- C. Plan and execute the Work accordingly.

### 2. PART 2 PRODUCTS

#### 2.1 PRODUCTS FOR PATCHING AND EXTENDING WORK

- A. New Materials: As specified in product Sections; match existing products and work for patching and extending work.
- B. Type and Quality of Existing Products: Determine by inspection and testing products where necessary, referring to existing Work as a standard.

### 3. PART 3 EXECUTION

#### 3.1 EXAMINATION

- A. Verify that demolition is complete, and areas are ready for installation of new Work.
- B. Beginning of alteration Work means acceptance of existing conditions.

### 3.2 FIRE PREVENTION

- A. Comply with NFPA 241 requirements.
- B. Remove and keep area free of combustible rubbish, paper, waste, and chemicals.
- C. Heat-Generating Activities: Comply with the following procedures while performing heat-generating procedures including welding, torch-cutting, soldering, brazing, removing paint by heat, or other procedures with open flames.
  - 1. As far as practical, restrict heat generating activities to area outside the building.
  - 2. Do not perform heat generating activities in or near rooms that contain flammable liquids or explosive vapors.
  - 3. Use fireproof baffles to prevent flames, sparks, hot gases, or other high-temperature materials from reaching surrounding combustible materials.
  - 4. Prevent the spread of sparks and particles of hot metal through open windows, doors, holes, and cracks in floors, walls, ceilings and roofs.
  - 5. Fire Watch: Before working with heat generating activities, employ personnel to serve as fire watch at each location where such work will be performed. Fire watch procedures shall be implemented according to NFPA 51B, Standard for Fire Prevention During Welding, Cutting, and Other Hot Work and NFPA 241.
    - (a) Prohibit fire watch personnel from other work that would distract them from fire-watch duties.
    - (b) Cease work for heat generating activities whenever fire-watch personnel are not present.
    - (c) Fire-watch personnel shall perform final fire-safety inspection each day beginning no sooner than 30 minutes after conclusion of heat generating activities.
    - (d) Fire-watch personnel shall maintain their duties at each area of heat generating activities until 60 minutes after conclusion of daily work.
  - 6. Fire-Control Devices: Provide and maintain fire extinguishers, fire blankets, and rag buckets for disposal of rags with combustible liquids.
  - 7. Fire Sprinklers: Where fire sprinkler protection exists and is functional, maintain it without interruption while operations are being performed. Protect sprinklers from damage by operations. Remove protection when operations are complete.

### 3.3 PREPARATION

- A. Cut, move, or remove items as necessary for access to alterations and renovation Work. Replace and restore at completion.
- B. Remove unsuitable material not marked for salvage, such as rotted wood, corroded metals, and deteriorated masonry and concrete. Replace materials as specified for finished Work.
- C. Remove debris and abandoned items from area and from concealed spaces.
- D. Prepare surface and remove surface finishes to provide for proper installation of new work and finishes.
- E. Close openings in exterior surfaces to protect existing work from weather and extremes of temperature and humidity.

### 3.4 INSTALLATION

- A. Coordinate work of alterations and renovations to expedite completion and to accommodate Owner occupancy.
- B. Remove, cut, and patch Work in a manner to minimize damage and to provide a means of restoring products and finishes to original condition.
- C. Refinish visible existing surfaces to remain in renovated rooms and spaces, to specified condition for each material, with a neat transition to adjacent finishes.
- D. Install products as specified in individual Sections.

### 3.5 TRANSITIONS

- A. Where new Work abuts or aligns with existing, perform a smooth and even transition. Patched Work to match existing adjacent Work in texture and appearance.
- B. When finished surfaces are cut so that a smooth transition with new work is not possible, request instructions from Architect.

### 3.6 ADJUSTMENTS

- A. Where removal of partitions or walls results in adjacent spaces becoming one, rework floors, walls, and ceilings to a smooth plane without breaks, steps, or bulkheads.
- B. Where a change of plane of 1/8 inch or more occurs, request instructions from Architect.
- C. Trim existing doors as necessary to clear new floor finish. Refinish trim as required.
- D. Fit work at penetrations of surfaces as specified in Section 01 73 29.

### 3.7 REPAIR OF DAMAGED SURFACES

- A. Patch or replace portions of existing surfaces which are damaged, lifted, discolored, or showing other imperfections.
- B. Repair substrate prior to patching finish.

### 3.8 FINISHES

- A. Finish surfaces as specified in individual Product Sections.
- B. Finish patches to produce uniform finish and texture over entire area. When finish cannot be matched, refinish entire surface to nearest intersections.

### 3.9 CLEANING

- A. Match samples of existing materials that have been cleaned and identified for acceptable cleaning levels.
- B. Avoid over cleaning to prevent damage to existing materials.

END OF SECTION

## SECTION 01 42 19

### REFERENCE STANDARDS

#### 1. PART 1 GENERAL

##### 1.1 SECTION INCLUDES

- A. Definitions.
- B. Specification format and content.
- C. Industry standards.
- D. Codes and standards.
- E. Governing regulations/authorities.

##### 1.2 DEFINITIONS

- A. General: Basic contract definitions are included in the General Conditions.
- B. Regulations: Includes laws, ordinances, statutes, and lawful orders issued by authorities having jurisdiction, as well as rules, conventions, and agreements within the construction industry that control performance of the work.

##### 1.3 SPECIFICATION FORMAT AND CONTENT

- A. Specifications are organized into Divisions and Sections based on the Construction Specifications Institute's 50-Division Master Format 2018 numbering system.
- B. The sections are placed in the Project Manual in numeric sequence; however, this sequence is not complete and the Table of Contents of the specifications must be consulted to determine the total listing of sections.
- C. The section title is not intended to limit the meaning or content of the section, nor to be fully descriptive of the requirements specified therein.
- D. The organization of the specifications shall not control the division of the work among subcontractors or establish the extent of work to be performed by any trade.
- E. Specifications use certain conventions regarding style of language and the intended meaning of certain terms, words, and phrases when used in particular situations or circumstances. These conventions are:
  - 1. Language used in Specifications and other Contract Documents is abbreviated. Words and meanings shall be interpreted as appropriate. Words that are implied, but not stated, shall be interpolated as the sense requires. Singular words shall be interpreted as plural and plural words interpreted as singular where applicable to maintain the context of the Contract Document indicated.
  - 2. Imperative and streamlined language is generally used in the Specifications. Requirements expressed in the imperative mood are to be performed by the Contractor. Subjective language is used for clarity to describe responsibilities that must be fulfilled indirectly by the Contractor, or by others when so noted.
  - 3. The words "shall be" are implied wherever a colon (:) is used within a sentence or phrase.

##### 1.4 INDUSTRY STANDARDS

- A. Except where Contract Documents include more stringent requirements, applicable construction industry standards shall apply as if bound into the Contract Documents to the extent referenced. Such standards are made part of Contract Documents by reference.

- B. Conform to reference standard by date of issue current on date for receiving bids except when a specific date is indicated.
- C. Where compliance with 2 or more standards is specified and where standards may establish different or conflicting requirements for quantities or quality levels, the more stringent, higher quality and greater quantity of work shall apply.
- D. The quantity or quality level shown or specified shall be the minimum provided or performed. Indicated numeric values are minimum or maximum, as appropriate, for the context of the requirements.
- E. Each entity engaged in construction of the work is required to be familiar with industry standards applicable to its construction activity.
- F. Copies of applicable standards are not bound with the Contract Documents. Where copies of standards are needed to perform a required activity, Contractor shall obtain copies directly from publication source.
- G. Trade associations names and titles of general standards are frequently abbreviated. Where such abbreviations are used in the Specifications or other Contract Documents, they shall mean the recognized trade association, standards-generating organization, authority having jurisdiction, or other entity applicable to the content of the text provision. Refer to the "Encyclopedia of Associations", published by Gale Research Co., available in most libraries.
- H. Refer to individual specification sections and related drawings for names and abbreviations of trade associations and standards applicable to specific portions of the work. In particular, refer to Division 23 for names and abbreviations applicable to mechanical work, and refer to Division 26 for names and abbreviations applicable to electrical work.
- I. The contractual relationship of the parties to the Contract shall not be altered from the Contract Documents by mention or inference otherwise in any reference document.

#### 1.5 CODES AND STANDARDS

- A. Latest edition of pertaining ordinances, laws, rules, codes, regulations, standards, and others of public agencies having jurisdiction of the work are intended wherever reference is made in either the singular or plural to Code or Building Code except as otherwise specified, including but not limited to latest edition of those in the following listing.
  - 1. 2019 California Building Standards Administrative Code (CBSAC), California Code of Regulations (CCR), Title 24, Part 1
  - 2. 2019 California Building Code (CBC) California Code of Regulations (CCR) Title 24, Part 2 (2018 International Building Code (IBC) with California amendments)
  - 3. 2019 California Electrical Code (CEC) California Code of Regulations (CCR) Title 24, Part 3 (2017 National Electric Code (NEC) with California amendments)
  - 4. 2019 California Mechanical Code (CMC) California Code of Regulations (CCR) Title 24, Part 4 (2018 Uniform Mechanical Code (UMC) with California amendments)
  - 5. 2019 California Plumbing Code (CPC) California Code of Regulations (CCR) Title 24, Part 5 (2018 Uniform Plumbing Code (UPC) with California amendments)
  - 6. 2019 California Energy Code, California Code of Regulations (CCR) Title 24, Part 6

1.6 GOVERNING REGULATIONS/AUTHORITIES

- A. Authorities having jurisdiction have been contacted where necessary to obtain information for preparation of Contract Documents. Contact authorities having jurisdiction directly for information having a bearing on the work.
- B. Comply with all federal, state and local laws, ordinances, rules and regulations indicated and which bear on the conduct of the work.

2. PART 2 PRODUCTS

Not Used

3. PART 3 EXECUTION

Not Used

END OF SECTION

## SECTION 01 43 00

### QUALITY ASSURANCE

#### 1. PART 1 GENERAL

##### 1.1 SECTION INCLUDES

- A. Interpretation of requirements.
- B. Quality assurance and control of installation.
- C. Tolerances.
- D. Field samples.
- E. Mock-up.
- F. Manufacturers' field services and reports.

##### 1.2 INTERPRETATION OF REQUIREMENTS

- A. If compliance with two or more standards is specified and the standards establish different or conflicting requirements for minimum quantities or quality levels, comply with the most stringent requirement.
- B. The quantity or quality level shown or specified shall be the minimum provided or performed. The actual installation shall comply exactly with the minimum quantity or quality specified, or it may exceed the minimum within reasonable limits.
- C. Where codes or specified standards indicate higher standards, more stringent tolerances or more precise workmanship than levels shown or specified, comply with most stringent requirements.
- D. Refer uncertainties and requirements that are different, but apparently equal, to Architect for a decision before proceeding.

##### 1.3 QUALITY ASSURANCE/CONTROL OF INSTALLATION

- A. Installer Qualifications: A firm or individual experienced in installing, erecting, or assembling work similar in material, design, and extent to that indicated for this project, whose work has resulted in construction with a record of successful in-service performance.
- B. Manufacturer Qualifications: A firm experienced in manufacturing products or systems similar to those indicated for this project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units.
- C. Fabricator Qualifications: A firm experienced in producing products similar to those indicated for this project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units.
- D. Coordination: Coordinate sequence of activities to accommodate required quality-assurance and - control services with a minimum of delay and to avoid necessity of removing and replacing construction to accommodate testing and inspecting.
- E. Monitor quality control over suppliers, manufacturers, products, services, site conditions, and workmanship, to produce Work of specified quality.
- F. Comply fully with manufacturers' instructions, including each step in sequence.
- G. Should manufacturers' instructions conflict with Contract Documents, request clarification from Architect before proceeding.



- H. Secure Products in place with positive anchorage devices designed and sized to withstand stresses, vibration, physical distortion or disfigurement.

#### 1.4 TOLERANCES

- A. Monitor tolerance control of installed products to produce acceptable Work. Do not permit tolerances to accumulate.
- B. Comply with manufacturer's tolerances. Should manufacturer's tolerance conflict with Contract Documents, request clarification from Architect before proceeding.
- C. Adjust products to appropriate dimensions; position before securing products in place.

#### 1.5 FIELD SAMPLES

- A. Install field samples at the site as required by individual specifications sections for review.
- B. Acceptable samples represent a quality level for the Work.
- C. Where field sample is specified in individual sections to be removed, clear area after field sample has been reviewed by Architect.

#### 1.6 MANUFACTURERS' FIELD SERVICES AND REPORTS

- A. When specified in individual specification sections, require material or product suppliers or manufacturers to provide qualified staff personnel to observe site conditions, conditions of surfaces and installation, quality of workmanship, start-up of equipment, test, adjust, and balance of equipment and other field services as applicable, and to initiate instructions when necessary.
- B. Individuals to report observations and site decisions or instructions given to applicators or installers that are supplemental or contrary to manufacturers' written instructions.
- C. Submit report in duplicate within 15 days of observation to Architect for review.

### 2. PART 2 PRODUCTS

Not Used

### 3. PART 3 EXECUTION

#### 3.1 GENERAL INSTALLATION

- A. Comply with requirements specified in Section 01 73 00.

#### 3.2 EXAMINATION

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

3.3 PREPARATION

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

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

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

END OF SECTION

**SECTION 01 45 29**

TESTING LABORATORY SERVICES

1. PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Selection and payment.
- B. Contractor submittals.
- C. Laboratory responsibilities.
- D. Laboratory reports.
- E. Limits on testing laboratory authority.
- F. Contractor responsibilities.
- G. Schedule of inspections and tests.
- H. Test and inspection form.

1.2 REFERENCES

- A. ASTM C140 - Standard Test Methods for Sampling and Testing Concrete Masonry Units and Related Units.
- B. ASTM D3740 - Practice for Evaluation of Agencies Engaged in Testing and/or Inspection of Soil and Rock as Used in Engineering Design and Construction.
- C. ASTM E329 - Recommended Practice for Inspection and Testing Agencies for Concrete, Steel, and Bituminous Materials as Used in Construction.
- D. CBC - California Building Code, Title 24, Part 2 of the California Code of Regulations (CCR).

1.3 SELECTION AND PAYMENT

- A. Owner will employ and pay for services of an independent testing laboratory to perform specified inspection and testing as specified by Owner's testing laboratory.
- B. Owner will pay cost of testing and inspection except the following for which the Contractor shall reimburse the Owner through deductive change order:
  - 1. Any retesting and sampling required due to failure of original test.
  - 2. Any testing and inspection required to be performed that requires testing laboratory or agency to perform services outside the state of California.
  - 3. Concrete design mix.
  - 4. Additional testing expenses caused by failure of the Contractor to adhere to construction schedule or caused by failure of the Contractor to give proper advanced notice or caused by Contractor delay.
- C. Contractor shall employ and pay for services required to perform specified inspection and testing specified as Contractor responsibility.

- D. Employment of testing laboratory shall in no way relieve Contractor of obligation to perform work in accordance with requirements of Contract Documents.

#### 1.4 QUALITY ASSURANCE

- A. Comply with requirements of ASTM E329 and ASTM D3740.
- B. Laboratory Staff: Maintain a full time registered engineer on staff to review services.
- C. Testing Equipment: Capable of performing tests required calibrated at reasonable intervals with devices acceptable to the National Bureau of Standards.

#### 1.5 OWNER'S TESTING LABORATORY RESPONSIBILITIES

- A. Test samples of mixes submitted by Inspector.
- B. Provide qualified personnel at site. Cooperate with Architect and Contractor in performance of services.
- C. Perform specified inspection, sampling, and testing of products in accordance with specified standards.
- D. Ascertain compliance of materials and mixes with requirements of Contract Documents.
- E. Promptly notify Architect and Contractor of observed irregularities or non-conformance of Work or products.
- F. Perform additional inspections and tests required by Architect.
- G. Attend preconstruction conferences and progress meetings when requested by Architect.

#### 1.6 LABORATORY REPORTS

- A. After each inspection and test, promptly submit within no more than 14 days of the date of the inspection or test one copy of laboratory report to Architect, Engineer, Owner's Resident Inspector, and to Contractor. Reports of test results of materials and inspections found not to be in compliance with the requirements of the Contract Documents shall be forwarded immediately to the Architect, Engineer, Owner's Resident Inspector, and the Contractor.
- B. Include:
  - 1. Date issued.
  - 2. Project title and number.
  - 3. Name of inspector.
  - 4. Date and time of sampling or inspection.
  - 5. Identification of product and Specifications section.
  - 6. Location in the Project.
  - 7. Type of inspection or test.
  - 8. Date of test.
  - 9. Ambient conditions at time of test or sample-taking.
  - 10. Results of tests and interpretation of test results.
  - 11. Professional opinion as to whether tested work is in conformance with Contract Documents.
  - 12. Recommendations on retesting.

- C. Verification of Test Reports: Each testing agency shall submit to the Architect a verified report in duplicate covering all of the tests which were required to be made by that agency during the progress of the project. Such report shall be furnished each time that work on the project is suspended, covering the tests up to that time and at the completion of the project, covering all tests.

#### 1.7 LIMITS ON TESTING LABORATORY AUTHORITY

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

#### 1.8 CONTRACTOR RESPONSIBILITIES

- A. Submit proposed mix designs to Architect for review in accordance with Section 03 30 00.
- B. Cooperate with laboratory personnel, and provide access to the Work and to manufacturer's facilities.
- C. Notify Architect, Owner's Resident Inspector and testing laboratory 48 hours prior to expected time for operations requiring inspection and testing services.
  - 1. When tests or inspections cannot be performed after such notice, reimburse Owner for laboratory personnel and travel expenses incurred due to the Contractor's negligence.
  - 2. The Contractor shall notify the Owner's representative a sufficient time in advance of the manufacture of material to be supplied by him under the Contract Documents, which must by terms of the Contract be tested, in order that the Owner may arrange for the testing of same at the source of supply.
  - 3. Any material shipped by the Contractor from the source of supply prior to having satisfactorily passed such testing and inspection or prior to the receipt of notice from said representative that such testing and inspection will not be required shall not be incorporated in the job.
- D. Employ and pay for services of Owner's testing laboratory to perform additional inspections, sampling and testing required when initial tests indicate work does not comply with contract documents.

#### 1.9 SCHEDULE OF INSPECTIONS AND TESTS BY CONTRACTOR

- A. Contractor Responsibility:
  - 1. Statement of Responsibility - 1704.4 Refer to listed special inspections under Article 1.9.
- B. Plumbing:
  - 1. Testing as specified in Division 22 including, but not limited to: Sterilization, soil waste and vent, water piping, source of water, gas piping, downspouts and storm drains.
- C. Automatic Fire Sprinklers:
  - 1. Testing as specified in Division 21 shall include, but not be limited to: hydrostatic pressure.
- D. Electrical:
  - 1. Testing as specified in Division 26 including, but not limited to: Equipment testing, all electrical system operations, grounding system and checking insulation after cable is pulled.

2. PART 2 PRODUCTS

Not Used

2. PART 3 EXECUTION

Not Used

END OF SECTION

## SECTION 01 50 00

### TEMPORARY FACILITIES AND CONTROLS

#### 1. PART 1 GENERAL

##### 1.1 SECTION INCLUDES

- A. Temporary Utilities: Electricity, lighting, heat, ventilation, telephone service, communication service, water, and sanitary facilities.
- B. Temporary Controls: Barriers, enclosures and fencing. Water, erosion, pollution, noise and fire protection control.
- C. Construction Facilities: Access roads, parking, progress cleaning, project signage, and temporary buildings.

##### 1.2 SUBMITTALS

- A. Moisture-Protection Plan:
  - 1. Submit Moisture - Protection Plan under provisions of Section 01 33 00.
  - 2. Describe procedures and controls for protecting materials and construction from moisture absorption and damage, including delivery, handling, and storage provisions for materials subject to moisture absorption or moisture damage, discarding moisture-damaged materials, protocols for mitigating moisture intrusion into completed Work, and replacing moisture damaged Work.
  - 3. Indicate sequencing of work that requires water, such as sprayed fire-resistive materials, plastering, sawing and grinding, and describe plans for dealing with water and moisture from these operations.
  - 4. Show procedures for verifying that wet construction has dried sufficiently to permit installation of finish materials.

##### 1.3 TEMPORARY ELECTRICITY

- A. Connect to existing power service at location as directed. Power consumption shall not disrupt Owner's need for continuous service. Owner will pay for cost of energy used. Exercise measures to conserve energy.
- B. Provide power outlets for construction operations, with branch wiring and distribution boxes. Provide flexible power cords as required.
- C. Provide main service disconnect and over current protection at convenient location.
- D. Comply with NECA, NEMA, and UL standards and regulations for temporary electric service.
- E. Permanent convenience receptacles may be utilized during construction.

##### 1.4 TEMPORARY LIGHTING

- A. Maintain lighting and provide routine repairs.
- B. Permanent building lighting may be utilized during construction.

##### 1.5 TEMPORARY WATER SERVICE

- A. Provide, maintain and pay for suitable quality water service required for construction operations. Contractor may obtain water from existing fire hydrant if appropriate clearances are acquired and fees paid.
- B. Extend branch piping with outlets located so water is available by hoses with threaded connections.

#### 1.6 TEMPORARY SANITARY FACILITIES

- A. Provide temporary chemical type toilet facilities and enclosures.
- B. Maintain temporary toilet facilities in a sanitary manner.
- C. Existing facilities shall not be used.
- D. Facilities shall comply with the accessibility requirements of the CBC - California Building Code, (CCR) California Code of Regulations, Title 24, Part 2, Section 11B-201.4.

#### 1.7 BARRIERS

- A. Provide barriers to prevent unauthorized entry to construction areas and to protect existing facilities and adjacent properties from damage from construction operations.
- B. Provide barricades and covered walkways required by governing authorities for public rights-of-way and for public access to existing building.
- C. Provide protection for plant life and trees designated to remain and for soft and hardscape areas adjacent to work, replace damaged materials in kind.
- D. Protect non-owned vehicular traffic, stored materials, site and structures from damage.

#### 1.8 FENCING

- A. Construction: Commercial grade chain link fence.
- B. Provide 6 foot high fence around construction site; equip with vehicular and pedestrian gates with locks. Post fences and gates with no trespassing signs.

#### 1.9 WATER CONTROL

- A. Grade site to drain. Maintain excavations free of water. Provide, operate, and maintain pumping equipment.
- B. Provide water barriers as required to protect site from running water.

#### 1.10 EROSION AND SEDIMENT CONTROL

- A. Conform to Best Management Practices for erosion and sediment control and non-storm water management as defined in Sections 3 and 4 of the Construction Activity Handbook published by the Storm Water Quality Association.
- B. Plan and execute construction by methods to control surface drainage from cuts and fills, from borrow and waste disposal areas. Prevent erosion and sedimentation.
- C. Minimize amount of bare soil exposed at one time.
- D. Provide temporary measures such as berms, dikes, and drains, to prevent water flow.
- E. Construct fill and waste areas by selective placement to avoid erosive surface silts or clays.
- F. Coordinate construction activities with control procedures established in the Storm Water Pollution Prevention Plan (SWPPP).

#### 1.11 TEMPORARY FIRE PROTECTION

- A. Maintain temporary fire protection facilities of the types needed until permanent facilities are installed.
- B. Comply with NFPA 10 "Standard for Portable Fire Extinguishers" and NFPA 241 "Standard for Safeguarding Construction, Alterations, and Demolition Operations".



- C. Fire safety during construction shall comply with CFC - California Fire Code (CCR) California Code of Regulations, Title 24, Part 9, Chapter 33.
- D. Store combustible materials in containers in fire-safe locations.
- E. Maintain unobstructed access to fire extinguishers, fire hydrants, temporary fire-protection facilities, stairways, and other access routes.
- F. Provide supervision of welding operations, combustion-type temporary heating units, and similar sources of fire ignition.

#### 1.12 NOISE CONTROL

- A. Provide methods, means, and facilities to minimize noise produced by construction operations.

#### 1.13 POLLUTION CONTROL

- A. Provide methods, means, and facilities to prevent contamination of soil, water, and atmosphere from discharge of noxious, toxic substances, and pollutants produced by construction operations.
- B. Conform to Best Management Practices for waste management and material controls as defined in Section 4 of the Construction Activity Handbook published by the Storm Water Quality Association.
- C. Coordinate construction activities with control procedures established in the Storm Water Pollution Prevention Plan ( SWPPP).

#### 1.14 EXTERIOR ENCLOSURES

- A. Provide temporary weather-tight closure of exterior openings to accommodate acceptable working conditions and protection for materials, to allow for temporary heating and maintenance of required ambient temperatures identified in individual specification Sections, and to prevent entry of unauthorized persons.
- B. Provide access doors with self-closing hardware and locks.

#### 1.15 SECURITY

- A. Provide security and facilities to protect Work and existing facilities and Owner's operations from unauthorized entry, vandalism, or theft.
- B. Coordinate with Owner's security program.

#### 1.16 ACCESS ROADS

- A. Construct and maintain temporary roads accessing public thoroughfares to serve construction area. Extend and relocate as Work progress requires. Provide detours necessary for unimpeded traffic flow.
- B. Stabilize temporary vehicle transportation routes and construction entrances to prevent erosion and control dust immediately after grading in accordance with best management practice techniques defined in Section 3 of the Construction Activity Handbook published by the Storm Water Quality Association.
- C. Maintain stabilization techniques as work progresses.
- D. Provide and maintain access to fire hydrants, free of obstructions.
- E. Designated existing on-site roads may be used for construction traffic.

#### 1.17 PARKING

- A. Arrange for temporary surface parking areas to accommodate construction personnel.
- B. Existing on-site parking areas may be used for construction personnel.

#### 1.18 TRAFFIC CONTROL

- A. Comply with requirements of authorities having jurisdiction.
- B. Obtain all permits, provide all materials and maintain controls as required of authorities having jurisdiction.
- C. Maintain access for fire-fighting equipment and access to hydrants.

#### 1.19 PROGRESS CLEANING

- A. Remove debris and rubbish from pipe chases, plenums, attics, crawl spaces, and other closed or remote spaces, prior to enclosing the space.
- B. Broom and vacuum clean interior areas prior to start of surface finishing, and continue cleaning to eliminate dust.
- C. Provide walk-off mats at each building entry.

#### 1.20 WASTE DISPOSAL

- A. Provide waste collection containers in sizes adequate to handle waste from construction operations.
- B. Maintain building areas free of waste materials, debris, and rubbish.
- C. Remove waste materials, debris, and rubbish from site periodically and legally dispose of off site.
- D. Maintain site area in a clean and orderly condition.

#### 1.21 PROJECT IDENTIFICATION

- A. Provide 8 x 4 foot project sign of exterior grade plywood and wood frame construction, painted, with exhibit lettering by professional sign painter to Architect's design and colors.
- B. List title of Project, names of Owner, Architect and Contractor.
- C. Erect on site at location established by Architect.
- D. Sign to remain in place through construction period and shall be removed only after dedication of the project.
- E. Provide temporary directional signs for construction personnel and visitors.
- F. No other signs are allowed except those required by law.

#### 1.22 FIELD OFFICES

- A. Office: Weather-tight, with lighting, electrical outlets, heating, cooling and ventilating equipment, and equipped with sturdy furniture drawing rack and drawing display table.
- B. Maintain daily janitorial service for offices. Maintain approach to office free of mud and water.
- C. Provide space for Project meetings, with table and chairs to accommodate 8 persons.
- D. When permanent facilities are enclosed with operable utilities, relocate offices into building, with written agreement of Owner, and remove temporary buildings.
- E. Facilities shall comply with the accessibility requirements of the CBC - California Building Code, (CCR) California Code of Regulations, Title 24, Part 2, Section 11B-201.4.

1.23 STORAGE AREAS AND SHEDS

- A. Size to storage requirements for products of individual Sections. Allow for access and orderly provision for maintenance and for inspection of products.

1.24 REMOVAL OF UTILITIES, FACILITIES, AND CONTROLS

- A. Maintain temporary equipment, facilities and controls until Substantial Completion or when use is no longer required.
- B. Remove temporary above grade or buried utilities, equipment, facilities, materials, prior to Substantial Completion review.
- C. Remove underground installations to a minimum depth of 2 feet. Grade site as indicated.
- D. Clean and repair damage caused by installation or use of temporary work.
- E. Materials and facilities that constitute temporary facilities are property of the Contractor.
- F. Restore existing facilities used during construction to original condition.
- G. Restore permanent facilities used during construction to specified condition.
- H. Replace construction that cannot be satisfactorily restored.

2. PART 2 PRODUCTS

Not Used

3. PART 3 EXECUTION

Not Used

END OF SECTION



## SECTION 01 57 23

### STORM WATER POLLUTION PREVENTION PLAN

#### 1. PART 1 GENERAL

##### 1.1 SECTION INCLUDES

- A. Assistance in filing the Notice of Intent (NOI) in the Stormwater Multi-Application and Reporting System (SMARTS) website.
- B. Preparation and implementation of the Storm Water Pollution Prevention Plan (SWPPP).
- C. Plan administration, maintenance and updates.
- D. Placement of erosion/pollution control devices.
- E. Maintenance and monitoring of control devices.
- F. Non-storm water management.
- G. Related work necessary for plan compliance.
- H. Reports and certificates.
- I. Filing the Notice of Termination (NOT) in the Stormwater Multi-Application and Reporting System (SMARTS) website.

##### 1.2 REFERENCES

- A. Stormwater Best Management Practice Handbook (BMP Handbook), Construction Edition, as published by the California Storm Water Quality Association. Available at [www.casqa.org](http://www.casqa.org).

##### 1.3 SUBMITTALS

- A. Submit SWPPP under provisions of Section 01 33 00.
- B. Submit SWPPP for review within two weeks after Contract award.
- C. Submit manufacturer's installation instructions for all products.

##### 1.4 QUALITY ASSURANCE

- A. Storm Water Pollution Prevention Plan (SWPPP) shall be prepared by a Qualified SWPPP Developer (QSD).
- B. Permit Registration Documents (PRDs) shall be prepared by a Qualified SWPPP Developer (QSD).
- C. Implementation and monitoring of the SWPPP shall be accomplished by a Qualified Storm Water Practitioner (QSP).
- D. Perform work in accordance with Storm Water Pollution Prevention Plan.
- E. Maintain one copy of document on site.

## 1.5 REGULATORY REQUIREMENT

- A. Prior to the beginning of construction on this site the Owner will file with the State of California, State Water Resources Control Board a Notice of Intent (N.O.I.) that this project will comply with the terms of the State Water Resources Control Board's Order No. 2012-0006 - DWQ and the National Pollutant Discharge Elimination System (NPDES) General Permit No. CAS0000002, General Permit for Storm Water Discharges Associated with Construction and Land Disturbance Activities.
- B. Assist Owner with entering any necessary data, information or Permit Registration Documents into the Stormwater Multi-Application and Reporting System (SMARTS) website.
- C. Comply with requirements of the State's General Permit with regard to the implementation and maintenance of the SWPPP.
- D. Coordinate the SWPPP with the requirements of the Owner's Storm Water Management Plan (SWMP). A copy of the SWMP may be obtained from the Owner upon request.

## 1.6 PRE-INSTALLATION CONFERENCE

- A. Convene a conference two weeks prior to commencing work at the site, under provisions of Section 01 31 00.
- B. Require attendance of parties directly affecting the work of this Section.
- C. Review requirements of the SWPPP.

## 1.7 PERFORMANCE REQUIREMENTS

- A. Risk level shall be determined and submitted to the State Water Resources Control Board as part of the Permit Registration Documents (PRDs).
- B. The Storm Water Pollution Prevention Plan is a minimum requirement. Revisions and modifications to the SWPPP are acceptable only if they maintain levels of protection equal to or greater than originally specified.
- C. All modifications to the SWPPP shall be made by a Qualified Storm Water Practitioner (QSP).
- D. Read and be thoroughly familiar with all of the requirements of the SWPPP
- E. Inspect and monitor all work and storage areas for compliance with the SWPPP prior to any anticipated rain.
- F. A Qualified Storm Water Practitioner (QSP) shall develop Rain Event Action Plans (REAPs) during construction.
- G. Complete any and all corrective measures as may be directed by the regulatory agency.
- H. Penalties: Pay any fees and be liable for any other penalties that may be imposed by the regulatory agency for non-compliance with SWPPP during the course of work.
- I. Costs: Pay all costs associated with the implementation of the requirements of the SWPPP in order to maintain compliance with the Permit. This includes installation of all Housekeeping BMPs, General Site and Material Management BMPs, Bi-weekly Inspection requirements, maintenance requirements, monitoring requirements, and all other requirements specified in the SWPPP.

## 2. PART 2 PRODUCTS

### 2.1 MATERIALS

- A. All temporary and permanent storm water pollution prevention facilities, equipment, and materials as required by or as necessary to comply with the SWPPP as described in the BMP Handbook.
- B. Substitutions: Under provisions of Section 01 25 13.

### 3. PART 3 EXECUTION

#### 3.1 PREPARATION AND APPROVAL

- A. Prepare Storm Water Pollution Prevention Plan (SWPPP) as required to comply with storm water pollution regulations.
- B. Prepare SWPPP by following the format in Appendix G of the Stormwater Best Management Practice Handbook (BMP Handbook), January 2015 edition, published by the Storm Water Quality Association.
- C. Prepare and submit all additional Permit Registration Documents (PRDs) required by the State Water Resources Control Board.

#### 3.2 GENERAL IMPLEMENTATION REQUIREMENTS

- A. Obtain a Waste Discharger Identification (WDID) number from the State Water Resources Control Board (SWRCB).
- B. All measures required by the SWPPP shall be implemented concurrent with the commencement of construction. Pollution practices and devices shall be followed or installed as early in the construction schedule as possible with frequent upgrading of devices as construction progresses.
- C. Conduct an inspection of all erosion control and pollution prevention devices prior to any anticipated storm event to verify all SWPPP measures are in place and to identify and mitigate any new potential pollution sources brought by the ongoing construction.
- D. Conduct monitoring to assess compliance with Numeric Action Levels (NALs) or Numeric Effluent Limitations (NELs) as appropriate to the project.
- E. After storm events, conduct an inspection of the project site to verify the performance of the erosion control and pollution prevention devices in reducing pollutant loading of the discharged storm water associated with the construction activity.
- F. Eliminate or reduce to the extent feasible the discharge of materials other than storm water to the storm drain system and/or receiving waters as dictated by the State General Permit and SWPPP

#### 3.3 IMPLEMENTATION REQUIREMENTS DURING THE NON-RAINY SEASON

- A. The non-rainy season in the State of California is between April 1 and September 30.
- B. All requirements of the SWPPP shall apply during the non-rainy season without exception.

#### 3.4 IMPLEMENTATION REQUIREMENTS DURING THE RAINY SEASON

- A. The rainy season in the State of California is between October 1 and March 31.
- B. All requirements of the SWPPP shall apply during the rainy season without exception.

#### 3.5 REPORTING

- A. Prepare all inspection records for each inspection done prior to and just after all storm events as required by the SWPPP with two copies forwarded to the Owner and the Architect.
- B. Prepare the overall certification based upon the inspection reports for Owner's use in the certifying the project site's compliance with the SWPPP and the State's General Permit.

### 3.6 COMPLETION OF WORK

- A. Clean-up shall be performed as each portion of the work progresses. All refuse, excess material, and possible pollutants shall be disposed of in a legal manner off-site and all temporary and permanent SWPPP devices shall be in place and maintained in good condition.
- B. At completion of work, inspect installed SWPPP devices, and present the currently implemented SWPPP with all backup records to the Owner.
- C. Assist the Owner in submitting a Notice of Termination (NOT) into the SMARTS system when construction is complete and conditions of termination listed in the NOT have been satisfied.
- D. Leave storm water pollution prevention controls in place that are needed for post-construction storm water management. Remove those that are not needed. Post-construction controls will be maintained by the Owner.
- E. Provide Site Monitoring Reports, SWPPP revisions, Compliance Certificates, and related documents to the Owner. Post-construction controls mentioned in the Compliance Certificate are considered to be in place at the end of the Construction Contract.

### 3.7 EROSION CONTROL PLAN

- A. Refer to Erosion Control Plan that is included in the Contract Documents as a guide for site erosion and sediment control.
- B. Include Erosion Control Plan as a part of the final SWPPP.

END OF SECTION



## SECTION 01 61 00

### PRODUCT REQUIREMENTS

#### 1. PART 1 GENERAL

##### 1.1 SECTION INCLUDES

- A. Products.
- B. Transportation and handling.
- C. Storage and protection.
- D. Damage and restoration.

##### 1.2 PRODUCTS

- A. Products: Means new material, machinery, components, equipment, fixtures, and systems forming the Work. Does not include machinery and equipment used for preparation, fabrication, conveying and erection of the Work.
- B. Products may also include existing materials or components required for reuse that were obtained from this project.
- C. Products specified or recycled from other projects are not considered new products.
- D. Provide interchangeable components of the same manufacturer, for similar components.
- E. Provide products that comply with the Contract Documents, that are undamaged and are unused at the time of installation.
- F. Provide products complete with all accessories, trim, finish, safety guards and other devices and detail needed for a complete installation and for the intended use and effect.
- G. Where a specific manufacturer's product is specified as the basis of design, the designation shall establish the qualities relating to type, function, dimension, in-service performance, physical properties, appearance and other characteristics for comparable products of other named manufacturers.
- H. Where products are specified by name or by manufacturer provide the product or manufacturer specified. No substitutions will be permitted unless made under the provisions of Section 01 25 13.
- I. Where specifications only describe a product or assembly by listing exact characteristics required, provide a product or assembly that provides the characteristics.
- J. Where specifications only require compliance with performance requirements, provide products that comply with those requirements.
- K. Where the specifications only require compliance with an imposed code, standard or regulation, provide a product that complies with the standards, codes or regulations specified.
- L. Where specifications require review and acceptance of a sample, the Architect's decision will be final on whether a proposed product sample is acceptable or not.
- M. Provide materials and products specified in the full range of color, texture and pattern for selection by Architect. Range shall include standard stocked color/texture/pattern, as advertised in product data and brochures.
- N. Do not use materials and equipment removed from existing premises, except as specifically permitted by the Contract Documents.

- O. Where product is designated to match an existing product, provide product that matches in size, profile, finish, dimension and other characteristics the existing product identified.

### 1.3 TRANSPORTATION AND HANDLING

- A. Transport and handle products in accordance with manufacturer's instructions.
- B. Schedule delivery to minimize long-term storage at site to prevent overcrowding of construction spaces.
- C. Coordinate delivery with installation time to ensure minimum holding time for items that are flammable, hazardous, easily damaged, or sensitive to deterioration, theft and other losses.
- D. Deliver products in manufacturer's original sealed container or packaging system, complete with labels and instructions for handling, storing, unpacking, protecting, and installing.
- E. Promptly inspect shipments to assure that products comply with requirements, quantities are correct, and products are undamaged.
- F. Provide equipment and personnel to handle products by methods to prevent soiling, disfigurement, or damage.

### 1.4 STORAGE

- A. Store products in accordance with manufacturer's instructions, with seals and labels intact and legible.
- B. Store sensitive products in weather-tight, climate controlled enclosures.
- C. Store products in a manner that will not damage or overload project structure.
- D. For exterior storage of fabricated products, place on sloped supports, above ground.
- E. Provide off-site storage when site does not permit on-site storage .
- F. Cover products subject to deterioration with impervious sheet covering. Provide ventilation to avoid condensation.
- G. Store loose granular materials on solid flat surfaces in a well-drained area. Prevent mixing with foreign matter.
- H. Provide equipment and personnel to store products by methods to prevent soiling, disfigurement, or damage.
- I. Arrange storage of products to permit access for inspection. Periodically inspect to assure products are undamaged and are maintained under specified conditions.
- J. Prevent the discharge of pollutants to storm water from storage of materials on-site using best management practice techniques defined in Chapter 4 of the Construction Activity Handbook published by the Storm Water Quality Task Force.

### 1.5 PROTECTION

- A. Protect installed Work and provide special protection where specified in individual specification Sections.
- B. Provide temporary and removable protection for installed Products. Control activity in immediate work area to minimize damage.
- C. Provide protective coverings at walls, projections, jambs, sills, and soffits of openings.
- D. Protect finished floors, stairs, and other surfaces from traffic, dirt, wear, damage, or movement of heavy objects.

- E. Prohibit traffic or storage upon waterproofed or roofed surfaces. If traffic or activity is necessary, obtain recommendations for protection from waterproofing or roofing material manufacturer.
- F. Provide humidity and temperature control for installed products as recommended by materials manufacturer.
- G. Prohibit traffic from landscaped areas.

1.6 DAMAGE AND RESTORATIONS

- A. Damage to existing or new work whether accidental or not shall be restored or replaced as specified or directed by Architect.
- B. Restoration shall be equal to structural performance of original work.
- C. Finish shall match appearance of existing adjacent work.
- D. Work not properly restored or where not capable of being restored shall be removed and replaced.

2. PART 2 PRODUCTS

Not Used

3. PART 3 EXECUTION

Not Used

END OF SECTION

## SECTION 01 73 00

### EXECUTION REQUIREMENTS

#### 1. PART 1 GENERAL

##### 1.1 SECTION INCLUDES

- A. General procedural requirements governing execution of the Work.
  - 1. Construction layout.
  - 2. Field engineering and surveying.
  - 3. General installation of products.

##### 1.2 SUBMITTALS

- A. Certificates: Submit certificate signed by land surveyor certifying that location and elevation of improvements comply with requirements.
- B. Certified Surveys: Submit two copies signed by land surveyor.
- C. Final Property Survey: Submit 2 copies showing the Work performed and record survey data.

#### 2. PART 2 PRODUCTS

Not Used

#### 3. PART 3 EXECUTION

##### 3.1 EXAMINATION

- A. Existing Conditions: Existence and location of site improvements and other construction indicated as existing are not guaranteed. Before beginning work, investigate and verify existence and location of construction affecting the Work.
- B. Existing Utilities: Existence and location of underground and other utilities indicated as existing are not guaranteed. Before beginning work, investigate and verify existence and location of underground utilities affecting the Work.
  - 1. Before construction, verify location and invert elevation at points of connection of sanitary sewer, storm sewer, and water-service piping; and electrical services.
  - 2. Furnish location data for work related to Project that must be performed by public utilities serving Project site.
- C. Acceptance of Conditions: Examine substrates, areas, and conditions, with Installer or Applicator present for compliance with requirements for installation tolerances and other conditions affecting performance. Record observations.
  - 1. Written Report: Where conditions detrimental to performance of the Work are encountered, provide a written report listing the following:
    - (a) Description of the Work.
    - (b) List of detrimental conditions, including substrates.
    - (c) List of unacceptable installation tolerances.

- (d) Recommended corrections.
- 2. Verify compatibility with and suitability of substrates, including compatibility of existing finishes or primers.
- 3. Examine roughing-in for mechanical and electrical systems to verify actual locations of connections before equipment and fixture installation.
- 4. Examine walls, floors, and roofs for suitable conditions where products and systems are to be installed.
- 5. Proceed with installation only after unsatisfactory conditions have been corrected. Proceeding with the Work indicates acceptance of surfaces and conditions.

### 3.2 PREPARATION

- A. Existing Utility Information: Furnish information to Owner 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. Coordinate with authorities having jurisdiction.
- B. Field Measurements: Take field measurements as required to fit the Work properly. Recheck measurements before installing each product. Where portions of the Work are indicated to fit to other construction, verify dimensions of other construction by field measurements before fabrication. Coordinate fabrication schedule with construction progress to avoid delaying the Work.
- C. Space Requirements: Verify space requirements and dimensions of items shown diagrammatically on Drawings.
- D. Review of Contract Documents and Field Conditions: Immediately on discovery of need for clarification of Contract Documents, submit a Request For Information (RFI) to Architect. Include a detailed description of problem encountered, together with recommendations for resolution of the item discovered.

### 3.3 CONSTRUCTION LAYOUT

- A. Verification: Before proceeding to lay out the Work, verify layout information shown on Drawings, in relation to the property survey and existing benchmarks. If discrepancies are discovered, notify Architect promptly.
- B. General: Engage a land surveyor, registered in the state of California to lay out the Work using accepted surveying practices.
  - 1. 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.
  - 2. Establish dimensions within tolerances indicated. Do not scale Drawings to obtain required dimensions.
  - 3. Inform installers of lines and levels to which they must comply.
  - 4. Check the location, level and plumb, of every major element as the Work progresses.
  - 5. Notify Architect when deviations from required lines and levels exceed allowable tolerances.
  - 6. Close site surveys with an error of closure equal to or less than the standard established by authorities having jurisdiction.
- C. Site Improvements: Locate and lay out site improvements, including pavements, grading, fill and topsoil placement, utility slopes, and invert elevations.
- D. Building Lines and Levels: Locate and lay out control lines and levels for structures, building foundations, column grids, and floor levels, including those required for mechanical and electrical work. Transfer survey markings and elevations for use with control lines and levels. Level foundations and piers from two or more locations.

- E. Record Log: Maintain a log of layout control work. Record deviations from required lines and levels. Include beginning and ending dates and times of surveys, weather conditions, name and duty of each survey party member, and types of instruments and tapes used. Make the log available for reference by Architect.

### 3.4 FIELD ENGINEERING

- A. Identification: Control datum for survey is that established by Owner provided survey.
- B. Reference Points: Locate existing permanent benchmarks, control points, and similar reference points before beginning the Work. Preserve and protect permanent benchmarks and control points during construction operations.
  - 1. Do not change or relocate existing benchmarks or control points without prior written approval of Architect. Report lost or destroyed permanent benchmarks or control points promptly. Report the need to relocate permanent benchmarks or control points to Architect before proceeding.
  - 2. Replace lost or destroyed permanent benchmarks and control points promptly. Base replacements on the original survey control points.
- C. Benchmarks: Establish and maintain a minimum of two permanent benchmarks on Project site, referenced to data established by survey control points.
  - 1. Record benchmark locations, with horizontal and vertical data, on Project Record Documents.
  - 2. Where the actual location or elevation of layout points cannot be marked, provide temporary reference points sufficient to locate the Work.
  - 3. Remove temporary reference points when no longer needed. Restore marked construction to its original condition.
- D. Certified Survey: On completion of foundation walls, major site improvements, and other work requiring field-engineering services, prepare a certified survey showing dimensions, locations, angles, and elevations of construction and sitework.
- E. Final Property Survey: Prepare a final property survey showing significant features (real property) for Project. Include on the survey a certification, signed by land surveyor that principal metes, bounds, lines, and levels of Project are accurately positioned as shown on the survey.
  - 1. Show boundary lines, monuments, streets, site improvements and utilities, existing improvements and significant vegetation, adjoining properties, acreage, grade contours, and the distance and bearing from a site corner to a legal point.

### 3.5 INSTALLATION

- A. General: Locate the Work and components of the Work accurately, in correct alignment and elevation, as indicated.
  - 1. Make vertical work plumb and make horizontal work level.
  - 2. Where space is limited, install components to maximize space available for maintenance and ease of removal for replacement.
  - 3. Conceal pipes, ducts, and wiring in finished areas, unless otherwise indicated.
  - 4. Maintain maximum headroom clearance in spaces without a suspended ceiling.
- B. Comply with manufacturer's written instructions and recommendations for installing products in applications indicated.
- C. Install products at the time and under conditions that will ensure the best possible results. Maintain conditions required for product performance until Substantial Completion.

- D. 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.
- E. Tools and Equipment: Do not use tools or equipment that produce harmful noise levels.
- F. Templates: Obtain and distribute to the parties involved templates for work specified to be factory prepared and field installed. Check Shop Drawings of other work to confirm that adequate provisions are made for locating and installing products to comply with indicated requirements.
- G. Anchors and Fasteners: Provide anchors and fasteners as required to anchor each component securely in place, accurately located and aligned with other portions of the Work.
  - 1. Mounting Heights: Where mounting heights are not indicated, mount components at heights directed by Architect.
  - 2. Allow for building movement, including thermal expansion and contraction.
  - 3. Coordinate installation of anchorages. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, and items with integral anchors, that are to be embedded in concrete or masonry. Deliver such items to Project site in time for installation.
- H. Joints: Make joints of uniform width. Where joint locations in exposed work are not indicated, arrange joints for the best visual effect. Fit exposed connections together to form hairline joints.
- I. Hazardous Materials: Use products, cleaners, and installation materials that are not considered hazardous.

END OF SECTION

## SECTION 01 73 29

### CUTTING AND PATCHING

#### 1. PART 1 GENERAL

##### 1.1 SECTION INCLUDES

- A. Requirements and limitations for cutting and patching of Work.

##### 1.2 DEFINITIONS

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

##### 1.3 REGULATORY REQUIREMENTS

- A. Unless specifically shown on the drawings, no structural member shall be cut, drilled, or notched without prior written authorization from the Architect.

##### 1.4 SUBMITTALS

- A. Submit written request in advance of cutting or patching which affects:

1. Structural integrity of any element of Project.
2. Integrity of weather-exposed or moisture-resistant element.
3. Efficiency, maintenance, or safety of any operational element.
4. Visual qualities of sight exposed elements.
5. Work of Owner or separate contractor.

- B. Include in request:

1. Identification of Project.
2. Location and description of affected work.
3. Necessity for cutting or patching.
4. Description of proposed work, and Products to be used.
5. Alternatives to cutting and patching.
6. Effect on work of Owner or separate contractor.
7. Written permission of affected separate contractor.
8. Date and time work will be executed.

##### 1.5 QUALITY ASSURANCE

- A. Do not cut and patch structural elements in a manner that could change their load-carrying capacity or load-deflection ratio.



- B. Do not cut or patch operating elements that would reduce their capacity to perform or that would result in increased maintenance or decreased operational life or safety.
- C. Do not cut or patch construction that would result in visual evidence of cutting or patching.
- D. Remove and replace construction that has been cut or patched in a visually unsatisfactory manner.

## 2. PART 2 PRODUCTS

### 2.1 MATERIALS

- A. Primary Products: Those required for original installation.
- B. Substitutions: Under provisions of Section 01 25 13.

## 3. PART 3 EXECUTION

### 3.1 EXAMINATION

- A. Inspect existing conditions prior to commencing Work, including elements subject to damage or movement during cutting and patching.
- B. After uncovering existing Work, inspect conditions affecting performance of work.
- C. Beginning of cutting or patching means acceptance of existing conditions.

### 3.2 PREPARATION

- A. Provide temporary supports to ensure structural integrity of the Work. Provide devices and methods to protect other portions of Project from damage.
- B. Provide protection from elements for areas which may be exposed by uncovering work.

### 3.3 CUTTING AND PATCHING

- A. Execute cutting, fitting, and patching to complete Work.
- B. Fit Products together, to integrate with other work.
- C. Uncover work to install ill timed work.
- D. Remove and replace defective or non-conforming work.
- E. Remove samples of installed work for testing when requested.
- F. Provide openings in the Work for penetration of mechanical and electrical work.
- G. Cut rigid materials using saw or drill. Pneumatic tools not allowed without prior approval.

### 3.4 PERFORMANCE

- A. Execute work by methods to avoid damage to other Work, and which will provide appropriate surfaces to receive patching and finishing.
- B. Employ skilled and experienced installer to perform cutting and patching.
- C. Cut rigid materials using masonry saw or core drill. Pneumatic tools not allowed without prior approval.
- D. Restore work with new Products in accordance with requirements of Contract Documents.
- E. Fit work air tight to pipes, sleeves, ducts, conduit, and other penetrations through surfaces.

- F. At penetrations of fire rated walls, partitions, ceiling, or floor construction, completely seal voids with fire rated material, to full thickness of the penetrated element.
- G. Refinish surfaces to match adjacent finish. For continuous surfaces, refinish to nearest intersection or natural break. For an assembly, refinish entire unit.

### 3.5 CLEANING

- A. Clean areas and spaces where cutting and patching was performed.
- B. Completely remove paint, mortar, oils, sealant, and similar materials.

END OF SECTION

## SECTION 01 74 19

### CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL

#### 1. PART 1 GENERAL

##### 1.1 SECTION INCLUDES

- A. Administrative and procedural requirements for the following:
  - 1. Salvaging nonhazardous demolition and construction waste.
  - 2. Recycling nonhazardous demolition and construction waste.
  - 3. Disposing of nonhazardous demolition and construction waste.

##### 1.2 DEFINITIONS

- A. Construction Waste: Building and site improvement materials and other solid waste resulting from construction, remodeling, renovation, or repair operations. Construction waste includes packaging.
- B. Demolition Waste: Building and site improvement materials resulting from demolition or selective demolition operations.
- C. Disposal: Removal off-site of demolition and construction waste and subsequent sale, recycling, reuse, or deposit in landfill or incinerator acceptable to authorities having jurisdiction.
- D. Recycle: Recovery of demolition or construction waste for subsequent processing in preparation for reuse.
- E. Salvage: Recovery of demolition or construction waste and subsequent sale or reuse in another facility.
- F. Salvage and Reuse: Recovery of demolition or construction waste and subsequent incorporation into the Work.

##### 1.3 PERFORMANCE GOALS

- A. General: Develop waste management plan that results in end-of-Project rates for salvage/recycling of 65 percent by weight of total waste generated by the Work.
- B. Salvage/Recycle Goals: Salvage and recycle as much nonhazardous demolition and construction waste as possible. Owner has established a minimum goal of 65 percent by weight of total waste generated by the Work for the following materials:

##### 1.4 SUBMITTALS

- A. Submit waste management plan and progress reports under the provisions of Section 01 33 00.
- B. Waste Management Plan: Submit plan within 14 days of date established for the Notice of Award.
- C. Waste Reduction Progress Reports: Concurrent with each Application for Payment, submit reports. Include separate reports for demolition and construction waste. Include the following information:
  - 1. Material category.
  - 2. Generation point of waste.
  - 3. Total quantity of waste in tons.
  - 4. Quantity of waste salvaged, both estimated and actual in tons.
  - 5. Quantity of waste recycled, both estimated and actual in tons.
  - 6. Total quantity of waste recovered (salvaged plus recycled) in tons.
  - 7. Total quantity of waste recovered (salvaged plus recycled) as a percentage of total waste.

- D. Forms: Prepare waste reduction progress reports on forms included at end of Part 3.
- E. Waste Reduction Calculations: Before request for Substantial Completion, submit calculated end-of-Project rates for salvage, recycling, and disposal as a percentage of total waste generated by the Work.
- F. Records of Donations: Indicate receipt and acceptance of salvageable waste donated to individuals and organizations. Indicate whether organization is tax exempt.
- G. Records of Sales: Indicate receipt and acceptance of salvageable waste sold to individuals and organizations. Indicate whether organization is tax exempt.
- H. Recycling and Processing Facility Records: Indicate receipt and acceptance of recyclable waste by recycling and processing facilities licensed to accept them. Include manifests, weight tickets, receipts, and invoices.
- I. Landfill and Incinerator Disposal Records: Indicate receipt and acceptance of waste by landfills and incinerator facilities licensed to accept them. Include manifests, weight tickets, receipts, and invoices.

#### 1.5 QUALITY ASSURANCE

- A. Regulatory Requirements: Comply with hauling and disposal regulations of authorities having jurisdiction.
- B. Waste Management Conference: Conduct conference at Project site to comply with requirements in Division 01 Section 01 31 00 - Project Management and Coordination. Review methods and procedures related to waste management including, but not limited to, the following:
  - 1. Review and discuss waste management plan.
  - 2. Review requirements for documenting quantities of each type of waste and its disposition.
  - 3. Review and finalize procedures for materials separation and verify availability of containers and bins needed to avoid delays.
  - 4. Review procedures for periodic waste collection and transportation to recycling and disposal facilities.
  - 5. Review waste management requirements for each trade.

#### 1.6 WASTE MANAGEMENT PLAN

- A. General: Develop plan consisting of waste identification, waste reduction work plan, and cost/revenue analysis. Indicate quantities by weight or volume, but use same units of measure throughout waste management plan.
- B. Waste Identification: Indicate anticipated types and quantities of waste generated by the Work. Include estimated quantities and assumptions for estimates.
- C. Waste Reduction Work Plan: List each type of waste and whether it will be salvaged, recycled, or disposed of in landfill or incinerator. Include points of waste generation, total quantity of each type of waste, quantity for each means of recovery, and handling and transportation procedures.
  - 1. Salvaged Materials for Reuse: For materials that will be salvaged and reused in this Project, describe methods for preparing salvaged materials before incorporation into the Work.
  - 2. Salvaged Materials for Sale: For materials that will be sold to individuals and organizations, include list of their names, addresses, and telephone numbers.
  - 3. Salvaged Materials for Donation: For materials that will be donated to individuals and organizations, include list of their names, addresses, and telephone numbers.
  - 4. Recycled Materials: Include list of local receivers and processors and type of recycled materials each will accept. Include names, addresses, and telephone numbers.
  - 5. Disposed Materials: Indicate how and where materials will be disposed of. Include name, address, and telephone number of each landfill and incinerator facility.
  - 6. Handling and Transportation Procedures: Include method that will be used for separating recyclable waste including sizes of containers, container labeling, and designated location on Project site where materials separation will be located.

- D. Cost/Revenue Analysis: Indicate total cost of waste disposal as if there was no waste management plan and net additional cost or net savings resulting from implementing waste management plan. Include the following:
1. Total quantity of waste.
  2. Estimated cost of disposal (cost per unit). Include hauling and tipping fees and cost of collection containers for each type of waste.
  3. Total cost of disposal (with no waste management).
  4. Revenue from salvaged materials.
  5. Revenue from recycled materials.
  6. Savings in hauling and tipping fees by donating materials.
  7. Savings in hauling and tipping fees that are avoided.
  8. Handling and transportation costs. Include cost of collection containers for each type of waste.
  9. Net additional cost or net savings from waste management plan.
- E. Forms: Prepare waste management plan on forms included at end of Part 3.

## 2. PART 2 PRODUCTS

(NOT USED)

## 3. PART 3 EXECUTION

### 3.1 PLAN IMPLEMENTATION

- A. General: Provide handling, containers, storage, signage, transportation, and other items as required to implement waste management plan during the entire duration of the Contract.
- B. Training: Train workers, subcontractors, and suppliers on proper waste management procedures, as appropriate for the Work occurring at Project site.
1. Distribute waste management plan to everyone concerned within 3 days of submittal return.
  2. Distribute waste management plan to entities when they first begin work on-site. Review plan procedures and locations established for salvage, recycling, and disposal.
- C. Site Access and Temporary Controls: Conduct waste management operations to ensure minimum interference with roads, streets, walks, walkways, and other adjacent occupied and used facilities.
1. Designate and label specific areas on Project site necessary for separating materials that are to be salvaged, recycled, reused, donated, and sold.
  2. Comply with Division 01 Section 01 50 00 - Temporary Facilities and Controls, for controlling dust and dirt, environmental protection, and noise control.

### 3.2 SALVAGING DEMOLITION WASTE

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

- D. Salvaged Items for Owner's Use:
  - 1. Clean salvaged items.
  - 2. Pack or crate items after cleaning. Identify contents of containers.
  - 3. Store items in a secure area until delivery to Owner.
  - 4. Transport items to Owner's storage area on-site designated by Owner.
  - 5. Protect items from damage during transport and storage.
- E. Doors and Hardware: Brace open end of door frames. Except for removing door closers, leave door hardware attached to doors.

### 3.3 RECYCLING WASTE, GENERAL

- A. General: Recycle paper and beverage containers used by on-site workers.
- B. Recycling Receivers and Processors: Licensed entity normally engaged in the business of receiving, recycling, and processing waste materials with a minimum of 5 years of documented experience with the types of waste products to be processed under the provisions of this section.
- C. Recycling Incentives: Revenues, savings, rebates, tax credits, and other incentives received for recycling waste materials shall be shared equally by Owner and Contractor.
- D. Procedures: Separate recyclable waste from other waste materials, trash, and debris. Separate recyclable waste by type at Project site to the maximum extent practical.
  - 1. Provide appropriately marked containers or bins for controlling recyclable waste until they are removed from Project site. Include list of acceptable and unacceptable materials at each container and bin.
  - 2. Inspect containers and bins for contamination and remove contaminated materials if found.
  - 3. Stockpile processed materials on-site without intermixing with other materials. Place, grade, and shape stockpiles to drain surface water. Cover to prevent windblown dust.
  - 4. Stockpile materials away from construction area. Do not store within drip line of remaining trees.
  - 5. Store components off the ground and protect from the weather.
  - 6. Remove recyclable waste off Owner's property and transport to recycling receiver or processor.

### 3.4 RECYCLING DEMOLITION WASTE

- A. Concrete Reinforcement: Remove reinforcement and other metals from concrete and sort with other metals.
- B. Concrete: Break up and transport to concrete-recycling facility.

### 3.5 RECYCLING CONSTRUCTION WASTE

- A. Packaging:
  - 1. Cardboard and Boxes: Break down packaging into flat sheets. Bundle and store in a dry location.
  - 2. Polystyrene Packaging: Separate and bag materials.
  - 3. Pallets: As much as possible, require deliveries using pallets to remove pallets from Project site. For pallets that remain on-site, break down pallets into component wood pieces and comply with requirements for recycling wood.
  - 4. Crates: Break down crates into component wood pieces and comply with requirements for recycling wood.
- B. Site-Clearing Wastes: Chip brush, branches, and trees on-site.
  - 1. Comply with requirements in Division 32 Section 32 90 00 - Planting for use of chipped organic waste as organic mulch. A minimum of 100 percent of site clearing waste to be recycled.

- C. Wood Materials:
  - 1. Clean Cut-Offs of Lumber: Grind or chip into small pieces.
  - 2. Clean Sawdust: Bag sawdust that does not contain painted or treated wood.
    - (a) Comply with requirements in Division 32 Section 32 90 00 - Planting for use of clean sawdust as organic mulch.
- D. Gypsum Board: Stack large clean pieces on wood pallets and store in a dry location.
  - 1. Clean Gypsum Board: Grind scraps of clean gypsum board using small mobile chipper or hammer mill. Screen out paper after grinding.
    - (a) Comply with requirements in Division 32 Section 32 90 00 - Planting for use of clean ground gypsum board as inorganic soil amendment.

### 3.6 DISPOSAL OF WASTE

- A. General: Except for items or materials to be salvaged, recycled, or otherwise reused, remove waste materials from Project site and legally dispose of them in a landfill or incinerator acceptable to authorities having jurisdiction.
- B. Do not allow waste materials that are to be disposed of accumulate on-site. Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and areas.
- C. Burning: Do not burn waste materials.
- D. Disposal: Transport waste materials off Owner's property and legally dispose of them.

### 3.7 FORMS

- A. Waste Management Plan Forms Attached:
  - 1. Construction Waste Reduction Progress Report.
  - 2. Demolition Waste Reduction Progress Report.
  - 3. Construction Waste Identification.
  - 4. Demolition Waste Identification.
  - 5. Construction Waste Reduction Work Plan.
  - 6. Demolition Waste Reduction Work Plan.
  - 7. Cost/Revenue Analysis of Construction Waste Reduction Work Plan.
  - 8. Cost/Revenue Analysis of Demolition Waste Reduction Work Plan.

END OF SECTION

**CONSTRUCTION WASTE REDUCTION PROGRESS REPORT**

MATERIAL CATEGORY	GENERATION POINT	TOTAL QUANTITY OF WASTE TONS (A)	QUANTITY OF WASTE SALVAGED		QUANTITY OF WASTE RECYCLED		TOTAL QUANTITY OF WASTE RECOVERED TONS (D = B + C)	TOTAL QUANTITY OF WASTE RECOVERED % (D/Ax100)
			ESTIMATED TONS	ACTUAL TONS (B)	ESTIMATED TONS	ACTUAL TONS (C)		
Packaging: Cardboard								
Packaging: Boxes								
Packaging: Plastic Sheet or Film								
Packaging: Polystyrene								
Packaging: Pallets or Skids								
Packaging: Crates								
Packaging: Paint Cans								
Packaging: Plastic Pails								
Site-Clearing Waste								
Masonry or CMU								
Lumber: Cut-Offs								
Lumber: Warped Pieces								
Plywood or OSB (scraps)								
Wood Forms								
Wood Waste Chutes								
Wood Trim (cut-offs)								
Metals								
Insulation								
Roofing								
Joint Sealant Tubes								
Gypsum Board (scraps)								
Carpet and Pad (scraps)								
Piping								
Electrical Conduit								
Other:								



**DEMOLITION WASTE REDUCTION PROGRESS REPORT**

MATERIAL CATEGORY	GENERATION POINT	TOTAL QUANTITY OF WASTE TONS (A)	QUANTITY OF WASTE SALVAGED		QUANTITY OF WASTE RECYCLED		TOTAL QUANTITY OF WASTE RECOVERED TONS (D=B+C)	TOTAL QUANTITY OF WASTE RECOVERED % (D/Ax100)
			ESTIMATED TONS	ACTUAL TONS (B)	ESTIMATED TONS	ACTUAL TONS (C)		
Asphaltic Concrete Paving								
Concrete								
Brick								
CMU								
Lumber								
Plywood and OSB								
Wood Paneling								
Wood Trim								
Miscellaneous Metals								
Structural Steel								
Rough Hardware								
Insulation								
Roofing								
Doors and Frames								
Door Hardware								
Windows								
Glazing								
Acoustical Tile								
Carpet								
Carpet Pad								
Demountable Partitions								
Equipment								
Cabinets								
Plumbing Fixtures								
Piping								
Supports and Hangers								
Valves								
Sprinklers								
Mechanical Equipment								
Electrical Conduit								
Copper Wiring								
Light Fixtures								
Lamps								
Lighting Ballasts								
Electrical Devices								
Switchgear and Panel boards								
Transformers								
Other:								

CONSTRUCTION WASTE IDENTIFICATION							
MATERIAL CATEGORY	GENERATION POINT	EST. QUANTITY OF MATERIALS RECEIVED (A)	EST. WASTE - % (B)	TOTAL EST. QUANTITY OF WASTE* (C=AxB)	EST. VOLUME CY	EST. WEIGHT TONS	REMARKS AND ASSUMPTIONS
Packaging: Cardboard							
Packaging: Boxes							
Packaging: Plastic Sheet or Film							
Packaging: Polystyrene							
Packaging: Pallets or Skids							
Packaging: Crates							
Packaging: Paint Cans							
Packaging: Plastic Pails							
Site-Clearing Waste							
Masonry or CMU							
Lumber: Cut-Offs							
Lumber: Warped Pieces							
Plywood or OSB (scraps)							
Wood Forms							
Wood Waste Chutes							
Wood Trim (cut-offs)							
Metals							
Insulation							
Roofing							
Joint Sealant Tubes							
Gypsum Board (scraps)							
Carpet and Pad (scraps)							
Piping							
Electrical Conduit							
Other:							

\* Insert units of measure.

DEMOLITION WASTE IDENTIFICATION				
MATERIAL DESCRIPTION	EST. QUANTITY	EST. VOLUME CY	EST. WEIGHT TONS	REMARKS AND ASSUMPTIONS
Asphaltic Concrete Paving				
Concrete				
Brick				
CMU				
Lumber				
Plywood and OSB				
Wood Paneling				
Wood Trim				
Miscellaneous Metals				
Structural Steel				
Rough Hardware				
Insulation				
Roofing				
Doors and Frames				
Door Hardware				
Windows				
Glazing				
Acoustical Tile				
Carpet				
Carpet Pad				
Demountable Partitions				
Equipment				
Cabinets				
Plumbing Fixtures				
Piping				
Piping Supports and Hangers				
Valves				
Sprinklers				
Mechanical Equipment				
Electrical Conduit				
Copper Wiring				
Light Fixtures				
Lamps				
Lighting Ballasts				
Electrical Devices				
Switchgear and Panelboards				
Transformers				
Other:				

CONSTRUCTION WASTE REDUCTION WORK PLAN						
MATERIAL CATEGORY	GENERATION POINT	TOTAL EST. QUANTITY OF WASTE TONS	DISPOSAL METHOD AND QUANTITY			HANDLING AND TRANSPORTATION PROCEDURES
			EST. AMOUNT SALVAGED TONS	EST. AMOUNT RECYCLED TONS	EST. AMOUNT DISPOSED TO LANDFILL TONS	
Packaging: Cardboard						
Packaging: Boxes						
Packaging: Plastic Sheet or Film						
Packaging: Polystyrene						
Packaging: Pallets or Skids						
Packaging: Crates						
Packaging: Paint Cans						
Packaging: Plastic Pails						
Site-Clearing Waste						
Masonry or CMU						
Lumber: Cut-Offs						
Lumber: Warped Pieces						
Plywood or OSB (scraps)						
Wood Forms						
Wood Waste Chutes						
Wood Trim (cut-offs)						
Metals						
Insulation						
Roofing						
Joint Sealant Tubes						
Gypsum Board (scraps)						
Carpet and Pad (scraps)						
Piping						
Electrical Conduit						
Other:						

DEMOLITION WASTE REDUCTION WORK PLAN						
MATERIAL CATEGORY	GENERATION POINT	TOTAL EST. QUANTITY OF WASTE TONS	DISPOSAL METHOD AND QUANTITY			HANDLING & TRANSPORTION PROCEDURES
			EST. AMOUNT SALVAGED TONS	EST. AMOUNT RECYCLED TONS	EST. AMOUNT DISPOSED TO LANDFILL TONS	
Asphaltic Concrete Paving						
Concrete						
Brick						
CMU						
Lumber						
Plywood and OSB						
Wood Paneling						
Wood Trim						
Miscellaneous Metals						
Structural Steel						
Rough Hardware						
Insulation						
Roofing						
Doors and Frames						
Door Hardware						
Windows						
Glazing						
Acoustical Tile						
Carpet						
Carpet Pad						
Demountable Partitions						
Equipment						
Cabinets						
Plumbing Fixtures						
Piping						
Supports and Hangers						
Valves						
Sprinklers						
Mechanical Equipment						
Electrical Conduit						
Copper Wiring						
Light Fixtures						
Lamps						
Lighting Ballasts						
Electrical Devices						
Switchgear and Panelboards						
Transformers						
Other:						

**COST/REVENUE ANALYSIS OF CONSTRUCTION WASTE REDUCTION WORK PLAN**

<b>MATERIALS</b>	<b>TOTAL QUANTITY OF MATERIALS (VOL. OR WEIGHT) (A)</b>	<b>EST. COST OF DISPOSAL (B)</b>	<b>TOTAL EST. COST OF DISPOSAL (C = A x B)</b>	<b>REVENUE FROM SALVAGED MATERIALS (D)</b>	<b>REVENUE FROM RECYCLED MATERIALS (E)</b>	<b>LANDFILL TIPPING FEES AVOIDED (F)</b>	<b>HANDLING AND TRANSPORTATION COSTS AVOIDED (G)</b>	<b>NET COST SAVINGS OF WORK PLAN (H = D+E+F+G)</b>
Packaging: Cardboard								
Packaging: Boxes								
Packaging: Plastic Sheet or Film								
Packaging: Polystyrene								
Packaging: Pallets or Skids								
Packaging: Crates								
Packaging: Paint Cans								
Packaging: Plastic Pails								
Site-Clearing Waste								
Masonry or CMU								
Lumber: Cut-Offs								
Lumber: Warped Pieces or OSB								
Wood Forms								
Wood Waste Chutes								
Wood Trim (cut-offs)								
Metals								
Insulation								
Roofing								
Joint Sealant Tubes								
Gypsum Board (scraps)								
Carpet and Pad (scraps)								
Piping								
Electrical Conduit								
Other:								

**COST/REVENUE ANALYSIS OF DEMOLITION WASTE REDUCTION WORK PLAN**

<b>MATERIALS</b>	<b>TOTAL QUANTITY OF MATERIALS (VOL. OR WEIGHT) (A)</b>	<b>EST. COST OF DISPOSAL (B)</b>	<b>TOTAL EST. COST OF DISPOSAL (C= A x B)</b>	<b>REVENUE FROM SALVAGED MATERIALS (D)</b>	<b>REVENUE FROM RECYCLED MATERIALS (E)</b>	<b>LANDFILL TIPPING FEES AVOIDED (F)</b>	<b>HANDLING AND TRANSPORTATION COSTS AVOIDED (G)</b>	<b>NET COST SAVINGS OF WORK PLAN (H = D+E+F+G)</b>
Asphaltic Concrete Paving Concrete								
Brick								
CMU								
Lumber								
Plywood and OSB								
Wood Paneling								
Wood Trim								
Miscellaneous Metals								
Structural Steel								
Rough Hardware								
Insulation								
Roofing								
Doors and Frames								
Door Hardware								
Windows								
Glazing								
Acoustical Tile								
Carpet								
Carpet Pad								
Demountable Partitions								
Equipment								
Cabinets								
Plumbing Fixtures								
Piping								
Supports and Hangers								
Valves								
Sprinklers								
Mech. Equipment								
Electrical Conduit								
Conner Wiring								
Light Fixtures								
Lamps								
Lighting Ballasts								
Electrical Devices								
Switchgear and Panelboards								
Transformers								
Other:								

## SECTION 01 77 00

### CLOSEOUT PROCEDURES

#### 1. PART 1 GENERAL

##### 1.1 SECTION INCLUDES

- A. Closeout Procedures.
- B. Final Cleaning.
- C. Pest Control.
- D. Adjusting.
- E. Demonstration and Instructions.
- F. Project Record Documents.
- G. Operation and Maintenance Data.
- H. Warranties.
- I. Spare Parts and Maintenance Materials.
- J. DVBE Participation Report.

##### 1.2 PROJECT CLOSEOUT CONFERENCE

- A. As specified under Section 01 31 00.

##### 1.3 CLOSEOUT PROCEDURES

- A. Submit written certification that Contract Documents have been reviewed, Work has been inspected, and that Work is complete in accordance with Contract Documents and ready for Architect's review.
- B. Prepare and submit to Architect a list of items to be completed or corrected, the value of the items on the list, and reasons why the Work is not complete.
- C. Submit written request to Architect for review of Work.
- D. Submit warranties, bonds, service agreements, certifications, record documents, maintenance manuals, receipt of spare parts and similar closeout documents.
- E. Make final changeover of permanent locks and deliver keys to Owner.
- F. Terminate and remove temporary facilities from Project site.
- G. Advise Owner of change over in heat and other utilities.
- H. Submit final Application for Payment identifying total adjusted Contract Sum, previous payments, and sum remaining due.
- I. Submit affidavit of payment of debts and claims, AIA Document G706.
- J. Submit affidavit of release of liens, AIA Document G706A.
- K. Submit consent of contractors surety to final payment, AIA Document G707.



- L. Owner will occupy all portions of the building as specified in Section 01 11 00.
- 1.4 REGULATORY REQUIREMENTS

- A. Provide submittals to Architect that are required by governing or other authority.

1.5 FINAL CLEANING

- A. Execute final cleaning prior to final review by Architect.
- B. Employ experienced professional cleaners for final cleaning.
- C. Clean interior and exterior glass and surfaces exposed to view; remove temporary labels, stains and foreign substances, polish transparent and glossy surfaces.
- D. Clean equipment and plumbing fixtures to a sanitary condition.
- E. Clean exposed surfaces of grilles, registers and diffusers.
- F. Clean debris from roofs, gutters, downspouts, and drainage systems.
- G. Clean site; sweep paved areas, rake clean landscaped surfaces.
- H. Remove waste and surplus materials, rubbish, and construction facilities from the site.
- I. Clean light fixtures and replace burned out lamps and bulbs.
- J. Leave project clean and ready for occupancy by Owner.

1.6 PEST CONTROL

- A. Engage an experienced, licensed exterminator to make final inspection and rid Project of rodents, insects, and other pests. Submit final report to Architect.

1.7 ADJUSTING

- A. Adjust operating Products and equipment to ensure smooth and unhindered operation.

1.8 DEMONSTRATION AND INSTRUCTIONS

- A. Demonstrate operation and maintenance of products, systems, and equipment to Owner's personnel two weeks prior to date of final review.
- B. For each demonstration submit list of participants in attendance.
- C. Provide two copies of video tape of each demonstration and instructions session.
- D. For equipment or systems requiring seasonal operation, perform demonstration for other season within six months.
- E. Utilize operation and maintenance manuals as basis for instruction. Review contents of manual with Owner's personnel in detail to explain all aspects of operation and maintenance.
- F. Demonstrate start-up, operation, control, adjustment, trouble-shooting, servicing, maintenance, and shutdown of each item of equipment at agreed-upon times, at equipment location.
- G. Prepare and insert additional data in operations and maintenance manuals when need for additional data becomes apparent during instruction.

## 1.9 PROJECT RECORD DOCUMENTS

- A. Maintain on site, one set of the following record documents; record actual revisions to the Work in contrasting color.
  - 1. Contract Drawings.
  - 2. Specifications.
  - 3. Addenda.
  - 4. Change Orders and other Modifications to the Contract.
  - 5. Reviewed shop drawings, product data, and samples.
- B. Store Record Documents separate from documents used for construction.
- C. Record information concurrent with construction progress.
- D. Specifications: Legibly mark and record at each Product Section in contrasting color ink, description of actual Products installed, including the following:
  - 1. Manufacturer's name and product model and number.
  - 2. Supplier and installer's name and contact information.
  - 3. Changes made by Addenda and Modifications.
- E. Contract Drawings and Shop Drawings: Legibly mark each item in contrasting color ink to record actual construction including:
  - 1. Measured horizontal and vertical locations of underground utilities and appurtenances, referenced to permanent surface improvements.
  - 2. Measured locations of internal utilities and appurtenances concealed in construction, referenced to visible and accessible features of the Work.
  - 3. Field changes of dimension and detail.
  - 4. Details not on original Contract Drawings.
  - 5. Revisions to electrical circuitry and locations of electrical devices and equipment.
  - 6. Note change orders, alternate numbers, and similar information, where applicable.
  - 7. Identify each record drawing with the written designation of "RECORD DRAWING" located in prominent location.
- F. Record Digital Data Files: Immediately before inspection for Substantial Completion, review marked-up record prints with Architect and Construction Manager. When authorized, prepare a full set of corrected digital data files of the Contract Drawings, as follows:
  - 1. Format: Same digital data software program, version, and operating system as the original Contract Drawings.
  - 2. Format: Annotated PDF electronic file with comment function enabled.
  - 3. Incorporate changes and additional information previously marked on record prints. Delete, redraw, and add details and notations where applicable.
  - 4. Refer instances of uncertainty to Architect through Construction Manager for resolution.

5. Architect will furnish Contractor one set of digital data files of the Contract Drawings for use in recording information.
  - (a) Refer to Section 01 33 00 "Submittal Procedures" for requirements related to use of Architect's digital data files.
  - (b) Architect will provide data file layer information. Record markups in separate layers.
- G. Final Property Survey: Under the provisions of Section 01 73 00.
- H. Record Construction Schedule: Under the provisions of Section 01 32 17.
- I. Submit documents to Architect at time of Substantial Completion.

#### 1.10 OPERATION AND MAINTENANCE DATA

- A. Summary:
  1. Organize operation and maintenance data with directory.
  2. Provide operation and maintenance manuals for products, systems, subsystems, and equipment.
  3. Refer to Divisions 02 thru 49 for specific operation and maintenance manual requirements for the Work in those Divisions.
- B. Submit two sets prior to final review, bound in 8-1/2 inch x 11 inch, three ring D size binders with durable vinyl covers.
- C. Prepare binder covers with printed title "OPERATION AND MAINTENANCE INSTRUCTIONS", title of project, and subject matter of binder when multiple binders are required.
- D. Internally subdivide the binder contents with permanent page dividers, logically organized as described below; with laminated plastic tabs.
- E. Part 1: Directory, listing names, addresses, and telephone numbers of Architect, Engineers, Contractor, subcontractors, and major equipment suppliers and manufacturers.
- F. Part 2: Operation and maintenance instructions, arranged by specification section. For each category, identify names, addresses, and telephone numbers of Subcontractors and suppliers. Identify the following:
  1. Performance and design criteria.
  2. List of equipment.
  3. Parts list for each component.
  4. Start-up procedures.
  5. Shutdown instructions.
  6. Normal operating instructions.
  7. Wiring diagrams.
  8. Control diagrams.
  9. Maintenance instructions for equipment and systems.
  10. Maintenance instructions for finishes, including recommended cleaning methods and materials.

G. Part 3: Project documents and certificates, including the following:

1. Shop drawings and product data.
2. Air and water balance reports.
3. Certificates.
4. Warranties.

#### 1.11 WARRANTIES

- A. Commencement of warranties shall be date of Substantial Completion.
- B. For items of Work delayed beyond date of Substantial Completion, provide updated submittal within ten days after acceptance, listing date of acceptance as start of warranty period.
- C. Provide duplicate notarized copies in operation and maintenance manuals.
- D. Execute and assemble documents from subcontractors, suppliers, and manufacturers.
- E. Provide Table of Contents and assemble in binder with durable plastic cover.
- F. Submit prior to final Application for Payment.
- G. Manufacturer's disclaimers and limitations on product warranties do not relieve Contractor of warranty on the work that incorporates the products.
- H. Manufacturer's disclaimer and limitations on product warranties do not relieve suppliers, manufacturer's, and subcontractors required to countersign special warranties with Contractor.
- I. When correcting failed or damaged warranted construction, remove and replace construction that has been damaged as a result of such failure or must be removed and replaced to provide access for correction of warranted construction.
- J. When work covered by warranty has failed and has been corrected, reinstate warranty by written endorsement. Reinstated warranty shall be equal to original warranty with equitable adjustment for depreciation.
- K. Upon determination that Work covered by warranty has failed, replace or repair Work to an acceptable condition complying with requirements of the Contract Documents.

#### 1.12 SPARE PARTS AND MAINTENANCE MATERIALS

- A. Provide products, spare parts, maintenance and extra materials in quantities specified in individual specification Sections.
- B. Deliver to Project site and place in location as directed.
- C. Obtain signed receipt for delivery of materials and submit prior to request for final review by Architect.

#### 1.13 DISABLED VETERAN BUSINESS ENTERPRISE ("DBVE") PARTICIPATION

- A. Submit DVBE Participation Report as stipulated by Document 00 65 73.
- B. Provide supplemental report to substantiate non-compliance with District goal of three percent (3%) participation if required.

2. PART 2 PRODUCTS

Not Used

3. PART 3 EXECUTION

Not Used

END OF SECTION

## SECTION 02 41 19

### SELECTIVE DEMOLITION

#### 1. PART 1 GENERAL

##### 1.1 SECTION INCLUDES

- A. Removal of designated building equipment and fixtures.
- B. Removal of designated construction.
- C. Disposal of materials.
- D. Storage of salvaged materials.
- E. Cap and identify utilities.
- F. Temporary partitions to allow building occupancy.
- G. Temporary fire protection.
- H. Schedule of materials and equipment.

##### 1.2 DEFINITIONS

- A. Remove: Detach items from existing construction and legally dispose of them off-site unless indicated to be removed and salvaged or recycled.
- B. Disposal: Removal off-site of demolition waste and subsequently deposit in landfill acceptable to authorities having jurisdiction.
- C. Salvage: Recovery of demolition waste for subsequent reuse.
- D. Recycle: Recovery of demolition waste for subsequent processing.
- E. Existing to Remain: Items of construction that are not to be removed and that are not indicated to be removed salvaged, or recycled.

##### 1.3 MATERIALS OWNERSHIP

- A. Historic items, relics, cornerstones, commemorative plaques, tablets and similar objects encountered during demolition are to remain the Owner's property.
- B. Carefully remove each item in a manner to prevent damage and deliver to Owner.

##### 1.4 SUBMITTALS

- A. Predemolition Photographs: Show conditions of exiting adjacent construction and site improvements that might be misconstrued as damaged by demolition operations. Submit before work begins.
- B. Record Documents: Submit under provisions of Section 01 77 00. Accurately record locations of utilities and subsurface obstructions.

##### 1.5 REGULATORY REQUIREMENTS

- A. Conform to applicable codes for demolition work, safety of structure, electrical disconnection and reconnection dust control and disposal of materials.
- B. Comply with California Fire Code (CFC), California Code of Regulations, (CCR) Title 24, Part 9, Chapter 5 - Fire Service Features and Chapter 33 - Fire Safety During Construction and Demolition.

- C. Obtain required permits from authorities.
- D. Notify affected utility companies before starting work and comply with their requirements.
- E. Do not close or obstruct egress width to exits.
- F. Do not disable or disrupt building fire or life safety systems without 3 day prior written notice to the Owner.

#### 1.6 EXISTING CONDITIONS

- A. Areas of buildings to be demolished will be evacuated and their use discontinued before start of work.
- B. Owner will occupy building(s) adjacent to demolition area. Conduct demolition so owner's operation will not be disrupted.
- C. Provide at least 72 hour notice to Owner of activities that will affect Owner's operation.
- D. Maintain access to existing walkways, exits and other adjacent occupied facilities.
- E. Owner assumes no responsibility for areas of buildings to be demolished.
- F. Hazardous Materials: It is not anticipated that hazardous materials will be encountered in the work.
  - 1. Hazardous materials will be removed by Owner before start of work.
  - 2. Hazardous materials will be removed by Owner under separate contract.
  - 3. If materials suspected of containing hazardous materials are encountered, do not disturb. Notify Architect.
  - 4. Conform to applicable regulatory procedures when discovering hazardous or contaminated materials.

#### 1.7 SCHEDULING

- A. Schedule work under provisions of Section 01 32 17.
- B. Schedule Work to coincide with new construction.
- C. Perform work during normal hours of operation.
- D. Notify Owner in writing 5 days in advance of any required work to be performed on a weekend or holiday.
- E. Perform noisy, malodorous, dusty, work:
  - 1. Between the hours of 8:00 a.m. and 5:00 p.m.
- F. Coordinate utility and building service interruptions with Owner.
- G. Schedule tie-ins to existing systems to minimize disruption.
- H. Coordinate Work to ensure fire sprinklers, fire alarms, smoke detectors, emergency lighting, exit signs and other life safety systems remain in full operation in occupied areas.

#### 1.8 PROJECT CONDITIONS

- A. Conduct demolition to minimize interference with adjacent and occupied building areas.
- B. Cease operations immediately if structure appears to be in danger and notify Architect. Do not resume operations until directed.

## 2. PART 2 PRODUCTS

Not Used

## 3. PART 3 EXECUTION

### 3.1 EXAMINATION

- A. Correlate existing conditions with requirements indicated.
- B. Inventory and record condition of items to be removed and salvaged.
- C. Execute predemolition photographs.
- D. Verify that hazardous waste remediation is complete.

### 3.2 PREPARATION

- A. Existing Utilities: Locate, identify, disconnect and seal or cap off indicated utilities serving areas to be demolished.
- B. Salvaged Items: Clean, pack and identify items for storage.
- C. Protect existing items which are not indicated to be salvaged, removed, or altered.
- D. Erect and maintain weatherproof closures for exterior openings.
- E. Erect and maintain temporary partitions to prevent spread of dust, fumes, noise, and smoke to provide for Owner occupancy as specified in Section 01 11 00.

### 3.3 DEMOLITION

- A. Conduct demolition to minimize interference with adjacent and occupied building areas.
- B. Cease operations immediately if structure appears to be in danger. Notify Architect. Do not resume operations until directed.
- C. Maintain protected egress and access to the Work.
- D. Maintain fire safety during demolition in accordance with CFC, Chapter 33.
- E. Demolish in an orderly and careful manner. Protect existing supporting structural members.

### 3.4 SALVAGING OF DEMOLITION MATERIALS

- A. Salvage materials under the provisions of Section 01 74 19.
- B. Clean salvaged items.
- C. Pack or crate items after cleaning. Identify contents.
- D. Store items in secure area until delivery to Owner.
- E. Protect items from damage.
- F. Install salvaged items to comply with requirements for new materials and equipment.

### 3.5 RECYCLING OF DEMOLITION MATERIALS

- A. Recycle demolition waste under the provisions of Section 01 74 19.



### 3.6 DISPOSAL OF DEMOLISHED MATERIALS

- A. Except for items to be recycled, reused, salvaged, reinstalled, or otherwise indicated to remain, remove demolished materials from Project site and legally dispose of them in an EPA – approved landfill.
- B. Do not burn or bury materials on site.

### 3.7 CLEANING

- A. Clean adjacent structures and improvements of dust, dirt and debris caused by demolition.
- B. Remove temporary construction.
- C. Return adjacent areas to condition existing before demolition operations began.
- D. Leave site in a clean condition.

END OF SECTION

## SECTION 03 11 00

### CONCRETE FORMWORK

#### 1. PART 1 GENERAL

##### 1.1 SECTION INCLUDES

- A. Formwork for cast-in-place concrete, with shoring, bracing, and anchorage.
- B. Openings for other affected work.
- C. Form accessories.
- D. Stripping forms.

##### 1.2 REFERENCES

- A. CBC - California Building Code, (CCR) California Code of Regulations, Title 24, Part 2, Chapter 19.
- B. ACI 301 - Specifications for Structural Concrete for Buildings.
- C. PS 1-09 - Structural Plywood.

##### 1.3 SYSTEM DESCRIPTION

- A. Design, engineer, and construct formwork, shoring, and bracing to meet design and code requirements, so that resultant concrete conforms to required shapes, lines, and dimensions.

##### 1.4 QUALITY ASSURANCE

- A. Construct and erect concrete formwork in accordance with ACI 301.

##### 1.5 REGULATORY REQUIREMENTS

- A. Conform to CBC - California Building Code, (CCR) California Code of Regulations, Title 24, Part 2.

#### 2. PART 2 PRODUCTS

##### 2.1 FORM MATERIALS

- A. Plywood: PS1-09, BB Plyform grade, Class I, Exterior classification.
- B. Lumber: Douglas Fir species; construction grade; with grade stamp clearly visible.
- C. Tubular Column: Round, of spirally wound laminated fiber; surface treated with release agent; of size required.

##### 2.2 FORMWORK ACCESSORIES

- A. Form Ties: Snap-off metal of adjustable length; cone type; 1 inch break back dimension; free of defects that will leave holes no larger than one inch diameter in concrete surface.
- B. Form Release Agent: Colorless material which will not stain concrete, absorb moisture, or impair natural bonding or color characteristics of coating intended for use on concrete.
- C. Fillets for Chamfered Corners: Wood strips type; 3/4 x 3/4 inch size; maximum possible lengths.
- D. Dovetail Anchor Slots: Minimum 22 gage galvanized steel; foam filled; release tape sealed slots; bent tab anchors; securable to concrete formwork; manufactured by Heckmann Building Products Co., [www.heckmannbuildingprods.com](http://www.heckmannbuildingprods.com).

- E. Flashing Reglets: 26 gage thick galvanized steel; longest possible lengths; release tape sealed slots; with alignment splines for joints; securable to concrete formwork; Type CO reglet manufactured by Fry Reglet [www.fryreglet.com](http://www.fryreglet.com).
- F. Nails, Spikes, Lag Bolts, Through Bolts, Anchorages: Sized as required; of strength and character to maintain formwork in place while placing concrete.

### 3. PART 3 EXECUTION

#### 3.1 INSPECTION

- A. Verify lines, levels, and measurements before proceeding with formwork.

#### 3.2 PREPARATION

- A. Obtain Architect's approval for use of earth forms for footings.
- B. Minimize form joints. Symmetrically align joints and make watertight to prevent leakage of mortar.
- C. Arrange and assemble formwork to permit stripping, so that concrete is not damaged during its removal.
- D. Arrange forms to allow stripping without removal of principal shores, where required to remain in place.

#### 3.3 ERECTION

- A. Erect formwork, shoring and bracing to achieve design requirements, in accordance with requirements of ACI 301.
- B. Provide bracing to ensure stability of formwork. Strengthen formwork liable to be overstressed by construction loads.
- C. Obtain approval before framing openings in structural members which are not indicated on Drawings.
- D. Do not displace or damage vapor barrier placed by Section 03 30 00.
- E. Construct formwork to maintain tolerances in accordance with ACI 301.

#### 3.4 APPLICATION OF FORM RELEASE AGENT

- A. Apply form release agent on formwork in accordance with manufacturer's instructions. Apply prior to placing reinforcing steel, anchoring devices, and embedded items.
- B. Do not apply form release agent where concrete surfaces are scheduled to receive applied coverings which may be affected by agent. Soak contact surfaces of untreated forms with clean water. Keep surfaces wet prior to placing concrete.

#### 3.5 INSERTS, EMBEDDED PARTS, AND OPENINGS

- A. Provide formed openings where required for work embedded in or passing through concrete.
- B. Coordinate work of other Sections in forming and setting openings, slots, recesses, chases, sleeves, bolts, anchors, and other inserts.
- C. Install accessories in accordance with manufacturer's instructions, level and plumb. Ensure items are not disturbed during concrete placement.

#### 3.6 FORM REMOVAL

- A. Do not remove forms and bracing until concrete has sufficient strength to support its own weight and imposed loads.

- B. Do not damage concrete surfaces during form removal.

### 3.7 CLEANING

- A. Clean forms to remove foreign matter as erection proceeds.
- B. Ensure that water and debris drain to exterior through clean-out ports.

### 3.8 EARTH FORMS

- A. Construct wood edge strips at top sides of excavations as indicated on drawings.
- B. Provide forms for footings and foundation walls wherever concrete cannot be placed against solid earth.
- C. Remove loose dirt and debris from form area prior to concrete placement.
- D. Concrete for foundations may be placed directly into neat excavations provided the foundation trench walls are stable as determined by the Architect (Structural Engineer).
- E. When earth formed foundations are used, the minimum formwork shown on the drawings is mandatory to insure clean excavations prior to and during concrete placement.
- F. Provide 3-1/2 inch high starter wall for all concrete and masonry walls below grade.

END OF SECTION

## SECTION 03 20 00

### CONCRETE REINFORCING

#### 1. PART 1 GENERAL

##### 1.1 SECTION INCLUDES

- A. Reinforcing steel bars, welded steel wire fabric fabricated steel bar or rod mats for cast-in-place concrete.
- B. Support chairs, bolsters, bar supports, and spacers, for supporting reinforcement.
- C. Fibrous secondary reinforcement for slabs-on-grade.

##### 1.2 REFERENCES

- A. CBC - California Building Code, (CCR) California Code of Regulations, Title 24, Part 2, Chapter 19 (ACI 318).
- B. ACI 301 - Specifications for Structural Concrete for Buildings.
- C. ACI 315 (SP-66) - Details and Detailing of Concrete Reinforcement.
- D. ACI 318 - Building Code Requirements for Structural Concrete.
- E. ASTM A1064 - Carbon-Steel Wire and Welded Wire Reinforcement, Plain and Deformed, for Concrete.
- F. ASTM A615 - Deformed and Plain Carbon-Steel Bars for Concrete Reinforcement.
- G. ASTM A706 - Standard Specification for Low Alloy Steel Deformed Bars for Concrete Reinforcement.
- H. ASTM C1116 - Specification for Fiber-Reinforced Concrete and Shotcrete.
- I. AWS D1.4 - Structural Welding Code Reinforcing Steel.
- J. CRSI - Manual of Practice.
- K. CRSI - Placing Reinforcing Bars.

##### 1.3 QUALITY ASSURANCE

- A. Perform concrete reinforcement work in accordance with CRSI Manual of Standard Practice.
- B. Conform to ACI 301 and ACI 315 (SP-66).
- C. Conform to CBC California Building Code, (CCR) California Code of Regulations, Title 24, Part 2.

##### 1.4 CERTIFICATES

- A. Submit mill test certificates of supplied concrete reinforcing, indicating physical and chemical analysis.

#### 2. PART 2 PRODUCTS

##### 2.1 MATERIALS

- A. Reinforcing Steel: ASTM A615, Grade 40 for No. 4 bars and smaller, Grade 60 for No. 5 bars and larger. Billet-steel deformed bars, uncoated finish.
- B. Welded Reinforcement: ASTM A706, Grade 60, deformed bars, unfinished.
- C. Welded Steel Wire Fabric: ASTM A1064 plain type; coiled rolls; uncoated finish.

- D. Steel Wire: ASTM A1064, plain, cold drawn steel.
- E. Fibrous Reinforcement:
  - 1. Collated, fibrillated, polypropylene fibers with length varying from 1-1/2 to 2 inches; nylon filamentized fibers of 3/4 inch length; cellulose fibers of 1/8 inch length; cellulose fibers of 1/8 inch length meeting requirements of ASTM C1116, Type III.
  - 2. Manufacturers:
    - (a) Forta Mono or Forta, Forta Corp., [www.fortacorp.com](http://www.fortacorp.com).
    - (b) Fibermix or Fibermesh, SI Concrete Corp., [www.fibermesh.com](http://www.fibermesh.com).
    - (c) Nycon, Nycon, Inc., [www.nycon.com](http://www.nycon.com).
    - (d) Grace Fibers or Micro Fibers, W.R. Grace and Co., [www.graceconstruction.com](http://www.graceconstruction.com).
    - (e) Buckeye Building Fibers, [www.ultrafiber500.com](http://www.ultrafiber500.com).
  - 3. Substitutions: Under provisions of Section 01 25 13.

## 2.2 ACCESSORY MATERIALS

- A. Tie Wire: Minimum 16 gage annealed type.
- B. Chairs, Bolsters, Bar Supports, Spacers: Sized and shaped for strength and support of reinforcement during installation and placement of concrete including load bearing pad on bottom to prevent vapor barrier puncture.
- C. Chairs, Bolsters, Bar Supports, Spacers Adjacent to Architectural Concrete Surfaces: Plastic coated sized and shaped as required.

## 2.3 FABRICATION

- A. Fabricate in accordance with ACI 315 (SP-66), providing concrete cover specified in Section 03 30 00.
- B. Locate reinforcing splices not indicated on Drawings at points of minimum stress.
- C. Weld reinforcing bars in accordance with AWS D1.4.

## 3. PART 3 EXECUTION

### 3.1 INSTALLATION

- A. Before placing concrete, clean reinforcement of foreign particles or coatings.
- B. Place, support, and secure reinforcement against displacement. Do not deviate from alignment or measurement.
- C. Mix fibrous reinforcement into concrete material according to Section 03 30 00.
- D. Do not displace or damage vapor barrier required by Section 03 30 00.

### 3.2 FIELD QUALITY CONTROL

- A. Field inspection and testing will be performed under provisions of Section 01 45 29.

END OF SECTION

## SECTION 03 30 00

### CAST-IN-PLACE CONCRETE

#### 1. PART 1 GENERAL

##### 1.1 SECTION INCLUDES

- A. Cast-in-place concrete foundation walls, and footings.
- B. Floors and slabs on vapor barrier.
- C. Control, expansion, and contraction joint devices associated with concrete work.
- D. Shade structure foundations.

##### 1.2 REFERENCES

- A. The 2010 Americans with Disabilities Act (ADA) Standards for Accessible Design.
- B. CBC - California Building Code, (CCR) California Code of Regulations Title 24, Part 2, Chapter 19.
- C. CBC - California Building Code, (CCR) California Code of Regulations, Title 24, Part 2, California State Accessibility Standards.
- D. ACI 301 - Specifications for Structural Concrete for Buildings.
- E. ACI 302.1R - Guide for Concrete Floor and Slab Construction.
- F. ACI 305R - Hot Weather Concreting.
- G. ACI 306.R - Standard Specification for Cold Weather Concreting.
- H. ACI 318 - Building Code Requirements for Structural Concrete.
- I. ASTM C33 - Concrete Aggregates.
- J. ASTM C94 - Ready-Mixed Concrete.
- K. ASTM C109 - Standard Test Method for Compressive Strength of Hydraulic Cement Mortars.
- L. ASTM C150 - Portland Cement.
- M. ASTM C289 - Potential Reactivity of Aggregate.
- N. ASTM C309 - Liquid Membrane Forming Compound.
- O. ASTM C330 - Lightweight Aggregates for Structural Concrete.
- P. ASTM C494 - Standard Specifications for Chemical Admixtures for Concrete.
- Q. ASTM C567 - Unit Weight of Structural Lightweight Concrete.
- R. ASTM C618- Standard Specification for Coal Fly Ash and Raw or Calcined Natural Pozzolan for Use as a Mineral Admixture for Concrete.

- S. ASTM C932 - Surface-Applied Bonding Agents.
- T. ASTM C1315 - Liquid Membrane-Forming Compounds Having Special Properties for Curing and Sealing Concrete.
- U. ASTM C1602 - Standard Specification for Mixing Water Used in the Production of Hydraulic Cement Concrete.
- V. ASTM D226 - Asphalt Saturated Organic Felt used in Roofing and Waterproofing.
- W. ASTM D1751 - Preformed Expansion Joint Filler for Concrete Paving and Structural Construction.
- X. ASTM E96 – Standard Test Methods for Water Vapor Transmission of Materials.
- Y. ASTM E154 - Standard Test Methods for Water Vapor Retardants used in Contact with Earth Under Concrete Slabs, on Walls, or as Ground Cover.
- Z. ASTM E1643 - Installation of Water Vapor Retarders used in Contact with Earth or Granular Fill Under Concrete Slab.
- AA. ASTM E1155 - Determining Floor Flatness and Levelness Using the F-Number System.
- BB. ASTM E1745 - Standard Specifications for Plastic Water Vapor Retarders Used in Contact with Soil Or Granular Fill Under Concrete Slabs.
- CC. ASTM F1249 - Standard Test Method for Water Vapor Transmission Rate Through Plastic Film and Sheeting Using a Modulated Infrared Sensor.
- DD. ASTM F1869 - Standard Test Method for Measuring Moisture Vapor Emission Rate of Concrete Subfloor Using Anhydrous Calcium Chloride.
- EE. National Ready Mix Concrete Association - Plant Certification Program.
- FF. Stormwater Best Management Practice Handbook (BMP Handbook), Construction Edition, as published by the California Storm Water Quality Association.

### 1.3 QUALITY ASSURANCE

- A. Perform work in accordance with ACI 301.
- B. Installation of vapor barrier shall be in accordance with ASTM E1643 and manufacturer's installation guides and recommendations. Provide Architect written site reports from manufacturer's field service representative, indicating observation of vapor barrier installation prior to concrete placement.
- C. Obtain concrete materials from same source throughout the Work.

### 1.4 QUALIFICATIONS

- A. Manufacturer: Manufacturer of ready-mix concrete products complying with ASTM C94 requirements for production facilities and equipment. Certified according to National Ready Mix Concrete Associates Plant Certification Program.

### 1.5 DESIGN MIX

- A. Submit design mix for each class of concrete, prepared by a California Registered Civil Engineer, to Testing Laboratory and Architect for review.



## 1.6 REGULATORY REQUIREMENTS

- A. Conform to CBC - California Building Code, (CCR) California Code of Regulations, Title 24, Part 2.
- B. Conform to CBC - California Building Code, (CCR) California Code of Regulations, Title 24, Part 2, and the 2010 ADA Standards for Accessible Design for access requirements for individuals with disabilities.

## 1.7 SUBMITTALS

- A. Submit product data and manufacturer's instructions for all accessories under provisions of Section 01 33 00.

## 1.8 ENVIRONMENTAL REQUIREMENTS

- A. Provide concrete curing, finishing, and waste management techniques as defined in Section 4 of the Storm Water Best Management Practice Handbook, (BMP Handbook) Construction Edition.

## 2. PART 2 PRODUCTS

### 2.1 FORMWORK

- A. As specified in Section 03 11 00.

### 2.2 REINFORCEMENT

- A. Reinforcing steel as specified in Section 03 20 00.

### 2.3 FIBROUS REINFORCEMENT

- A. Fibrous reinforcement as specified in Section 03 20 00.

### 2.4 CONCRETE MATERIALS

- A. Cement: ASTM C150, Type I or Type II Portland type; low alkali; grey color.
- B. Fine and Coarse Aggregates Normal Weight Concrete: ASTM C33, non reactive when tested in accordance with ASTM C289 and Appendix X-1 of ASTM C33.
- C. Fine and Coarse Aggregate, Light Weight Concrete: ASTM C330.
- D. Water: ASTM C1602, clean and not detrimental to concrete.

### 2.5 ADMIXTURES

- A. Fly Ash: ASTM C618, Class F.
- B. Water Reducing Admixture: ASTM C494, Type A.
- C. Calcium chloride, or any other admixtures not allowable.

### 2.6 ACCESSORIES

- A. Underlayment: ASTM D226, Type I (No. 15) asphalt saturated roofing felt.

- B. Bonding Agent: ASTM C932; Weld-Crete as manufactured by Larsen Products Corp., [www.larsenproducts.com](http://www.larsenproducts.com).
- C. Non-shrink Grout: Premixed compound consisting of non-metallic aggregate, cement, water reducing and plasticizing agents; capable of developing minimum compressive strength of 7000 psi in 28 days.
- D. Joint Filler: ASTM D1751, 1/2 inch thick.
- E. Sand Fill: Manufactured "crusher run" sand free of silt, clay, loam, friable or soluble materials or organic matters, all passing the No. 4 sieve and only 5 percent passing the No. 200 sieve.
- F. Curing, Hardening and Vapor Barrier Compound: ASTM C1315, Type I, Class A and ASTM C309, Type 1, Class A, with maximum volatile organic compound (VOC) content rating as required to suit regulatory requirements. Material to have no less than 34 percent penetrating solids, have no visible sheen and be compatible with floor finish materials and overlays. Provide the following:
  - 1. PMC 3300 Penetrating Sealer manufactured by Curranseal, [www.curranseal.com](http://www.curranseal.com).
- G. Substitutions: Under provisions of Section 01 25 13.

## 2.7 CONCRETE MIX

- A. Mix concrete in accordance with ASTM C94 ACI 318, Section 26.4.4.
- B. Footings: Proportion normal-weight concrete mixture as follows:
  - 1. Minimum Compressive Strength: As required from structural engineer for deferred approval design.
  - 2. Maximum Water-Cement Materials Ratio: As required from structural engineer for deferred approval design.
  - 3. Aggregate Size: As required from structural engineer for deferred approval design.
  - 4. Slump Limit: 4 inch minimum, 6 inch maximum.
  - 5. Fly Ash: Maximum 25 percent by weight.
  - 6. Waterproofing Admixture: 3 percent by weight of cement.

## 3. PART 3 EXECUTION

### 3.1 INSPECTION

- A. Verify anchors, seats, plates, reinforcement, and other items to be cast into concrete are accurately placed, held securely, and will not cause difficulty in placing concrete.

### 3.2 PREPARATION

- A. At locations where new concrete is dowelled to existing work, drill holes in existing concrete, insert steel dowels, and pack solid with non-shrink grout.
- B. Place 2 inch thick sand fill over subgrade.
- C. Compact sand fill as specified in Section 31 20 00.

- D. Install underlayment over wood subfloor. Lap joints 6 inches. Fasten in place.

### 3.3 PLACING CONCRETE

- A. Notify Architect minimum 24 hours prior to commencement of concreting operations.
- B. Place concrete in accordance with ACI 301.
- C. Hot Weather Placement: ACI 305R.
  - 1. Maintain concrete temperature below 90 deg F at time of placement. Chilled mixing water or chopped ice may be used to control temperature, provided water equivalent of ice is calculated to total amount of mixing water.
  - 2. Fog-spray forms, steel reinforcement, and subgrade just before placing concrete in hot weather. Keep subgrade uniformly moist without standing water, soft spots, or dry areas.
- D. Cold Weather Placement: ACI 306R.
  - 1. When average high and low temperature is expected to fall below 40 deg F for three successive days, maintain delivered concrete mixture temperature within the temperature range required by ACI 306.1
- E. Ensure reinforcement, inserts, embedded parts and formed joints are not disturbed during concrete placement.
- F. Do not disturb or damage vapor barrier while placing concrete. Repair damage as required to maintain integrity of barrier.
- G. Place concrete continuously between predetermined construction and control joints. Do not break or interrupt successive pours such that cold joints occur.
- H. Place interior floor slabs on fill in a strip sequence pattern.
- I. Excessive honeycomb or embedded debris in concrete is not acceptable.

### 3.4 JOINTS

- A. Saw cut control joints at an optimum time after finishing. Use 3/16 inch thick blade, cutting 1/3 into depth of slab thickness.
- B. Review locations of joints when indicated and make recommendations for any additional joints or suggestions for new locations. Lack of joints or misplacement of joints will not constitute justification of slab cracking.
- C. Provide control joints at 15 feet on center unless otherwise indicated.
- D. Where indicated on the drawings, separate slabs from vertical surfaces with joint filler. Extend joint filler from bottom of slab to within 1/4 inch of finished slab surface.

### 3.5 FINISHING OF FORMED SURFACES

- A. Rough form finish:
  - 1. Leave surfaces with the texture imparted by forms, except patch tie holes and defects.
  - 2. Remove fins exceeding 1/4 inch in height.

3. Use for below grade foundation walls and concealed spaces.

B. Smooth form finish:

1. Coordinate as necessary to secure form construction using smooth, hard, uniform surfaces, with number of seams kept to a practical minimum and in a uniform and orderly pattern.
2. Patch tie holes and defects.
3. Remove fins completely.
4. Use for exposed finish surfaces to receive paint.

C. Smooth rubbed finish:

1. Produce on newly hardened concrete no later than the day following form removal.
2. Wet the surfaces, and rub with carborundum brick or other abrasive until uniform color and texture are produced.
3. Do not use a cement grout other than the cement paste drawn from the concrete itself by the rubbing process.
4. Use for exposed finish surfaces to receive clear sealer.

D. Grout cleaned finish:

1. Do not start cleaning operations until all contiguous surfaces to be cleaned are completed and accessible.
2. Do not permit cleaning as the work progresses.
3. Mix one part Portland cement and 1-1/2 parts fine sand with sufficient water to produce a grout having the consistency of thick paint.
4. Wet the surface of the concrete sufficiently to prevent absorption of water from the grout and apply the grout uniformly with brushes or spray gun.
5. Immediately after applying the grout, scrub the surface vigorously with a cork float or stone to coat the surface and fill all air bubbles and holes.
6. While the grout is still plastic, remove all excess grout by working the surface with a rubber float, sack, or other means.
7. After the surface whites from drying (about 30 minutes at normal temperatures), rub vigorously with clean burlap.
8. Keep the surface damp for at least 36 hours after final rubbing.
9. Use for repair of exposed finish surfaces to receive paint or clear sealer and for exposed to view exterior foundation stem walls..

E. Medium Sandblast Finish:

1. Concrete must have cured a minimum of 14 days prior to sandblasting.

2. Perform sandblasting finishing in as continuous an operation as possible, utilizing same work crew to maintain continuity of finish on each surface or area of work.
3. Maintain depth of cut and general aggregate exposure to match field sample.
4. After sandblasting to required finish, wash to clean exposed aggregate surfaces to match Architect's sample.
5. Use where indicated on drawings.

### 3.6 CURING

- A. Apply curing, hardening and vapor barrier compound on all floor slabs that are not exposed and indicated to be sealed.
- B. Cure concrete surfaces in accordance with ACI 301.
- C. Spray apply curing, hardening and vapor barrier compound on finished slab surfaces located below grade, at grade, and above grade in two "wet on wet" flood coats at the total rate of 200 sq. ft./gallon in accordance with manufacturer's instructions.
- D. Application of compound shall be by a trained applicator acceptable to compound manufacturer.
- E. After application of curing, hardening, and vapor barrier compound, moist cure concrete using the following method:
  1. Spraying: Fog spray clean, potable water over floor slab areas and maintain moist for 10 days.
  2. Polyethylene Film: Spread over floor slab areas, lap edges and sides, maintain in place for 10 days.

### 3.7 PATCHING

- A. Notify Architect immediately upon removal of forms to determine areas that will require patching.
- B. Surface defects shall include color and texture irregularities, stains, cracks, spalls, air bubbles, honeycombs, rock pockets, fins and other projections and discolorations in the surface that cannot be removed by cleaning.
- C. Patch imperfections in accordance with ACI 301.

### 3.8 DEFECTIVE CONCRETE

- A. Modify or replace concrete not conforming to required levels and lines, details, and elevations.
- B. Repair or replace concrete not properly placed or of the specified type.

### 3.9 FIELD QUALITY CONTROL

- A. Field inspection and testing will be performed under provisions of Section 01 45 29.
- B. Owner's Inspector will take cylinders and perform slump and air entrainment tests in accordance with ACI 301 and will arrange for pick-up by Testing Laboratory.
- C. Three cylinders will be taken for every 50 yards, or fraction thereof, for each class of concrete for each day.

- D. Tests of cement and aggregates will be performed by Testing Laboratory to ensure conformance with requirements stated herein.
- E. Slab tolerance as measured by ASTM E1155 shall be performed within 72 hours of floor slab installation.
- F. Maintain records of placed concrete items. Record date, location of pour, quantity, air temperature, and test samples taken.

### 3.10 PROTECTION

- A. Protect finished work under provisions of Section 01 61 00.
- B. Immediately after placement, protect concrete from premature drying, excessively hot or cold temperatures, and mechanical injury.
- C. Maintain concrete with minimal moisture loss at relatively constant temperature for period necessary for hydration of cement and hardening of concrete.

END OF SECTION

## SECTION 05 12 00

### STRUCTURAL STEEL FRAMING

#### 1. PART 1 GENERAL

##### 1.1 SECTION INCLUDES

- A. Structural steel framing members and support members.
- B. Baseplates, and anchor bolts.
- C. Grouting under baseplates.

##### 1.2 REFERENCES

- A. CBC - California Building Code, (CCR) California Code of Regulations, Title 24, Part 2.
- B. ASTM A36 - Carbon Structural Steel.
- C. ASTM A53 - Pipe, Steel, Black and Hot-Dipped, Zinc Coated, Welded and Seamless.
- D. ASTM A108 - Steel Bars, Carbon, Cold-Finished, Standard Quality.
- E. ASTM A307 - Carbon Steel Bolts and Studs, 60,000 psi Tensile Strength
- F. ASTM A325 - High Strength Bolts for Structural Steel Joints.
- G. ASTM A490 - Structural Bolts, alloy Steel, Heat Treated, 150 ksi Minimum Tensile Strength.
- H. ASTM A500 - Cold-Formed Welded and Seamless Carbon Steel Structural Tubing in Round and Shapes.
- I. ASTM A992 - Standard Specification for Steel for Structural Shapes for Use in Building Framing.
- J. ASTM C1107 - Packaged Dry, Hydraulic Cement Grout (non shrink).
- K. ASTM F1554 - Standard Specification for Anchor Bolts, Steel, 36, 55, and 105 KSI Yield Strength.
- L. AWS A2.4 - Standard Welding Symbols.
- M. AWS D1.1 - Structural Welding Code - Steel.
- N. ANSI / ASCE 360 - Specification for the Design, Fabrication and Erection of Structural Steel for Buildings.
- O. ANSI / ASCE 303 - Specification for Architectural Exposed Structural Steel.
- P. SSPC - The Society for Protective Coatings.

##### 1.3 QUALITY ASSURANCE

- A. Fabricate structural steel members in accordance with AISC-Specification for the Design, Fabrication and Erection of Structural Steel for Buildings.
- B. Perform Work in accordance with AISC - Specification for Architectural Exposed Structural Steel where indicated on the drawings.
- C. Category for Architecturally Exposed Structural Steel (AESS) shall be 1.

## 1.4 QUALIFICATIONS

- A. Design connections not detailed on the Drawings under direct supervision of a Professional Structural Engineer experienced in design of this work and licensed in the State of California.
- B. Design connections in accordance with CBC California Building Code, (CCR) California Code of Regulations, Title 24, Part 2, Chapter 22.

## 2. PART 2 PRODUCTS

### 2.1 MATERIALS

- A. Structural Steel Members: ASTM A36. W and WT shapes, ASTM A992.
- B. Structural Tubing: ASTM A500, Grade B.
- C. Steel Pipe: ASTM A53, Grade B.
- D. Shear Stud Connectors: ASTM A108, Grade 1015, forged steel, headed, unfinished.
- E. Threaded Bolts, Nuts, and Washers: ASTM A325.
- F. Anchor Bolts: ASTM A307. ASTM F1554 if over 9-1/2 inches long.
- G. Welding Materials: AWS D1.1; type required for materials being welded.
- H. Grout: ASTM C1107, non-shrink type, pre-mixed compound consisting of non-metallic aggregate, cement, water reducing and plasticizing additives, capable of developing a minimum compressive strength of 7,000 psi at 28 days.

### 2.2 FABRICATION

- A. Fabricate structural steel members in accordance with AISC Specification.
- B. Continuously seal joined members by continuous welds. Grind exposed welds smooth.

### 2.3 FINISH

- A. Prepare structural component surfaces in accordance with SSPC SP-2.
- B. Prepare Architecturally Exposed Structural Steel in accordance with SSPC-6.
- C. Shop and Touch-Up Primer: SSPC 15, Type 1, Red Oxide.
- D. Shop prime structural steel members. Do not prime surfaces that will be fireproofed, field welded or in contact with concrete or masonry.
- E. Finish: Site paint exposed to view structural steel members under provisions of Section 09 90 00.

### 2.4 SOURCE QUALITY CONTROL AND TESTS

- A. Testing and analysis of components will be performed under provisions of Section 01 45 29.

## 3. PART 3 EXECUTION

### 3.1 EXAMINATION

- A. Verify that field conditions are acceptable and are ready to receive work.
- B. Beginning of installation means erector accepts existing conditions.



### 3.2 ERECTION

- A. Allow for erection loads, and for sufficient temporary bracing to maintain structure safe, plumb, and in true alignment until completion of erection and installation of permanent bracing.
- B. Field weld components indicated on Drawings.
- C. Field connect members with threaded fasteners indicated; torque to required resistance.
- D. Do not field cut or alter structural members without approval of Architect.
- E. After erection, prime welds, abrasions, and surfaces not shop primed, except surfaces to be in contact with concrete.
- F. Erect Architecturally Exposed Structural Steel in accordance with category designated.

### 3.3 GROUTING

- A. Clean concrete on masonry bearing surfaces.
- B. Roughen bearing surface prior to setting base and bearing plates.
- C. Set base and bearing plates on wedges, shims, or setting nuts.
- D. Tighten anchor bolts after members are positioned and plumb.
- E. Cut off protruding wedges or shims flush with edge of base or bearing plate.
- F. Pack grout solidly between bearing surfaces and plates so no voids remain.
- G. Finish exposed surfaces, protect installed materials, and allow to cure.

### 3.4 ERECTION TOLERANCES

- A. Erect structural steel members in accordance with AISC Specification.
- B. Erect Architecturally Exposed Structural Steel in accordance with category designated.

### 3.5 RECYCLING CONSTRUCTION WASTE

- A. Recycle excess materials waste under the provisions of Section 01 74 19.

### 3.6 FIELD QUALITY CONTROL

- A. Field inspection and testing will be performed under provisions of Section 01 45 29.

END OF SECTION

## SECTION 07 71 23

### MANUFACTURED GUTTERS AND DOWNSPOUTS

#### 1. PART 1 GENERAL

##### 1.1 SECTION INCLUDES

- A. Galvanized steel gutters and downspouts.
- B. Steel pipe downspouts.

##### 1.2 REFERENCES

- A. ASTM A53 - Pipe, Steel, Black and Hot-Dipped Zinc-Coated Welded and Seamless.
- B. ASTM A123 - Zinc (Hot-Dip Galvanized) Coating on Iron and Steel Products.
- C. ASTM A653 - Steel Sheet, Zinc Coated, (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
- D. ASTM A755 - Steel Sheet, Metallic Coated by the Hot-Dip Process and Prepainted by the Coil-Coating Process for Exterior Exposed Building Products.
- E. ASTM A792 - Steel Sheet, Aluminum-Zinc Alloy. Coated by the Hot-Dip Process, General Requirements.
- F. ASTM A924 - General Requirements for Steel Sheet, Zinc-Coated (Galvanized) by the Hot-Dip Process.
- G. SMACNA - Architectural Sheet Metal Manual.

##### 1.3 SUBMITTALS

- A. Submit shop drawings, product data, and samples under provisions of Section 01 33 00.
- B. Submit shop drawings of metal items indicating profiles, jointing, terminations, and installation details. Indicate type and spacing of fasteners.
- C. Submittal of specific plates from the SMACNA Architectural Sheet Metal Manual constitutes acceptable documentation of installation details.
- D. Submit product data for pre-coated galvanized steel.
- E. Submit two samples 4 x 4 inch in size illustrating metal finish color for pre-coated steel.
- F. Submit warranty for metal finish.

##### 1.4 QUALITY ASSURANCE

- A. Applicator: Company specializing in sheet metal work with five years minimum experience.
- B. Perform work in accordance with SMACNA standard details and requirements.

##### 1.5 STORAGE AND HANDLING

- A. Store products under provisions of Section 01 61 00.
- B. Stack preformed material to prevent twisting, bending, or abrasion and to provide ventilation.
- C. Prevent contact with materials during storage which may cause discoloration, staining or damage.

## 1.6 WARRANTY

- A. Provide warranty under provisions of Section 01 77 00.
- B. Provide 20-year warranty coverage for metal finish from all defects.

## 2. PART 2 PRODUCTS

### 2.1 MATERIALS

- A. Pre-coated Galvanized Steel: ASTM A755 on zinc-coated galvanized substrate, ASTM A653, Grade 33, G90 zinc coating in accordance with ASTM A924, or ASTM A792, Grade 50, AZ55 aluminum zinc coating, thickness as specified.

### 2.2 COMPONENTS

- A. Gutters: 0.0299 inch thick.
- B. Downspouts: ASTM A53, Grade B, Schedule 40 steel pipe, standard weight, Type S, one piece without joints, galvanized according to ASTM A53; 1.8 oz./sq. ft.
- C. Splash Pans: Same metal as for gutters.

### 2.3 ACCESSORIES

- A. Anchorage Devices: Meet SMACNA requirements.
- B. End Caps, Downspout Outlets and Strainers, Rain Diverters, Straps, Support Brackets, Joint Fasteners. Profiled to suit gutters and downspouts.
- C. Sealant: Silicone type as specified in Section 07 92 00.

### 2.4 FABRICATION

- A. Form gutters and downspouts of profiles and sizes indicated.
- B. Field measure site conditions prior to fabricating work.
- C. Fabricate with required connection pieces.
- D. Form sections square, true, and accurate in size, in maximum possible lengths and free of distortion or defects detrimental to appearance or performance.
- E. Hem exposed edges of metal.
- F. Seal metal joints.
- G. Fabricate gutter and downspout accessories; seal watertight.
- H. Form splash pans to size as detailed with rolled edges.

### 2.5 FINISHING

- A. Kynar 500 or Hylar 5000 shop pre-coated finish on flat sheet metal stock. Finish with 0.2 mil baked on primer and 0.80 mil baked on topcoat for a 1.0 mil dry film thickness. Color to be selected by Architect from manufacturer's entire range of standard colors.

### 3. PART 3 EXECUTION

#### 3.1 EXAMINATION

- A. Verify that surfaces are ready to receive work.
- B. Beginning of installation means acceptance of existing conditions.

#### 3.2 INSTALLATION

- A. Install gutters, downspouts, and accessories in accordance with SMACNA requirements.
- B. Join lengths with seams sealed watertight. Flash and seal gutters to downspouts and accessories.
- C. Seal metal joints watertight.

END OF SECTION

## **SECTION 07 92 00**

### JOINT SEALANTS

#### 1. PART 1 GENERAL

##### 1.1 SECTION INCLUDES

- A. Preparing sealant substrate surfaces.
- B. Sealant and backing.

##### 1.2 SUMMARY OF SEALANT LOCATIONS

- A. Joints in horizontal surfaces.
  - 1. Expansion and isolation joints in cast-in-place concrete slabs.
  - 2. Joints in flashing and sheet metal.
  - 3. Joints between dissimilar materials and those listed above.
  - 4. Other joints as indicated.

##### 1.3 REFERENCES

- A. ASTM C834 - Latex Sealing Compounds.
- B. ASTM C919 - Practices for Use of Sealants in Acoustical Applications.
- C. ASTM C920 - Elastomeric Joint Sealants.
- D. ASTM C1193 - Standard Guide for Use of Joint Sealants.
- E. ASTM D1056 - Flexible Cellular Materials - Sponge or Expanded Rubber.
- F. FS TT-S-001657 - Sealing Compound, Single Component, Butyl Rubber Based, Solvent Release Type.
- G. SWRI - (Sealant, Waterproofing and Restoration Institute) - Sealant and Caulking Guide Specification.

##### 1.4 SUBMITTALS

- A. Submit product data under provisions of Section 01 33 00.
- B. Submit product data indicating sealant chemical characteristics, performance criteria, limitations, and color availability.
- C. Submit samples under provisions of Section 01 33 00.
- D. Submit two samples 4 inches long in size illustrating colors selected.

##### 1.5 QUALITY ASSURANCE

- A. Manufacturer: Company specializing in manufacturing the products specified in this Section with minimum five years documented experience.
- B. Applicator: Company specializing in applying the Work of this Section with minimum three years documented experience, approved by sealant manufacturer.
- C. Conform to Sealant, Waterproofing, and Restoration Institute (SWRI) requirements for materials and installation.

- D. Perform Work in accordance with ASTM C1193.
- E. Perform acoustical sealant application work to provide maximum STC values in accordance with ASTM C919.

#### 1.6 ENVIRONMENTAL REQUIREMENTS

- A. Do not install solvent curing sealants in enclosed building spaces.
- B. Do not install sealant when temperature is less than 40 degrees F.
- C. Maintain temperature and humidity recommended by the sealant manufacturer during and after installation.

#### 1.7 OPERATION AND MAINTENANCE DATA

- A. Submit maintenance data under the provisions of Section 01 77 00.
- B. Submit recommended inspection intervals for sealant joints.
- C. Submit instructions for repairing and replacing failed sealant joints.

#### 1.8 WARRANTY

- A. Provide 5 year warranty under provisions of Section 01 77 00.
- B. Include coverage for installed sealants and accessories which fail to achieve air and water seal and exhibit loss of adhesion or cohesion or do not cure.

### 2. PART 2 PRODUCTS

#### 2.1 MATERIALS

- 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 sealant manufacturer, based on testing and field experience.

#### 2.2 MANUFACTURERS

- A. Manufacturers and their products are listed for each type of sealant. Acceptable manufacturers include the following:
  - 1. Dow Consumer Solutions, [www.consumer.dow.com](http://www.consumer.dow.com).
  - 2. General Electric Co., [www.gesealants.com](http://www.gesealants.com).
  - 3. Pecora Corp., [www.pecora.com](http://www.pecora.com).
  - 4. Sika Corp., [www.sikausa.com](http://www.sikausa.com).
  - 5. Sonneborn/ChemRex, [www.chemrex.com](http://www.chemrex.com).
  - 6. Tremco, Inc., [www.tremcosealants.com](http://www.tremcosealants.com).
  - 7. United States Gypsum Co., [www.usg.com](http://www.usg.com).
  - 8. W.R. Meadows, Inc., [www.wrmeadows.com](http://www.wrmeadows.com).
- B. Substitutions: Under provisions of Section 01 25 13.

## 2.3 SEALANTS

- A. Type A - Acrylic Latex: One-part, non-sag, mildew resistant acrylic emulsion compound complying with ASTM C834, Type S, Grade NS, formulated to be paintable.
  - 1. Tremco, Inc., Acrylic Latex Caulk.
  - 2. Pecora Corporation, AC-20.
  - 3. Sonneborn, Chemrex, Sonolac.
- B. Type B - Butyl Sealant: One-part, non-sag solvent-release-curing sealant complying with FS TT-S-001657 for Type 1 and formulated with a minimum of 75 percent solids.
  - 1. Tremco, Inc., Tremco Butyl Sealant.
  - 2. Pecora Corporation, BC-158.
  - 3. Sonneborn, Chemrex, Multi-Purpose Sealant.
- C. Type E - Neutral-Curing Silicone Sealant: One part medium modulus neutral-curing silicone sealant complying with ASTM C920, Type S, Grade NS, Class 25.
  - 1. Dow Consumer Solutions, Dowsil 795.
  - 2. General Electric Co., Ultraglaze 4000.
  - 3. Tremco, Inc., Spectrum 3.
  - 4. Pecora Corp., 895.
- D. Type F - One-Part Mildew-Resistant Silicone Sealant: Complying with ASTM C920, Type S, Grade NS, Class 25.
  - 1. Dow Consumer Solutions, Dowsil 786.
  - 2. General Electric Co., Sanitary 1700.
  - 3. Tremco, Inc., Trensil 200.
  - 4. Pecora Corp., 863 or 898 White.
- E. Type G - Multi-Part Pourable Sealant: Complying with ASTM C920, Type M, Grade P, Class 25. Shore A hardness +40.
  - 1. Tremco, Inc., THC900/901.
  - 2. Pecora Corp., Dynatred or Urexpan NR-200.
  - 3. Sika Corporation, Sikaflex 2c NS TG.
  - 4. W.R. Meadows, Pourthane NS/SL.
- F. Type H - Acoustical Sealant: Nondrying, nonhardening permanently flexible conforming to ASTM C834.
  - 1. Pecora Corp., AIS-919 Acoustical Sealant.
  - 2. Tremco, Inc., Tremco Acoustical Sealant.
  - 3. United States Gypsum Co., Sheetrock Acoustical Sealant.

## 2.4 ACCESSORIES

- A. Primer: Non-staining type, recommended by sealant manufacturer to suit application.
- B. Joint Cleaner: Non-corrosive and non-staining type, recommended by sealant manufacturer; compatible with joint forming materials.
- C. Joint Backing: ASTM D1056; round, closed cell polyethylene foam rod; oversized 30 to 50 percent larger than joint width.
- D. Bond Breaker: Pressure sensitive tape recommended by sealant manufacturer to suit application.

## 3. PART 3 EXECUTION

### 3.1 EXAMINATION

- A. Verify that joint openings are ready to receive Work and field measurements are as shown on Drawings and recommended by the manufacturer.
- B. Beginning of installation means installer accepts existing substrate.

### 3.2 PREPARATION

- A. Clean and prime joints in accordance with manufacturer's instructions. Prime if recommended by manufacturer.
- B. Remove loose materials and foreign matter which might impair adhesion of sealant.
- C. Verify that joint backing and release tapes are compatible with sealant.
- D. Perform preparation in accordance with ASTM C1193.
- E. Protect elements surrounding the Work of this Section from damage or disfiguration.

### 3.3 INSTALLATION

- A. Install sealant in accordance with manufacturer's instructions.
- B. Measure joint dimensions and size materials to achieve required width/depth ratios.
- C. Install joint backing to achieve a neck dimension no greater than 1/3 the joint width.
- D. Install bond breaker where joint backing is not used.
- E. Apply sealant within recommended application temperature ranges. Consult manufacturer when sealant cannot be applied within these temperature ranges.
- F. Install sealant free of air pockets, foreign embedded matter, ridges, and sags.
- G. Tool joints concave unless otherwise detailed.

### 3.4 CLEANING AND REPAIRING

- A. Clean work under provisions of Section 01 77 00.
- B. Clean adjacent soiled surfaces.
- C. Repair or replace defaced or disfigured finishes caused by Work of this Section.



3.5 PROTECTION OF FINISHED WORK

- A. Protect sealants until cured.
- B. Sprinkler fine silica sand on sealant of exterior concrete paving joints to reduce tracking of sealant.

3.6 SCHEDULE

<u>Type</u>	<u>Location</u>	<u>Color</u>
A. Type D - Non-Sag Polyurethane Sealant	Painted metal flashing.	To match adjacent surface.
B. Type G - Multi-part Pourable Urethane	Exterior and interior joints in horizontal surfaces of concrete.	Limestone

END OF SECTION

## SECTION 09 90 00

### PAINTING

#### 1. PART 1 GENERAL

##### 1.1 SECTION INCLUDES

- A. Surface preparation.
- B. Products and application.
- C. Surface finish schedule.

##### 1.2 SUMMARY OF PAINTED SUBSTRATES

- A. Section includes the application of paint systems on the following exterior substrates:
  - 1. Steel pipe downspouts.
  - 2. Exposed electrical conduit.
- B. Substrate listings are for principal surfaces only. Refer to drawings, details and individual specification sections for items, surfaces, and substrates not specifically listed.

##### 1.3 REFERENCES

- A. ASTM D16 - Definitions of Terms Relating to Paint, Varnish, Lacquer, and Related Products.
- B. SSPC - The Society for Protective Coatings.

##### 1.4 SYSTEM DESCRIPTION

- A. Preparation of all surfaces to receive final finish.
- B. Painting and finishing work of this section using coating systems of materials including primers, sealers, fillers, and other applied materials whether used as prime, intermediate, or finish coats.
- C. Surface preparation, priming, and finish coats specified in this Section are in addition to shop-priming and surface treatment specified under other Sections.
- D. Painting and finishing all exterior and interior surfaces of materials including structural, mechanical, and electrical work on site, in building spaces, and above or on the roof.
- E. Paint exposed surfaces except where a surface or material is specifically indicated not to be painted or is to remain natural. Where an item or surface is not specifically mentioned, paint the same as similar adjacent materials or surfaces.

##### 1.5 DEFINITIONS

- A. Conform to ASTM D16 for interpretation of terms used in this Section.

##### 1.6 QUALITY ASSURANCE

- A. Product Manufacturer: Company specializing in manufacturing quality paint and finish products with five years experience.
- B. Applicator: Company specializing in commercial painting and finishing with five years documented experience.

- C. Coats: The number of coats specified is the minimum number acceptable. If full coverage is not obtained with the specified number of coats, apply such additional coats as are necessary to produce the required finish.
- D. Employ coats and undercoats for all types of finishes in strict accordance with the recommendations of the paint manufacturer.
- E. Provide primers and undercoat paint produced by the same manufacturer as the finish coat.
- F. The minimum dry film thickness of each coat of paint shall comply with the manufacturer's recommendations for each type of paint used.

#### 1.7 REGULATORY REQUIREMENTS

- A. Comply with applicable codes and regulations of governmental agencies having jurisdiction including those having jurisdiction over airborne emissions and industrial waste disposal. Where those requirements conflict with this specification, comply with the more stringent provisions.
- B. Comply with the current applicable regulations of the California Air Resources Board (CARB) and the Environmental Protection Agency (EPA).
- C. Comply with South Coast Air Quality Management District (SCAQMD) Rule 1113. A copy of this regulation can be obtained from <http://www.aqmd.gov/rules/reg/reg11/r1113.pdf>.
- D. In the South Coast Air Quality Management District (SCAQMD), where lower VOC contents are specified for a number of categories, certain products may be covered under the manufacturer's SCAQMD - approved Averaging Program. As a result, certain products may be fully compliant with SCAQMD Rule 1113, despite having VOC contents higher than specified limits.

#### 1.8 SUBMITTALS

- A. Submit product data under provisions of Section 01 33 00.
- B. Product data for each coating type shall include as a minimum the following items. Listing shall be by manufacturer's catalog number:
  - 1. Solvent type.
  - 2. Resin type and percentage.
  - 3. Prime pigments by percent of weight.
  - 4. Reinforcing pigment by percent of weight
  - 5. Solids and volume by weight.
  - 6. VOC and RAVOC limits.
  - 7. Coverage rates and film thickness both wet and dry.
  - 8. Conformance to environmental standards listed.
  - 9. Surface preparation recommendations.
  - 10. Application, storage, clean up and disposal recommendations.
  - 11. Special instructions from the manufacturer for proper preparation and application.
- C. Provide manufacturer's technical information and instructions for application of each material proposed for use by catalog number.
- D. List each material by catalog number and cross-reference specific coating with specified finish system.

- E. Technical data sheets and all container labels must match and shall contain the same product identification numbers. The term "Series " is not acceptable.
- F. Provide manufacturer's written and signed certificate that products proposed meet or exceed specified materials.
- G. Submit samples under provisions of Section 01 33 00.
- H. Submit two samples 8-1/2 x 11 inch in size of each paint color and texture applied to cardboard. Resubmit samples until acceptable color, sheen and texture is obtained.
- I. On same species and quality of wood to be installed, submit two 4 x 8 inch samples showing system to be used for varnishes and stains.

#### 1.9 DELIVERY, STORAGE, AND HANDLING

- A. Deliver products to site and store and protect under provisions of Section 01 61 00.
- B. Deliver products to site in sealed and labeled containers; inspect to verify acceptance.
- C. Container labeling to include manufacturer's name, type of paint, brand name, brand code, coverage, surface preparation, drying time, cleanup, color designation, and instructions for mixing and reducing. Paint containers not displaying product identification will not be acceptable.
- D. Store paint materials at minimum ambient temperature of 50 degrees F and a maximum of 90 degrees F, in well ventilated area, unless required otherwise by manufacturer's instructions.
- E. Take precautionary measures to prevent fire hazards and spontaneous combustion.

#### 1.10 ENVIRONMENTAL REQUIREMENTS

- A. Provide continuous ventilation and heating facilities to maintain interior surface and ambient temperatures above 50 degrees F with a maximum humidity level of 50 percent for 24 hours before, during, and 48 hours after application of finishes, unless required otherwise by manufacturer's instructions.
- B. Do not apply exterior coatings during rain or snow, or when relative humidity is above 50 percent, unless required otherwise by manufacturer's instructions.
- C. Minimum Application Temperatures for Latex Paints: 50 degrees F for interiors; 50 degrees F for exterior; unless required otherwise by manufacturer's instructions.
- D. Minimum Application Temperature for Varnish and Urethane Finishes: 65 degrees F for interior or exterior, unless required otherwise by manufacturer's instructions.
- E. Provide lighting level of 80 foot candles measured mid-height at substrate surface.

#### 1.11 EXTRA MATERIAL

- A. Provide a one gallon unopened container of each color to Owner.
- B. Label each container with color, texture, and room locations in addition to the manufacturer's label.

### 2. PART 2 PRODUCTS

#### 2.1 ACCEPTABLE MANUFACTURERS - PAINT

- A. Unless specifically identified otherwise, product designations included in this section are those that are manufactured and distributed by the Dunn-Edwards Corporation, [www.dunnedwards.com](http://www.dunnedwards.com) and shall serve as the basis of design standard for kind, quality, performance and function.

B. Subject to full compliance with specified requirements, other manufacturers offering equivalent products are:

1. Behr Process Corp., [www.behrpaint.com](http://www.behrpaint.com).
2. Benjamin Moore Paints, [www.benjaminmoore.com](http://www.benjaminmoore.com).
3. Glidden Professional, [www.gliddenprofessional.com](http://www.gliddenprofessional.com).
4. Kelly-Moore Paint Company, [www.kellymoore.com](http://www.kellymoore.com).
5. Pittsburgh Paints, [www.ppg.com](http://www.ppg.com).
6. Sherwin Williams, [www.sherwin-williams.com](http://www.sherwin-williams.com).
7. Tnemec Company, Inc., [www.tnemec.com](http://www.tnemec.com).
8. Vista Paint Corporation, [www.vistapaint.com](http://www.vistapaint.com).

C. Substitutions: Under provisions of Section 01 25 13.

## 2.2 MATERIALS

- A. Ready mixed, except field catalyzed coatings. Process pigments to a soft paste consistency, capable of being readily and uniformly dispersed to a homogeneous coating.
- B. Good flow and brushing properties; capable of drying or curing free of streaks or sags.
- C. "Deep Tone" colors to be composed of 100 percent acrylic pigments with a colored base.
- D. Accessory Materials: Linseed oil, shellac, turpentine, paint thinners and other materials not specifically indicated but required to achieve the finishes specified, of commercial quality.
- E. Chemical Components of Interior Paints and Coatings: Shall not exceed the limitations of Green Seal's Standard GS-11 and SCAQMD Rule 1113 averaging method for VOC content and the following restrictions:
  1. Flat Paints and Coatings: VOC content of not more than 50 g/L.
  2. Non-Flat Paints and Coatings: VOC content of not more than 50 g/L.
  3. Anticorrosive Coatings: VOC content of not more than 100 g/L.
  4. Varnishes and Sanding Sealers: VOC content of not more than 275 g/L.
  5. Stains: VOC content of not more than 250 g/L.
  6. Aromatic Compounds: Paints and coatings shall not contain more than 1.0 percent by weight of total aromatic compounds (hydrocarbon compounds containing one or more benzene rings).
  7. Silica Compounds: Paints and coatings, to include colorants, shall not contain any silica.
  8. Restricted Components: Paints and coatings shall not contain any of the following:
    - (a) Acrolein.
    - (b) Acrylonitrile.
    - (c) Antimony.
    - (d) Benzene.
    - (e) Butyl benzyl phthalate.

- (f) Cadmium.
- (g) Di (2-ethylhexyl) phthalate.
- (h) Di-n-butyl phthalate.
- (i) Di-n-octyl phthalate.
- (j) 1,2-dichlorobenzene.
- (k) Diethyl phthalate.
- (l) Dimethyl phthalate.
- (m) Ethylbenzene.
- (n) Ethylene Glycol.
- (o) Formaldehyde.
- (p) Hexavalent chromium.
- (q) Isophorone.
- (r) Lead.
- (s) Mercury.
- (t) Methyl ethyl ketone.
- (u) Methyl isobutyl ketone.
- (v) Methylene chloride.
- (w) Naphthalene.
- (x) Toluene (methylbenzene).
- (y) 1,1,1-trichloroethane.
- (z) Vinyl chloride.

### 2.3 FINISHES

- A. Refer to schedule at end of Section for surface finish schedule.

## 3. PART 3 EXECUTION

### 3.1 INSPECTION

- A. Verify that surfaces are ready to receive work as instructed by the product manufacturer.
- B. Examine surfaces to be finished prior to commencement of work. Report any condition that may potentially affect proper application.
- C. Measure moisture content of surfaces using an electronic moisture meter. Do not apply finishes unless moisture content of surfaces are below the following maximums:
  - 1. Plaster and Gypsum Wallboard : 12 percent.
  - 2. Masonry, Concrete, and Concrete Unit Masonry : 12 percent.

- 3. Interior Located Wood : 15 percent.
- 4. Exterior Located Wood : 15 percent.

D. Beginning of installation means acceptance of existing surfaces.

### 3.2 SURFACE PREPARATION

- A. Correct minor defects and clean surfaces which affect work of this Section.
- B. Shellac and seal marks which may bleed through surface finishes.
- C. Galvanized Surfaces: Remove surface contamination and oils and wash with solvent. Pretreat with phosphoric acid etch or vinyl wash. Apply coat of etching primer the same day as pretreatment is applied.

### 3.3 PROTECTION OF ADJACENT WORK

- A. Protect elements surrounding the work of this Section from damage or disfiguration.
- B. Repair damage to other surfaces caused by work of this Section.
- C. Furnish drop cloths, shields, and protective methods to prevent spray or droppings from disfiguring other surfaces.
- D. Remove empty paint containers from site.

### 3.4 WORK NOT TO BE PAINTED

- A. Painting is not required on surfaces in concealed and inaccessible areas such as furred spaces, foundation spaces, utility tunnels, pipe spaces and duct shafts.
- B. Do not paint metal surfaces such as stainless steel, chromium plate, brass, bronze, and similar finished metal surfaces.
- C. Do not paint anodized aluminum or other surfaces which are specified to be factory pre-finished.
- D. Do not paint sandblasted or architecturally finished concrete surfaces.
- E. Do not paint over Underwriters Laboratories, Factory Mutual or other code-required labels or identifications.

### 3.5 APPLICATION

- A. Apply products in accordance with manufacturer's instructions.
- B. Do not apply finishes to surfaces that are not dry.
- C. Apply prime coat to surfaces which are to be painted or finished.
- D. Apply each coat to uniform finish.
- E. Apply each coat of paint slightly darker than preceding coat unless otherwise approved.
- F. Sand lightly between coats to achieve required finish.
- G. Allow applied coat to dry before next coat is applied.
- H. The number of coats specified is the minimum that shall be applied. Apply additional coats when undercoats, stains or other conditions show through final paint coat, until paint film is of uniform finish, color and appearance.

- I. Where clear finishes are required, tint fillers to match wood. Work fillers into the grain before set. Wipe excess from surface.
  - J. Prime back surfaces of interior and exterior woodwork with primer paint.
  - K. Prime back surfaces of interior woodwork scheduled to receive stain or varnish finish with gloss varnish reduced 25 percent with mineral spirits.
  - L. Paint mill finished door seals to match door or frame.
  - M. Paint primed steel glazing stops in doors to match door or frame.
  - N. Cloudiness, spotting, lap marks, brush marks, runs, sags, spikes and other surface imperfections will not be acceptable.
  - O. Where spray application is used, apply each coat of the required thickness. Do not double back to build up film thickness of two coats in one pass.
  - P. Where roller application is used, roll and redistribute paint to an even and fine texture. Leave no evidence of roller laps, irregularity of texture, skid marks, or other surface imperfections.
- 3.6 FINISHING MECHANICAL AND ELECTRICAL EQUIPMENT
- A. Paint shop primed equipment. Do not paint shop prefinished items.
  - B. Prime and paint insulated and exposed pipes, conduit, boxes, insulated and exposed ducts, hangers, brackets, collars and supports, except where items are prefinished.
  - C. Paint exposed conduit and electrical equipment occurring in finished areas.
  - D. Do not paint moving parts of operating units; mechanical or electrical parts such as valve operators; linkages; sensing devices; and motor shafts.
  - E. Do not paint over labels or equipment identification markings.
  - F. Do not paint switch plates, light fixtures, and fixture lenses.
- 3.7 CLEANING
- A. As Work proceeds, promptly remove paint where spilled, splashed, or spattered.
  - B. During progress of Work maintain premises free of unnecessary accumulation of tools, equipment, surplus materials, and debris.
  - C. Collect cotton waste, cloths, and material which may constitute a fire hazard, place in closed metal containers and remove daily from site.
- 3.8 PROTECTION OF COMPLETED WORK
- A. Protect finished installation under provisions of Section 01 61 00.
  - B. Erect barriers and post warning signs. Maintain in place until coatings are fully dry.
  - C. Confirm that no dust generating activities will occur following application of coatings.
- 3.9 PATCHING
- A. After completion of painting in any one room or area, repair surfaces damaged by other trades.
  - B. Touch-up or re-finish as required to produce intended appearance.



3.10 FIELD QUALITY CONTROL

- A. Field inspection and testing will be performed under provisions of Section 01 45 29.
- B. The Owner reserves the right to invoke the following test procedure at any time and as often as the Owner deems necessary.
- C. The Owner will engage the services of an independent testing agency to sample paint material being used.
- D. Samples of material delivered to the Project will be taken, identified, sealed, and certified in the presence of the Contractor.
- E. The testing agency will perform appropriate quantitative materials analysis and other characteristic testing of materials as required by the Owner.
- F. If test results show materials being used and their installation do not comply with specified requirements or manufacturer's recommendations, the Contractor may be directed to stop painting, remove noncomplying paint, pay for testing and repaint surfaces to acceptable condition.

3.11 COLOR SCHEDULE

- A. Paint and finish colors shall be selected by the Architect from manufacturer's entire range of standard color selections and special colors selected to match or compliment the colors of other materials, equipment, or components which comprise the work.
- B. Access doors, registers, exposed piping, electrical conduit and mechanical/electrical panels: Generally the same color as adjacent walls.
- C. Exterior and interior steel doors, frames and trim: Generally a contrasting color to adjacent walls.
- D. Doors generally are all the same color, but of a contrasting color from frame and trim.
- E. Exterior and interior steel fabrications: Generally a contrasting color to adjacent walls.
- F. Exposed interior mechanical/ductwork: Generally a contrasting color to adjacent walls or ceiling.

3.12 SCHEDULE - EXTERIOR SURFACES

- A. Steel - Galvanized (Semi-Gloss Urethane Alkyd Enamel)
  - 1st coat: Supreme Chemical Metal Clean and Etch SCME-01
  - 2nd coat: ULGM00 Ultrashield Galvanized Metal Primer
  - 3rd coat: ASHL50 Aristoshield
  - 4th coat: ASHL50 Aristoshield

END OF SECTION

## SECTION 11 90 00

### MISCELLANEOUS EQUIPMENT

#### 1. PART 1 GENERAL

##### 1.1 SECTION INCLUDES

- A. Infrared electric heater units.
- B. Post mounted oscillating fan.
- C. Clear vinyl roll-up shade screen.

##### 1.2 REFERENCES

- A. 2010 Americans with Disabilities Act (ADA) Standards for Accessible Design.
- B. CBC - California Building Code, (CCR) California Code of Regulations, Title 24, Part 2.

##### 1.3 SUBMITTALS

- A. Submit product data and manufacturer's installation instructions for each item under provisions of Section 01 33 00.

##### 1.4 REGULATORY REQUIREMENTS

- A. Conform to CBC, California Building Code, (CCR), Title 24, Part 2 and the 2010 ADA Standards for Accessible Design for accessibility.

##### 1.5 OPERATION AND MAINTENANCE DATA

- A. Submit operation and maintenance data under provisions of Section 01 77 00.

#### 2. PART 2 PRODUCTS

##### 2.1 PRODUCTS

- A. Infrared Electric Quartz Heater: Infratech Model Number WD-4024, WD Series Dual Element Heater, Color to be selected by architect from manufacturer's standard colors, heaters to be mounted to Building B shade canopy as indicated on plans, and controls to be switchable type. <http://infratech-usa.com/manual/reference-manual/#wd-series-heaters>.
- B. Column Mounted Electric Fan: Bigassfans Model: 20" Aireye fan kit with standard controller and AEOS occupancy sensor, or equal, color to be selected by architect from manufacturer's standard colors, fans to be mounted to posts with manufacturer standard wall bracket kit, and install as detailed on drawings, [https://store.bigassfans.com/en\\_us/aireye-20-wall-standard-control-aeos-1](https://store.bigassfans.com/en_us/aireye-20-wall-standard-control-aeos-1).
- C. Vinyl Roll Up Shade: Insolroll Oasis 2800 Patio shade, or equal, with clear vinyl fabric and track guide system, manual hand crank operation, and prefinished ceiling mount aluminum headbox, and color to be selected by architect from manufacturer's standard colors, [https://insolroll.com/oasis-2800-patio-shades/#tab\\_3](https://insolroll.com/oasis-2800-patio-shades/#tab_3).
- D. Substitutions: Under provisions of Section 01 25 13.

### 3. PART 3 EXECUTION

#### 3.1 INSTALLATION

- A. Install equipment in accordance with manufacturer's printed instructions and as indicated on the drawings.
- B. Furnish all necessary hardware, anchors, inserts, connections, and embedded items necessary for proper installation. Coordinate with work of other sections.

END OF SECTION

## SECTION 13 34 23

### PRE-ENGINEERED FABRIC SHADE STRUCTURES

#### PART 1 – GENERAL

##### 1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General Conditions and Division 1 Specification Sections, apply to this section.

##### 1.2 SUMMARY

- A. A single, State of California-licensed fabric shade structure contractor shall be responsible for the design, wet-stamped engineering drawings, fabrication, supply, and erection of the work specified herein, including foundations. The intent of this specification is to have only one shade contractor be responsible for all of the functions listed above.

##### 1.3 SUBMITTALS

###### 1.3.1 With Bid Submittals:

- A. Provide proof of existing reference sites with structures of similar project scope and scale, and that are engineered to 2019 CBC specifications.
- B. Deferred Approval - Contractor shall provide (5) engineered drawing sets, one PDF document set, and (2) sets of structural calculations for submission to the Architect for review prior to submittal to the City of Pomona Building and Safety Division. Documents shall be prepared and stamped by a licensed California Structural Engineer and must receive City of Pomona Building and Safety approval prior to the start of fabrication. Plan check and permit fees will be paid by the Owner at the time of submission. Contractor shall be solely responsible for obtaining Building Department Approval.
- C. Provide a minimum of 7 fabric samples to demonstrate fabric color range, and a digital (PDF) or paper document showing a minimum of 9 powder coat color choices. Also, provide a letter of authorization from the fabric manufacturer delineating authorized use of the specified fabric.
- D. Provide proof of all quality assurance items, including;
  - 1. A list of at least 3 reference projects in California that have been installed a minimum of 12 years.
  - 2. Proof of General Liability, Professional Liability, and Umbrella insurance, as per Section 1.4B.
  - 3. Proof of current State of California Contractor's License, Class A or Class B.
  - 4. Proof of current City of Los Angeles Approved Fabricator license.
  - 5. Proof of a minimum of \$15,000,000 aggregate bonding capacity.
  - 6. Proof of current IAS certification, as per Section 1.4D.

7. Proof of an Annual Maintenance Inspection Program.
8. Proof of a Corporate Safety and/or Injury & Illness Prevention Program.
9. Proof of current status as an ISNetworld Member Contractor.

#### 1.4 QUALITY ASSURANCE

Fabrication and erection are limited to firms with proven experience in the design, fabrication, and erection of fabric shade structures, and such firms shall meet the following minimum requirements. No substitutions shall be allowed for the following:

- A. A single shade structure contractor shall design, engineer, manufacture, and erect the fabric shade structures, including the foundations, and shall provide a dedicated Project Manager throughout the entire Scope of Work related to the shade structure(s).
- B. All bidders shall have at least 15 years' experience in the design, engineering, manufacture, and erection of fabric shade structures, engineered to California Building Code requirements with similar scope, and a successful construction record of in-service performance.
- C. All bidders shall provide proof with bid submittal of a minimum of \$1,000,000 General/Public Liability insurance, \$3,000,000 Professional Liability (PL) insurance, and additional \$5,000,000 Umbrella/Excess Liability insurance.
- D. All bidders shall be a currently licensed contractor in the State of California, and shall provide proof of a minimum aggregate bonding capacity of \$15,000,000 with bid.
- E. Manufacturer shall have a City of Los Angeles Approved Fabricator license and be accredited by the IAS (International Accreditation Service) for Structural Steel Fabrication under CBC 2016, Section 1704.2.5.2.
- F. The fabric shade structure contractor shall have a Corporate Quality Control program/manual, which describes their complete quality assurance program.
- G. All bidders must be a current Member Contractor with ISNetworld, which confirms the bidder's strict adherence to Safety, Insurance, Quality, and Regulatory standards.

#### 1.5 PROJECT CONDITIONS

- A. Field Measurements: Verify layout information for fabric shade structure(s) shown on the drawings in relation to the property survey and existing structures, and verify locations by field measurements prior to erection of the fabric shade structure(s).

#### 1.6 WARRANTY

- A. The successful bidder shall provide a 12-month warranty on all labor and materials.
- B. A supplemental warranty from the manufacturer shall be provided for a period of 10 years (pro-rated) on fabric and 10 years on the structural integrity of the steel, from date of substantial completion.
- C. The warranty shall not deprive the Owner of other rights the Owner may have under the provisions of the Contract Documents, and will be in addition to and run concurrent with other warranties made by the Contractor under requirements of the Contract Documents.

## PART 2 – PRODUCTS

### 2.1 GENERAL

- A. The structures shall be sized as shown on the construction document set.
1. Building B canopy shall be custom designed to include perimeter beams for equipment, lighting, and gutter mounting. Size as indicated on drawings.
  2. Building B awning shall be custom designed to mount to building B.
  3. Alternate 1 - Day use Shelter shall be 100' x 44'. Provisions for lighting, equipment, and power shall be provided as indicated on the plans.
  4. Alternate 2 - Kennel Shelter shall be 40'x40'. Provisions for lighting shall be provided as indicated on plans.
  5. Alternate 3 – Courtyard Canopy shall be 22'x14' cantilever type canopy. Provisions for lighting shall be provided as indicated on plans.
- H. The structures shall be manufactured by Shade Structures, Inc., d/b/a USA SHADE & Fabric Structures, or approved equal with valid DSA approval at time of bid that includes the engineering drawings, fabric roof, steel cables, all fasteners, and erection of structure(s), including foundations.
- I. Contact: USA SHADE & Fabric Structures  
1085 N. Main Street, Suite C  
Orange, CA 92867  
Phone: 949.403 0030 Fax: 714.538.2440  
Attn: Andy Stack  
[astack@usa-shade.com](mailto:astack@usa-shade.com)
- J. To qualify as an approved equal, please submit product documentation, fabric samples, and all quality assurance criteria, as per Section 1.4, at least 10 days prior to bid in order to be considered. No substitutions will be allowed after the deadline. Any approval of alternate manufacturers shall be by addendum prior to the bid date and shall not be allowed without written notification.
- K. Approved equals at time of Bid:
- a. Contact: J. Miller Canvas, LLC  
2329 S. Birch Street  
Santa Ana, CA 92707  
Phone: 714-641-0052 x0052  
Attn: Marlon Theilacker  
[marlon@jmillercanvas.com](mailto:marlon@jmillercanvas.com)
  - b. Contact: Park Planet  
Phone: 616-405-4041  
Attn: Nate Parker  
[nate@parkplanet.com](mailto:nate@parkplanet.com)
- L. The fabric shade structure(s) shall conform to the current adopted version of the California Building Code 2019.

M. All fabric shade structures are designed and engineered to meet the minimum of 115mph Wind Load, Risk Category II, Exposure C, and Seismic (earthquake) Load based on Seismic Design Category D, Seismic Risk Category II, and a Live Load of 5psf. All fabric shade structures shall be engineered with a zero wind pass-through factor on the fabric. When ASD Steel Design Method is used based on CBC 2019 Section 1605A.3.1, the load combinations Dead Load + 0.75 Live load + 0.75 Wind Load, and 0.6 Dead Load + Wind Load must be analyzed. NO EXCEPTIONS.

N. Steel:

1. All steel members of the fabric shade structure shall be designed in strict accordance with the requirements of the "American Institute of Steel Construction" (AISC) Specifications and the "American Iron and Steel Institute" (AISI) Specifications for Cold-Formed Members and manufactured in a IAS- (International Accreditation Service) accredited facility for Structural Steel Fabrication under CBC 2019 Section 1704.2.5.2.
2. All connections shall have a maximum internal sleeving tolerance of .0625" using high-tensile strength steel sections with a minimum sleeve length of 6".
3. All non-hollow structural steel members shall comply to ASTM A-36. All hollow structural steel members shall be cold-formed, high-strength steel and comply with ASTM A-500-10, Grade B. All steel plates shall comply with ASTM A-572, Grade 50. All galvanized steel tubing shall be triple-coated for rust protection using an in-line electroplating coat process. All galvanized steel tubing shall be internally coated with zinc and organic coatings to prevent corrosion.

O. Bolts:

1. All structural field connections of the shade structure shall be designed and made with high-strength bolted connections using ASTM A-325, Grade B.
- 2.
3. Where applicable, all stainless steel bolts shall comply with ASTM F-593, Alloy Group 1 or 2. All bolt fittings shall include rubber washers for water-tight seal at the joints. All nuts shall comply with ASTM F-594, Alloy Group 1 or 2.

P. Welding:

1. All shop-welded connections of the fabric shade structure shall be designed and performed in strict accordance with the requirements of the "American Welding Society" (AWS) Specifications. Structural welds shall be made in compliance with the requirements of the "pre-qualified" welded joints, where applicable and by certified welders. No onsite or field welding shall be permitted.
2. All full penetration welds shall be continuously inspected by an independent inspection agency and shall be tested to the requirement of the 2016 CBC.

Q. Powder Coating:

1. Galvanized steel tubing preparation prior to powder coating shall be executed in accordance with solvent cleaning SSPC-SP1. Solvents such as water, mineral spirits, xylol, and toluol, which are to be used to remove foreign matter from the surface. A mechanical method prior to solvent cleaning, and prior to surface preparation, shall be executed according to Power Tool Cleaning SSPC-SP3, utilizing wire brushes, abrasive wheels, needle gun, etc.
2. Carbon structural steel tubing preparation prior to powder coating shall be executed in accordance with commercial blast cleaning SSPC-SP6 or NACE #3. A commercial blast cleaned surface, when viewed without magnification, shall be free of all visible oil, grease, dirt, mill scale, rust, coating, oxides, corrosion, and other foreign material.
3. Powder coating shall be sufficiently applied (minimum 3 mils thickness) and cured at the recommended temperature to provide proper adhesion and stability to meet salt spray and adhesion tests, as defined by the American Society of Testing Materials.
4. Raw powder used in the powder coat process shall have the following characteristics:
  - a. Specific gravity: 1.68 +/- 0.05
  - b. Theoretical coverage: 114 +/- 4ft<sup>2</sup>/mil
  - c. Mass loss during cure: <1%
  - d. Maximum storage temperature: 80°F
  - e. Interpon<sup>®</sup> 800 is a high-durability TGIC powder coating designed for exterior exposure. Tested against the most severe specifications, Interpon 800 gives significantly improved gloss retention and resistance to color change.
5. When the fabric shade structure(s) will be located within 15 miles of the ocean or standing body of water, rust protection undercoat primer will be required on all structures. Sherwin-Williams<sup>®</sup> POWDURA<sup>®</sup> epoxy powder coating Z.R Primer shall be applied in accordance with the manufacturer's specifications. Primer should be fused only and then top coated with the selected powder coat to ensure proper inter-coat adhesion.
  - a. The primer's attributes shall be:
    - a. Specific gravity (g/ml): 2.37
    - b. Coverage at 1.0 mil (ft<sup>2</sup>/lb): 81.6
    - c. Adhesion: ASTM D-3359 5B
    - d. Flexibility: ASTM D-552 Pass 1/8"
    - e. Pencil hardness: ASTM D-3363 H-2H
    - f. Impact resistance (in.lb): ASTM D-2794 Dir & Rev, 120 in-lbs
    - g. Salt spray resistance: ASTM B-117 2000 hours
    - h. Humidity resistance: ASTM D-4585 2000 hours
    - i. 60° Gloss: ASTM D-523 50 ~ 70
    - j. Cure schedule (metal temp): 10min @ 200°C (390°F)  
25min @ 135°C (275°F)
    - k. Film thickness tange (mils): 2.0 ~ 3.0

K. Tension Cable: Steel wire rope cable is determined based on calculated engineering loads.

1. 0.25" (nominal) galvanized 7x19 strand core wire rope shall be used for tension loads up to 4,500 lbs.



2. 0.375" (nominal) galvanized 7x19 strand core wire rope shall be used for tension loads up to 9,000 lbs.
3. 0.5" (nominal) galvanized 6x19 strand core wire rope shall be used for tension loads up to 13,500 lbs.

L. Fabric Roof Systems:

1. UV Shade Fabric:
  - a. Shadesure® shade fabric is made of a UV-stabilized, high-density polyethylene (HDPE), as manufactured by Multiknit® (Pty) Ltd. HDPE mesh shall be a heat-stentered, three bar Rachel-knitted, lockstitch fabric with one monofilament and two tape yarns to ensure that the material will not unravel if cut. Raw fabric rolls shall be 9.8425 feet wide.
  - b. Fabric Properties:
    - ~ Life Expectancy: minimum 8 years with continuous exposure to the sun
    - ~ Fading: minimum fading after 5 years (3 years for Red)
    - ~ Fabric Mass: 5.31 oz/yd<sup>2</sup> ~ 5.6 oz/yd<sup>2</sup> (180gsm ~ 190gsm)
    - ~ Fabric Width: 9.8425 feet (3m)
    - ~ Roll Length: 164.04 feet (50m)
    - ~ Roll Dimensions: 62.99 inches x 16.5354 inches (160cm x 42cm)
    - ~ Roll Weight +/- 66 lbs (+/- 30kg)
    - ~ Minimum Temp: -13°F (-25°C)
    - ~ Maximum Temp: +176°F (80°C)
  - c. Fabric shall meet the following flame spread and fire propagation tests:
    - 1) ASTM E-84
    - 2) NFPA 701 Test Method 2
    - 3) California's Office of the State Fire Marshal, Registered Flame Resistant Product
2. Stitching & Thread:
  - a. All sewing seams are to be double-stitched.
  - b. The thread shall be GORE® TENARA® mildew-resistant sewing thread, manufactured from 100% expanded PTFE (Teflon™). Thread shall meet or exceed the following:
    - 1) Flexible temperature range
    - 2) Very low shrinkage factor
    - 3) Extremely high strength, durable in outdoor climates
    - 4) Resists flex and abrasion of fabric
    - 5) Unaffected by cleaning agents, acid rain, mildew, salt water, and is unaffected by most industrial pollutants
    - 6) Treated for prolonged exposure to the sun
    - 7) Rot resistant

3. Shade and UV Factors:
  - a. Shade protection and UV screen protection factors shall be as follows:

<u>Color</u>	<u>UV Block %</u>	<u>Shade %</u>
Pacific Blue	85%	80%~86%
Rain Forest Green	85%	79%~86%
Red	86%	80%~83%
Silver	81%	80%~85%
Desert Sand	92%	80%~84%
Terracotta	82%	80%~83%
Yellow	89%	80%~82%

## PART 3 – EXECUTION

### 3.1 INSTALLATION

- A. The installation of fabric shade structures shall be performed by manufacturer or manufacturer-approved and certified contractor, which shall be bonded and holding a current contractor's license with the State of California's Contractors State License Board. All installation personnel must have experience in the erection of tensioned fabric structures.
- B. The installation shall comply with the manufacturer's instructions for assembly, installation, and erection, per City approved drawings.
- C. Concrete:
  1. Unless noted otherwise for footings and piers by the Project Engineer, the concrete specification for footings, piers, slabs, curbs, and walkways shall meet a minimum 3,000psi at 28-day strength.
  2. Concrete work shall be executed in accordance with the latest edition of American Concrete Building Code ACI 318-14.
  3. Concrete specifications shall comply in accordance with the Section 03300 Cast-in-Place Concrete, detailed as per plans, and shall be as follows:
    - a. 28 Days Strength F'c = 3000 psi
    - b. Aggregate: HR
    - c. Slump: 3 ~ 5 inch
    - d. Portland Cement shall conform to C-150
    - e. Aggregate shall conform to ASTM C-33
  4. All reinforcement shall conform to ASTM A-615 grade 60.
  5. Reinforcing steel shall be detailed, fabricated, and placed in accordance with the latest ACI Detailing Manual and Manual of Standard Practice.
  6. Whenever daily ambient temperatures are below 80 degrees Fahrenheit, the contractor may have mix accelerators and hot water added at the batch plant (See Table 1).
  7. The contractor shall not pour any concrete when the daily ambient temperature is to be below 55 degrees Fahrenheit.

**TABLE 1**

<b>Temperature Range</b>	<b>% Accelerator</b>	<b>Type Accelerator</b>
75~80 degrees F	1%	High Early (non calcium)
70~75 degrees F	2%	High Early (non calcium)
Below 70 degrees F	3%	High Early (non calcium)

D. Foundations:

1. All anchor bolts set in new concrete shall comply with ASTM F1554 GR 55.
2. All anchor bolts shall be Hot-Dip Galvanized.
3. Footings and full rebar cages shall be drilled, set, and poured as per manufacturer's drawings and specifications.

END OF SECTION

## SECTION 26 00 00

### GENERAL ELECTRICAL REQUIREMENTS

#### PART 1 - GENERAL

##### 1.1 SCOPE

- A. Work of this section includes everything necessary for or incidental to completing the electrical work, to provide a complete and operable electrical system, except as herein specifically excluded.

##### 1.2 GENERAL REQUIREMENTS

- A. Electrical System Characteristics: 208/120V. 3PH, 4W.
- B. Guarantee: Furnish a written guarantee for a period of one-year from date of acceptance.
- C. Codes and Regulations: Work done under this Section shall comply with the latest edition of the following: California Electrical Code, State of California Title 24, State Building Standards, Occupational Safety and Health Administration (OSHA) requirements, State of California Title 17 and to all local codes having jurisdiction. In the case where the codes have different levels of requirements, the most stringent rule shall apply.
- D. Wherever a discrepancy in quantity or size of conduit, wire, equipment, devices, circuit breakers, etc., (all materials), arises on the Drawing and/or Specifications, the Contractor shall be responsible for providing and installing all material and services required by the strictest condition noted on Drawings and/or in Specifications to insure complete and operable systems as required by the Owner and Engineer.
- E. The General and Supplementary Conditions, as well as Special Conditions apply in addition to items in the Electrical Section. Special attention is directed to the following sections:
  - 1. Drawings and Specifications at the site.
  - 2. Shop drawings and samples.
  - 3. Record drawings.
  - 4. Cutting and Patching.
  - 5. Cleaning up.
  - 6. Guarantee.
  - 7. Tests.
- F. Additional Work: Refer to Mechanical and Plumbing plans and specifications for additional Electrical requirements.
- G. Provide minimum of twenty percent LED driver of each type.
- H. Testing:
  - 1. Scan:
    - a. Infrascan test of the branch circuit panels affected by the addition circuits shall be required.
    - b. Infrascan certified reports shall be submitted on completion to the Owner and Engineer.
    - c. Scans shall be performed by an independent testing laboratory with total connected loads in operation.
  - 2. Megger:
    - a. Branch circuits affected by the scope of work - phase, neutral and ground conductors.
  - 3. All circuits shall be tested for continuity and circuit integrity. Adjustments shall be made for circuits not complying with testing criteria.

4. Grounding System: Shall be tested by an independent testing laboratory to meet resistance specified in Part 3.1, D.3 of these Specifications. It shall be this Contractor's responsibility to make adjustments, as required, to upgrade non-complying systems to proper and safe operation.
  5. All certified testing reports shall be submitted to the Owner at completion of project.
- I. All Core Cutting, Drilling, and Patching:
1. For the installation of work under this Section, the aforementioned shall be performed under this Section of the Specifications and the Concrete section of the Specifications.
  2. No holes will be allowed in any structural members without the written approval of the Structural Engineer.
  3. For penetrations of concrete slabs or concrete footings, the work will be as directed in the Concrete Section of Specifications.
  4. The contractor shall be responsible for patching and repairing surfaces where he is required to penetrate for work under this contract.
  5. Penetrations shall be sealed to meet the rated integrity of the surface required to be patched and repaired. The patched surface shall be painted or finished to match the existing surface.
- J. Verifying Drawings and Job Conditions:
1. This Contractor shall examine all Drawings and Specifications in a manner to be fully cognizant of all work required under this Section.
  2. This Contractor shall visit the site and verify existing conditions. Where existing conditions differ from Drawings, adjustment shall be made and allowances included for all necessary equipment to complete all parts of the Drawings and Specifications.
- K. Shop Drawings:
1. Drawings shall be submitted in six (6) bound sets accompanied by Letter of Transmittal, which shall give a list of the number and dates of the drawings submitted. Drawings shall be complete in every respect and bound in sets.
  2. The Drawings submitted shall be marked with the name of the project, numbered consecutively and bear the approval of the Contractor as evidence that the Drawings have been checked by the Contractor. Any Drawings submitted without this approval will be returned to the Contractor for resubmission.
  3. If the shop drawings show variations from the requirements of the Contract because of standard shop practice or other reasons, the Contractor shall make specific mention of such variations in his letter of transmittal. If the substitution is accepted, the Contractor shall be responsible for proper adjustment which may be caused by the substitution. Samples shall be submitted when requested.
  4. Shop drawings shall be submitted on the following but not limited to:
    - a. Lighting fixtures, lamps and drivers.
    - b. Junction/Pull boxes.
    - c. Wire/Cable.
    - d. Conduit and fittings.
    - e. Panelboards.
    - f. Circuit Breakers.

- L. Drawings of Record: The Contractor shall provide and keep up-to-date, a complete record set of blueprints. These shall be corrected daily and show every change from the original Drawings. This set of prints shall be kept on the job site and shall be used only as a record set. This shall not be construed as authorization for the Contractor to make changes in the layout without definite instruction in each case. Upon completion of the work, a set of reproducible Contract Drawings shall be obtained from the General Contractor and all changes as noted on the record set of prints shall be incorporated thereon with black ink in a neat, legible, understandable and professional manner. Refer to the Supplementary General Conditions for complete requirements.

### 1.3 WORK IN COOPERATION WITH OTHER TRADES

- A. Examine the Drawings and Specifications and determine the work to be performed by the site utilities contractor, electrical, mechanical, plumbing, structure contractor and other trades. Provide the type and amount of electrical materials and equipment necessary to place this work in proper operation, completely wired, tested and ready for use. This shall include all conduit, wire, disconnects, relays, and other devices for the required operation sequence of all electrical, mechanical and other systems or equipment.

### 1.4 TESTING AND ADJUSTMENT

- A. Upon completion of all electrical work, this Contractor shall test all circuits, switches, motors, breakers, motor starter(s) and their auxiliary circuits and any other electrical items to insure perfect operation of all electrical equipment.
- B. Equipment and parts in need of correction and discovered during such testing shall be immediately repaired or replaced with all new equipment and that part of the system shall then be retested. All such replacement or repair shall be done at no additional cost to the Owner.
- B. All circuit shall be tested for continuity and circuit integrity. Adjustments shall be made for circuits not complying with testing criteria.
- C. All certified testing reports shall be submitted to the Engineer at completion of project.

### 1.5 IDENTIFICATION

- A. Identification nameplates shall be Micarta 1/8" thick and of approved size, with bevelled edges and engraved white letters 1/4" high minimum on black background. Nameplates shall be provided for all circuits in the distribution switchboards, and selector switches. Inscriptions on equipment shall be identical to those indicated in panels and/or motor control centers and other similar devices. Each nameplate shall be provided with drillings and suitable mounting screws corresponding to finish of the nameplate. The inscriptions in each nameplate shall be as indicated on the Drawings.

### 1.6 MAINTENANCE, SERVICING, INSTRUCTION MANUALS AND WIRINGDIAGRAMS

- A. Prior to final acceptance of the job, the Electrical Contractor shall furnish to the Owner at least four (4) copies of operating and maintenance and servicing instructions, as well as four (4) complete wiring diagrams for the following item(s) or equipment:
  - 1. LED drivers.
  - 2. Panelboards.
  - 3. Circuit Breakers.
- B. All wiring diagrams shall specifically cover the system supplied. Typical drawings will not be accepted. Two (2) copies shall be presented to the Electrical Engineer and four (4) copies to the Owner.

### 1.7 ELECTRICAL CONTRACTOR'S RESPONSIBILITY

- A. It shall be the Electrical Contractor's responsibility to obtain a complete set of Drawings and Specifications. He shall check the Drawings of the other trades and shall carefully read the entire Specifications and determine his responsibilities.

- B. The contractor shall be responsible for reviewing the plans and specifications to ensure each room, where electrical line or low voltage equipment is to be installed, has sufficient space to accommodate the system cabinets, equipment and terminations while maintaining code mandated clearances about said equipment. The contractor shall identify problem areas prior to bid, include all costs required for corrective measures in his bid and submit alternate equipment and materials suitable for the installation to the Architect/Engineer for acceptance as part of the product submittal process.

#### 1.8 FINAL INSPECTION AND ACCEPTANCE

- A. After all requirements of the Specifications and/or the Drawings have been fully completed, representatives of the Owner will inspect the work. Contractor shall provide competent personnel to demonstrate the operation of any item or system to the full satisfaction of each representative.
- B. Final acceptance of the work will be made by the Owner after receipt of approval and recommendation of acceptance from each representative.

#### 1.9 RECORD DRAWINGS

- A. Contractor shall furnish one set of reproducible record drawings before final payment of retention.

#### 1.10 SUBSTITUTIONS

- A. Substitution to specified equipment shall be submitted and received by the Engineer fifteen (15) days after the bid date for review and approval.
- B. To receive consideration, requests for substitutions must be accompanied by documentary proof of its equality with the specified material. Documentary proof shall be in letter form and identify the specified values/materials alongside proposed equal values/materials. In addition, catalog brochures and samples must be included in the submittal.
- C. In the event that authorization is given for a substitute equal to bid, after award of contract the Contractor shall submit to the Engineer certified quotations from suppliers of both the specified and proposed equal material for price comparison and delivery dates.
- D. In the event of cost reduction, the Owner will be credited with 100 percent of the reduction, arranged by Change Order.
- E. The Contractor warrants that substitutions proposed for specified items will fully perform the functions required.
- F. Substitutions or requests for substitution shall not be accepted and rejected for failure to comply with items A-E above.

### PART 2 - PRODUCTS

#### 2.1 MATERIALS

- A. Materials and Equipment: All electrical materials and equipment shall be new and shall be listed by Underwriter's Laboratories and bear their label, or listed and certified by a nationally recognized testing authority where UL does not have an approval. Custom made equipment must have complete test data submitted by the manufacturer attesting to its safety. In addition, the materials and equipment shall comply with the requirements of the following:
  - 1. American Society of Testing Materials (ASTM).
  - 2. Insulated Cable Engineers Association (ICEA).
  - 3. National Electrical Manufacturer's Association (NEMA).
  - 4. National Fire Protection Association (NFPA).
  - 5. American National Standard Institute (ANSI).

B. Lighting Fixtures:

1. Furnish, install and connect a lighting fixture at each outlet where a lighting fixture type symbol (designated on plans) is shown as being installed. Each fixture shall be complete with all required accessories including sockets, glassware, boxes, spacers, mounting devices, fire rating enclosure, chips and drivers.
2. LED Driver shall be Class 1, 120-277V, 50/60HZ (constant current) with surge protection in accordance with IEEE/ANSI C62.41.2 guidelines with a surge current rating of 10,000 amps. Operating temperature for interior fixtures shall range from 0°C to 35°C (32°F to 95°F). Operating temperature for exterior fixtures shall range from -40°C to 40°C (-40°F to 104°F). All defective drivers shall be replaced at no cost to the Owner.
3. LED chips shall be as manufactured by CREE, Philips-Lumileds, Nichia, Osram or approved equal.
4. Exterior fixtures shall be provided with LED chips of the same manufacturer. Mixing of chip manufacturers will not be allowed. All fixtures within line of sight must be replaced with new fixtures when the fixtures in the line of sight display dissimilar illumination colors.
5. LED chips shall have 4000° Kelvin color temperature. Interior fixtures shall meet IESNA LM-79-08. Exterior fixtures shall meet IESNA LM-80-08.
6. Where indicated on the Lighting Fixture Schedule, light fixtures shall be provided with integral occupancy sensor and/or daylight sensor. Provide two (2) programming/configuration tools for programming the integral control devices.
7. All light fixtures shall be individually supported and properly anchored to the surfaces indicated on the Architectural elevations.
8. Locations of fixtures shall be per the architectural reflected ceiling plan and shall be coordinated at time of rough-in.

C. Conduit:

1. Rigid conduit shall be full weight threaded type aluminum or steel, except where specifically required to be steel. Steel conduit shall be protected by overall zinc coating to inside and outside surfaces, applied by the hot dip, metallizing or sherardizing process.
2. Galvanized Rigid Conduit (GRC), shall be full weight threaded type aluminum or steel, except where specifically required to be steel. Steel conduit shall be protected by overall zinc coating to inside and outside surfaces, applied by the hot dip, metallizing, or sherardizing process.
3. Intermediate Metal Conduit (IMC), shall be hot-dipped galvanized in accordance with UL 1242 and meeting Federal Specification WWC-581 (latest revision).
4. Electrical Metallic Tubing (EMT), shall be zinc-coated steel with baked enamel or plastic finish on inside surfaces.
5. Flexible metal conduit shall be constructed of aluminum or hot-dipped galvanized steel strips wound spirally with interlocking edges to provide greatest flexibility with maximum strength. Interior surfaces shall be smooth and offer minimum drag to pulling in conductors. For indoor use only. Used only as directed by the Engineer.
6. Liquid-tight conduit (Seal-Tite) shall be galvanized steel flexible conduit as above except with moisture and oil-proof jacket, pre-cut lengths and factory installed fittings. For outdoor installations and motor connection.

D. Fittings:

1. Condulet type fittings shall be smooth inside and out, taper threaded with integral insulating bushing and of the shapes, sizes and types required to facilitate installation or removal of wires and cables from the conduit and tubing system. These fitting shall be of metal, smooth inside and out, thoroughly galvanized, and sherardized cadmium plated.



2. Metallic conduit covers shall have the same finish as the fitting and shall be provided for the opening of each fitting where conductor do not pass through the cover.
3. Connector, coupling, locknut, bushings and caps used with rigid conduit shall be steel, threaded and thoroughly galvanized. Bushings shall be insulated.
4. EMT fittings, connectors and couplings, shall be steel, zinc or cadmium plated, raintight, threadless, compression or tap-on multiple point, steel locking ring type with insulated throat.
5. Flexible steel conduit connectors shall be or malleable iron clamp or squeeze type or steel twist-in type with insulated throat. The finish shall be zinc or cadmium plating.
6. Die cast, set screw or indenter type fittings are not acceptable.
7. Conduit unions shall be "Erickson" couplings, or approved equal. The use of running threads will not be permitted.

E. 600 Volt Conductors - Wire and Cable:

1. All conductors shall be stranded copper. Simpull type or equal.
2. Type THHN/THWN thermoplastic, 600 volt, UL approved, dry and wet locations, for conductor sizes up to and including #4 AWG.
3. Wire and cable shall be new, manufactured not more than six (6) months prior to installation, shall have size, type of insulation, voltage rating and manufacturer's name permanently marked on outer covering at regular intervals.
4. Wire and cable shall be factory color coded by integral pigmentation with a separate color for each phase and neutral. Each system shall be color coded and it shall be maintained throughout.
5. Systems Conductor Color Coding:
  - a. Power 208/120V, 3PH, 4W:

(1) Phase A	= Black
(2) Phase B	= Red
(3) Phase C	= Blue
(4) Neutral	= White
  - b. Ground Conductors:
    - (1) Green
6. All color coding for #8 conductor and above shall be as identified above, utilizing phase tape at each termination.
7. No conductors carrying 120 volt or more shall be smaller than #12 AWG.

F. Junction and Pullboxes:

1. For interior dry locations, boxes shall be galvanized one-piece drawn steel, knockout type, with removable, machine screw secured covers.
2. For outside, damp or interior/exterior surface mounted locations, boxes shall be heavy cast aluminum or cast iron with removable, gasketed, non-ferrous machine screw secured covers.
3. All boxes shall be sized for the number and sizes of conductors and conduits entering the box and equipped with plaster rings where required. Each conductor shall be terminated at an insulated, barriered terminal connector and completely identified with an engraved fiber identification marker, Electrovert or Underwriter's Safety Device Company.

G. Outlet Boxes:

1. For fixtures, boxes shall be galvanized, one-piece drawn steel, knockout type equipped with 3/8" fixture studs and plaster rings where required.
2. Unless otherwise noted on plan or specified herein, outlet boxes shall be 4" square x 2 1/8" deep, one-piece drawn steel, knockout type, mounted flush with in wall. Provide with plaster rings and wall plate.
3. For communication/signal system outlets, outlet boxes shall be 4 11/16" square x 2 1/8" deep, one-piece drawn steel, knockout type, mounted flush with in wall. Provided with plaster rings and leave outlet box ready for installation of Owner furnished wall plate.
4. For alerting system devices, outlet/back boxes shall be as recommended by the system manufacturer and provided complete with plaster rings and covers.
5. For locations where standard boxes are not suitable due to number and size of conduit to be terminated, special boxes shall be designed to fit space or meet other requirements and submitted for approval.
6. For surface mounting or exposure to wet or damp locations, outlet boxes shall be heavy cast aluminum or cast iron with threaded hubs; covers shall be watertight with gaskets and non-ferrous screws.

H. Panelboards – Branch Circuit:

1. Branch circuit panelboards shall be of the dead front safety type equipped with thermal-magnetic bolt-on type 40 deg C. circuit breakers. Enclosure shall be minimum 20" wide and 5-3/4" deep unless otherwise noted on plan. Refer to panel schedule for ratings and quantity of circuits to be provided. Panels shall be provided with copper busses. Branch circuit panelboards shall be Eaton, to match existing. Equipment manufactured by third party OEM is not acceptable.
2. Circuit breakers shall be series rated with the main circuit breaker in the main switchboard. Circuit breakers shall be the number of poles and current capacity as indicated on the panel schedule with terminals/lugs UL listed for 75°C. Circuit breakers shall be fully coordinated to ensure a local fault does not trip any upstream circuit breaker.
3. Trims shall have doors equipped with flush type combination lock and catch, two milled type keys supplied with each panel. All locks shall be keyed alike and each door shall have a plastic covered directory frame with a typed identification card of all circuit and panel numbers for branch circuit panelboards and engraved lamacoid nameplates for power distribution panelboards.
4. Provide nameplate for all panelboards, 1/8" thick, Micarta or Lamacoid plate of approved size, with bevelled edges and engraved white letters on black background. Install nameplates on exterior trim of panel, above the panel door. Provide Arc-Fault warning labels on panel fronts.
5. All wiring shall be neatly arranged and laced together.
6. All circuit breakers shall be provided with a device for locking circuit breaker in "OFF" position.
7. Refer to Painting Section of these Specifications for all panel finish. Panel shall be primered for painting.
8. Neutral and Ground bus bars shall be full size, rectangular in cross section constructed of copper and interconnections.
9. Where indicated on plan, panels housing time clocks and contactors for control of lighting shall be provided with an auxiliary section. Panel shall consist of a two-section panelboard with two boxes and one trim/cover, each with their own door/lock.

I. Painting:

1. Junction boxes, pull boxes, etc., and conduit installed exposed and in public view shall be painted with colors selected by the Architect to match the subject exterior surface. Refer to painting section of the specifications for additional requirements.

J. Seismic Design and Anchoring of Electrical Equipment:

1. Seismic anchorage of electrical equipment shall conform to C.C.R. Title 24, 2019 CBC. Anchorage details for roof/floor mounted equipment shall be as shown on plans.

PART 3 - EXECUTION

3.1 PREPARATION AND INSTALLATION

A. Installation of Conduit and Outlet Boxes:

1. All conduit exposed or installed in concrete and masonry, shall be galvanized rigid steel conduit (GRC), or intermediate metal conduit (IMC).
2. Rigid conduit may be installed under floor slabs, under concrete sidewalls an as noted on the Drawings. Rigid conduit installed under slabs shall be 1" trade size minimum and shall be wrapped with 20 mil. polyvinyl chloride plastic tape. No conduit shall be installed/run horizontally in concrete slabs/floors.
3. All conduit except as hereinafter specified, installed in concrete/masonry walls, damp locations, hazardous locations, surface mounted up to 8'-0" above finished floor or subject to mechanical injury shall be heavy wall, threaded, galvanized rigid steel conduit (GRC), or intermediate metal conduit (IMC).
4. Flexible steel conduit shall only be permitted to be used at light fixture outlets and connections to vibrating electrical equipment. All flexible steel conduit runs shall be less than 6'-0". All outdoor installation shall be made using liquid-tight flex with approved fittings. Use of flexible conduit shall be as approved by the Engineer.
3. Intermediate metal conduit (IMC), is approved for use in all locations as approved for GRC or EMT and in accordance with Article 345 of CEC and UL Information card #DYBY.
4. All conduit shall be steel tube (EMT), Galvanized Rigid Steel (GRC), or Intermediate Metal Conduit (IMC).
5. Conduit shall be run so as not to interfere with other piping fixtures or equipment.
6. The ends of all conduit shall be cut square, carefully reamed out to full size and shall be shouldered in fitting.
7. PVC conduit shall not be run above grade.
8. Where conductors enter a raceway in a cabinet, pull box, junction box, or auxiliary gutter, the conductors shall be protected by a plastic bushing type fitting providing a smoothly rounded insulating surface.
9. All conduit shall be supported at intervals not less than 10'-0" and within 12" from any outlet and at each side of bends and elbows. Conduit supports shall be galvanized, heavy stamped, two hole conduit clamp properly secured.
10. One piece set-screw type conduit clamps or perforated iron for supporting conduit will not be permitted.
11. Seismic Conduit Support:
  - a. All conduit shall be supported in such a manner that it is securely attached to the structure of the building. Attachment is to be capable of supporting the tributary weight of conduit and contents in any direction. Maximum spacing of support and braces are to be as follows:

<u>CONDUIT TYPE</u>	<u>MAXIMUM SPACING</u>
EMT, IMC	10'-0"
GRC (3/4" thru 1 1/2")	10'-0"
GRC (2" thru 2 1/2")	16'-0"
GRC (3" and larger)	20'-0"

12. All conduit runs shall be installed parallel or perpendicular to structural members, or intersection of vertical planes and ceilings. Field made bends and offset shall be avoided where possible. Crushed or deformed raceway shall not be installed.
13. Open knockouts in outlet boxes only where required for inserting conduit.
14. All boxes shall be cleaned prior to pulling wires.
15. All conduit shall have a 200 lb test poly-propylene pull line left in place for future use in all runs tagged with a plastic tag at terminating end indicating the location of the opposite end of the conduit.
16. Exposed conduit shall be painted to match the finish of the wall or structure to which it is supported to.
17. Provide complete conduit system for all line voltage systems.
18. Provide ceiling access panels for junction/pull boxes in stalled over inaccessible ceilings.

B. Installation of 600 Volt Conductors:

1. All line voltage wire, including control circuits, shall be installed in conduit.
2. All line voltage circuits and feeder wires shall be continuous from the service point to terminal or farthest outlet. No joints shall be made except in pull, junction or outlet boxes, or in panel or switchboard gutters.
3. Thoroughly clean all conduit and wire-ways and see that all parts are perfectly dry before pulling any wires. No joint shall be made except in pull, junction or outlet boxes, or in panel or switchboard gutters.
4. Install UL approved, fixture wire from all lighting fixture lamp sockets into fixture outlet or junction box.
5. MC cable is not allowed.

C. Joints in 600 Volt Conductors:

1. Joints in 600 volt conductors smaller than No. 4 AWG shall be made with Scotchlok spring type connectors. Wires No 4 AWG and larger shall be joined together with approved type of pressure connector and taped with #33 3M tape, three (3) layers minimum to provide insulation not less than that of conductor. Connections to switch or busbar shall be made with one-piece copper lugs. Splicing of all 600 volt or less in-line connections #2 AWG through 350 MCM shall be made with 3M brand PST connector.
2. Joints/splices shall be done in junction or pull boxes.

D. Grounding:

1. Provide grounding for entire electric installation as shown on plans and as required by applicable codes. Included as requiring grounding are:
  - a. Conduit.
  - b. Neutral or identified conductors of interior wiring system.
  - c. Non-current carrying metal parts of fixed equipment.
2. Grounding and bonding conductors shall be sized per the latest edition of the California Code of Regulations, Title 24, State of California and CEC.
3. Provide and install an equipment grounding conductor in all feeder and branch circuit conduits.
4. Building grounding system resistance to ground shall not exceed 25 ohm.

- E. Prefabricated Equipment: Installation of all prefabricated items and equipment shall conform to the requirements of the manufacturer's specifications and installation instruction pamphlets. Where code requirements affect installation of materials and equipment, the more stringent requirements, code or manufacturer's instructions and/or specifications, shall govern the work.

END OF SECTION

## SECTION 31 10 00

### SITE CLEARING

#### 1. PART 1 GENERAL

##### 1.1 SECTION INCLUDES

- A. Remove surface debris.
- B. Remove indicated paving, curbs.
- C. Clear site of plant life and grass.
- D. Remove trees and shrubs.
- E. Remove root system of trees and shrubs.
- F. Erosion and sedimentation control measures.

##### 1.2 REGULATORY REQUIREMENTS

- A. Conform to applicable code for dust control and disposal of debris.
- B. Coordinate clearing Work with utility companies.
- C. Obtain required permits from authorities.
- D. Do not close or obstruct roadways and sidewalks without permits.

##### 1.3 DEFINITIONS

- A. Remove: Removal of existing construction and legally dispose of items off-site.
- B. Disposal: Removal off-site of demolition waste and subsequently deposit in landfill acceptable to authorities having jurisdiction.
- C. Existing to Remain: Items of construction that are not to be removed and that are not indicated to be removed.

##### 1.4 SUBMITTALS

- A. Preclearing Photographs: Show conditions of existing adjacent construction and site improvements that might be misconstrued as damaged by clearing operations. Submit before work begins.
- B. Record Documents: Submit under provisions of Section 01 77 00. Accurately record locations of capped utilities and other subsurface conditions.

##### 1.5 QUALITY ASSURANCE

- A. Perform best management practice techniques for given site conditions as defined in Section 3 of the Stormwater Best Management Practice Handbook (BMP Handbook), Construction Edition, as published by the California Storm Water Quality Association.
- B. Coordinate work of this section with permit provisions of State Water Resources Control Board Order No. 2010-0014-DWQ and the Storm Water Pollution Prevention Plan.
- C. Comply with City of Pomona Dust Control Ordinance.

## 2. PART 2 PRODUCTS

### 2.1 MATERIALS

- A. Recycled Demolition Waste: Crushed concrete paving as specified in Section 01 74 19.

## 3. PART 3 EXECUTION

### 3.1 EXAMINATION

- A. Correlate existing conditions with requirements indicated.
- B. Inventory and record condition of items to be removed and salvaged.
- C. Execute predemolition photographs.

### 3.2 PREPARATION

- A. Verify that existing plant life and features designated to remain are tagged or identified.

### 3.3 EROSION AND SEDIMENTATION CONTROL

- A. Provide erosion and sedimentation control measures to prevent soil erosion and discharge of soil-bearing water runoff or airborne dust to adjacent properties and walkways, according to requirements of Storm Water Pollution Prevention Plan.
- B. Inspect, repair, and maintain erosion and sedimentation control measures during clearing operations.

### 3.4 PROTECTION

- A. Protect utilities that remain, from damage.
- B. Protect trees, plant growth, and features designated to remain as final landscaping.
- C. Protect bench marks and existing structures from damage or displacement.

### 3.5 CLEARING

- A. Clear areas required for access to site and execution of Work.
- B. Remove trees and shrubs indicated.
- C. Clear undergrowth and deadwood without disturbing subsoil.
- D. Remove debris, rock, and extracted plant life.
- E. Remove paving, curbs, and other items as indicated. Neatly saw cut edges at right angle to surface.

### 3.6 RECYCLING OF DEMOLITION MATERIALS

- A. Recycle demolition waste under the provisions of Section 01 74 19.
- B. Separate recycled demolition materials from other demolished materials.
- C. Stockpile processed materials on-site without intermixing with other materials.
- D. Place, grade, and shape stockpiles to drain surface water. Cover to prevent wind blown dust.
- E. Do not store materials with in drip line of trees.

- F. Transport recyclable materials that are not indicated to be reused off Owner's property to recycling receiver or processor.
- G. Recycled incentives received for building demolition materials shall be equally shared between Contractor and Owner.
- H. Concrete: Break up and transport to concrete-recycling facility.
- I. Concrete Reinforcement: Remove reinforcement from concrete and sort with other metals.

### 3.7 DISPOSAL OF DEMOLISHED MATERIALS

- A. Except for items indicated to remain, remove demolished materials from Project site and legally dispose of them in an EPA – approved landfill.
- B. Do not burn or bury materials on site.

### 3.8 CLEANING

- A. Clean adjacent structures and improvements of dust, dirt and debris caused by clearing.
- B. Return adjacent areas to condition existing before clearing operations began.
- C. Leave site in a clean condition.

END OF SECTION



## SECTION 31 23 16

### EXCAVATION

#### 1. PART 1 GENERAL

##### 1.1 SECTION INCLUDES

- A. Excavation for building foundations.
- B. Excavation for slabs-on-grade, paving, and landscaping.
- C. Excavation for site structures.

##### 1.2 REFERENCES

- A. CBC - California Building Code, (CCR) California Code of Regulations, Title 24, Part 2, Chapter 18 and Appendix J.

##### 1.3 QUALITY ASSURANCE

- A. Comply with Chapters 18 and Appendix J of the CBC - California Building Code, (CCR) California Code of Regulations, Title 24, Part 2.

##### 1.4 FIELD CONDITIONS

- A. Verify that survey benchmark and intended elevations for the Work are as indicated.
- B. Notify Architect of unexpected subsurface conditions and discontinue work in area affected until notified to resume work.

##### 1.5 PROTECTION

- A. Protect trees, shrubs, lawns, and other features remaining as portion of final landscaping.
- B. Protect bench marks, fences, roads, sidewalks paving, and curbs.
- C. Underpin adjacent structures, including utilities and pipe chases, which may be damaged by excavation work.
- D. Protect above or below grade utilities which are to remain.
- E. Barricade open excavations and post warning lights. Operate lights from dusk to dawn.
- F. Protect facilities from damage caused by settlement, lateral movement, undermining, washout, and other hazards created by earthwork operations.
- G. Repair or replace all damage.

#### 2. PART 2 PRODUCTS

##### 2.1 EQUIPMENT

- A. Equipment: Capable of excavating subsoil.

#### 3. PART 3 EXECUTION

##### 3.1 PREPARATION

- A. Identify required lines, levels, contours, and datum.
- B. Identify known below grade utilities. Stake and flag locations.

- C. Identify and flag above grade utilities.
- D. Maintain and protect existing utilities remaining which pass through work area.
- E. Notify utility company and pay all costs to remove and relocate utilities.
- F. Upon discovery of unknown utility or concealed conditions, discontinue affected work; notify Architect.

### 3.2 EXCAVATION FOR STRUCTURES

- A. Excavate subsoil required to accommodate site structures and construction operations.
- B. Conform to elevations and dimensions shown within a tolerance of plus or minus 0.10 foot.
- C. Extend a sufficient distance from footings and foundations to permit placing and removal of formwork, installation of services, other construction, and for inspection.
- D. Hand trim excavation. Remove loose matter.
- E. Do not disturb bottom of excavations intended for bearing surfaces.

### 3.3 EXCAVATION FOR PAVEMENTS

- A. Cut surface under pavements to comply with cross-sections, elevations, and grades as shown, to subgrade elevations required and to grade tolerances specified.
- B. Overexcavate a minimum depth of 12 inches beneath all paving.
- C. Scarify subgrade beneath paving to a depth of 12 inches, moisture-condition to optimum moisture content and compact as specified.

### 3.4 STORAGE OF EXCAVATED MATERIALS

- A. Stockpile excavated materials in designated on-site area.
- B. Segregate excavated materials based upon intended use.
- C. Place, grade, and shape stockpile for proper drainage.
- D. Locate stockpile away from edge of excavation.
- E. Do not stockpile materials within drip line of trees.

### 3.5 STABILITY OF EXCAVATIONS

- A. Comply with local codes, ordinances, and requirements of agencies having jurisdiction.
- B. Machine slope banks to angle or repose or less.
- C. Maintain sides and slopes of excavations in safe condition until completion of backfilling.
- D. Shore and brace where sloping is not possible because of space restrictions or stability of material excavated.
- E. Provide shoring and bracing in good serviceable condition.
- F. Extend shoring and bracing as excavation progresses.
- G. Maintain shoring and bracing in excavations regardless of time period excavation will be open.

- H. Provide permanent steel sheet piling wherever subsequent removal of piling would permit lateral movement of soil under adjacent structures. Cut off top of piling 2'-6" below finish grade and leave permanently in place.
- I. Design and Calculations: Provide by licensed California engineer in accordance with requirements of the California Building Code and Safety Orders of the State of California, Division of Industrial Safety; Title 8, Division 1, Chapter 4, Subchapter 4, Article 6.

### 3.6 DEWATERING

- A. Prevent surface water and subsurface or ground water from flowing into excavations and from flooding project site and surrounding area.
- B. Grade top perimeter of excavations to prevent surface water from draining into excavations.
- C. Do not allow water to accumulate in excavations.
- D. Remove water to prevent softening of foundation bottoms and soil changes detrimental to stability of subgrades.
- E. Provide and maintain pumps, well points, sumps, suction and discharge lines and other components necessary to convey water away from excavations.
- F. Establish and maintain temporary drainage ditches and other diversions to convey rain water and water removed from excavations to runoff areas.
- G. Do not use trench excavations as temporary ditches.

### 3.7 DISPOSAL OF EXCESS AND WASTE MATERIAL

- A. Remove excess and waste materials, including unacceptable excavated material, trash, and debris, and dispose of legally off site.

### 3.8 PROTECTION OF WORK

- A. Protect finished work under provisions of Section 01 61 00.
- B. Protect excavations by methods required to prevent cave-in or loose soil from falling into excavation.
- C. Protect bottom of excavations from freezing, water saturation, and disturbance.

### 3.9 FIELD QUALITY CONTROL

- A. Field inspection and testing will be performed under provisions of Section 01 45 29.
- B. Allow testing service to inspect, test, and approve subgrade before further construction work is performed.

### 3.10 GRADING TOLERANCES

- A. Structures: Shape surface of areas under foundations to line, grade, and cross-section, with finish surface not more than 0.10 foot above or below required subgrade elevation.
- B. Pavements: Shape surface of areas under pavement to line, grade, and cross-section, with finish surface not more than 1/2 inch above or below required subgrade elevation.
- C. Building Slab: Grade smooth and even, free of voids, to required subgrade elevation. Final grade tolerance to be within 1/2 inch when tested with a 10 foot straightedge.

END OF SECTION

## SECTION 31 23 23

### BACKFILLING

#### 1. PART 1 GENERAL

##### 1.1 SECTION INCLUDES

- A. Site structure backfilling to subgrade elevations.
- B. Consolidation and compaction.
- C. Fill for over-excavation.

##### 1.2 REFERENCES

- A. CBC - California Building Code, (CCR) California Code of Regulations, Title 24, Part 2, Chapter 18.
- B. ASTM C136 - Method for Sieve Analysis of Fine and Coarse Aggregates.
- C. ASTM D448 - Sizes of Aggregate for Roadway and Bridge Construction.
- D. ASTM D1556 - Test Method for Density of Soil in Place by the Sand-Cone Method.
- E. ASTM D1557 - Test Methods for Moisture-Density Relations of Soils and Soil-Aggregate Mixtures Using 10 lb Rammer and 18 inch Drop.
- F. ASTM D2922 - Test Methods for Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth).
- G. ASTM D2937 - Test Method for Density of Soil in Place by the Drive-Cylinder Method.
- H. ASTM D3017 - Standard Test Method for Water Content of Soil and Rock in Place by Nuclear Methods (Shallow Depth).

##### 1.3 SUBMITTALS

- A. Submit under provisions of Section 01 33 00.
- B. Samples: Submit 10 lb. sample of each type of fill to testing laboratory, in air-tight containers.
- C. Submit name of imported materials source. Provide materials from same source throughout the work. Change of source requires Architect's approval.
- D. Submit test reports under provisions of Section 01 45 29.

##### 1.4 SUSTAINABLE DESIGN SUBMITTALS

- A. LEED Submittal: Submit manufacturer's data for pre-consumer and post-consumer recycled content under provisions of Section 01 81 13.

##### 1.5 QUALITY ASSURANCE

- A. Comply with CBC, California Building Code, (CCR) Title 24, Part 2, Chapter 18.

##### 1.6 FIELD CONDITIONS

- A. Verify that survey benchmark and intended elevations for the work areas are as indicated.

- B. Notify Architect of unexpected subsurface conditions and discontinue work in area affected until notified to resume work.

1.7 PROTECTION

- A. Protect trees, shrubs, lawns, and other features remaining as portion of final landscaping.
- B. Protect bench marks, fences, roads, sidewalks paving, and curbs.
- C. Repair or replace all damage.

2. PART 2 PRODUCTS

2.1 SOIL MATERIALS

- A. Existing Subsoil: Excavated and re-used material, graded free of lumps and rocks larger than 3 inches in any dimension.
- B. Imported Subsoil: Non-expansive predominantly granular soils such as a silty sand, free of lumps and rocks larger than 3 inches in any dimension, and debris. Expansion index less than 20, and no more than 50 percent of the material shall pass a No. 200 sieve. Material shall contain sufficient fines (binder) to result in a stable subgrade.
- C. Sand: Natural river or bank sand free of silt, clay, loam, friable or soluble materials or organic matter, graded in accordance with ASTM C136, all passing the No. 4 sieve and only 5 percent passing the No. 200 sieve.
- D. Pea Gravel: Natural stone; washed, free of clay, slate, organic matter, graded in accordance with ASTM C136, 1/4 inch to 5/8 inch.
- E. Gravel: Coarse aggregate; free of clay, shale and organic matter; ASTM D448, grading size 6 with 100 percent passing a 1 inch sieve and not more than 5 percent passing a No. 4 sieve.
- F. Drainage Fill: Washed, evenly graded mixture of crushed stone, or crushed or uncrushed gravel, graded in accordance with ASTM C136, with 100 percent passing a 1-1/2 inch sieve and not more than 5 percent passing a No. 4 sieve.
- G. Crushed Stone Base: Permeable base meeting California Department of Transportation 3/4 inch Permeable Class II Base designation according to the following gradation:

Mesh Size	% Passing
1 inch	100
3/4 inch	90-100
3/8 inch	40-100
#4	25-40
#8	18-33
#30	5-15
#50	0-7
#200	0-3

- H. Concrete: Structural concrete conforming to Section 03 30 00 with a compressive strength of 2,000 psi for fill to correct over-excavation.

- I. Materials (existing and import) shall be free of any toxic materials listed (by federal or state EPA or federal or state health agencies) as hazardous materials.
- J. Materials: (existing and import) are subject to the approval of the Soils Engineer for use in the project.
- K. Provide imported materials when sufficient satisfactory soil materials are not available from on site sources.

## 2.2 EQUIPMENT

- A. Equipment: Capable of excavating subsoil, mixing and placing materials, wetting, consolidation, grading, and compaction of material.

## 3. PART 3 EXECUTION

### 3.1 EXAMINATION

- A. Verify fill materials to be reused are acceptable.
- B. Verify areas to be backfilled are free of debris or water.

### 3.2 PREPARATION

- A. Generally, compact subgrade to density requirements for subsequent backfill materials.
- B. Cut out soft areas of subgrade not capable of in situ compaction. Backfill with subsoil fill and compact to density equal to or greater than requirements for subsequent backfill material.

### 3.3 BACKFILLING

- A. Backfill excavations as promptly as work permits, but not until the following has been completed:
  - 1. Acceptance of subgrade.
  - 2. Removal of concrete formwork.
  - 3. Removal of shoring and bracing if not to be left in place.
  - 4. Backfill of voids in subgrade with satisfactory materials.
  - 5. Removal of trash and debris.
  - 6. Permanent or temporary bracing or horizontally supported walls.
- B. Compact subgrade to density requirements for subsequent backfill.
- C. Backfill to contours and elevations required.
- D. Systematically backfill to allow maximum time for natural settlement. Do not backfill over porous, wet, frozen or spongy subgrade surfaces.
- E. Place and compact fill material in continuous layers not exceeding specified compacted depth for each layer.
- F. Before placing successive layers, all ruts, and other hollows more than 6 inches in depth shall be regraded and compacted.
- G. Maintain optimum moisture content of backfill materials.
- H. Backfill against supported foundation walls.
- I. Backfill simultaneously on each side of unsupported foundation walls.

- J. Remove and replace or scarify and air dry subgrade or fill material that is too wet to permit compaction to required density.

### 3.4 COMPACTION

- A. Control soil compaction during construction providing density specified for each area classification.
- B. Place and compact fill materials in continuous layers of not more than 6 inch thick compacted depth.
- C. Provide not less than the specified percentages of density of soil material compacted at optimum moisture content, for each layer of soil material in place.
- D. When existing ground surfaces have a density less than that specified for a particular area classification, scarify existing surface to a depth of 12 inches, moisture-condition to optimum moisture content and compact to required percentage of maximum density.
- E. Maintain optimum moisture content of fill materials to attain required compaction density.
- F. Moisture content shall be uniform throughout all layers. Add necessary moisture or aerate soil material at borrow source if it is not possible to obtain uniform moisture content at soil surface at time of placement.
- G. When moisture content and condition of each soil layer is satisfactory compact soils to specified density.
- H. Compaction of free draining material such as gravel shall be by treads of crawler type tractor, surface vibrator, smooth or pneumatic roller, hand or power tampers.
- I. Compaction of soils by use of water jetting or puddling is not an acceptable procedure.
- J. Correct improperly compacted areas or layers as directed by Architect if soil density tests indicate inadequate compaction.

### 3.5 DISPOSAL OF EXCESS AND WASTE MATERIAL

- A. Remove waste materials, including unacceptable excavated material, trash, and debris, and dispose of legally off site.
- B. Remove surplus backfill materials from site and dispose of legally off site.
- C. Leave material stockpile areas completely free of excess materials.

### 3.6 FIELD QUALITY CONTROL

- A. Field inspection and testing will be performed under provisions of Section 01 45 29.
- B. Allow testing service to inspect, test, and approve each subgrade and fill layer before further backfill or construction work is performed.
- C. Laboratory tests and analysis of fill material will be performed in accordance with ASTM D1557 and with Section 01 45 29.
- D. In place site tests and analysis of fill materials will be performed in accordance with ASTM D1556, ASTM D2937 or ASTM D2922, and with Section 01 45 29.
- E. In place site moisture tests will be performed in accordance with ASTM D3017.
- F. If tests indicate Work does not meet specified requirements, remove Work, replace and retest at no cost to Owner.

### 3.7 GRADING TOLERANCES

- A. Pavements: Shape surface of areas under pavement to line, grade, and cross-section, with finish surface not more than 1/2 inch above or below required subgrade elevation.
- B. Building Slab: Grade smooth and even, free of voids, to required subgrade elevation. Final grade tolerance to be within 1/2 inch when tested with a 10 foot straightedge.

### 3.8 MAINTENANCE

- A. Protect newly graded areas. Keep free of trash and debris.
- B. Provide erosion control methods to prevent erosion.
- C. Repair and reestablish grades in settled, eroded, and rutted areas to specified tolerances and density.
- D. Where completed areas are disturbed by subsequent construction operations or adverse weather, scarify surface, reshape, and compact to required density prior to further construction.
- E. Where settling occurs, remove surface (pavement, lawn, or other finish), add backfill material, compact, and replace surface treatment. Restore appearance, quality, and condition of surface finish to match adjacent work and eliminate evidence of restoration.

### 3.9 PLACEMENT SCHEDULE

- A. Fill under Footings:
  - 1. Existing subsoil fill, to subgrade elevation, compacted to 90 percent.
- B. Concrete Paving:
  - 1. Subsoil fill, existing or import, to subgrade elevation, compact to 90 percent.
  - 2. Cover with sand base to subgrade elevation, compact to 95 percent.
- C. Fill to Correct Overexcavation:
  - 1. Lean concrete of minimum compressive strength as specified.
  - 2. Imported fill, to required elevation, compact to 90 percent.

END OF SECTION



## SECTION 31 23 33

### TRENCHING

#### 1. PART 1 GENERAL

##### 1.1 SECTION INCLUDES

- A. Excavate trenches for utilities from outside building to municipal utilities.
- B. Excavate trenches for utilities on interior of building.
- C. Compacted bedding under fill over utilities.
- D. Backfilling and compaction.
- E. Fill for overexcavation.

##### 1.2 REFERENCES

- A. ASTM D1556 - Test Method for Density of Soil in Place by the Sand-Cone Method.
- B. ASTM D1557 - Test Methods for Moisture-Density Relations of Soils and Soil-Aggregate Mixtures Using 10 lb Rammer and 18 inch Drop.
- C. ASTM D2922 - Test Methods for Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth).
- D. ASTM D2937 - Test Method for Density of Soil in Place by the Drive-Cylinder Method.
- E. ASTM D3017 - Standard Test Method for Water Content of Soil and Rock in Place by Nuclear Methods (Shallow Depth).

##### 1.3 SUBMITTALS

- A. Submit under provisions of Section 01 33 00.
- B. Samples: Submit 10 lb sample of each type of fill to testing laboratory, in air-tight containers.
- C. Submit test reports under provisions of Section 01 45 29.

##### 1.4 PROJECT RECORD DOCUMENTS

- A. Submit documents under provisions of Section 01 77 00.
- B. Accurately record location of utilities remaining, rerouted utilities, new utilities by horizontal dimensions, elevations or inverts, and slope gradients.

##### 1.5 FIELD CONDITIONS

- A. Verify that survey benchmark and intended elevations for the Work as indicated.
- B. Notify Architect of unexpected subsurface conditions and discontinue work in area affected until notified to resume work.

##### 1.6 PROTECTION

- A. Protect trees, shrubs, lawns, and other features remaining as portion of final landscaping.
- B. Protect bench marks, fences, roads, sidewalks paving, and curbs.

- C. Underpin adjacent structures, including utilities and pipe chases, which may be damaged by excavation work.
- D. Protect above or below grade utilities which are to remain.
- E. Barricade open excavations and post warning lights. Operate lights from dusk to dawn.
- F. Protect facilities from damage caused by settlement, lateral movement, undermining, washout, and other hazards created by trenching operations.
- G. Repair or replace all damage.

## 2. PART 2 PRODUCTS

### 2.1 FILL MATERIALS

- A. Types specified in Section 31 23 23.

### 2.2 BED MATERIALS

- A. Subsoil: As specified in Section 31 23 23.
- B. Sand: As specified in Section 31 23 23.

### 2.3 EQUIPMENT

- A. Equipment: Capable of excavating subsoil, mixing and placing materials, wetting, consolidation, grading, and compaction of material.

## 3. PART 3 EXECUTION

### 3.1 EXAMINATION

- A. Verify that fill materials to be reused are acceptable.
- B. Verify agreement of existing site conditions with indicated conditions.
- C. Notify Architect of discrepancies found.
- D. Beginning work of this Section constitutes acceptance of existing conditions.

### 3.2 PREPARATION

- A. Identify required lines, levels, contours, and datum.
- B. Identify known below grade utilities. Stake and flag locations.
- C. Identify and flag above grade utilities.
- D. Maintain and protect existing utilities remaining which pass through work area.
- E. Notify utility company and pay all costs to remove and relocate utilities.
- F. Upon discovery of unknown utility or concealed conditions, discontinue affected work; notify Architect.

### 3.3 TRENCH EXCAVATION

- A. Excavate subsoil required to accommodate storm sewer, electric and telephone conduit, and piping to municipal or private utilities.
- B. Excavate trenches to uniform width, sufficiently wide to provide ample working room and a minimum of 8 inch clearance on both sides of the pipe.

- C. Excavate trenches to depth indicated or required to establish indicated slope and invert elevations.
- D. Depth of excavations on the exterior of the building shall provide for the minimum coverage above the top of the pipe, conduit, or tank measured from the lowest adjacent finish grade, as follows unless otherwise indicated on the Drawings:
  - 1. Steel Pipe and Conduit 24 inches
  - 2. Copper Water Tube 18 inches
  - 3. Cast-Iron, Pressure Pipe 36 inches
  - 4. Plastic Pipe (other than waste) 30 inches
  - 5. Plastic Waste Pipe 24 inches
  - 6. Soil, Sewer & Storm Drain 18 inches
  - 7. Irrigation Pipe (pressure) 24 inches
  - 8. Irrigation Pipe (non-pressure) 12 inch
- E. For pipe or conduit less than 4 inches in nominal size, do not excavate beyond indicated depths. Hand-excavate bottom to accurate elevations and support pipe or conduit on undisturbed soil.
- F. For pipe or conduit, 4 inches and larger, carry excavation 4 inches below required elevation and backfill with sand bedding to support pipe or conduit.
- G. Cut out soft areas of subgrade not capable of in situ compaction. Backfill with subsoil and compact to density equal to or greater than requirements for subsequent backfill material.
- H. Hand trim excavation. Remove loose material.
- I. Excavation cut not to interfere with bearing splay of foundations.
- J. At each pipe joint dig bell hole to relieve pipe bell of loads and to ensure continuous bearing of pipe on bearing surface.
- K. Remove lumped subsoil, boulders and rock up to 1/3 cu yd measured by volume. Replace with sand bedding material and compact as specified.

#### 3.4 STORAGE OF EXCAVATED MATERIALS

- A. Stockpile excavated materials in designated on-site area.
- B. Segregate excavated materials based upon intended use.
- C. Place, grade, and shape stockpile for proper drainage.
- D. Locate stockpile away from edge of excavations.
- E. Do not stockpile materials within drip line of trees.

#### 3.5 UNAUTHORIZED EXCAVATION

- A. Correct unauthorized excavation at no cost to Owner.
- B. Backfill excavation to correct elevation with concrete or approved fill material compacted as specified.

### 3.6 STABILITY OF EXCAVATIONS

- A. Comply with local codes, ordinances, and requirements of agencies having jurisdiction.
- B. Machine slope banks to angle of repose or less.
- C. Maintain sides and slopes of excavations in safe condition until completion of backfilling.
- D. Shore and brace where sloping is not possible because of space restrictions or stability of material excavated.
- E. Provide shoring and bracing in good serviceable condition.
- F. Extend shoring and bracing as excavation progresses.
- G. Maintain shoring and bracing in excavations regardless of time period excavation will be open.
- H. Provide permanent steel sheet piling wherever subsequent removal of piling would permit lateral movement of soil under adjacent structures. Cut off top of piling 2'-6" below finish grade and leave permanently in place.

### 3.7 DEWATERING

- A. Prevent surface water and subsurface or ground water from flowing into excavations and from flooding project site and surrounding area.
- B. Grade top perimeter of excavations to prevent surface water from draining into excavations.
- C. Do not allow water to accumulate in excavations.
- D. Remove water to prevent softening of trench bottoms and soil changes detrimental to stability of subgrades.
- E. Provide and maintain pumps, well points, sumps, suction and discharge lines and other components necessary to convey water away from excavations.
- F. Establish and maintain temporary drainage ditches and other diversions to convey rain water and water removed from excavations to runoff areas.
- G. Do not use trench excavations as temporary ditches.

### 3.8 BEDDING OF TRENCHES

- A. Support pipe and conduit during placement and compaction of bedding fill.
- B. Place a minimum of 4 inches of sand bedding beneath all piping and conduit 4 inches in diameter and larger.
- C. Place a minimum of 12 inches of sand bedding above all piping and conduit.
- D. Compact sand bedding to density required.

### 3.9 BACKFILLING

- A. Backfill excavations as promptly as work permits, but not until the following has been completed:
  - 1. Acceptance of subgrade.
  - 2. Inspection, testing, approval and record documentation of location of underground utilities.
  - 3. Removal of shoring and bracing if not to be left in place.
  - 4. Backfill of voids in subgrade with satisfactory materials.

- 5. Removal of trash and debris.
- 6. Installation of bedding material.
- B. Compact subgrade to density requirements for subsequent backfill.
- C. Backfill to contours and elevations required.
- D. Systematically backfill to allow maximum time for natural settlement. Do not backfill over porous, wet, frozen or spongy subgrade surfaces.
- E. Place and compact fill material in continuous layers not exceeding specified compacted depth for each layer.
- F. Employ a placement method that does not disturb or damage utilities in trenches.
- G. Before placing successive layers, all ruts, and other hollows more than 6 inches in depth shall be regraded and compacted.
- H. Maintain optimum moisture content of backfill materials.
- I. Backfill trenches with concrete where excavation is less than 3 feet below bottom of footing. Place concrete to level of bottom of adjacent footing. Width of concrete backfill to match width of footing and be full width of trench. Maintain minimum 6 inch encasement on sides, top, and bottom.
- J. Backfill trenches with concrete for piping or conduit where top of piping or conduit is less than 30 inches below finished elevation of paving. Minimum 6 inches of encasement on sides and top.
- K. Remove and replace or scarify and air dry subgrade or fill material that is too wet to permit compaction to required density.

### 3.10 COMPACTION

- A. Control soil compaction during construction providing density specified for each area classification.
- B. Place and compact fill materials in continuous layers of not more than 6 inch thick compacted depth.
- C. Provide not less than the specified percentages of density of soil material compacted at optimum moisture content, for each layer of soil material in place.
- D. When existing ground surfaces have a density less than that specified for a particular area classification, scarify existing surface to a depth of 12 inches, moisture-condition to optimum moisture content and compact to required percentage of maximum density.
- E. Maintain optimum moisture content of fill materials to attain required compaction density.
- F. Moisture content shall be uniform throughout all layers. Add necessary moisture or aerate soil material at borrow source if it is not possible to obtain uniform moisture content at soil surface at time of placement.
- G. When moisture content and condition of each soil layer is satisfactory compact soils to specified density.
- H. Compaction of free draining material such as gravel shall be by treads of crawler type tractor, surface vibrator, smooth or pneumatic roller, hand or power tampers.
- I. Compaction of soils by use of water jetting or puddling is not an acceptable procedure.
- J. Correct improperly compacted areas or layers as directed by Architect if soil density tests indicate inadequate compaction.

3.11 DISPOSAL OF EXCESS AND WASTE MATERIAL

- A. Remove waste materials, including unacceptable excavated material, trash, and debris, and dispose of legally off site.
- B. Remove surplus backfill materials from site and dispose of legally off site.
- C. Leave material stockpile areas completely free of excess materials.

3.12 PROTECTION OF WORK

- A. Protect finished work under provisions of Section 01 61 00.
- B. Protect excavations by methods required to prevent cave-in or loose soil from falling into excavation.
- C. Protect bottom of excavations from freezing, water saturation, and disturbance.

3.13 FIELD QUALITY CONTROL

- A. Field inspection and testing will be performed under provisions of Section 01 45 29.
- B. Allow testing service to inspect, test, and approve each subgrade and fill layer before further backfill or construction work is performed
- C. Laboratory tests and analysis of fill material will be performed in accordance with ASTM D1557 and with Section 01 45 29. In place site tests and analysis of fill material will be performed in accordance with ASTM D1556, ASTM D2937 or ASTM D2922, and with Section 01 45 29.
- D. In place site moisture tests will be performed in accordance with ASTM D3017.
- E. If tests indicate Work does not meet specified requirements, remove Work, replace and retest at no cost to Owner.

3.14 GRADING TOLERANCES

- A. Top Surface of Backfill: To within not more than 0.10 foot above or below required subgrade elevation.

3.15 PLACEMENT SCHEDULE

- A. Fill to Correct Overexcavation:
  - 1. Lean concrete of minimum compressive strength as specified.
- B. Utility Trenches on Exterior of Building:
  - 1. Sand bedding to 12 inches above pipe, compact to 90 percent.
  - 2. Existing subsoil fill, compact to 90 percent.

END OF SECTION

## SECTION 32 13 13

### CONCRETE PAVING

#### 1. PART 1 GENERAL

##### 1.1 SECTION INCLUDES

- A. Concrete sidewalks, curbs, gutters, utility slabs, parking areas, driveways, driveway aprons and approaches.
- B. Expansion, control and isolation joints.
- C. Finishing concrete pavements.
- D. Surface treatment with slip resistant coatings.
- E. Sand base course.
- F. Steel reinforcement.
- G. Fibrous secondary reinforcement.

##### 1.2 REFERENCES

- A. 2010 Americans with Disabilities Act (ADA) Standards for Accessible Design.
- B. ACI 301 - Specifications for Structural Concrete for Buildings.
- C. ACI 117 - Standard Specification for Tolerances for Concrete Construction and Materials.
- D. ASTM A82 - Specification for Steel Wire, Plain, for Concrete Reinforcement.
- E. ASTM A185 - Welded Steel Wire Fabric for Concrete Reinforcement.
- F. ASTM A184 - Specification for Fabricated Deformed Steel Bar Mats for Concrete.
- G. ASTM D1751 - Preformed Expansion Joint Fillers for Concrete Paving and Structural Construction.
- H. ASTM A615 - Deformed and Plain Billet-Steel for Concrete Reinforcement.
- I. ASTM C33 - Concrete Aggregates.
- J. ASTM C94 - Ready Mixed Concrete.
- K. ASTM C150 - Portland Cement.
- L. ASTM C260 - Air-Entraining Admixtures for Concrete.
- M. ASTM C289 - Potential Reactivity of Aggregates.
- N. ASTM C309 - Liquid Membrane-Forming Compounds for Curing Concrete.
- O. ASTM C494 - Chemical Admixtures for Concrete.
- P. ASTM C618- Standard Specification for Coal Fly Ash and Raw or Calcined Natural Pozzolan for Use as a Mineral Admixture for Concrete.
- Q. ASTM C979 - Pigments for Integrally Colored Concrete.
- R. ASTM C1116 - Specification for Fiber-Reinforced Concrete and Shotcrete.

- S. ASTM C1602 - Standard Specification for Mixing Water Used in the Production of Hydraulic Cement Concrete.
- T. CBC - California Building Code, (CCR) California Code of Regulations, Title 24, Part 2, California State Accessibility Standards.
- U. DSA/AC - Division of State Architect/Access Compliance.
- V. National Ready Mix Concrete Association - Plant Certification Program.
- W. Southern California Chapter, American Public Works Association - Standard Specifications for Public Works Construction.
- X. Stormwater Best Management Practice Handbook ( BMP Handbook ), Construction Edition, as published by the California Storm Water Quality Association.

### 1.3 QUALITY ASSURANCE

- A. Perform work in accordance with ACI 301.
- B. Obtain materials from same source throughout.

### 1.4 QUALIFICATIONS

- A. Manufacturer: Manufacturer of ready-mix concrete products complying with ASTM C94 requirements for production facilities and equipment. Certified according to National Ready Mix Concrete Association's Plant Certification Program.
- B. Pavement Installer: Company who has completed pavement work similar in material, design, and extent to that indicated for this project.
- C. Detectable Warning Pavement Installer: Company specializing in applying the work of this section with a minimum of 5 years experience and approved by manufacturer of the detectable warning products used.

### 1.5 REGULATORY REQUIREMENTS

- A. Conform to applicable code for paving work on public property.
- B. Conform to (CBC) California Building Code, (CCR) Title 24, Part 2, and the 2010 ADA Standards for Accessible Design for access requirements for individuals with disabilities.

### 1.6 ENVIRONMENTAL REQUIREMENTS

- A. Provide concrete curing, finishing, and waste management techniques as defined in Section 4 of the Storm Water Best Management Practice Handbook, (BMP Handbook) Construction Edition.

### 1.7 SUBMITTALS

- A. Submit product data under provisions of Section 01 33 00.
- B. Include data on joint filler, admixtures and curing compounds.
- C. Submit proposed mix design to testing laboratory and to Architect for review prior to commencement of work.
- D. Submit manufacturer's instructions under provisions of Section 01 33 00.



## 2. PART 2 PRODUCTS

### 2.1 CONCRETE MATERIALS

- A. Cement: ASTM C150 Normal-Type I or Type II Portland type, gray color, from single source throughout project.
- B. Fine and Coarse Aggregates: ASTM C33, non-reactive when tested in accordance with ASTM C289 and Appendix X-1 of ASTM C33.
- C. Water: ASTM C1602, clean and not detrimental to concrete.

### 2.2 BASE MATERIALS

- A. Subsoil fill base specified in Section 31 23 23.

### 2.3 FORM MATERIALS

- A. Conform to ACI 301.

### 2.4 REINFORCEMENT

- A. Reinforcing Steel: ASTM A615; 40 ksi yield grade; deformed billet steel bars, uncoated finish.
- B. Welded Steel Wire Fabric: Plain type, ASTM A185; in coiled rolls or flat sheets; uncoated finish.
- C. Fabricated Bar Mats: ASTM A184; welded or clip-assembled steel bar mats of ASTM A615, Grade 60 steel bars.
- D. Tie Wire: ASTM A82, annealed steel, minimum 16 gage size.
- E. Dowels: ASTM A615; 40 ksi yield grade, plain steel, uncoated finish.
- F. Supports: Chairs, spacers, dowel bar supports and other devices for spacing, supporting and fastening reinforcing bars, welded wire fabric, and dowels in place.
- G. Secondary Fibrous Reinforcement:
  - 1. Collated, fibrillated, polypropylene fibers for secondary reinforcement of concrete slabs with length varying from 1-1/2 to 2 inches; nylon filamentized fibers of 3/4 inch length; cellulose fibers of 1/8 inch length meeting requirements of ASTM C1116, Type III or IV.
  - 2. Manufacturers:
    - (a) Forta Mono or Forta, Forta Corp., [www.fortacorp.com](http://www.fortacorp.com).
    - (b) Fibermix or Fibermesh, SI Concrete Corp., [www.fibermesh.com](http://www.fibermesh.com).
    - (c) Nycon, Nycon, Inc., [www.nycon.com](http://www.nycon.com).
    - (d) Grace Fibers or Micro Fibers, W.R. Grace and Co., [www.graceconstruction.com](http://www.graceconstruction.com).
    - (e) Buckeye Building Fibers, [www.ultrafiber500.com](http://www.ultrafiber500.com).
  - 3. Substitutions: Under provisions of Section 01 25 13.

### 2.5 ACCESSORIES

- A. Curing Compound: ASTM C309, Type 1-D, Class B.
- B. Preformed Joint Filler: ASTM D1751, 1/2 inch thick.

- C. Clear Sealer: One component alkylalkoxy, silane penetrating sealer.
- D. Joint Sealers: As specified in Section 07 92 00.
- E. Rock Salt: Commercial standard packaged rock crystals, No. 2 size, free of fines.

## 2.6 ADMIXTURES

- A. Fly Ash: ASTM C618, Class F.
- B. Water Reducing Admixture: ASTM C494, Type A.
- C. Colored Concrete Pigment: ASTM C979 of color selected.

## 2.7 FINISH MATERIALS

- A. Aggregate: Natural quartz smooth; 1/4 inch minimum size to 3/8 inch maximum size; clean washed type. No reactive or iron bearing aggregate permitted. Grey color from single source throughout.
- B. Slip Resistant Aggregate: 95 percent minimum fused homogeneous aluminum oxide.

## 2.8 CONCRETE MIX

- A. Mix concrete in accordance with ASTM C94, Alternative No. 3.
- B. Provide concrete of the following characteristics:
  - 1. Driveways, aprons and approaches: Compressive strength of 3,500 psi at 28 days.
  - 2. Sidewalks, curbs, gutters and utility slabs: Compressive Strength of 2,500 psi at 28 days.
  - 3. Slump: 4 to 6 inches.
  - 4. Maximum aggregate size: 1 inch.
  - 5. Cement Content: Minimum 540 lbs/cu. yd.
  - 6. Fly Ash: Maximum 25 percent by weight.
  - 7. Air Entrainment: 2 to 4 percent.
  - 8. Water Cement Ratio: 0.50.
- C. When automatic machine placement is used, determine mix design and obtain laboratory test results that comply with or exceed requirements.

## 3. PART 3 EXECUTION

### 3.1 INSPECTION

- A. Verify compacted subgrade is ready to support paving and imposed loads.
- B. Verify gradients and elevations of base are correct.
- C. Beginning of installation means acceptance of existing conditions.

### 3.2 BASE

- A. Prepare and compact base materials in accordance with provisions of Section 31 23 23.

### 3.3 PREPARATION

- A. Moisten base to minimize absorption of water from fresh concrete.
- B. Coat surfaces of adjacent curbs, gutters, manholes, catch basins, inlets, light pole bases and other fixed objects with form release agent to form isolation joint and prevent bond with paving.
- C. Notify Architect minimum 24 hours prior to commencement of concreting operations.

### 3.4 FORMING

- A. Place and secure forms to correct location, dimension, and profile.
- B. Assemble formwork to permit easy stripping and dismantling without damaging concrete.
- C. Place joint fillers vertical in position, in straight lines. Secure during concrete placement.

### 3.5 REINFORCEMENT

- A. Place reinforcement at mid-height of slabs-on-grade.
- B. Lap adjoining pieces of welded wire fabric one full mesh and lace splice with wire. Offset laps of adjoining sheets.
- C. Place fabricated bar mats in lengths as long as practical. Overlap adjacent mat 2 inches.
- D. Interrupt reinforcement at expansion joints.
- E. Place secondary fiber reinforcement in concrete mix in quantities as specified for concrete pavements.
- F. Place reinforcement to achieve slab and curb alignment as detailed.
- G. Provide doweled joints at interruption of concrete with one end of dowel set in capped sleeve to allow longitudinal movement.
- H. Where joining existing concrete pavement, drill and set new dowels with epoxy grout into existing paving. Set opposite end of dowel in capped sleeve to allow for longitudinal movement.

### 3.6 PLACING CONCRETE

- A. Place concrete in accordance with ACI 301.
- B. Hot and Cold Weather Placement: ACI 301.
- C. Place concrete formwork on public property in conformance with applicable code.
- D. Ensure reinforcement, inserts, embedded parts, and formed joints are not disturbed during concrete placement.
- E. Place concrete continuously between predetermined construction joints and expansion joints.
- F. Do not push or drag concrete into place or use vibrators to move concrete into place.
- G. Place concrete to pattern indicated in strip sequence.
- H. Curb and Gutter: For automatic machine placement, produce curbs and gutters to required cross section, lines, grades, finish and jointing.
- I. Slip - Form Paving: For automatic machine placement, produce paving to required thickness, line, grade, finish and jointing.

### 3.7 JOINTS

- A. Review locations of joints when indicated and make recommendations for any additional joints or suggestions for new locations. Lack of joints or misplacement of joints will not constitute justification of pavement cracking.
- B. Place expansion joints at not to exceed 20 foot intervals to correct elevation and profile. Align curb, gutter, and sidewalk joints.
- C. Place joint filler at expansion joints and building or other appurtenances.
- D. Provide control joints at not to exceed 5 foot intervals.
- E. Saw cut control joints 3/16 inch wide at an optimum time after finishing. Cut 1/3 into depth of slab.
- F. Provide keyed joints as indicated.
- G. Finish each edge of joint with radiused jointer tool.
- H. Use form release agent at isolation joints where paving abutts curbs, gutters, manholes, catch basins, inlets, light pole bases, and other fixed objects to prevent bonding with pavement.
- I. Where joining existing pavement, align new expansion, control and isolation joints with previously placed joints.

### 3.8 FINISHING

- A. Uniformly spread, screed and consolidate concrete. Do not spread concrete by vibration.
- B. Medium Broom Finish:
  - 1. Float surface and trowel to smooth even finish.
  - 2. While surface is still plastic draw a soft fiber bristle broom uniformly over surface in perpendicular direction to traffic.
  - 3. Use for sidewalks which have a slope of 6 percent or less.
- C. Slip Resistant/Heavy Broom Finish:
  - 1. Float surface and trowel to smooth even finish.
  - 2. While concrete is still plastic, uniformly broadcast aluminum oxide particles onto surface at the rate of 25 pounds per 100 sq. ft.
  - 3. Trowel particles into surface of concrete to provide embedment. Do not force below surface.
  - 4. While surface is still plastic, draw a stiff fiber bristle broom uniformly over surface in perpendicular direction of traffic.
  - 5. Use for ramps with slope of 6 percent or greater, stair treads, and areas indicated.

### 3.9 CURING

- A. Cure concrete surfaces in accordance with ACI 301.
- B. Apply curing compound on finished slab surfaces in accordance with manufacturer's instructions.

### 3.10 FIELD QUALITY CONTROL

- A. Field inspection and testing will be performed under provisions of Section 01 45 29.
- B. Owner's Inspector will take cylinders and perform slump tests in accordance with ACI 301 and will arrange for pick-up of cylinders by Testing Laboratory.
- C. Three concrete test cylinders will be taken for every 50 or less cu yds of each class of concrete placed each day.
- D. One slump test will be taken for each set of test cylinders taken.
- E. Maintain records of placed concrete items. Record date, location of pour, quantity, air temperature, and test samples taken.

### 3.11 TOLERANCES

- A. Provide tolerances under provisions of Section 01 43 00 in accordance with ACI 117.
- B. Maximum Variation of Surface Flatness: 1/4 inch in 10 feet.
- C. Maximum Variation from True Position: 1/4 inch.
- D. Variation of Pavement Thickness: Plus 3/8 inch, minus 1/4 inch.
- E. Maximum Variation of Pavement Joints: 1/8 inch vertical alignment.

### 3.12 PROTECTION

- A. Immediately after placement, protect concrete under provisions of Section 01 61 00 from premature drying, excessive hot or cold temperatures, and mechanical injury.
- B. Do not permit traffic over pavement for 7 days after finishing.
- C. Maintain pavement free of stains, discoloration, dirt and other foreign materials. Remove surface stains and spillage of material as they occur.

### 3.13 REPAIR

- A. Remove and replace pavement that is broken, damaged, defective or does not comply with requirements of this Section.
- B. Refinishing pavement that is broken, damaged, or defective is not acceptable.
- C. Remove pavement in complete sections from joint to joint.
- D. Recycle pavement debris under provisions of Section 01 74 19.

END OF SECTION

## SECTION 33 40 00

### STORM DRAINAGE UTILITIES

#### 1. PART 1 GENERAL

##### 1.1 SECTION INCLUDES

- A. Storm drainage piping, fittings, and accessories.
- B. Connection of building and site storm drainage system to point of disposal.
- C. Catch basins, cleanouts.
- D. Paved area drainage.

##### 1.2 REFERENCES

- A. ACPA - American Concrete Pipe Association.
- B. ASTM A74 - Cast Iron Soil Pipe and Fittings.
- C. ASTM C12 - Practice for Installing Vitrified Clay Pipe Lines.
- D. ASTM C33 - Specification for Cement Aggregates.
- E. ASTM C76 - Reinforced Concrete Culvert, Storm Drain, and Sewer Pipe.
- F. ASTM C700 - Vitrified Clay Pipe, Extra Strength, Standard Strength and Perforated.
- G. ASTM C858 - Specifications for Underground Precast Concrete Utility Structures.
- H. ASTM D2564 - Solvent Cements for Poly (Vinyl Chloride) (PVC) Plastic Pipe and Fittings.
- I. ASTM D2855 - Practice for making Solvent - Cemented Joints with Poly (Vinyl Chloride) (PVC) Pipe and Fittings.
- J. ASTM D2321 - Underground Installation of Thermoplastic Pipe for Sewers and other Gravity-Flow Applications.
- K. ASTM D3034 - Type PSM Poly (Vinyl Chloride) (PVC) Sewer Pipe and Fittings.
- L. ASTM D3350 - Standard Specification for Polyethylene Plastic Pipe and Fittings Materials.
- M. AWWA C105 - Standard for Polyethylene Encasement for Ductile-Iron Piping for Water and other Liquids.
- N. CISPI - Cast Iron Soil Pipe Institute.

##### 1.3 REGULATORY REQUIREMENTS

- A. Conform to applicable code for materials and installation of the Work of this Section.

##### 1.4 SUBMITTALS

- A. Submit under provisions of Section 01 33 00.
- B. Submit product data indicating pipe, pipe accessories and drainage structure.
- C. Submit manufacturer's installation instructions.

## 1.5 PROJECT RECORD DOCUMENTS

- A. Submit documents under provisions of Section 01 77 00.
- B. Accurately record location of pipe runs, connections, catch basins, manholes, cleanouts, and invert elevations.
- C. Identify and describe unexpected variations to subsoil conditions or discovery of uncharted utilities.

## 2. PART 2 PRODUCTS

### 2.1 STORM DRAINAGE PIPE MATERIALS

- A. Cast Iron Pipe: ASTM A74; service type; bell and spigot end joints.
- B. Vitrified Clay Pipe: ASTM C700; extra strength, unperforated; bell and spigot end joints.
- C. Reinforced Concrete Pipe: ASTM C76, Class II with Wall Type B; mesh reinforcement; bell and spigot end joints.
- D. Polyvinyl Chloride Pipe (PVC): ASTM D3034; SDR 35 minimum wall thickness; bell and spigot style; solvent cement joints conforming to ASTM D2564.
- E. Perforated Polyvinyl Chloride Pipe (PVC): ASTM D3034; SDR 35 minimum wall thickness; bell and spigot style; solvent cement joints conforming to ASTM D2564; perforations to be symmetrically located in an arc of 160 degrees. Perforations shall have a total open area of at least 0.3 square inches per lineal foot of pipe. Perforations shall be either holes or slots. Diameter of holes may vary from 1/4 inch minimum to 3/8 inch maximum; the width of the slots may vary from 3/16 inch minimum to 5/16 inch maximum; the length of the slot shall not exceed 4 inches.
- F. Athletic Field Turf Underdrain Pipe: ASTM D3350, 1-1/2 inch high x 12 inch wide fabric wrapped high density polyethylene drainage pipe equivalent to AvanEDGE pipe manufactured by Advanced Drainage Systems, [www.ads-pipe.com](http://www.ads-pipe.com).
- G. Slot Drain: ACO Sports System 3000, [www.acousa.com](http://www.acousa.com) or Sports Edge XT-6 Slot Drain System, [www.sportsedge.com](http://www.sportsedge.com).
- H. Substitutions: Under provisions of Section 01 25 13.

### 2.2 PIPE ACCESSORIES

- A. Fittings: Same material as pipe, molded or formed to suit pipe size and end design, in required 'T', bends, elbows, cleanouts, reducers, traps, and other configurations required.
- B. Geotextile Fabric: As specified in Section 31 23 23.

### 2.3 PIPE IDENTIFICATION

- A. Plastic Underground Warning Tapes: Polyethylene plastic tape, 6 inches wide by 4 mils thick, solid blue in color with continuously printed caption in black letters "CAUTION - STORM SEWER SERVICE BURIED BELOW."
- B. Metallic-Lined Plastic Underground Warning Tapes: Polyethylene plastic tape with metallic core, 6 inches wide by 4 mils thick, solid blue in color with continuously printed caption in black letters "CAUTION - STORM SEWER SERVICE BURIED BELOW."

## 2.4 CATCH BASINS

- A. Basin Lid and Frame: Galvanized cast iron construction, hinged lid, linear grill lid design; nominal lid and frame size as indicated. Grate bars to be less than 1/2 inch apart.
- B. Base Pad: Cast-in-place concrete of type specified in Section 32 13 13; levelled top surface sleeved to receive storm sewer pipe sections.

## 2.5 MANHOLES AND CLEANOUTS

- A. Lid and Frame: Cast iron construction, removable lid, open checkerboard grill lid design; nominal lid and frame diameter as indicated.
- B. Shaft Construction and Concentric Cone Top Section: Reinforced precast concrete pipe sections, lipped male/female dry joints; cast steel ladder rungs into shaft sections at 12 inches; nominal shaft diameter as indicated.
- C. Base Pad: Cast-in-place concrete of type specified in Section 03 30 00; levelled top surface to receive concrete shaft sections, sleeved to receive sewer pipe sections.
- D. Cleanouts: Cast-iron ferrule and countersunk brass cleanout plug, with round cast-iron access frame and heavy-duty, secured, scoriated cast-iron cover.

## 2.6 OUTFALLS

- A. Cast-in-place reinforced concrete of type specified in Section 03 30 00.
- B. Provide head wall, apron, tapered sides and rip-rap as indicated.
- C. Rip rap to be irregular broken stone weighing between 10 to 40 pounds each.

## 2.7 FILL MATERIAL

- A. Sand: Type specified in Section 31 23 23.

# 3. PART 3 EXECUTION

## 3.1 EXAMINATION

- A. Verify that trench cut is ready to receive work, and excavations, dimensions, and elevations are as indicated.
- B. Beginning of installation means acceptance of existing conditions.

## 3.2 PREPARATION

- A. Hand trim excavations to required elevations. Correct over excavation with fill material of sand.
- B. Remove large stones or other hard matter which could damage drainage tile or impede consistent backfilling or compaction.

## 3.3 INSTALLATION - PIPE

- A. Extend storm sewerage piping to connect to building storm drain, of sizes and in locations indicated.
- B. Include storm sewerage system piping and appurtenances from a point 5'-0" outside building foundation to point of disposal.
- C. Join and install cast iron soil pipe and fittings with compression gaskets in accordance with CISPI Handbook, Volume I. Use service class gaskets.



- D. Join vitrified clay pipe and fittings with rubber sealing elements and install piping in accordance with ASTM C12.
- E. Join concrete pipe and fittings with rubber gaskets and install piping in accordance with ACPA Installation Manual.
- F. Solvent cement PVC pipe and fittings in accordance with ASTM D2855 and install piping in accordance with ASTM D2321.
- G. Place pipe on minimum 4 inch deep bed of sand.
- H. Install perforated PVC pipe at a minimum slope of 0.05 percent. Coordinate with installation of drainage fill and filter fabric specified in Section 31 23 23.
- I. Install warning tape during back-filling of trench for underground storm drain piping. Locate 8 inches below finished grade directly over piping.
- J. Lay pipe to slope gradients noted with maximum variation from true slope of 1/8 inch in 10 feet.
- K. Install coarse sand at sides and over top of pipe. Provide top cover to minimum compacted thickness of 12 inches.
- L. Place sand in maximum 6 inch lifts, consolidating each lift.
- M. Increase compaction of each successive lift. Refer to Section 31 23 23 for compaction requirements. Do not displace or damage pipe when compacting.
- N. Connect to point of disposal.

#### 3.4 INSTALLATION - CATCH BASINS, AND MANHOLES

- A. Form bottom of excavation clean and smooth to correct elevation.
- B. Form and place cast-in-place concrete base pad, with provision for storm drainage pipe end sections.
- C. Establish elevations and pipe inverts for inlets and outlets as indicated.
- D. Mount lid and frame level in grout, secured to top cone section to elevation indicated.
- E. Install accessories as indicated.
- F. Set top of frame and covers flush with paved surfaces. Elsewhere, set tops 3 inches above grade.

#### 3.5 INSTALLATION - CLEANOUTS

- A. Install cleanouts and extension from sewer pipe to cleanout at grade as indicated.
- B. Set cleanout frame and cover in concrete block 18 x 18 x 12 inches deep.
- C. Set top of cleanout flush with paved surfaces. Elsewhere, set top 1 inch above surrounding earth grade.

#### 3.6 FIELD QUALITY CONTROL

- A. Field inspection will be performed under provisions of Section 01 45 29.
- B. Clear interior of piping and structures of dirt and other debris as work progresses.

#### 3.7 PIPELINE FLUSHING

- A. Flush newly constructed storm drain piping with water.

- B. Collect and remove any rock, debris and silt using a metal screen during flushing procedure.

### 3.8 PROTECTION

- A. Protect finished installation under provisions of Section 01 61 00.
- B. Protect pipe from damage or displacement until backfilling operation is in progress.

END OF SECTION